DNR has a specific role in the new buffer law. We call it the Buffer Mapping Project. Today we will cover a brief history of buffers in Minnesota, we will learn about the design and process we are using to capture the information required by this law to be on the buffer protection maps, we see examples of what this legislation looks like on the land using data and information so people will be able to understand which lands are affected and finally we will wrap up with some challenges and opportunities as our efforts proceed toward implementation of this new law.
The good life in Minnesota depends closely on water quality for so many things that we value. Fishing, boating, canoeing, wildlife viewing, sustainable habitats for the species we value most, swimming, tourism, businesses and industries, and yes, even our basic needs of clean water for drinking and personal health in all the places we live in Minnesota
The purpose of the new law is to protect state water resources from erosion and runoff pollution and is part of the clean water initiative.

What do we know for sure about clean water? We know that Minnesota once was a buffer in its entirety and as a result we provided with the gifts of clean lakes, rivers, and groundwater.
What else do we know? This is a version of the 2011 Minnesota land use and land cover data. We know we have lost substantial areas of the state where there no longer is perennial vegetation on the land.
We know that the land use and land cover practices we are employing have resulted many watersheds having impairments to water quality and that there is a strong relationship between buffers and healthy aquatic life.
Where buffers matter most for groundwater protection

What else do we know? We know the type of geology we have in Minnesota and which areas are more or less susceptible to groundwater contamination. We know that we are pumping more water out of our aquifers in more locations. We know that water seeks its lowest level. So if we know that our land use choices are already impairing our surface waters downstream in so many watersheds in the state, and we know that it only took about two generations to create most of these impairments and if we remove more water from our aquifers and we have created about 100,000 new chemicals to make life better and most get away from us after we use them and end up in the water. What is the prognosis for the health of our aquifers when we no longer have very many buffers left to clean up the water before is soaks in and percolates into our drinking water supplies? Is it past time to get started on getting buffers back on the landscape in the most important places? I think the answer should be obvious.
Buffer Legislation at a glance
*Laws of Minnesota 2015, 1st Special Session, Chapter 4, Article 4*

Directs the "Buffer protection map" for public waters and public drainage systems

Riparian protection requirements for **public waters**, the more restrictive of:
1. a 50’ average/30’ minimum width, continuous buffer of perennially rooted vegetation;
2. the state shoreland standards;
3. or an alternative water quality practice

Riparian protection requirements for **public drainage systems**:
1. a 16.5-foot minimum width continuous buffer of perennially rooted vegetation on “ditches within the benefited area of public drainage systems”;
2. or an alternative water quality practice
This diagram shows the process steps DNR needs to go through to produce the buffer protection maps that follow the criteria provided in the law. Both Phase I and Phase II information are needed to produce the required maps. Some data and steps will take longer than others. The Phase II data collection from Drainage Authorities will take longer than we originally allowed for and it will be added into the preliminary buffer protection maps as it is provided. It will be factual information transferred from local records and validated by drainage authorities that does not need public review. This data will change with legal processes enacted by the drainage authority and the buffer protection maps will need to be updated periodically through time.
DNR has provided a viewing tool to help citizens understand the distribution of public waters across the state. We will use the public water inventory maps as the basis for showing public waters requiring a buffer. For the creation of the buffer protection maps, we will need to modify the spatial location of the public waters from what is depicted on the official public waters maps to the actual location of those waters where they exist currently so landowner know which watercourses need to have buffers.
The five criteria DNR will use for showing buffer widths on the preliminary buffer protection maps are listed.

Phase I Criteria for Public Waters on Preliminary Buffer Maps

• Public waters will have a 50 foot buffer width
• Public water wetlands with a shoreland classification will have a 50 foot buffer width
• Public drainage system ditches with a shoreland classification will have a 50 foot buffer width
• Public drainage system ditches with no shoreland classification will have a 16.5-foot buffer width
• Public water wetlands having no shoreland management classification will not be included
Identifying ditches and benefited areas of public ditch systems

A title slide with a picture used to introduce the Phase II process DNR will use in identifying ditches and benefited areas of public drainage systems and steps that will follow in the next 3 slides
The three parts of Step 1 DNR is using in Phase II to create a visual inventory of features on the landscape that appear to be ditches. It will become a part of the basis of an intense local review process that allows for evaluation of which features are classified as ditches that DNR will include on the map in the benefited areas of public drainage systems and which will be further evaluated by SWCDs in the future under Minnesota Statutes 103F.48, Subdivision 4.

**Step 1**

- Use LiDAR data to identify ditches within the watersheds
- Use tools to identify “ditch landscape features” that have a definable bank and bed and convey water
- Create maps of “ditch landscape features” that may be ditches within the benefited areas
The 5 parts of Step 2 DNR will use in Phase II to obtain data from local records

**Step 2**
- Ask Drainage Authorities to share shape files of benefited areas
- Ask Drainage Authorities to share paper maps of benefited areas
  - Transform paper maps into a digital map layer
- Ask Drainage Authorities to share land parcel information on benefited areas
  - Transform land parcel information into a digital map layer
The 4 parts of Step 3 DNR will use in Phase II. This will be the most time consuming and elongated part of the entire mapping project. This is due to the fact that the data is in over 100 local jurisdictions in a wide variety of forms and data types that will be difficult to convert into digital information that can be used in the creation of the buffer protection maps.

**Step 3**
- Add benefitted area information to preliminary buffer protection maps as data is available
- Request Drainage Authorities to validate the delineations we show are accurate with their data records
- Include validated benefitted area boundaries on official map
- Limit ditches shown on map to benefitted area boundaries
A description of the 4 major components of effort that will happen as a part of the Phase III process

• Preliminary maps produced with Public Waters Inventory and ditch features using LiDAR and other data layers
• Local review of ditch features with criteria
• Local input to recommend where buffers are appropriate
• Update errors and corrections to create accurate maps with locally reviewed criteria
The job of my team is to support the Buffer Team by compiling data and creating maps and other products that visualize and better understand the effects of conservation buffers on the landscape. We are also working with our partners in counties and watershed districts to consolidate information on Ditches and Benefitted areas in order to create the maps that show where buffers are required and how wide they need to be.

Here you see an map of Faribault County, MN showing the locations of cities, towns, roads, Parks and water features. We are currently working with Faribault county SWCD staff to learn about the information that Ditch Authorities may be able to provide for the purposes of mapping Ditches and Benefitted Areas.
This map shows the DNR Designated Public Waters and Watercourses in Faribault county. Solid blue lines are Natural Watercourses while dashed blue lines represent Natural Watercourses that have been altered (straightened, deepened, widened). Public water lakes and wetlands are shown in blue and those that have shoreline classifications are outlined in Dark Green. All of these features would get 50’ buffers unless they are a public ditch.

Note the dashed blue lines – these are public waters that have been subsequently altered in some way and in Faribault county these were typically converted to public ditches as shown in the next slide.

Data Sources – Public Water, Shore-land Classification – Minnesota DNR
This map shows the DNR Public Waters and Watercourses along with Public Ditches, in purple, as provided by Faribault County staff. These features would require a 16.5 foot buffer. As you can see, for the most part the altered natural watercourses have been identified by the county as part of a public ditch system.

Data Sources – Public Water, Shore-land Classification – Minnesota DNR
Public Ditch – Faribault County SWCD
This map shows the additional water features in Light Purple that are not classified as Public Waters or Watercourse, are not part of a County Ditch system but were identified as Altered watercourses by the MPCA. These features are likely the best representation of Private Ditches that exists.

Data Sources – Public Water, Shore-land Classification – Minnesota DNR  
Public Ditch – Faribault County SWCD  
Altered Watercourse – Minnesota Pollution Control Agency
This map shows the water features in Faribault county with the Benefitted area of a single public ditch in a red outline. When complete there would be benefitted areas surrounding all of the public ditch systems in the county.

Data Sources – Public Water, Shore-land Classification – Minnesota DNR
Public Ditch and Benefitted Area – Faribault County SWCD
Altered Watercourse – Minnesota Pollution Control Agency
This map shows a typical benefitted area boundary and the waterways and ditch system in that area. This area is in the eastern section of Faribault county.

Data Sources – Public Water, Shore-land Classification – Minnesota DNR
Public Ditch and Benefitted Area – Faribault County SWCD
Altered Watercourse – Minnesota Pollution Control Agency
LiDAR-derived DEM Analysis of landscape features

Using LiDAR-derived data (HPI) to identify “ditch features” within the benefited areas (LGU opportunity to recommend removal of these in Phase 3)
This map shows an example of how a multi-width buffer might look on the landscape. The yellow-buffer to the north of the road is a simulated 50’ buffer on a public watercourse. The red buffer to the south of the road is a simulated 16.5’ buffer on a public ditch system.
A list of 4 significant challenges and opportunities ahead as the Buffer Mapping Project moves toward the implementation of the law. Details of each one follows on the next 4 slides.

- Processing data required for the maps
- Defining criteria for which ditches are on the map
- Assisting local governments with Phase III review
- Helping landowners and local officials be successful
5 data related challenges involved in creating the maps

• Converting paper to digital data
• Over 100 drainage authorities
• Differing formats and levels of quality
• Review and quality control for accurate maps
• Funding and time constraints
4 principles we are striving for in defining the criteria that will be used to decide which ditches are included on the buffer protection maps. The 4 specific sub-criteria listed under the 4th criterion have not yet been finalized in our decision process.

- Stay with the water quality purpose of the law
- Allow for local control to guide map and follow-up
- Fair and equitable among landowners
- Solid criteria to minimize need for dispute resolution
  - Defineable bed and banks, and
  - Connected to downstream public waters, and
  - Within benefitted area of 103E drainage system, and
  - Altered or artificial channels
Assisting local governments in the Phase III review process is an essential and extremely important part of this process. The Phase III process is where landowners and local governments alike will see and understand what this law looks like and which lands will be affected. This is where the crafting of the maps and the application of the criteria will first be evaluated. We expect a large volume of clarifications, questions and correction requests to flow out of this process and need to be prepared to support the large amount of feedback that will occur in this Phase.

- Preliminary maps begin an intense local review process
- Criteria and guidance to manage the input is critical
- Tools and process support will be essential
- Orderly and efficient process for change requests
- Extremely tight timeframes to accomplish all this coordination
The effective implementation of this law will depend heavily on the ability of local
governments to work effectively with landowners in helping them achieve compliance with
this law. These 5 areas define the core of this challenge and opportunity.

- Good maps
- Local knowledge and good tools
- Recognizing where the work and relationships need to happen for success
- Designing adequate support and funding
Concluding Thoughts

- Comparison to 1969 law
- Make a successful project
- Work together to overcome barriers and problems
- Foster strong relationships with landowners
- Support and assist local governments
- Rebuild trust with an open hand and a listening ear
- Preserving our quality of life

7 tenets that will be needed to make this law work well

- Comparison to 1969 law
- Make a successful project
- Work together to overcome barriers and problems
- Foster strong relationships with landowners
- Support and assist local governments
- Rebuild trust with an open hand and a listening ear
- Preserving our quality of life
Thank you!