

# **Incorporating Local Knowledge Provides Better Hydrography Data for All**

Presented by  
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Primary Contributors:

IDWR (Wilma Robertson & Danielle  
Favreau) & Burley Irrigation District



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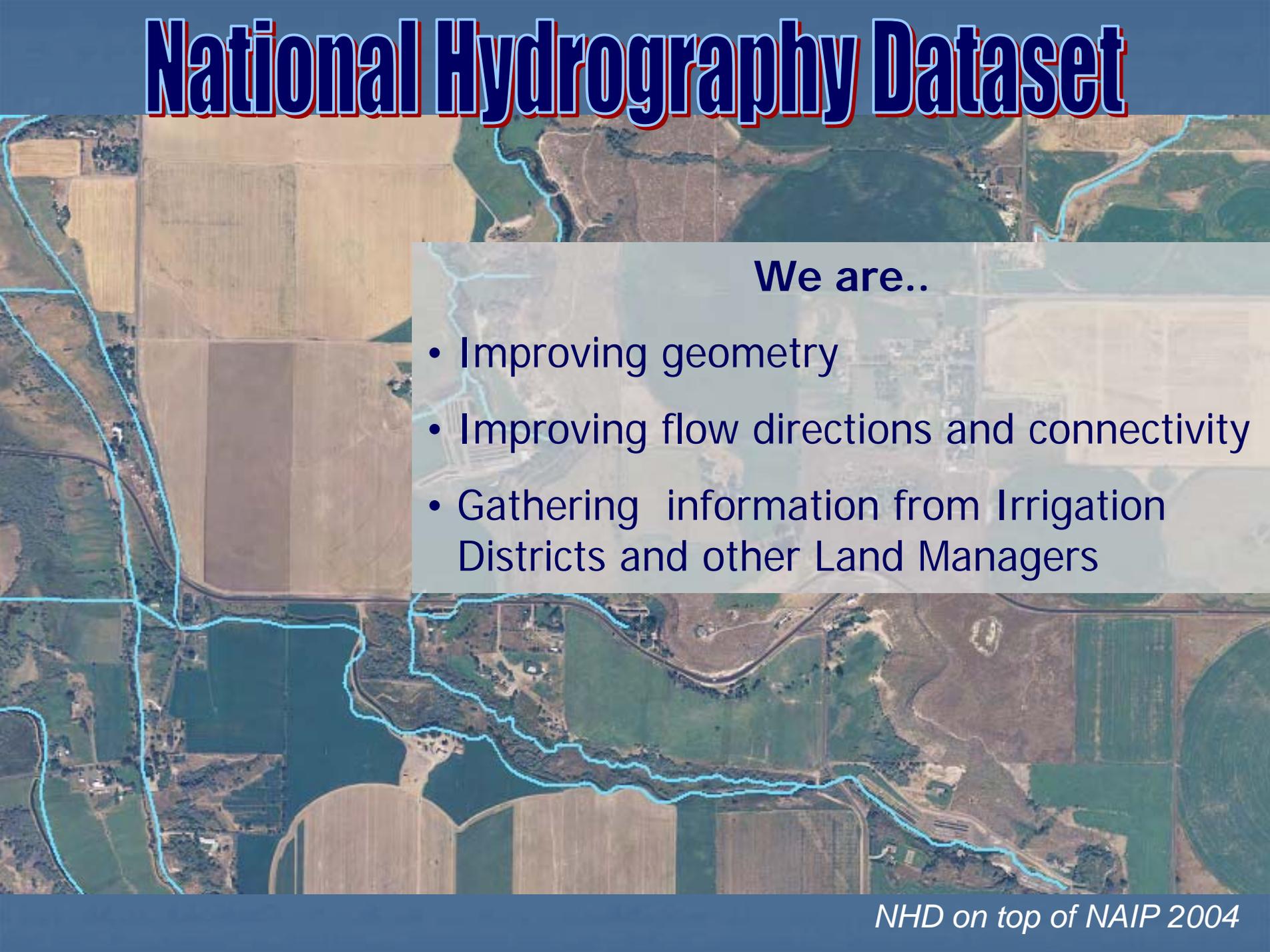
# National Hydrography Dataset

- “Completed” at 1:24,000 scale
- Information mostly derived from USGS topographic maps and USGS cartographic feature files

## As Data Steward, we want to...

- Add more names to the NHD
- Improve stream classification (perennial, intermittent, ephemeral)
- Add and improve other features such as springs and dams as well as add additional feature types

# National Hydrography Dataset

An aerial photograph of a rural landscape, likely in the Midwest, showing a mix of brown and green agricultural fields. A prominent river or stream flows through the scene, highlighted with a bright blue line that represents the National Hydrography Dataset (NHD) boundary. The river meanders through the fields, and there are some smaller channels and wetlands visible. The overall scene is a typical agricultural landscape with a significant water feature.

**We are..**

- Improving geometry
- Improving flow directions and connectivity
- Gathering information from Irrigation Districts and other Land Managers

W -

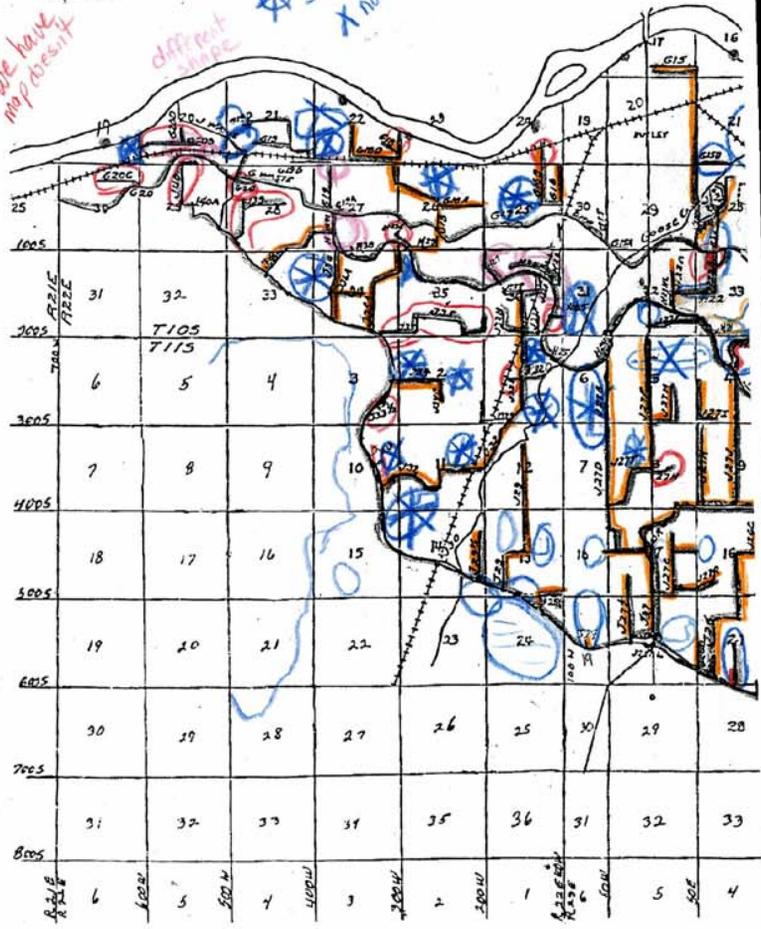
#6 Kent — Yellow/Orange  
#7 Brent — Blue

• points

gone  
X non-kent

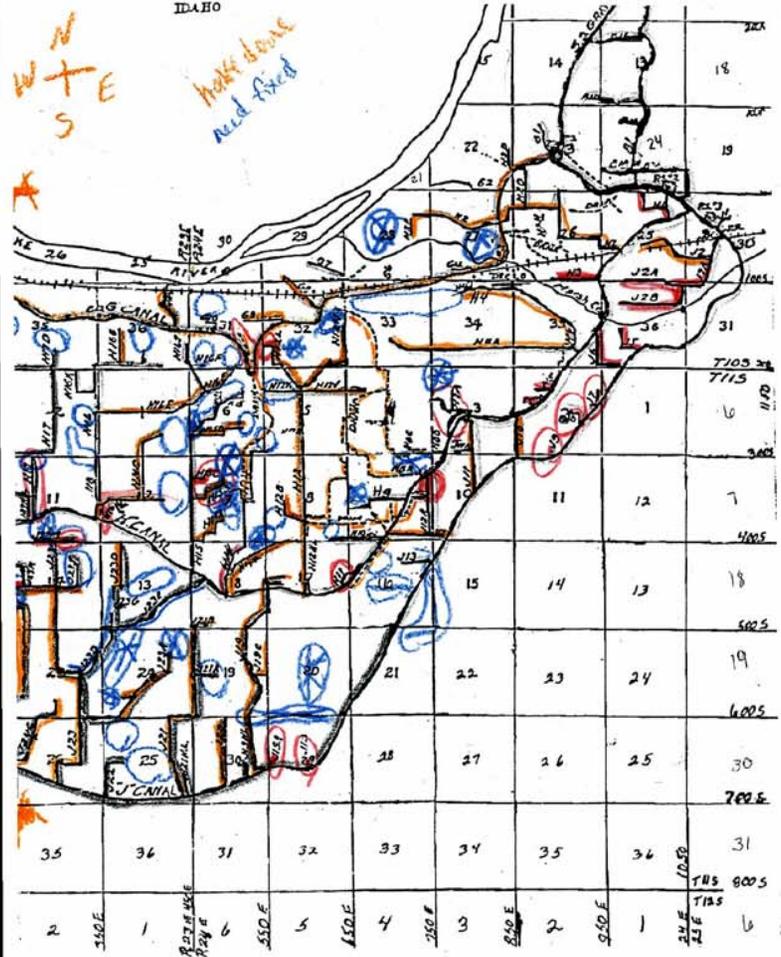
we have  
map obsity

different  
shape



IDAHO

W N  
W T E  
S  
make done  
need fixed



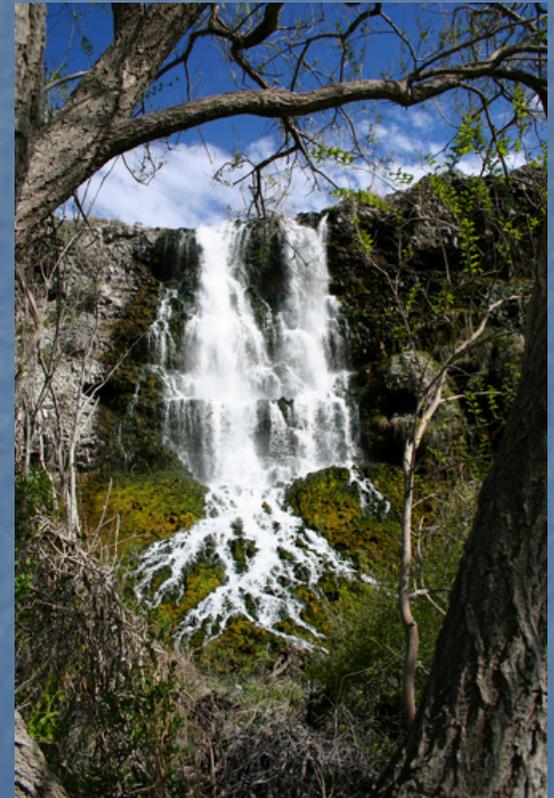
# Gathering Local Data - Resources

- NHD can be downloaded from national web site
  - Direct local editing?
  - If not, make it easy to submit edits to Data Steward
- Some Idaho Canal Companies have ArcGIS ArcView.
- Most Co. staff have limited GIS skills.
- IDWR could provide current NHD, NAIP, and other base layers.

# NHD Update Process

- Process depends on irrigation entities' existing GIS data, available historical maps and willingness to use GIS software and participate.

1. IDWR identifies candidates for NHD update
  - Prioritized based on IDWR relationship with entity and need of interested parties
2. IDWR prepares "best available" hydrological data layer based on Existing NHD, existing GIS data, photo-rectified historical maps and NAIP imagery
3. Best available data, NAIP imagery and tools (described in this presentation) and training on the tools are delivered to irrigation entity. Irrigation Entities also receive large paper maps.
4. Irrigation Entity uses tools to indicate changes. Frequently they will mark (additional) changes on paper map. All changed are send to IDWR. Occasionally this requires more visits by the IDWR to keep this step moving.



# NHD Update Process

5. IDWR improves “best available hydrological layer” and submits updated GIS data and paper maps back to irrigation entity.
6. Irrigation entities check new maps, and will pay special attention to flow directions and connectivity. Edited maps are send back to IDWR.
7. IDWR updates the NHD
8. Everybody can download updated NHD data for free from <http://nhd.usgs.gov/>
9. IDWR sends or hand delivers updated paper maps and GIS data to irrigation entity. Those are typically nice poster sized maps with aerial photography



# Customized Tool Description

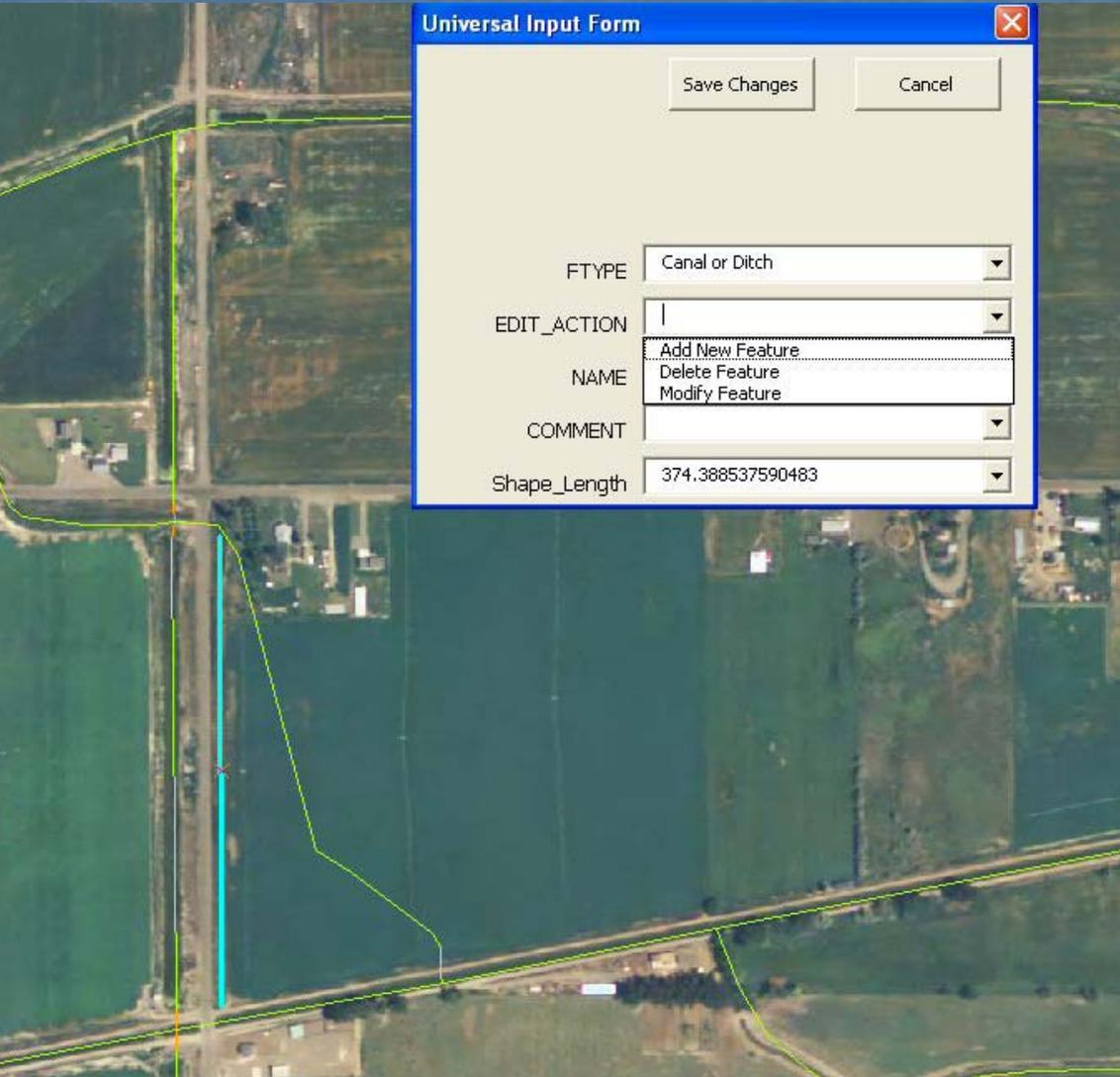
- Canal companies will only “touch” NHD flowlines that need to be changed, added or deleted.
- Preferably delivered as one project (mxd) with ready to go editing tool.
- Empty “edit” geodatabase
  - Feature Classes
- Limit to 1 Edit Task – For example: Create Feature
- Custom forms to indicate changes in attribute information.

# Customized Tool Description



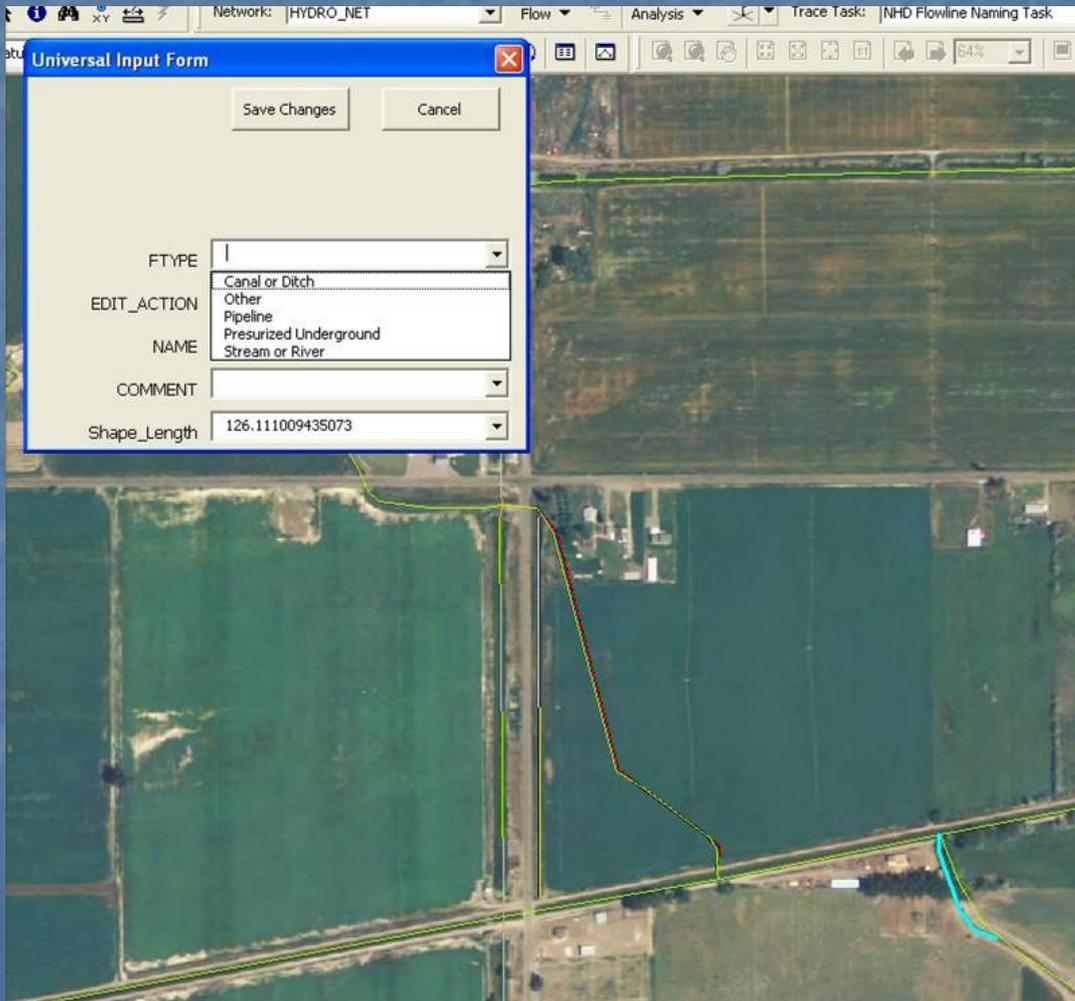
Goal: draw new canal segment currently missing in NHD

# Customized Tool Description



Dialog box appears  
when sketch is finished

# Customized Tool Description



User needs to specify the feature type when adding or modifying flowlines.

Drop down list shows NHD flowline feature types appropriate for canal companies.

# Customized Tool Description

Universal Input Form

Save Changes Cancel

FTYPE Canal or Ditch

EDIT\_ACTION |

NAME Add New Feature  
Delete Feature  
Modify Feature

COMMENT

Shape\_Length 374.388537590483

User chooses edit action:

**Add New Feature:** sketched line should be a new flowline

**Delete Feature:** line is drawn on top of feature that need to be deleted

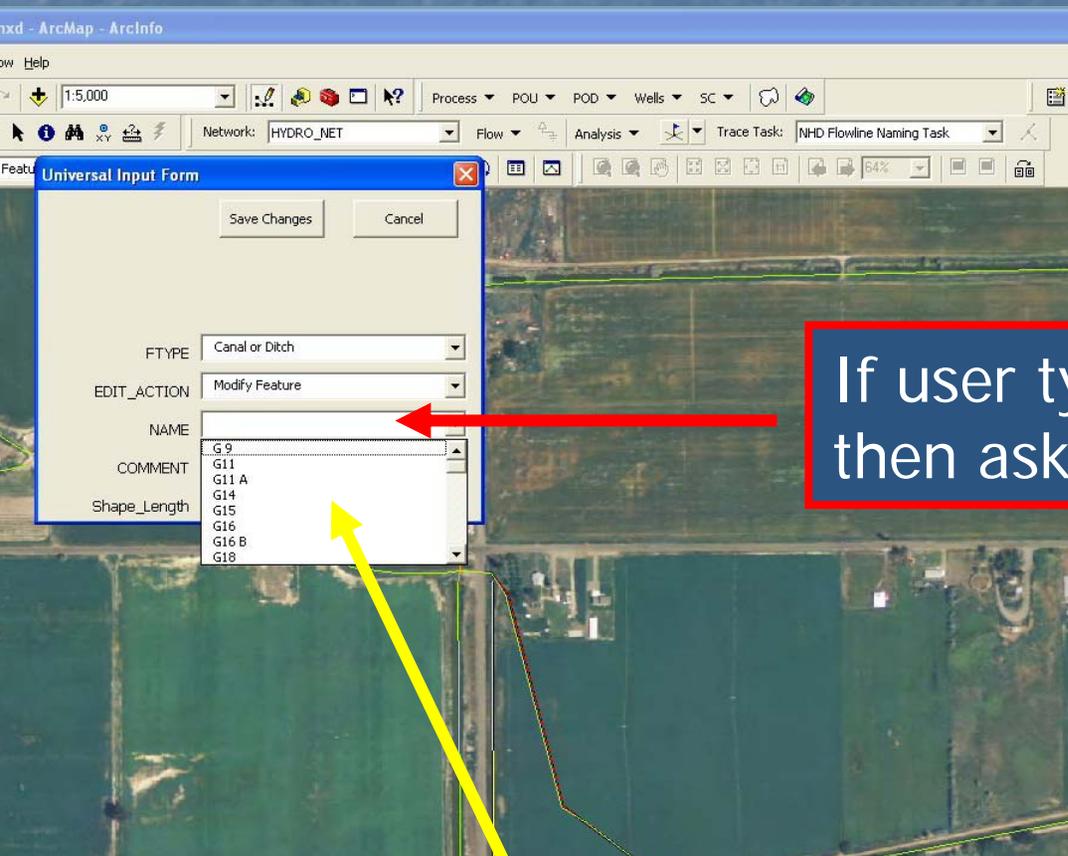
**Modify Feature:** modify the geometry of an existing NHD flowline

# Customized Tool Description

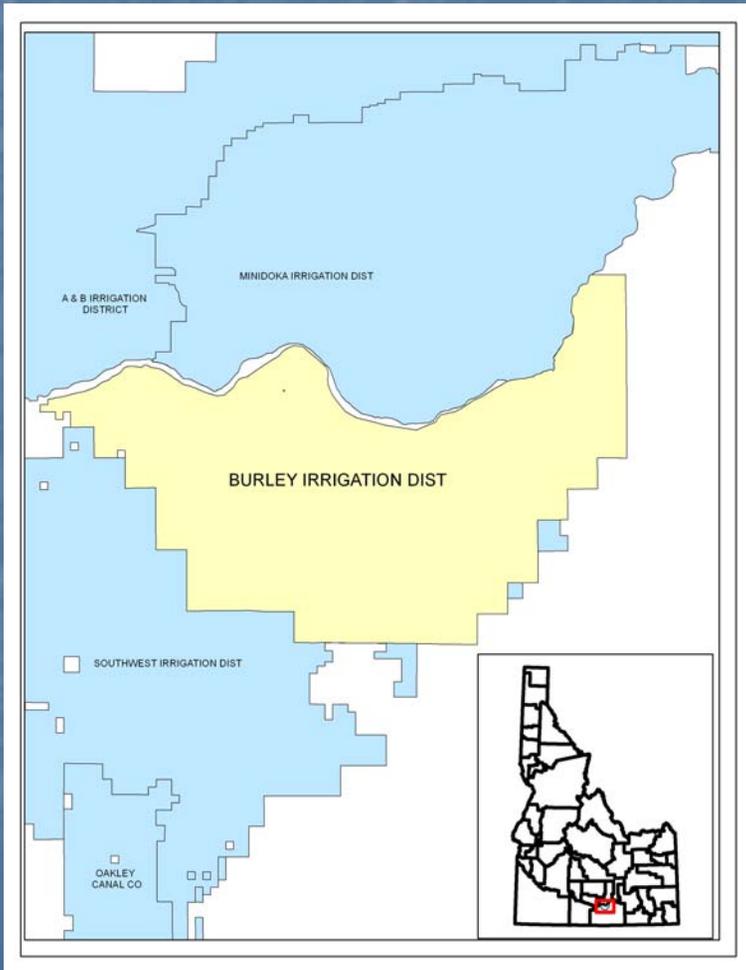
Existing canal names can be selected from drop-down box

If user types in a new name here then asked to confirm new name.

When user clicks "yes" the name is added to drop down list.

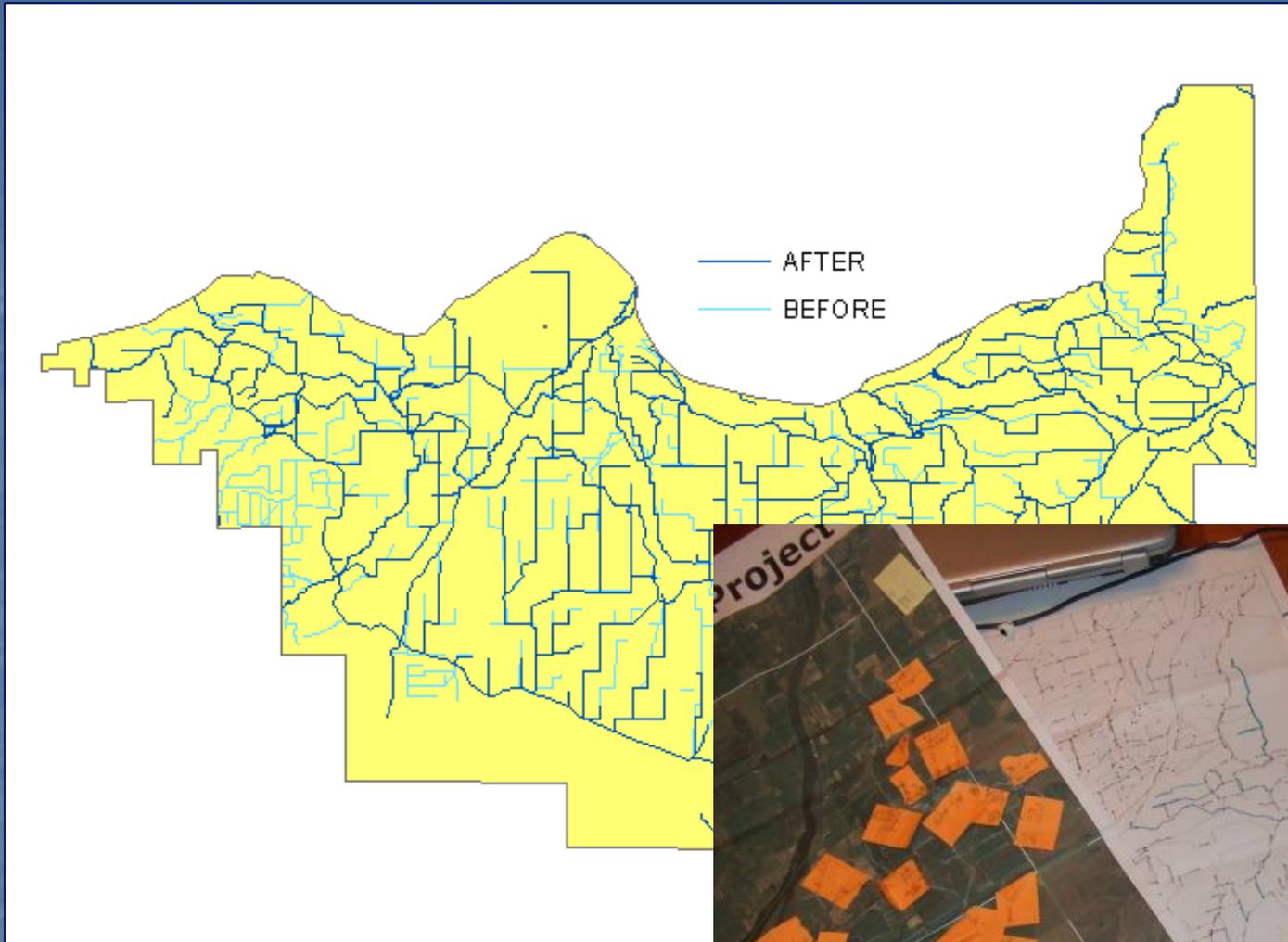


# Burley Irrigation District

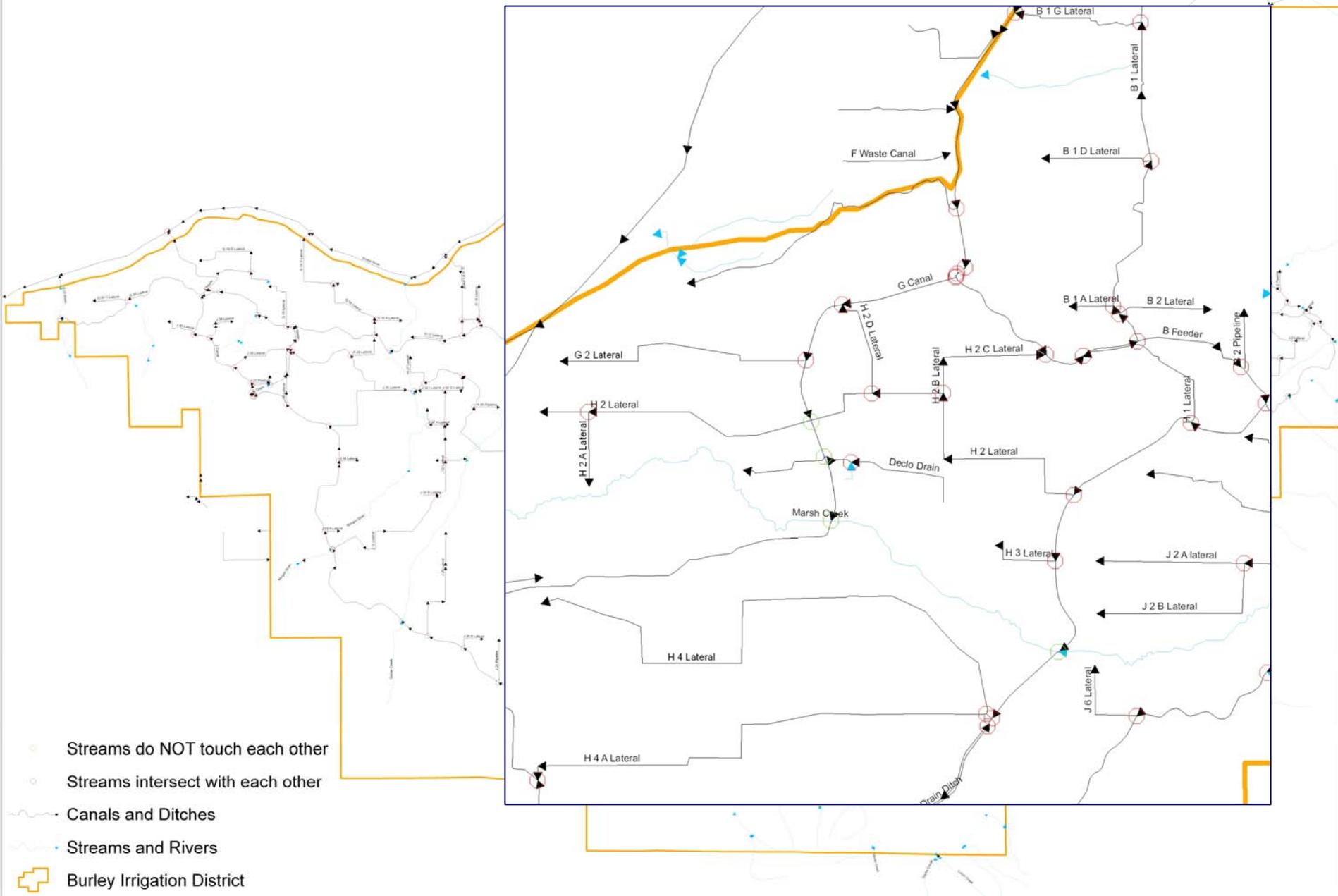


## What is in it for the local Irrigation Districts?

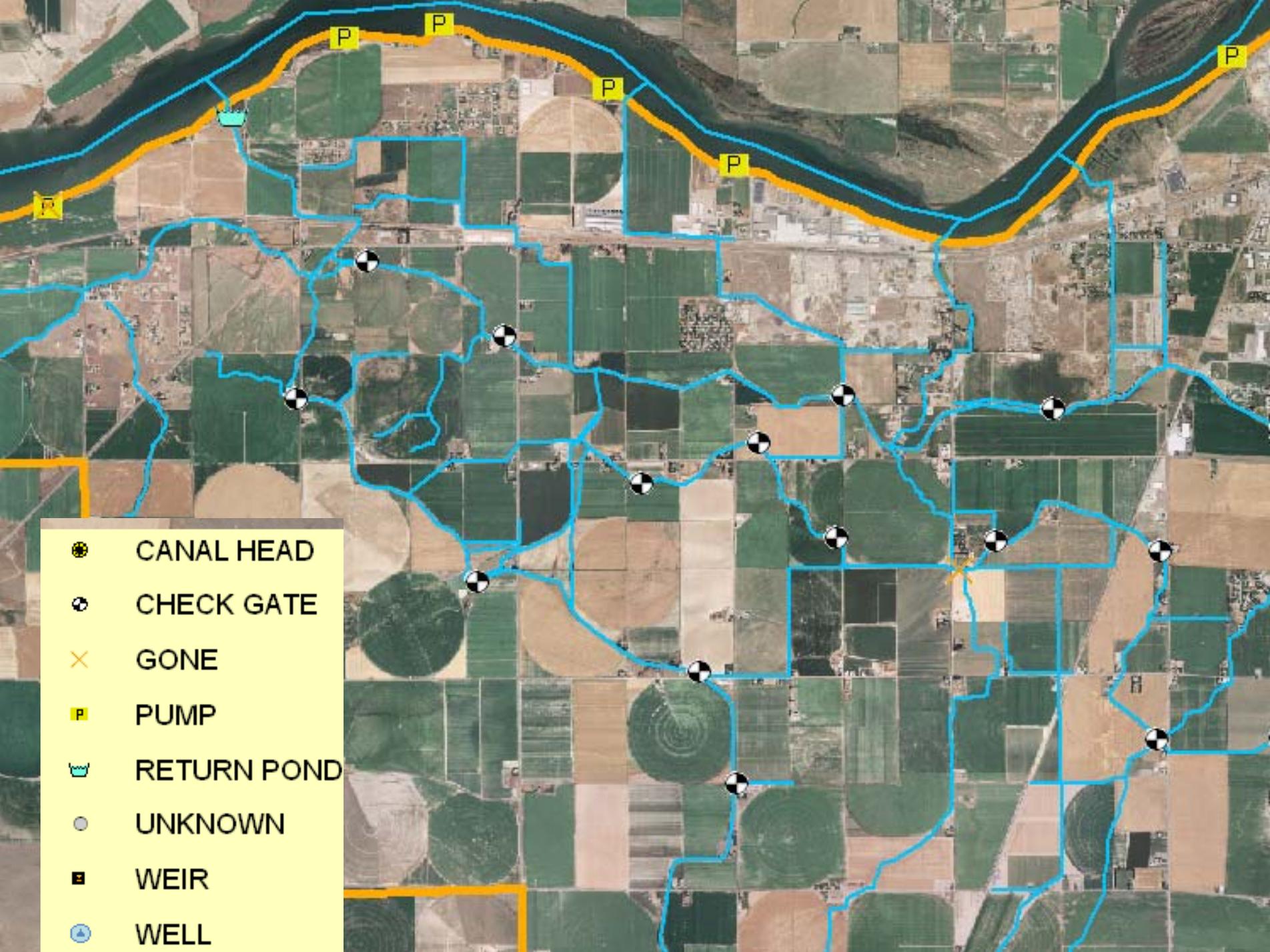
- Improved maps
  - Esp. Points of Diversion
- Improve Basic GIS software skills
- Future plans: customer links to network.
  - Billing
  - 911 response



# Flow Directions and Connectivity in Burley Irrigation District





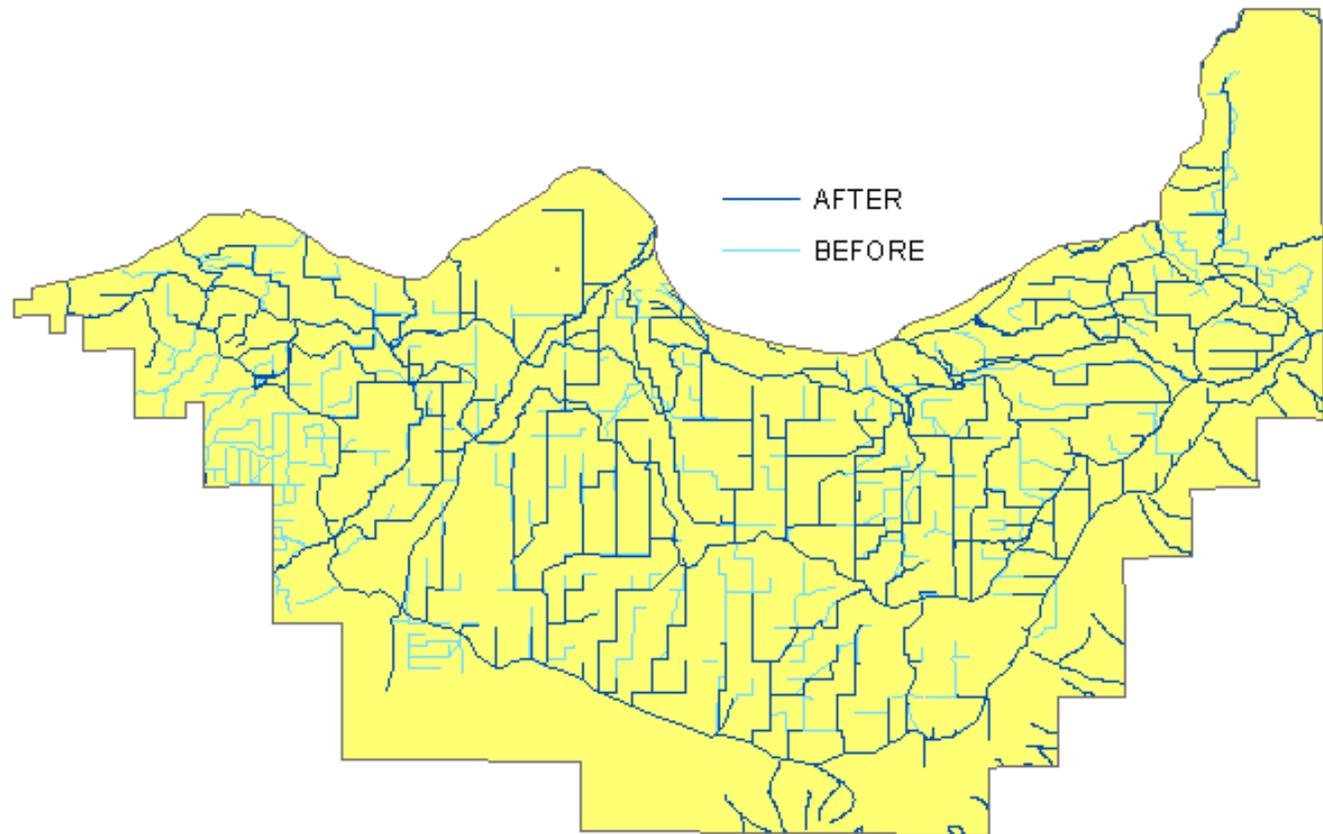


- CANAL HEAD
- ⊗ CHECK GATE
- × GONE
- PUMP
- 🌊 RETURN POND
- UNKNOWN
- WEIR
- ⊕ WELL

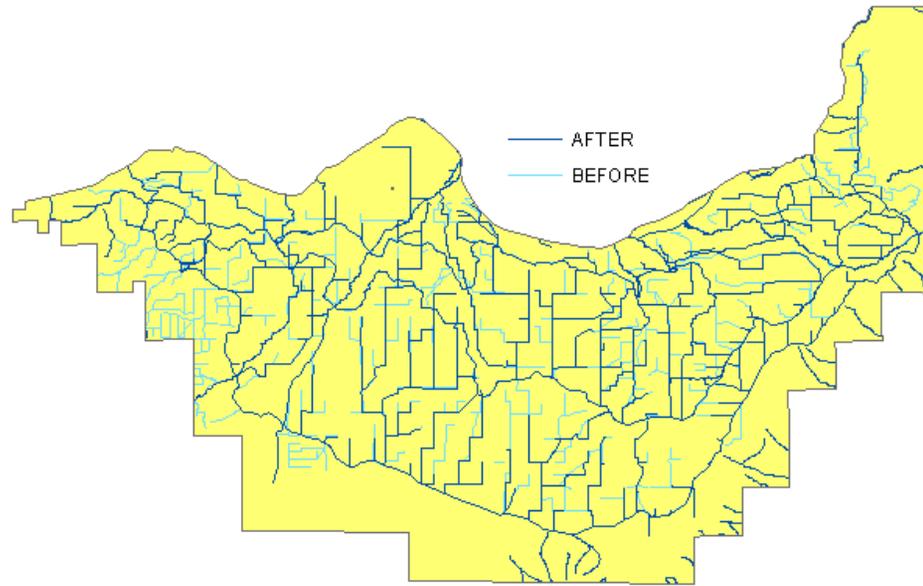
# Results

## ■ Improved Geometry

Updated geometry can now be used to linear reference points of diversion

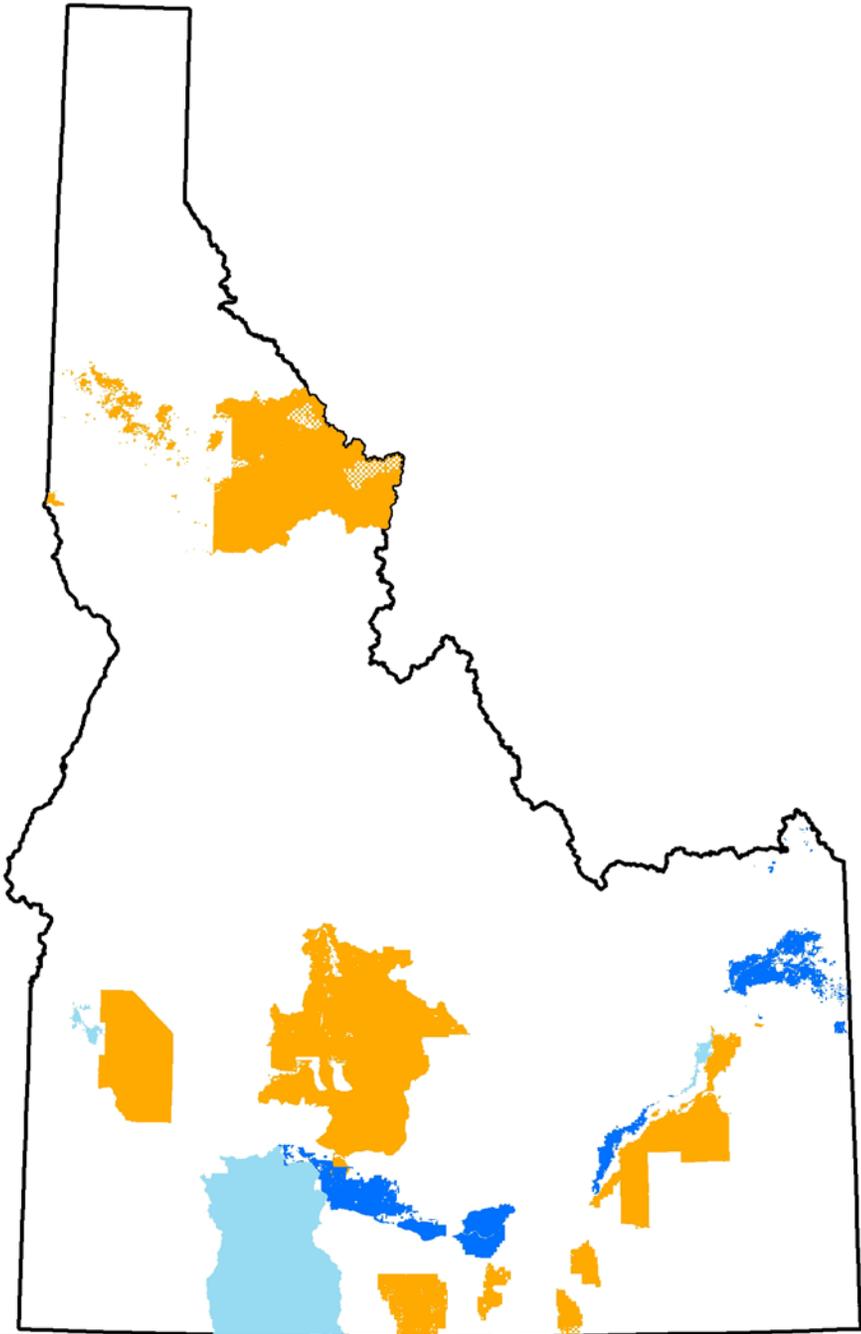


# Results

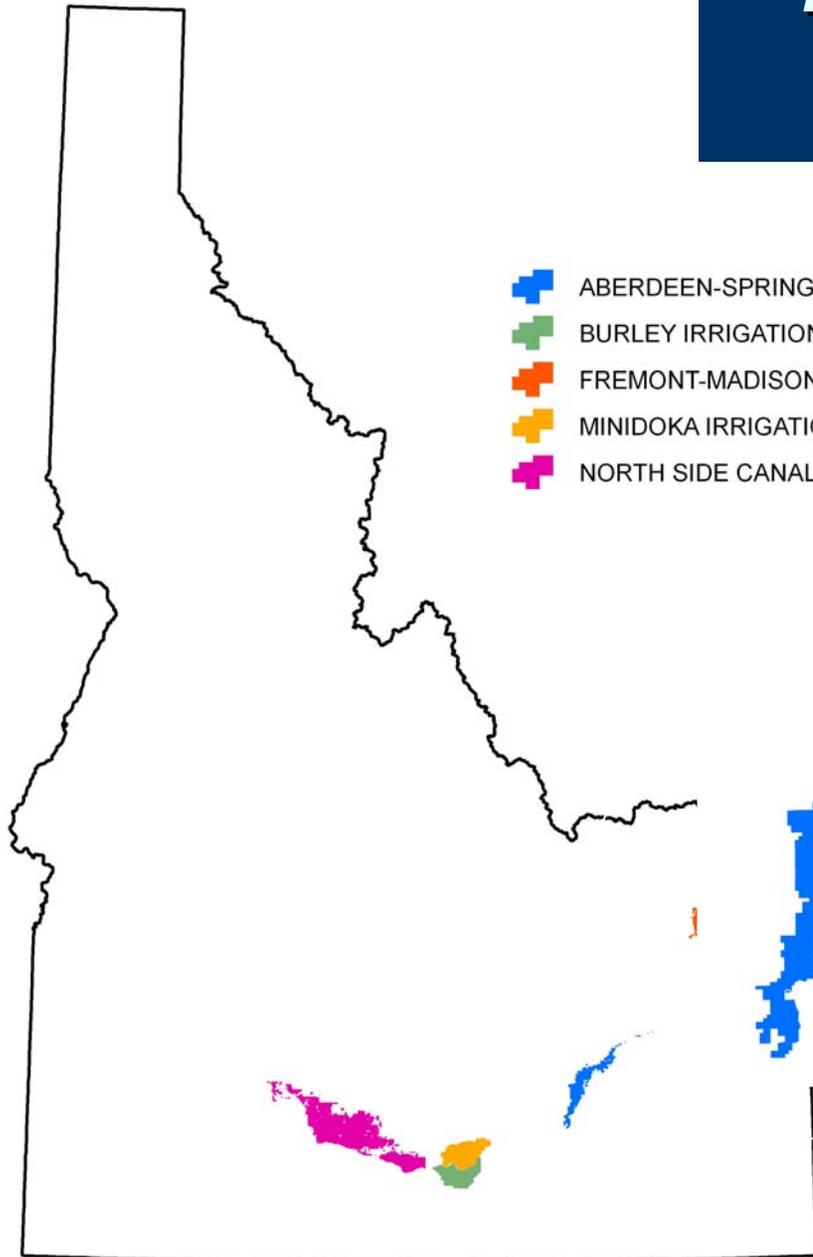


- Over 200 new names (mostly for laterals) were submitted to the GNIS.
- Significant improvement in flow direction and connectivity
- Improved network will allow for more and better analyses

# Cooperators



# Aberdeen-Springfield Canal Co.



-  ABERDEEN-SPRINGFIELD CANAL CO
-  BURLEY IRRIGATION DIST
-  FREMONT-MADISON IRRIGATION DISTRICT
-  MINIDOKA IRRIGATION DIST
-  NORTH SIDE CANAL CO LTD

- NHD update complete  
(Flowlines)

# Burley I.D.

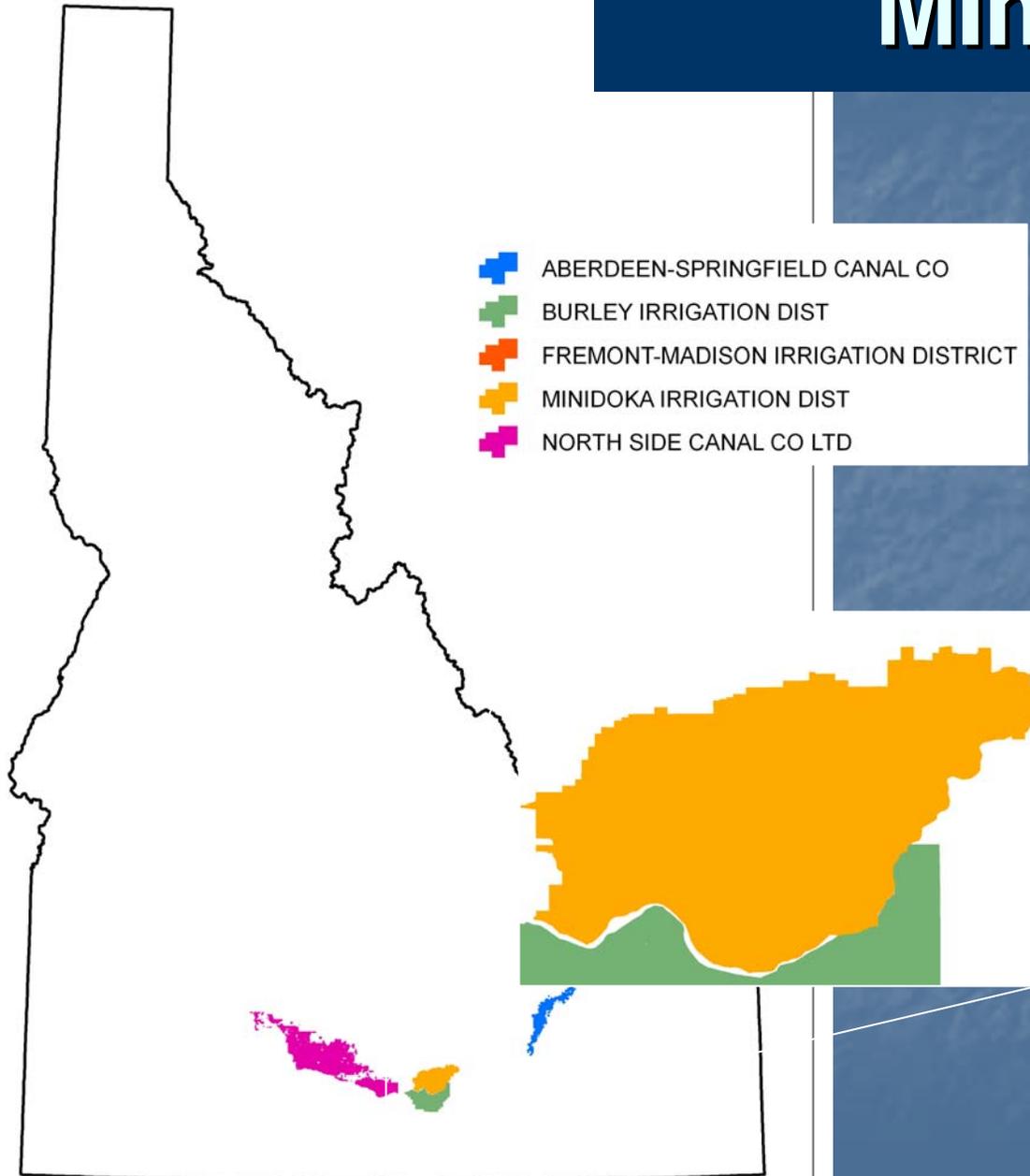


- NHD update completed (Flowlines)

- Have preliminary locations of most pumps, check gates, head gates and weirs

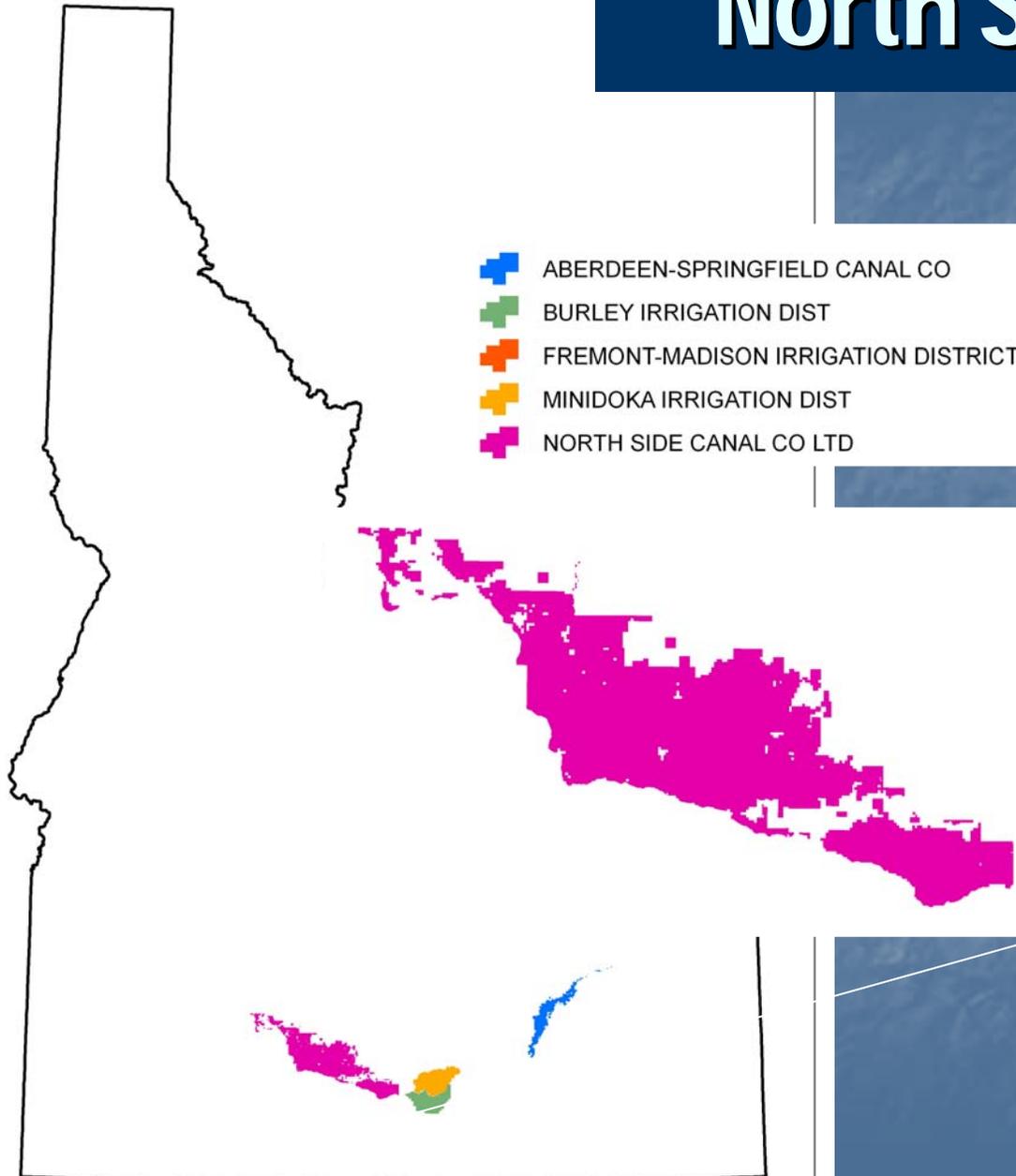
- We are in the early stages of spatially locating customers

# Minidoka I.D.



- IDWR created “best available data” and delivered the “tool”, training, GIS data and paper maps
- MID has extensive GPS dataset with different types of gates and pumps
- MID is currently working on updating “best available data”
- May be interested in spatially locating customers

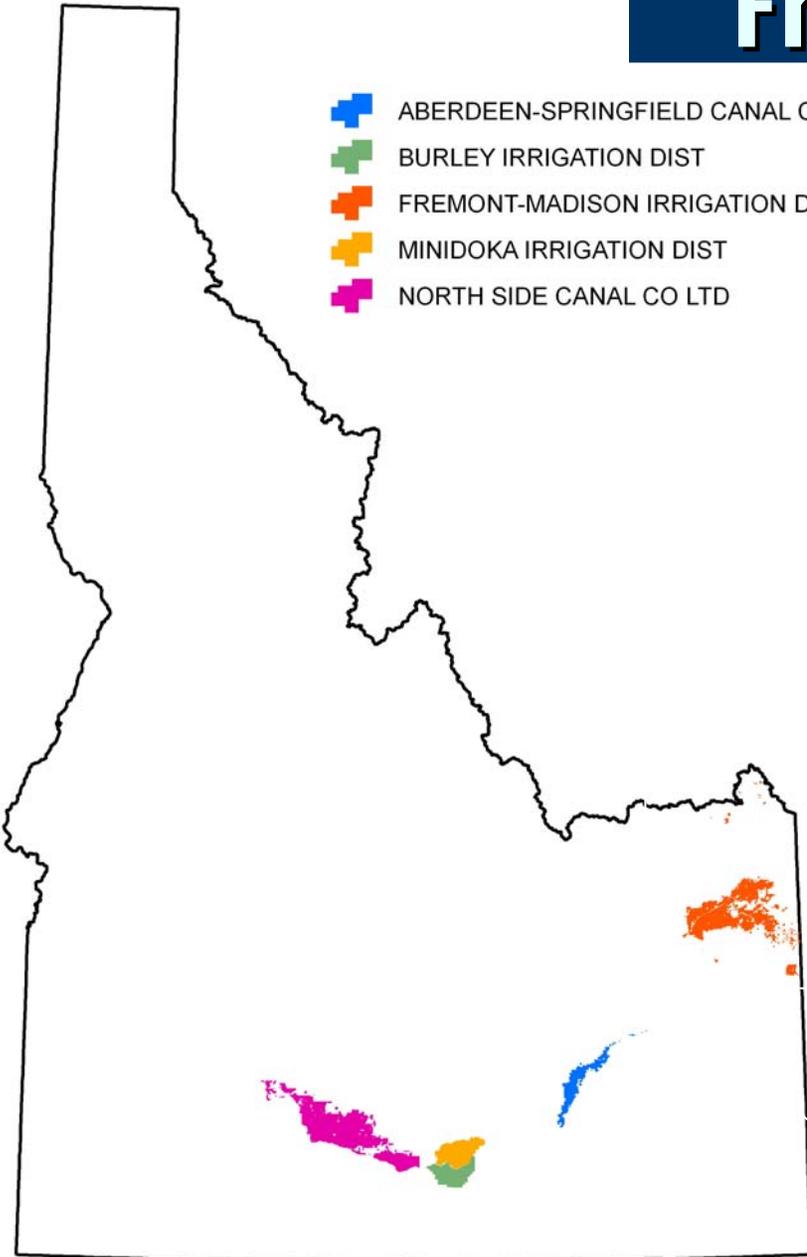
# North Side Canal Co.



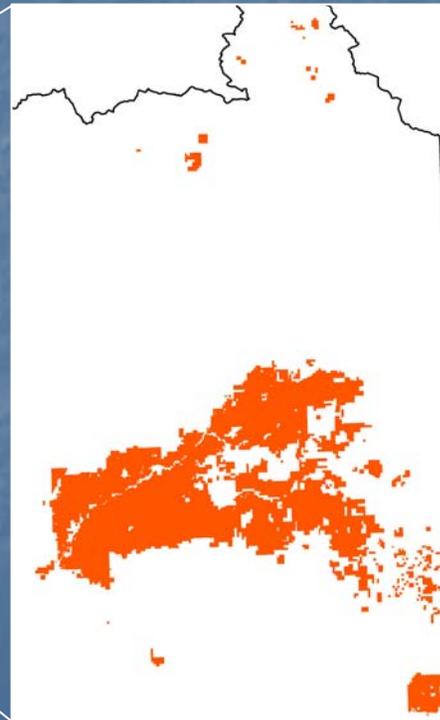
- IDWR created “best available data” and delivered the “tool”, training, GIS data and paper maps
- North Side Canal Company edited paper maps and send back to IDWR
- IDWR updated “best available data” including connectivity and flow direction and submitted updated maps to North Side Canal Co,
- North Side Canal Co is currently reviewing updated maps
- May be interested in adding points of diversion

# Fremont-Madison I.D.

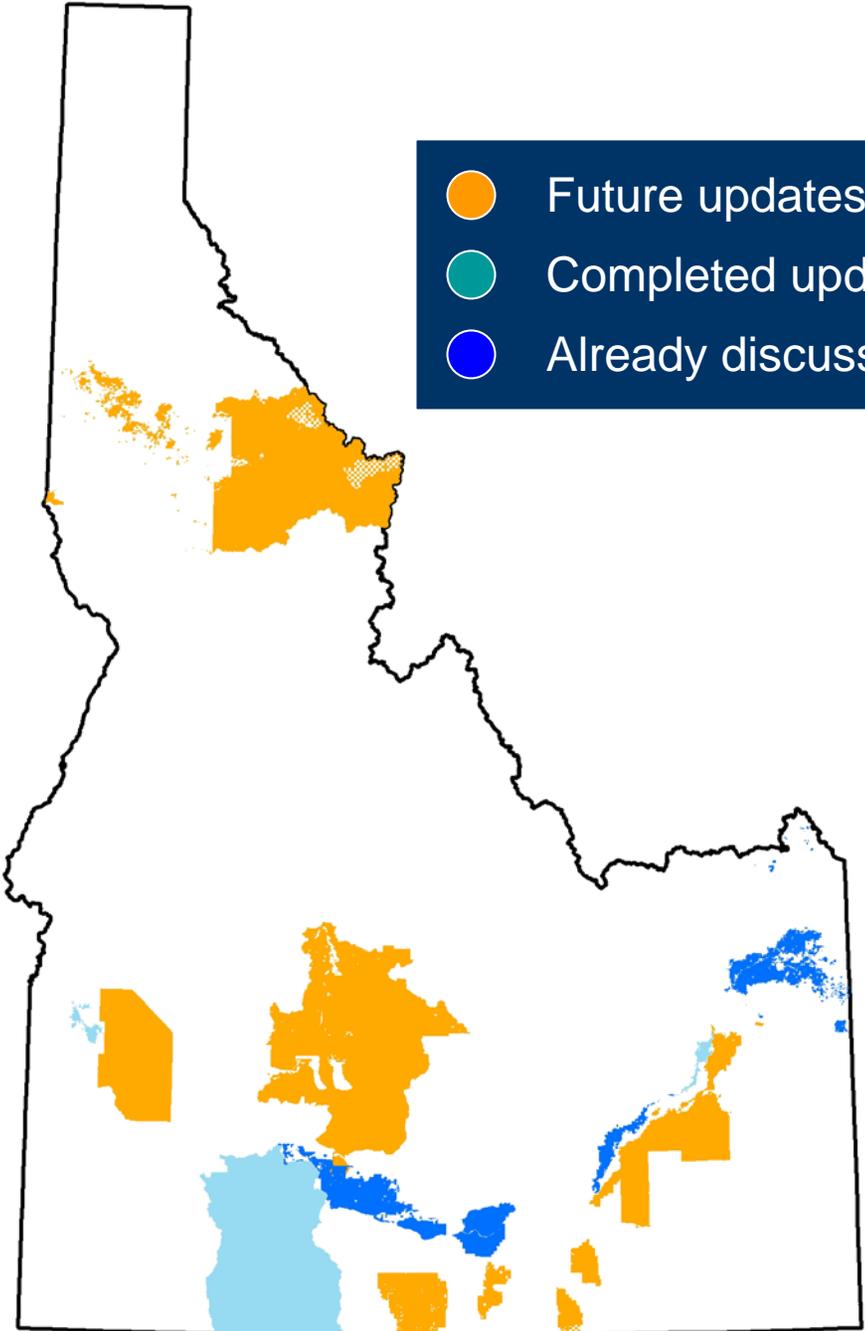
- ABERDEEN-SPRINGFIELD CANAL CO
- BURLEY IRRIGATION DIST
- FREMONT-MADISON IRRIGATION DISTRICT
- MINIDOKA IRRIGATION DIST
- NORTH SIDE CANAL CO LTD



- IDWR almost done with completing “best available hydrological data” layer
- Plan to visit Fremont-Madison later this summer to deliver “

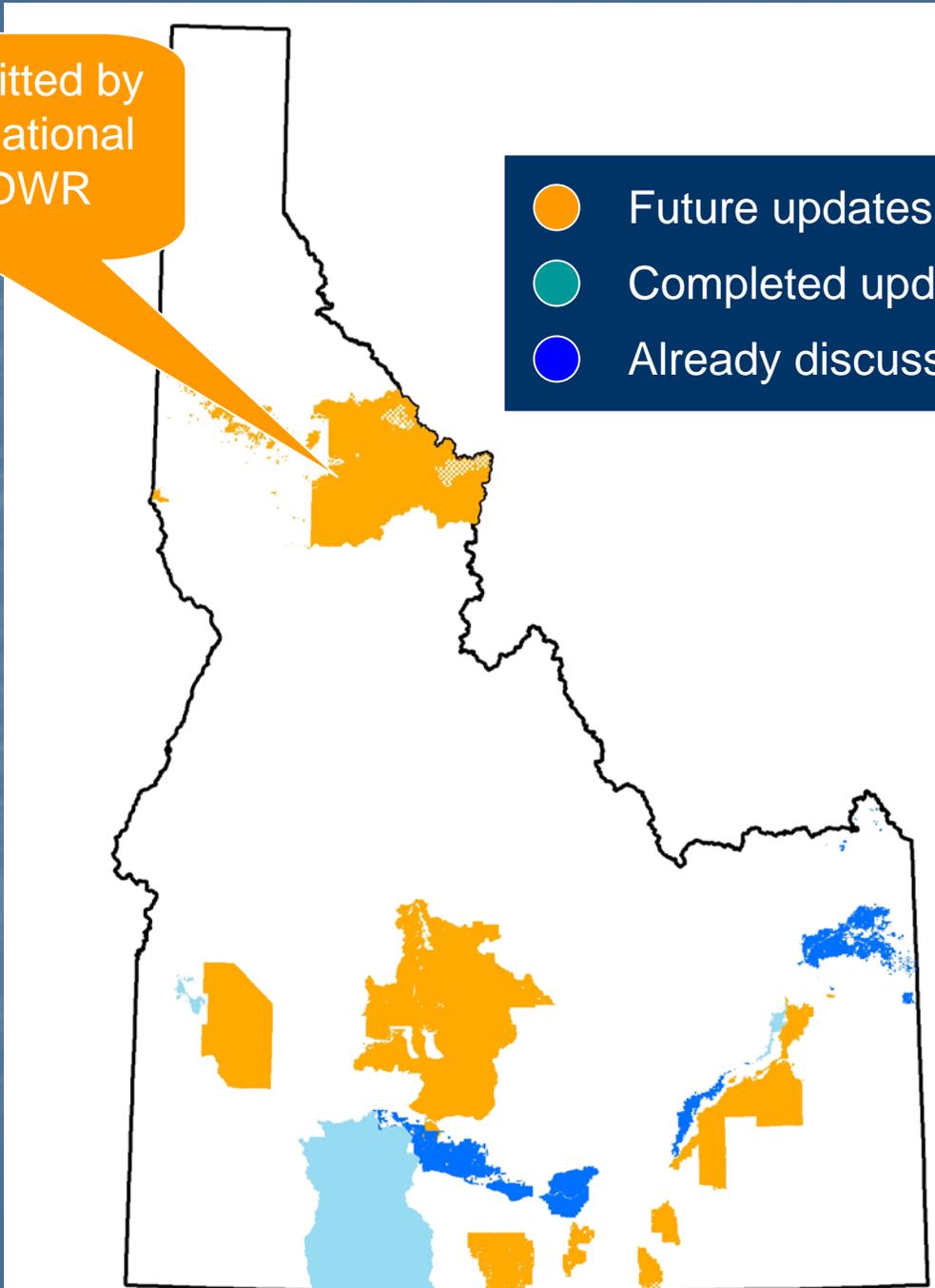


- Future updates
- Completed updates
- Already discussed

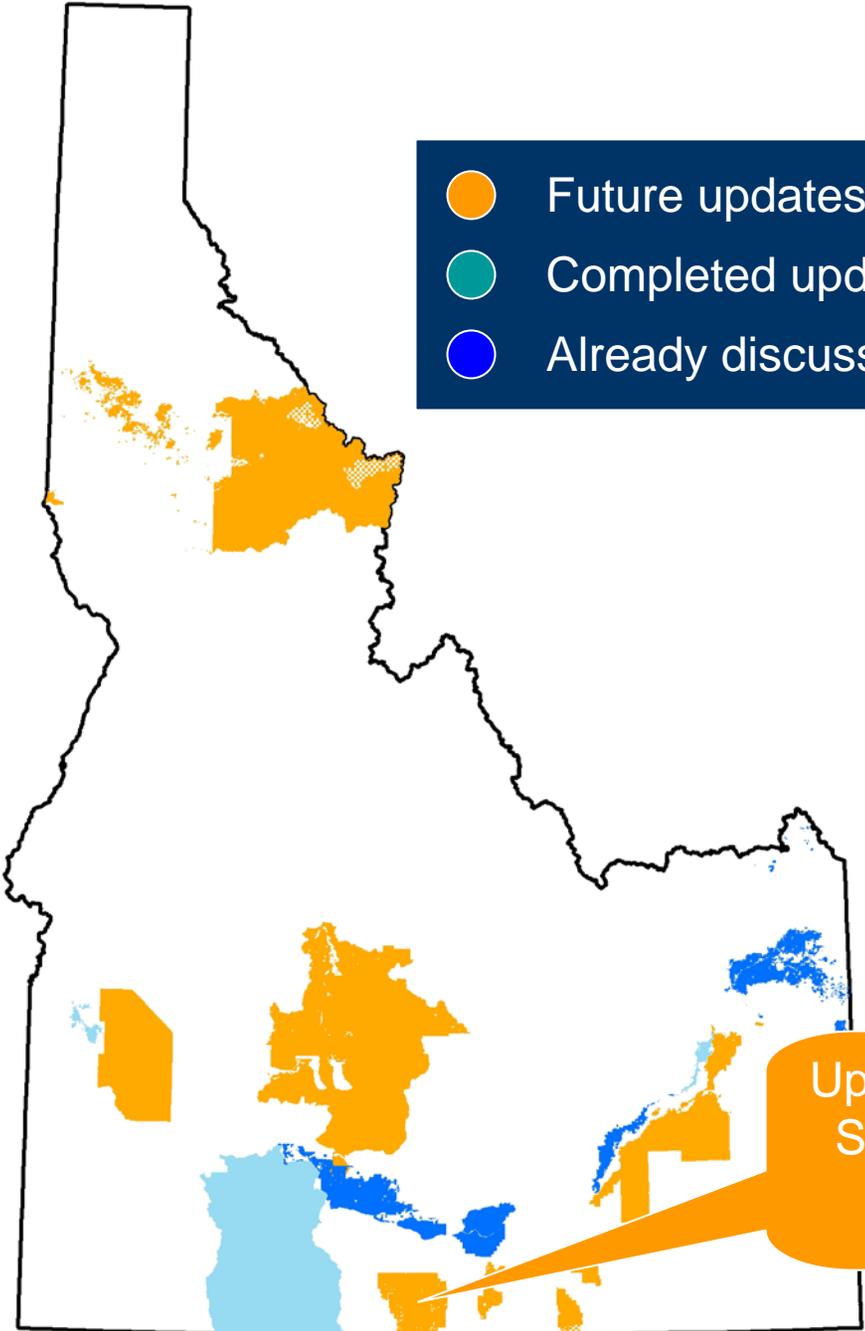


Update submitted by  
Clearwater National  
Forest to IDWR

- Future updates
- Completed updates
- Already discussed



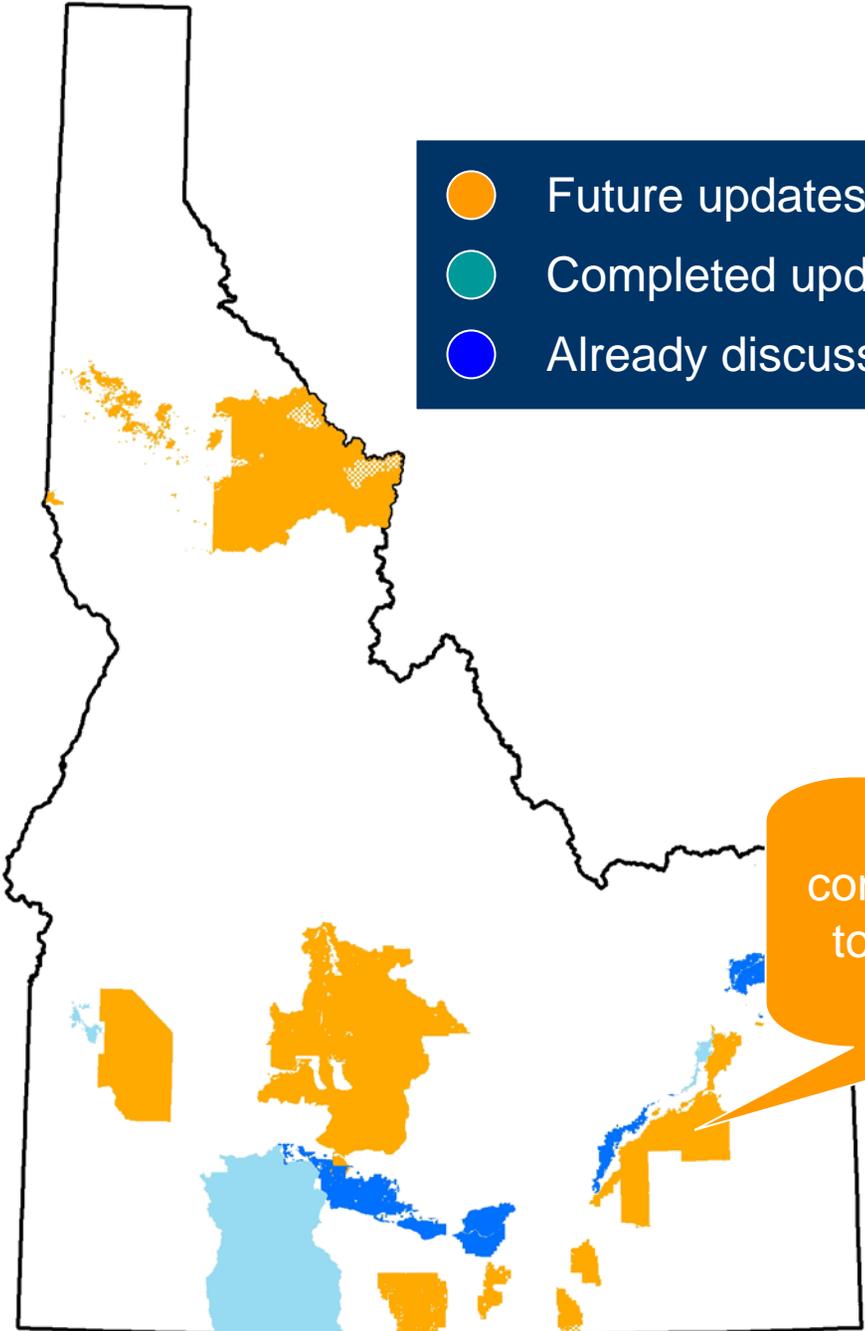
- Future updates
- Completed updates
- Already discussed



Update submitted by  
Sawtooth National  
Forest to IDWR



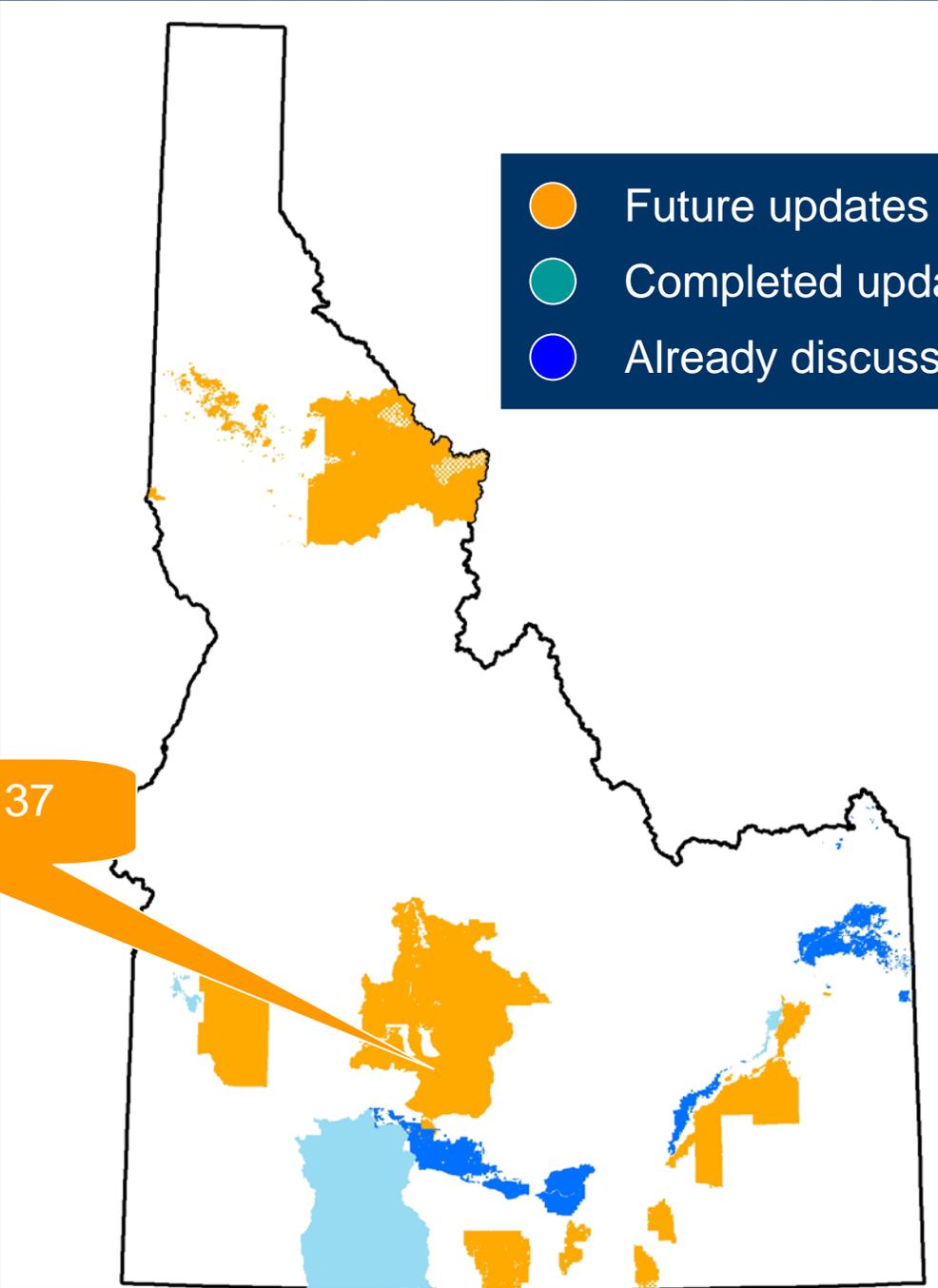
- Future updates
- Completed updates
- Already discussed

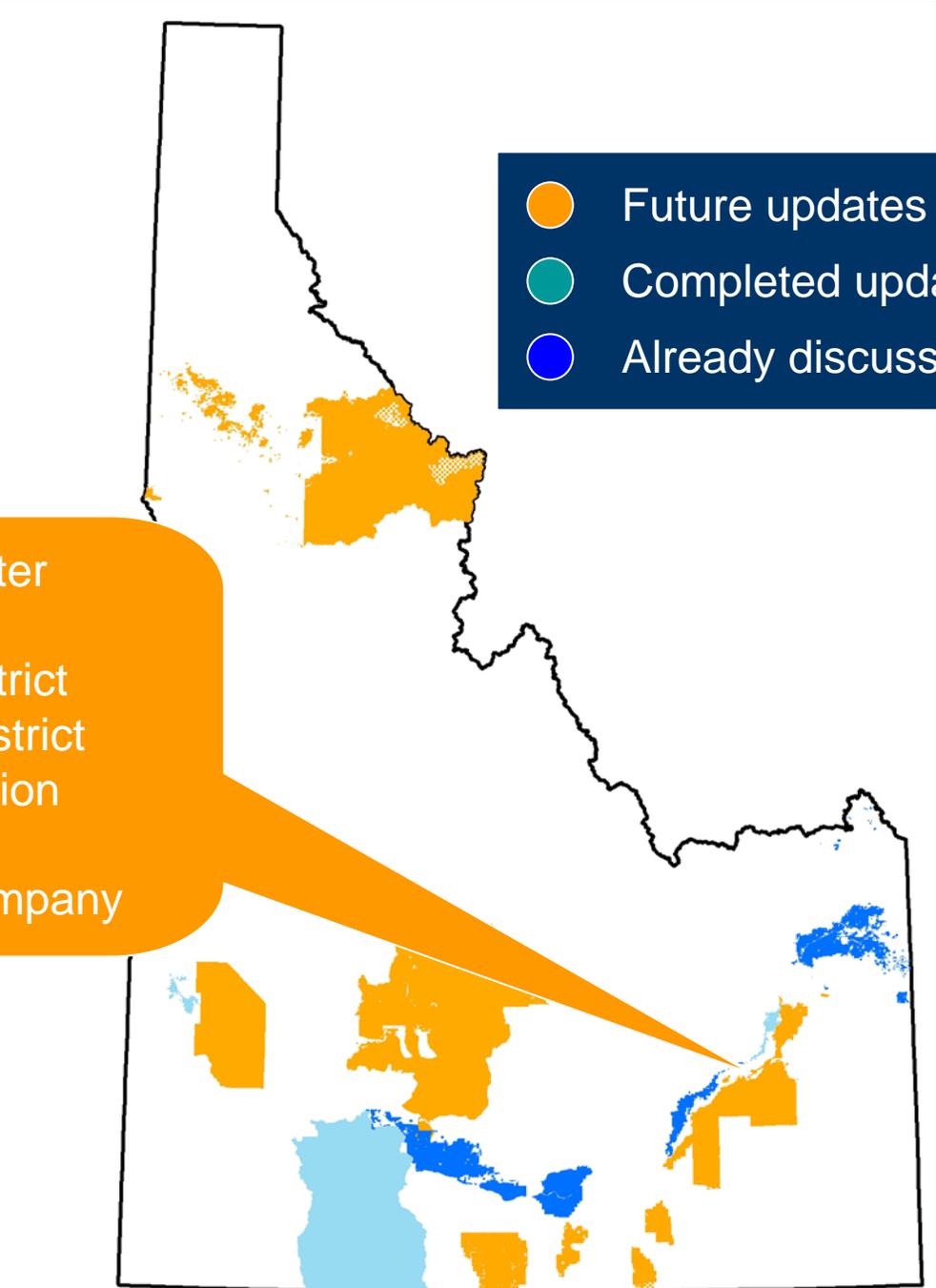


Considering contacting the Tribes to update Fort Hall Reservation

- Future updates
- Completed updates
- Already discussed

Water District 37

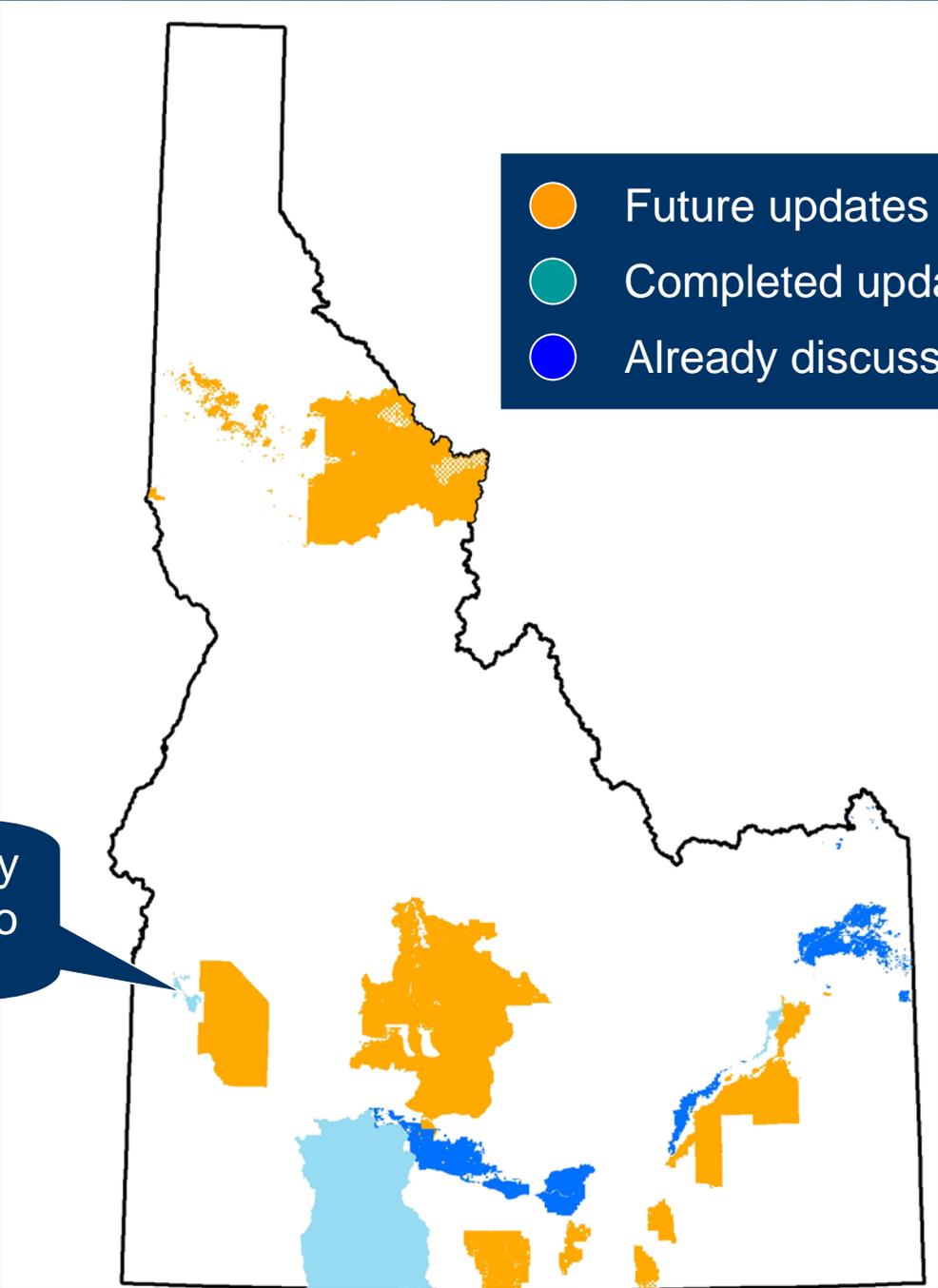


- 
- The map of Idaho is color-coded to show the status of irrigation updates. The northern and central regions are primarily orange, indicating 'Future updates'. The southern region is a mix of orange and blue, indicating both 'Future updates' and 'Already discussed'. There are also some teal areas in the south, indicating 'Completed updates'. A legend in the top right corner defines these colors: orange for 'Future updates', teal for 'Completed updates', and blue for 'Already discussed'. An orange callout box on the left points to the southern region of the map.
- Future updates
  - Completed updates
  - Already discussed

- Eastern Idaho Water Company
- Falls Irrigation District
- Idaho Irrigation District
- Progressive Irrigation District
- Watson Canal Company



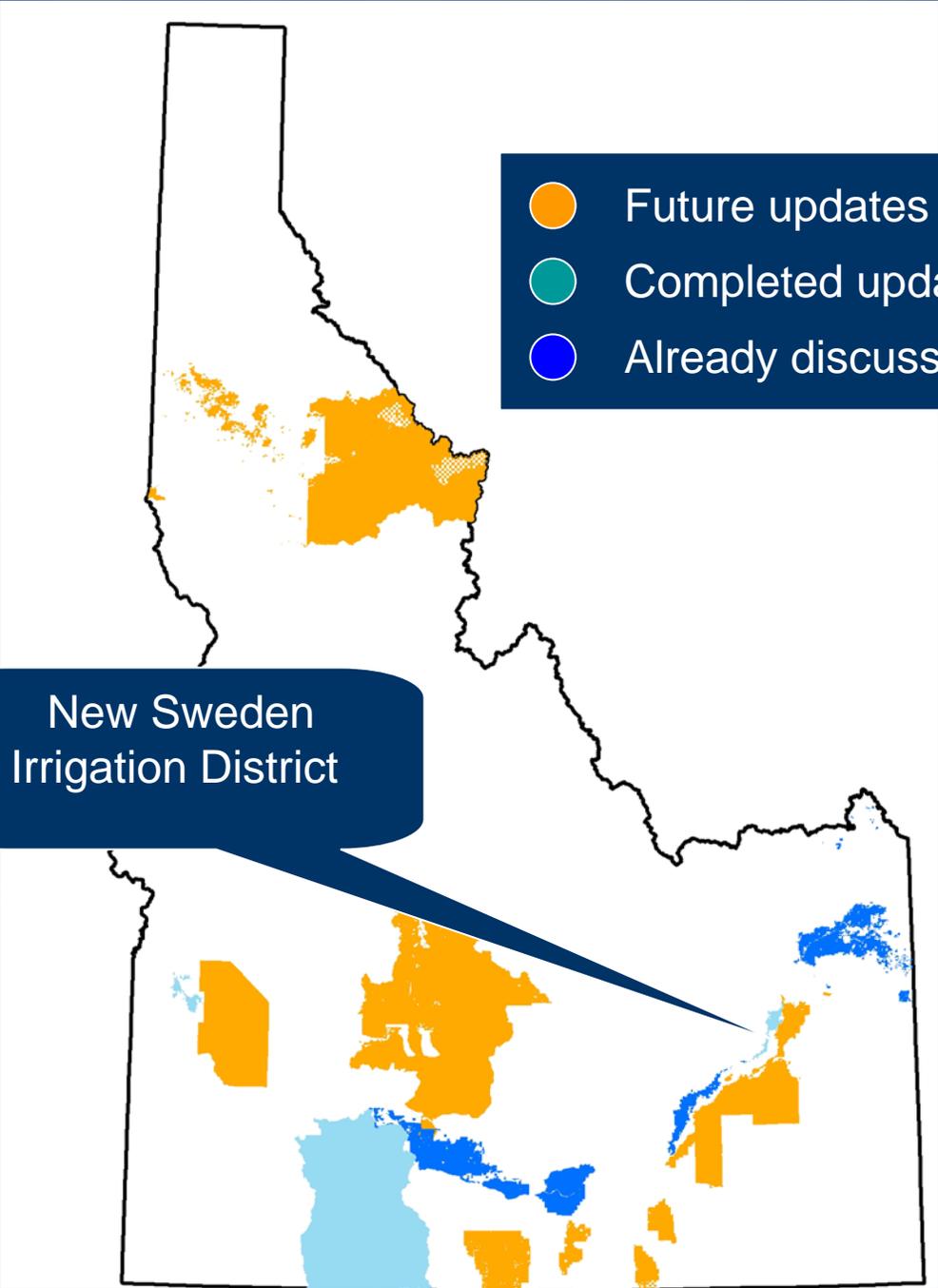
- Future updates
- Completed updates
- Already discussed



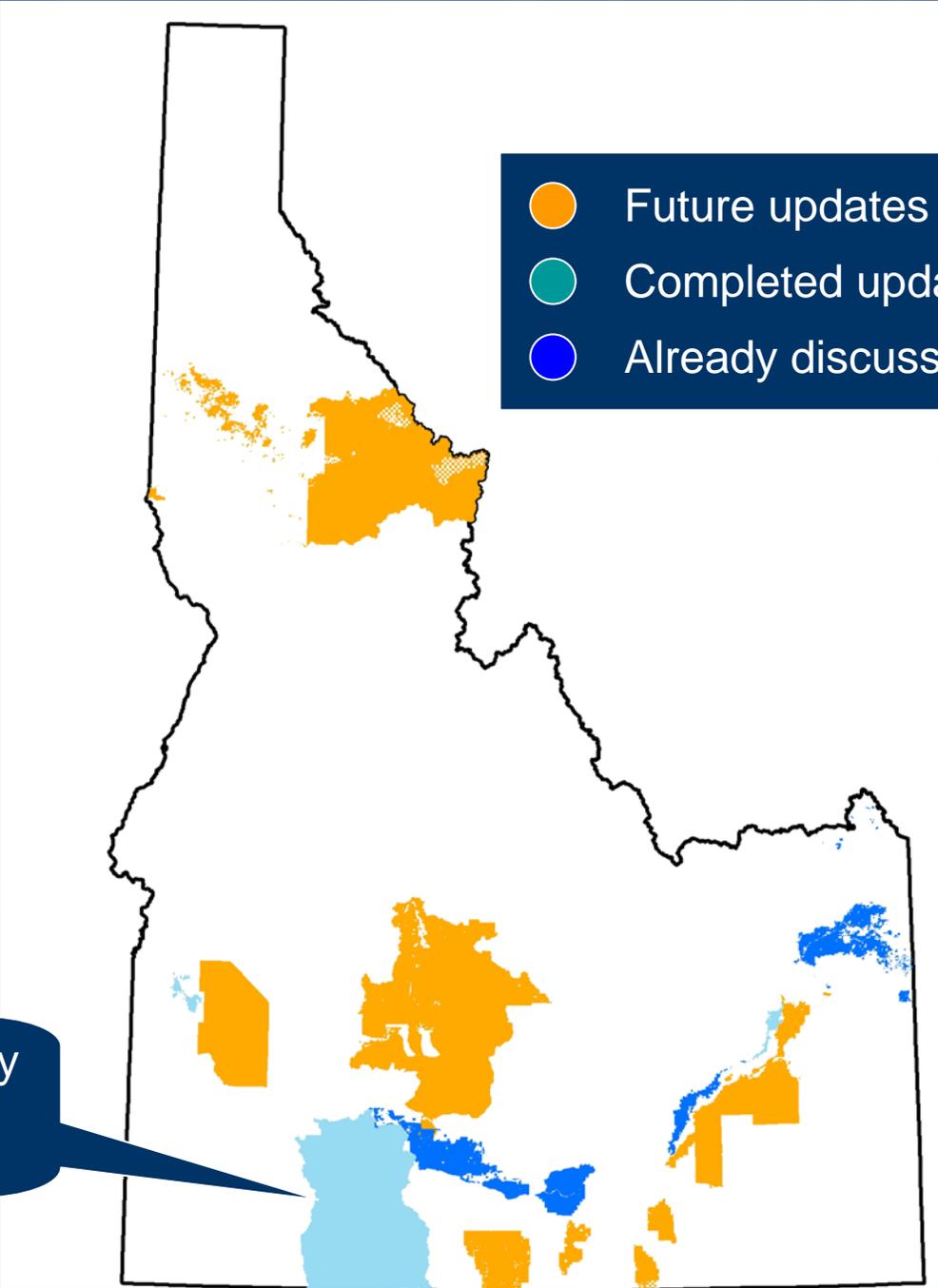
Update submitted by the City of Nampa to IDWR

- Future updates
- Completed updates
- Already discussed

New Sweden  
Irrigation District



- Future updates
- Completed updates
- Already discussed



Update submitted by  
BLM office in  
Jarbidge to IDWR

# Future Developments

**Continue to work with additional willing partners.**

**Tool need improvements:**

- Additional feature classes
- Flow Direction
- Connectivity
- Methodology to avoid over-digitizing

- Need to develop training and documentation.
- More testing by other “local agencies”.
- For people with limited number of updates, or no access to ArcGIS ArcView IDWR is currently developing web tools.

# ID National Hydrography Dataset Website

The screenshot shows a Microsoft Internet Explorer browser window displaying the Idaho Department of Water Resources website. The address bar shows the URL: <http://testsite/GeographicInfo/NHD/default.htm>. The website header includes the Idaho Department of Water Resources logo and a search bar. The main content area features a navigation menu on the left with options like 'A-Z Index', 'Water Management', and 'Geographic Information'. The central content area is titled 'National Hydrography Dataset (NHD) in Idaho' and includes sections for 'What is the NHD?', 'Updates', and 'Recent Updates'. The 'Recent Updates' section lists several updates, including one from the Aberdeen Springfield Canal Company and another from the BLM in Jarbidge. The right sidebar contains 'Announcements' and 'Help Me Find...' sections.

Link to  
National  
NHD page

Stay in touch on our NHD website at:  
<http://www.idwr.idaho.gov/hydrography/>

# Questions?

## National Hydrography Dataset

Regional POC (USGS)

-Henry Nelson

Principal Steward

-Linda Davis

Technical POC

-Wilma Robertson

Project Technician

-Danielle Favreau

## Acknowledgements:

Christian Marie for developing the Universal Data Entry Form v. 1.5 which served as a starting point for the attribute entry form development

Zach Mailard for the new name table procedure and technical assistance

Theresa Teeter (BID) for her patience and dedication to the editing process.

IDWR Offices: 208-287-4800