NHDPlus Support of the Open Water Data Initiative

NHDPlus News Seesion

ESRI International User Conference

July 22, 2015

Al Rea, USGS National Geospatial Program

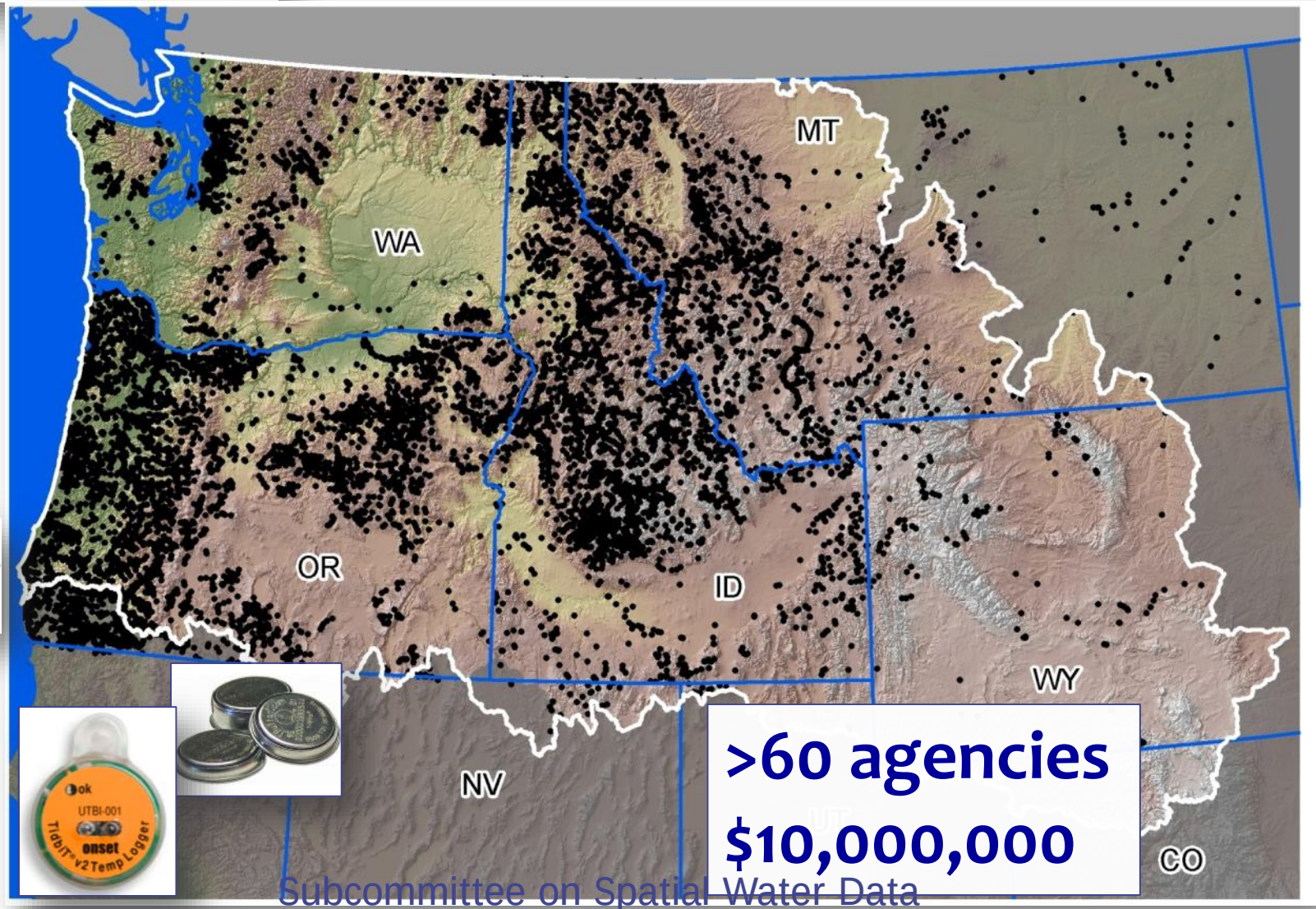
Subcommittee on Spatial Water Data

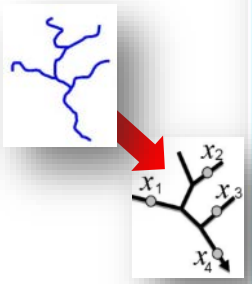
OWDI as a Challenge

- Access to water data is difficult
  - Collected by hundreds of organizations
  - No common infrastructure
  - WaterML2 new exchange standard (O&M)
- Understanding connections requires a geospatial framework
  - Landscape to stream
  - Stream to stream

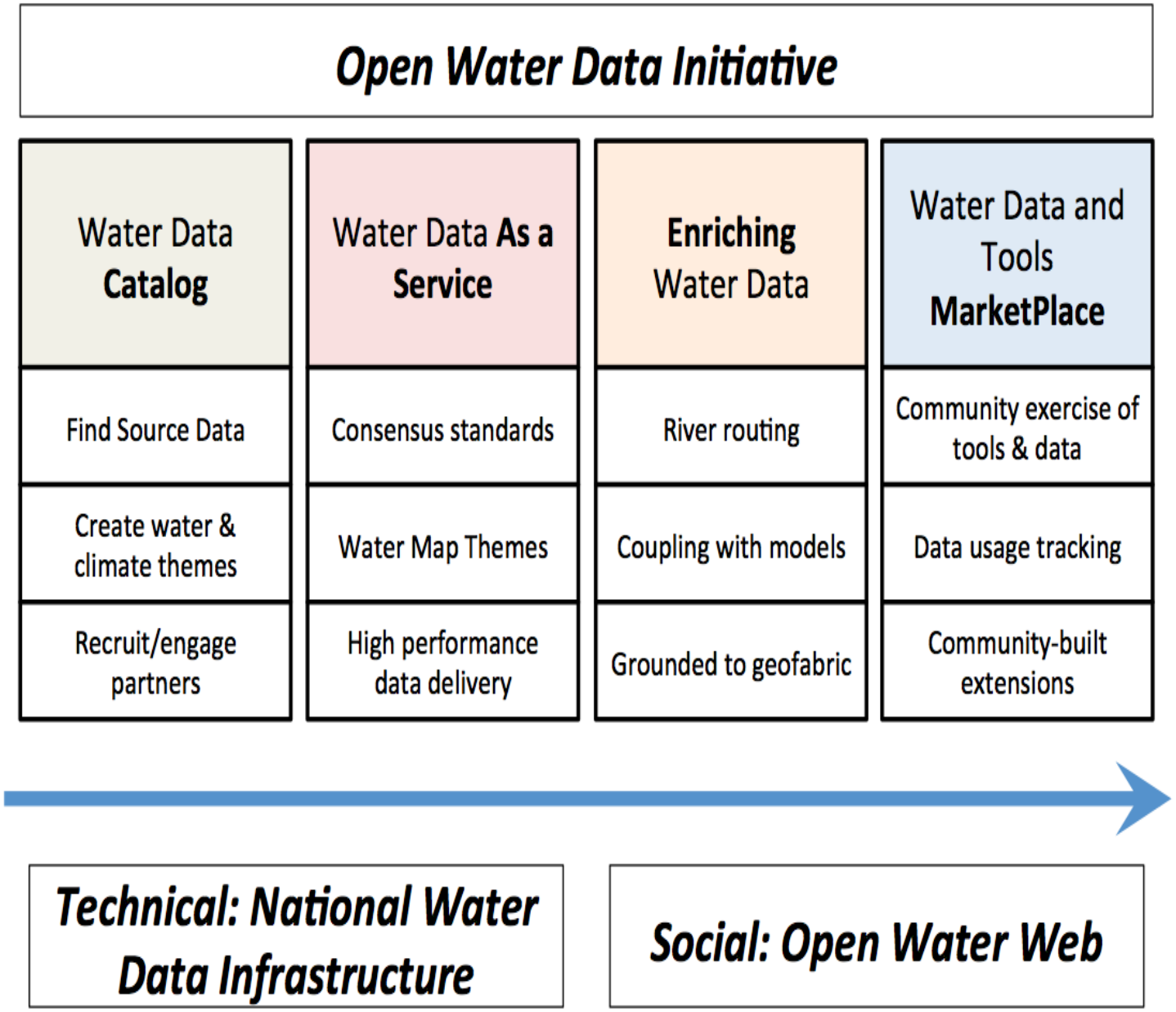
NorWeST Stream Temp

>45,000,000 hourly records
>15,000 unique stream sites

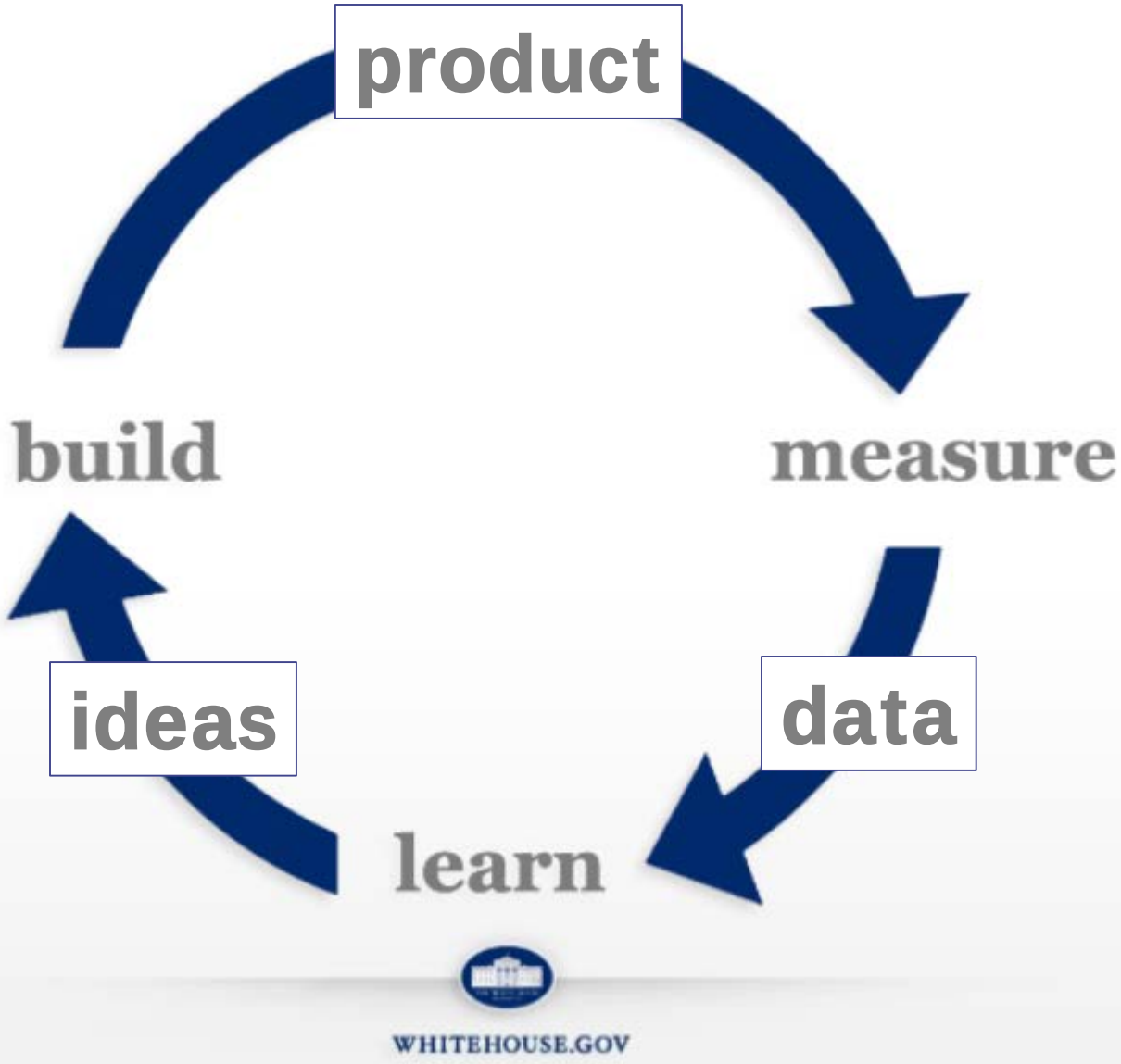




>60 agencies
$10,000,000


Open Water Data Initiative
Water Data Catalog
Water Data As a Service
Enriching Water Data
Water Data and Tools MarketPlace
Find Source Data
Consensus standards
River routing
Community exercise of tools & data
Create water & climate themes
Water Map Themes
Coupling with models
Data usage tracking
Recruit/engage partners
High performance data delivery
Grounded to geofabric
Community-built extensions
Technical: National Water Data Infrastructure
Social: Open Water Web

Lean Startup Methodology



Use Case Concepts

- Define use cases that respond to societal needs and cover broad range of water resources issues
- Identify critical data inputs — focus on these first
- Our emphasis is on the data, not the full solution
- Measure and learn — like steering a car

OWDI Working Groups

Work Group 1:

National Flood Interoperability Experiment

- Identify flood data including stream-flow observations, forecasts and impacts
- Developing *Hydrofabric* v 0.1* and exploring data conflation

*Supported by 3 sub-teams

Work Group 2:

Drought Decision Support System

- Identify water resources data including natural flow, reservoir storage and drought impacts
- Explore visualization of drought in Lower Colorado

Work Group 3:

Spill Response Tool

- Identify water quality data including potential points sources and impacts
- Exploring requirements for new/additional data (e.g. velocity forecasts and reservoir residence times)

fgdc
Federal Geographic Data Committee

ACWI
Advisory Committee on Water Information

Common Data Needs

- NHDPlus V2.1
  - National in single file geodatabase
  - Denormalized (flattened) data model
  - Available for download and as services
- Sites indexed to NHDPlus V2.1 network
  - Gages, NWS river forecast points
  - Dams
  - Large diversions and return flows
  - ...and many others

Status: Water Data as a Service

- NWS forecasts and NWIS data as WML2
- Robust serving capacity is necessary
- Slow services aren't used
- Measurement of service usage is key
- Repackaged seamless NHDPlus data for download—useful variation
- Metadata, sensor calibration info
- Machine readable ontologies

Status: Enriching Water Data

- Linking data to a standardized geospatial framework (e.g. NHDPlus)
  - Sites with observations and measurements
  - Better integration of geospatial layers (e.g. WBD linked to NHDPlus network)
  - Modeling parameters for catchments
- Network trace (upstream/downstream) capability is key

Status: Water Data and Tools Marketplace (Community)

- Community dialogue (SSWD, AWRA, etc.)
- Web-based forum needed (wiki or similar)
- Code/tool/procedure open source repositories (e.g. GitHub)
  - Many agencies/teams already have
  - Open forum or curated?
  - Challenges:
    - Keeping current
    - Discoverability, accessibility

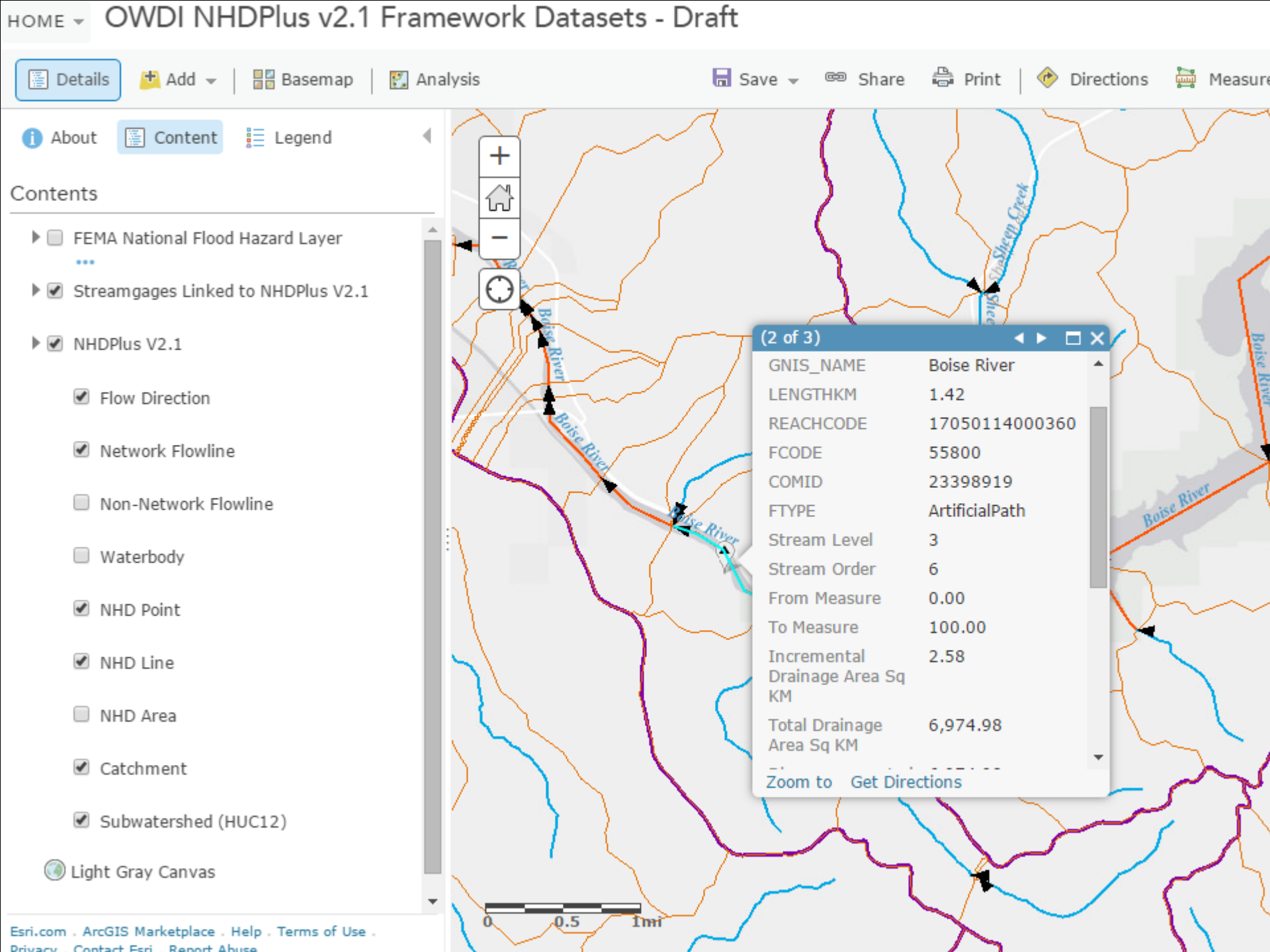
OWDI Examples:

- ArcGIS Online web map showcasing some OWDI data services:

  http://arcg.is/1CvFY6W

- National denormalized NHDPlus V2.1 download:

  ftp://ec2-54-227-241-43.compute-1.amazonaws.com/NHDplus/OWDI/


HOME
OWDI NHDPlus v2.1 Framework Datasets - Draft
Details
Add
Basemap
Analysis
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Directions
Measure
About
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Legend
Contents
FEMA National Flood Hazard Layer
Streamgages Linked to NHDPlus V2.1
NHDPlus V2.1
Flow Direction
Network Flowline
Non-Network Flowline
Waterbody
NHD Point
NHD Line
NHD Area
Catchment
Subwatershed (HUC12)
Light Gray Canvas
Boise River
Sheep Creek
(2 of 3)
GNIS_NAME Boise River
LENGTHKM 1.42
REACHCODE 17050114000360
FCODE 55800
COMID 23398919
FTYPE ArtificialPath
Stream Level 3
Stream Order 6
From Measure 0.00
To Measure 100.00
Incremental Drainage Area Sq KM 2.58
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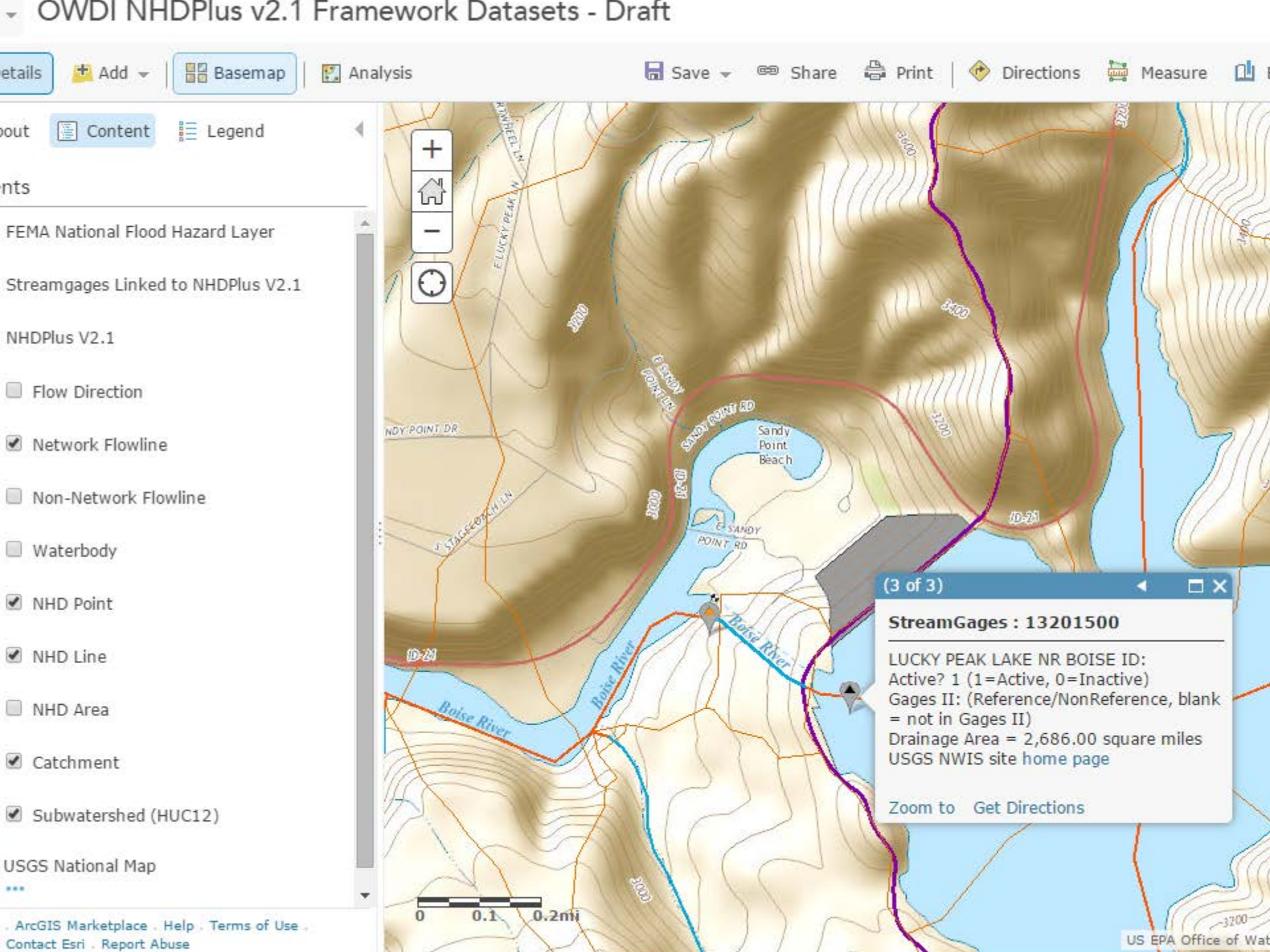
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NHD Point
NHD Line
NHD Area
Catchment
Subwatershed (HUC12)
USGS National Map
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Sandy Point Beach
Boise River
(3 of 3)
StreamGages : 13201500
LUCKY PEAK LAKE NR BOISE ID:
Active? 1 (1=Active, 0=Inactive)
Gages II: (Reference/NonReference, blank = not in Gages II)
Drainage Area = 2,686.00 square miles
USGS NWIS site home page
Zoom to
Get Directions
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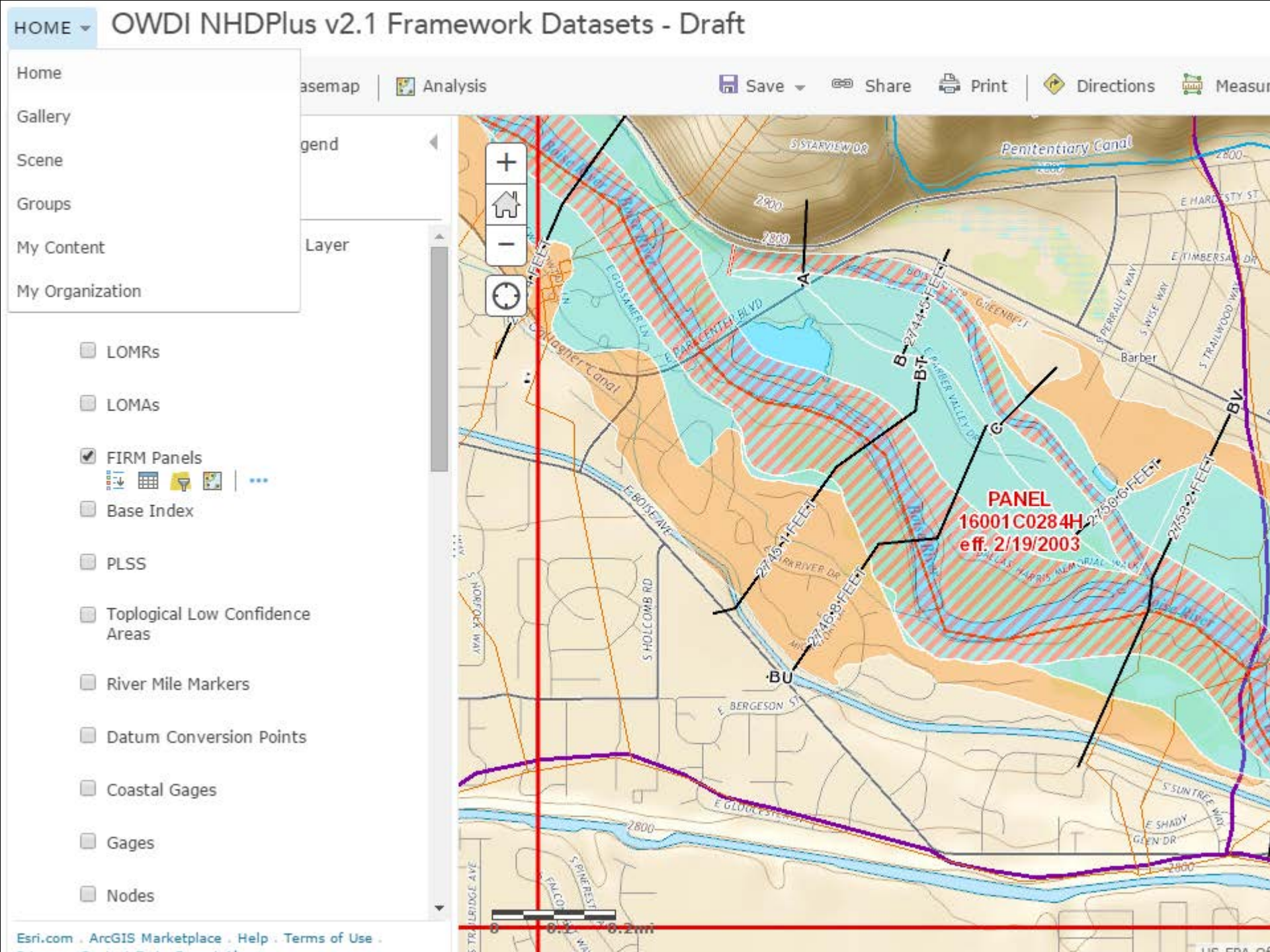
HOME
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Home
Gallery
Scene
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LOMAs
FIRM Panels
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PLSS
Toplogical Low Confidence Areas
River Mile Markers
Datum Conversion Points
Coastal Gages
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