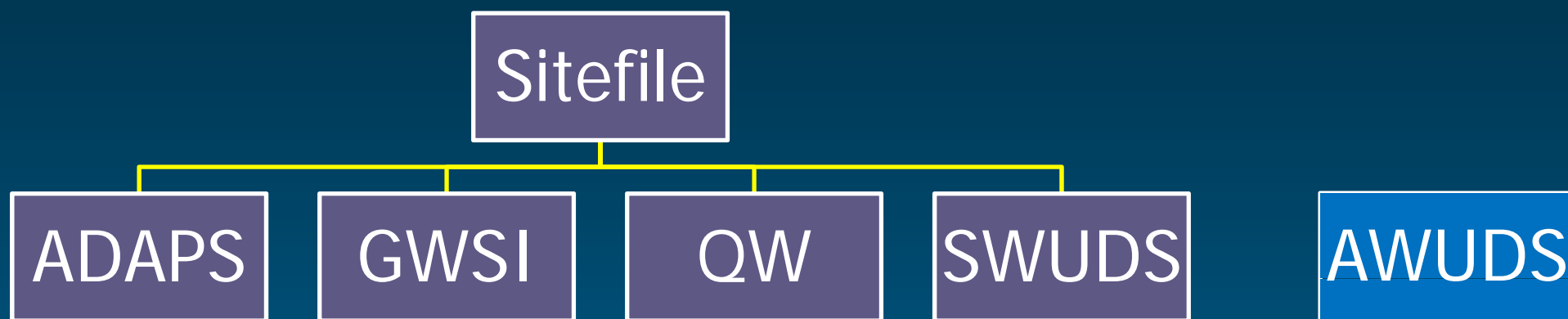


# Water-Use Software Components of the National Water Information System



*Todd Augenstein  
Water Use Technical Lead, NWIS Program*

# National Water Information System (NWIS)



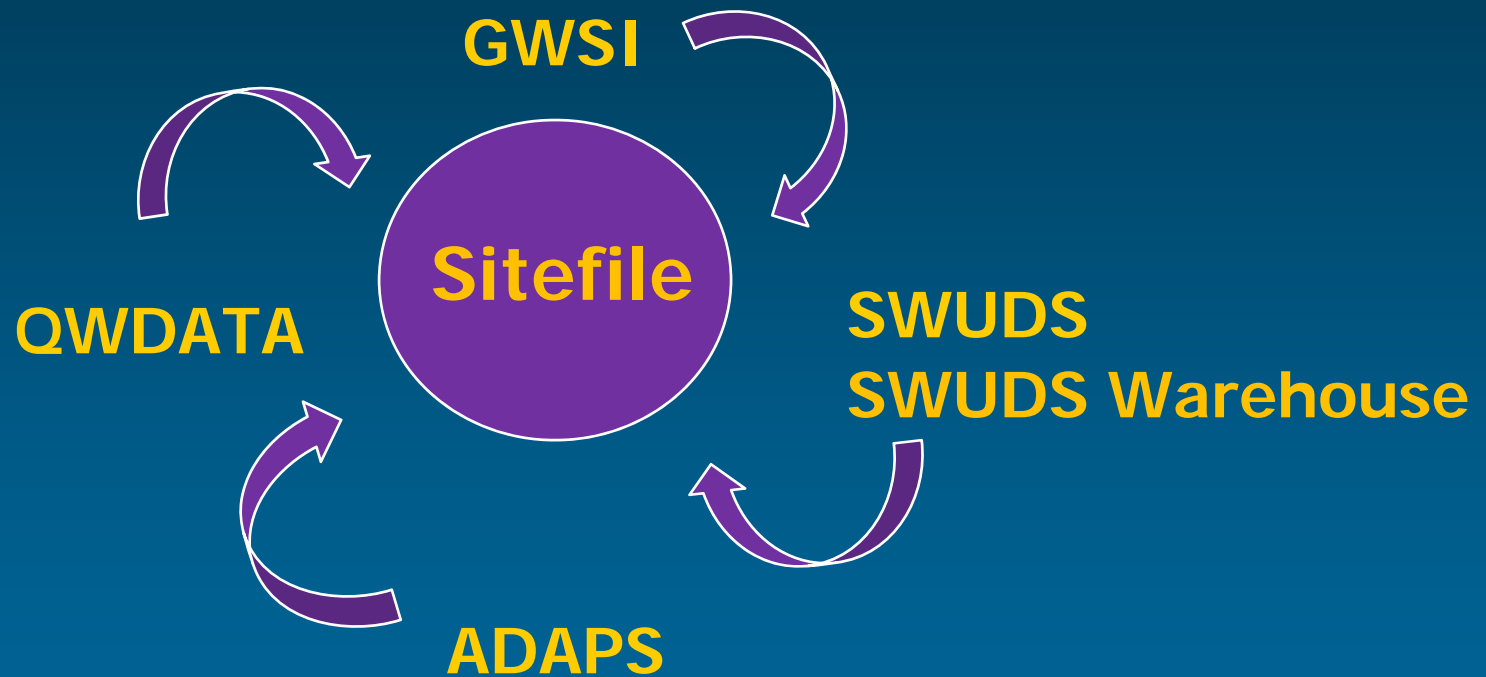
- **ADAPS** → Automated Data Processing System
- **QW** → Water Quality System
- **GWSI** → Groundwater Site Inventory System
- **SWUDS** → Site Specific Water-Use Data System
- **AWUDS** → Aggregate Water-Use Data System

# NWIS Water-Use Subsystems

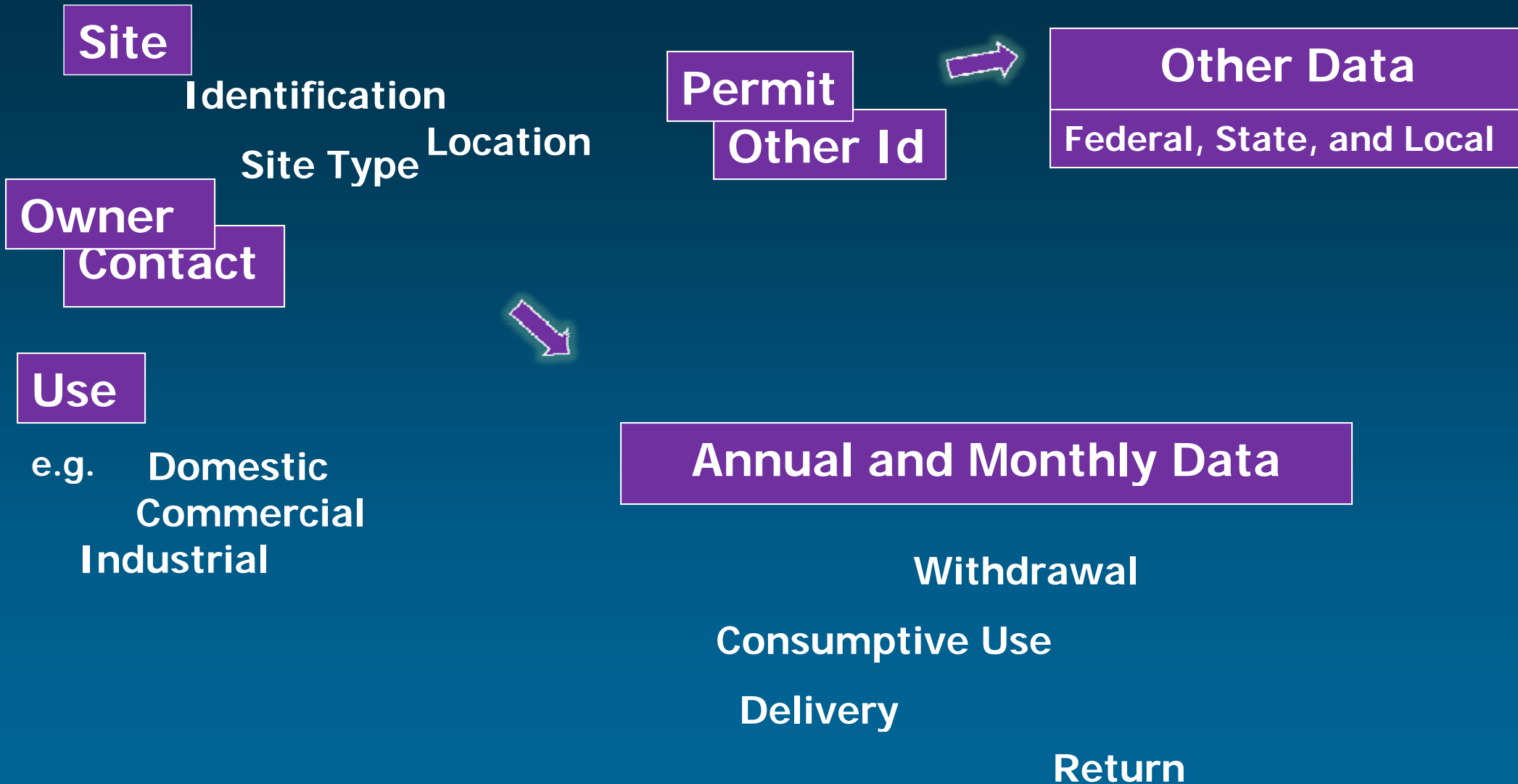
- **SWUDS** →
  - Stores measurements and estimates of water use
  - Tracks water movement from site to site
  - Can store power generation, acres irrigated, other data
- **SWUDS Data Warehouse** →
  - Optimized for data aggregation and reporting
- **AWUDS** →
  - Data aggregated by county, hydrologic unit, and aquifer
  - Compiled for “Estimated Use of Water in the United States”

## Common Linkage is the Sitefile.

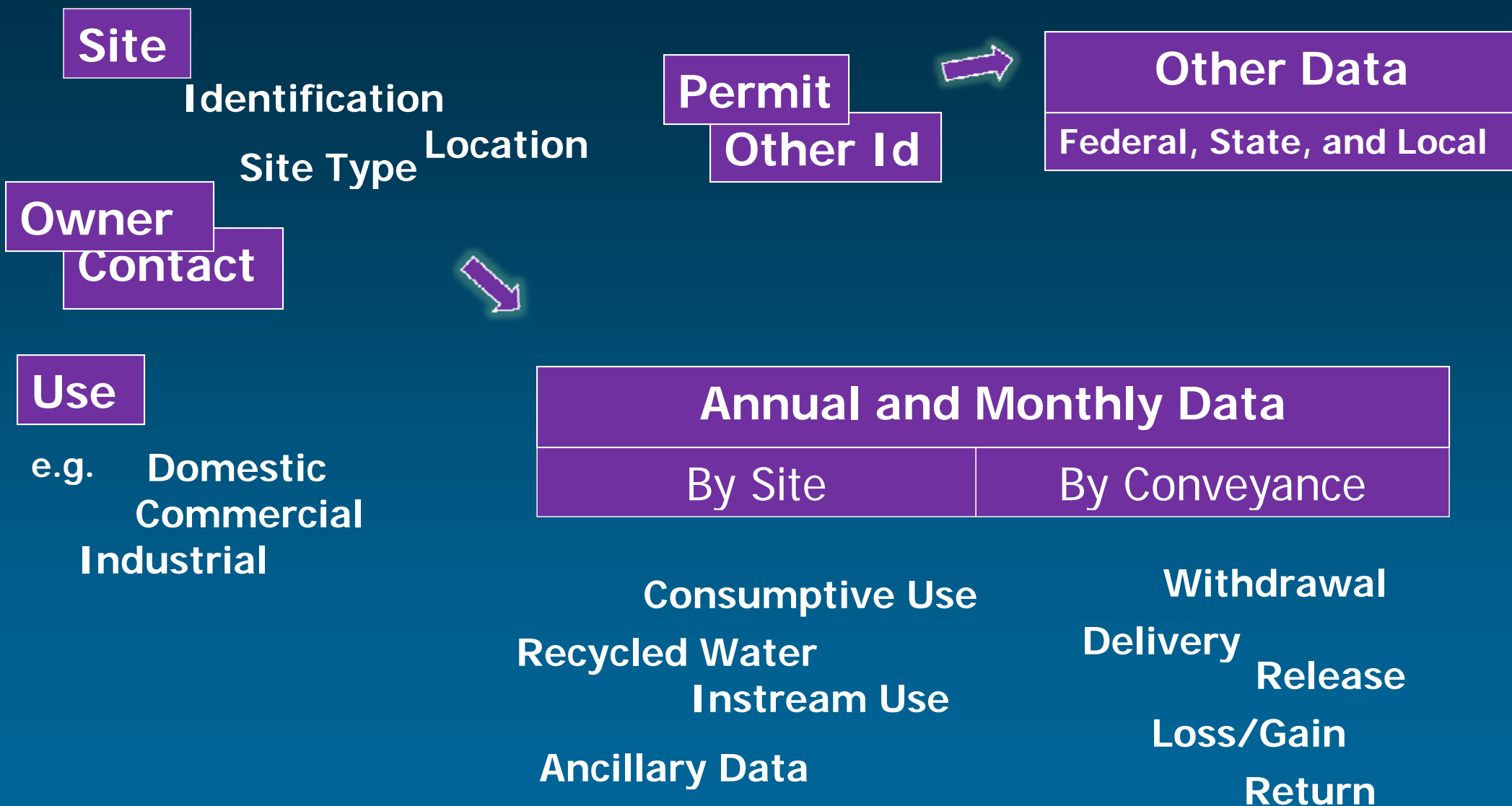
A **site** is a physical entity, thing, or place where a either a measurement or estimate is made.



# SWUDS – Conceptual Data Model



# SWUDS – Conceptual Data Model



# Site is Characterized by Site Type

A **site type** implies where a site is or a sample is obtained in the hydrologic cycle.

56 site types  
27 can be used  
with SWUDS



## Water-Use Site Types

Available:

LK	Lake, Reservoir, Imp
SP	Spring
GW	Well
GW-CR	Collector or Ranney t
GW-IW	Interconnected wells
GW-MW	Multiple wells
SB-GWD	Groundwater drain
FA-AWL	Animal waste lagoon
FA-CI	Cistern
FA-CS	Combined sewer
FA-DV	Diversion
FA-FON	Field, Pasture, Orcha

# Tracking the Flow of Water Site to Site

Source Site



Conveyance



Destination Site



A conveyance is a link between two sites.  
Conveyances are one way.



# Common Site Types

Well



Facility



Stream



Intake/Diversion



Treatment



Outfall



# Distribution and Collection Site Types

- Water-Distribution System
- Wastewater Sewer
- Combined Sewer
- Storm Sewer

# Aggregate Site Types

- Aggregate Groundwater Use
- Aggregate Surface-Water Use

Withdrawal  
or Diversion



An aggregate of specific sites with a single combined withdrawal or return value.

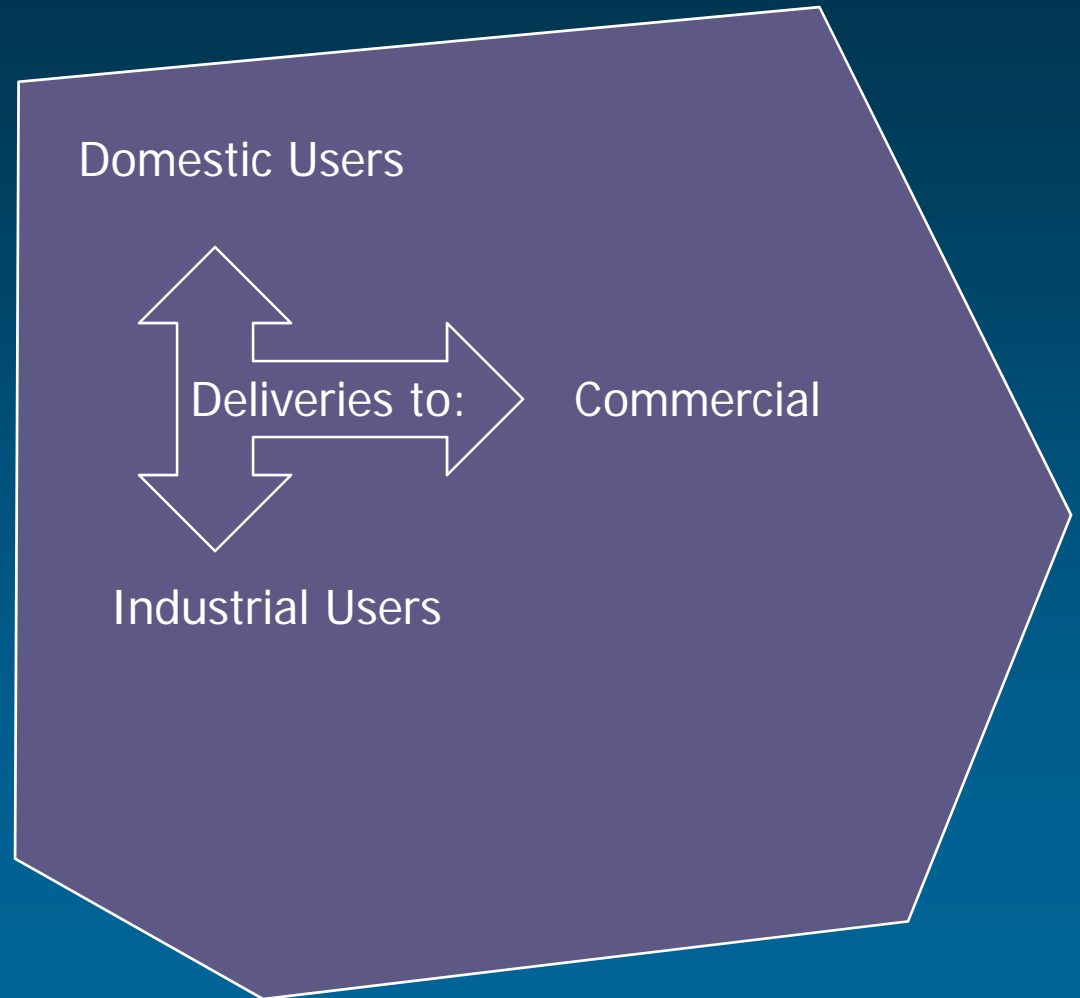


Return

# Aggregate Site Types

## Aggregate Facility

Such as all the industrial users on a distribution system or all self-supplied domestic users in a county.



# Networks, Follow the Drop of Water

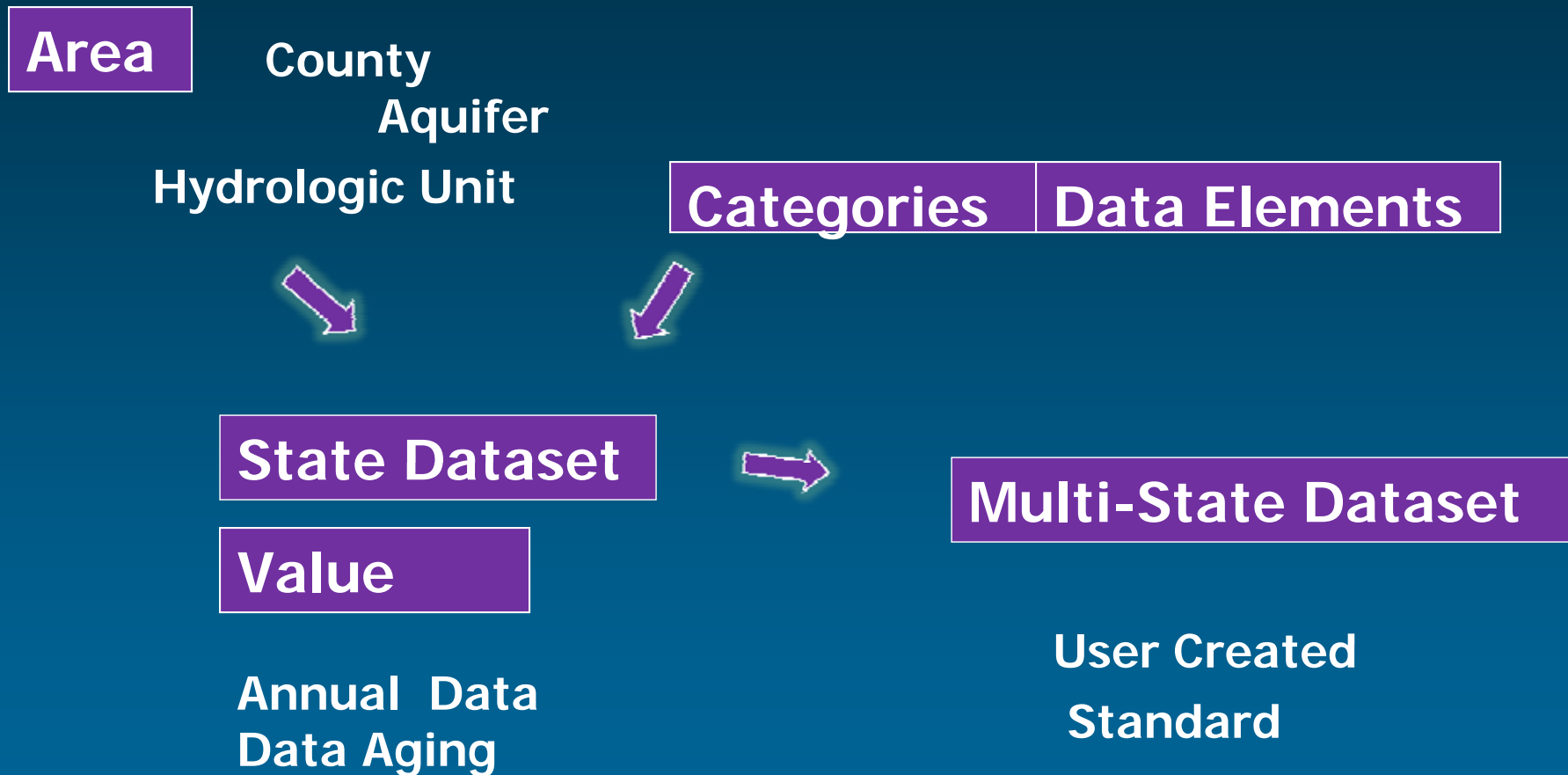


# National Water Information System (NWIS)



- **SWUDS** → Site Specific Water-Use Data System
- **AWUDS** → Aggregate Water-Use Data System

# AWUDS – New 2010 Conceptual Data Model



# AWUDS – Example Meta Data

State

Area Type

Data Aging Status

Year

Water-Use Category

Data Element

Virginia

USCountyEquivalent

Published

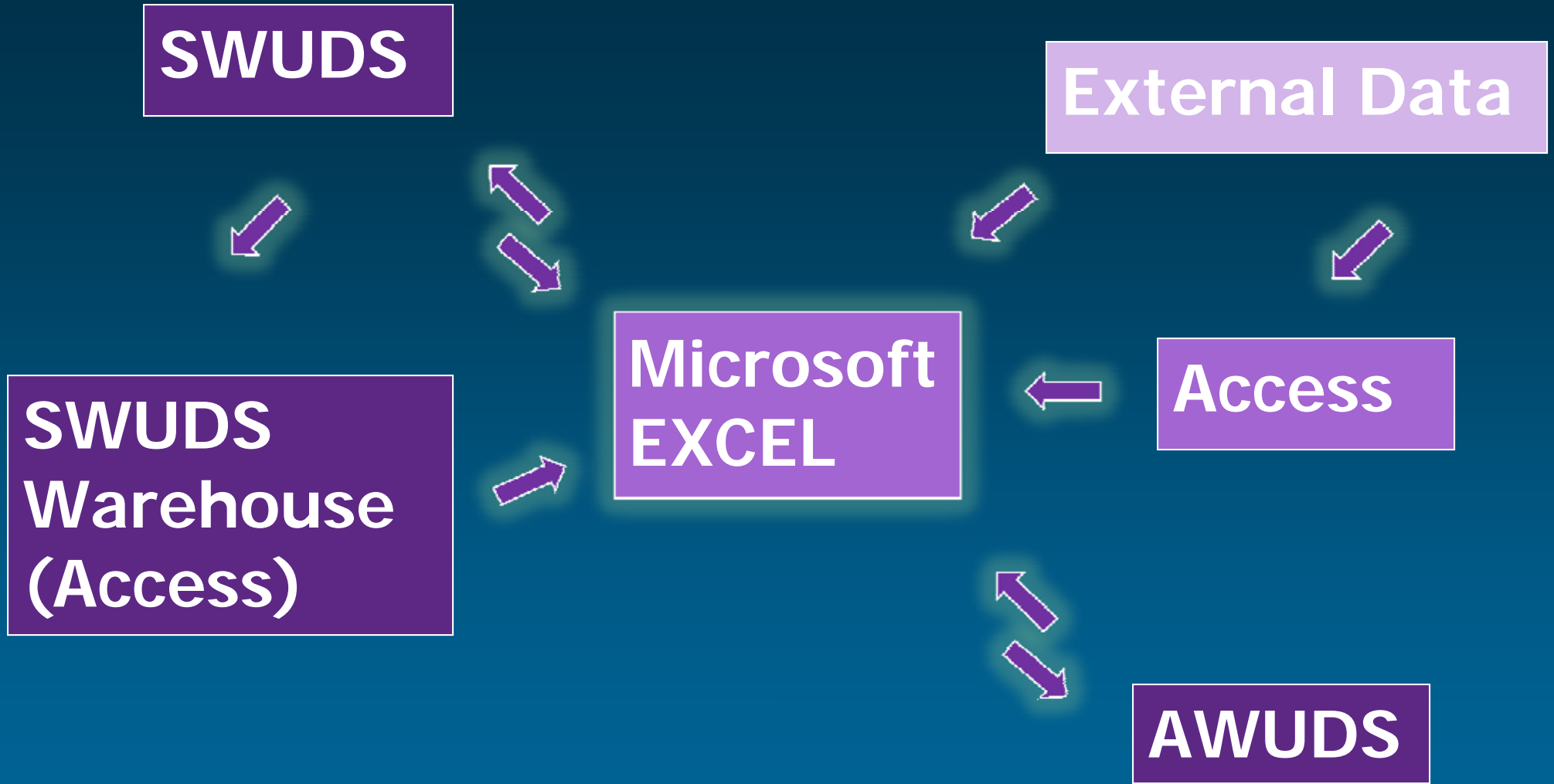
2005

Mining

Self-supplied ground-water withdrawals, fresh, in Mgal/d

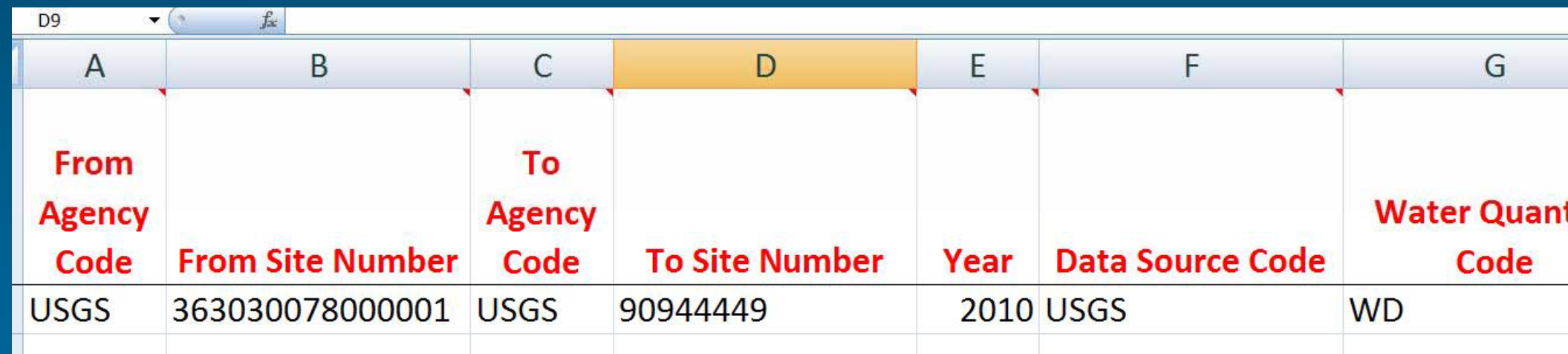


# Data Flow



# SWUDS Interaction with Excel

- Template Builder
- Batch Entry
- Retrievals
- Advanced - ODBC



The image shows a screenshot of an Excel spreadsheet. The spreadsheet has a header row with columns labeled A through G. The data row contains the following values: USGS, 363030078000001, USGS, 90944449, 2010, USGS, and WD. The column headers are: From Agency Code, From Site Number, To Agency Code, To Site Number, Year, Data Source Code, and Water Quant Code. The cell D9 is highlighted in yellow.

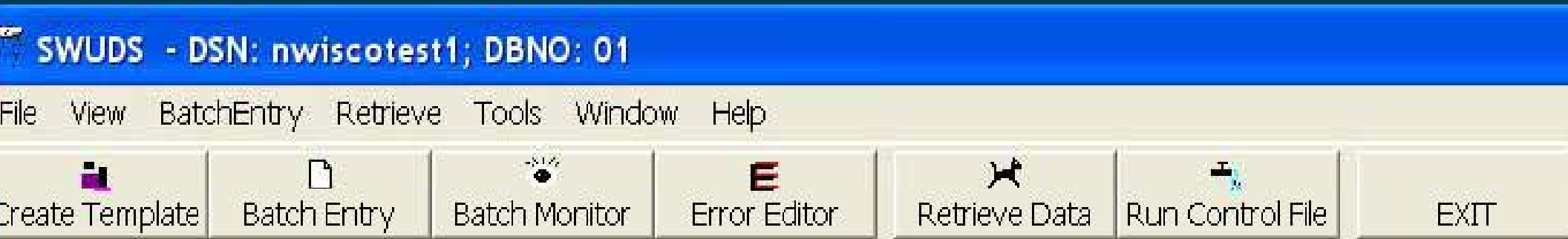
A	B	C	D	E	F	G
From Agency Code	From Site Number	To Agency Code	To Site Number	Year	Data Source Code	Water Quant Code
USGS	363030078000001	USGS	90944449	2010	USGS	WD

# SWUDS Interaction with GWSI

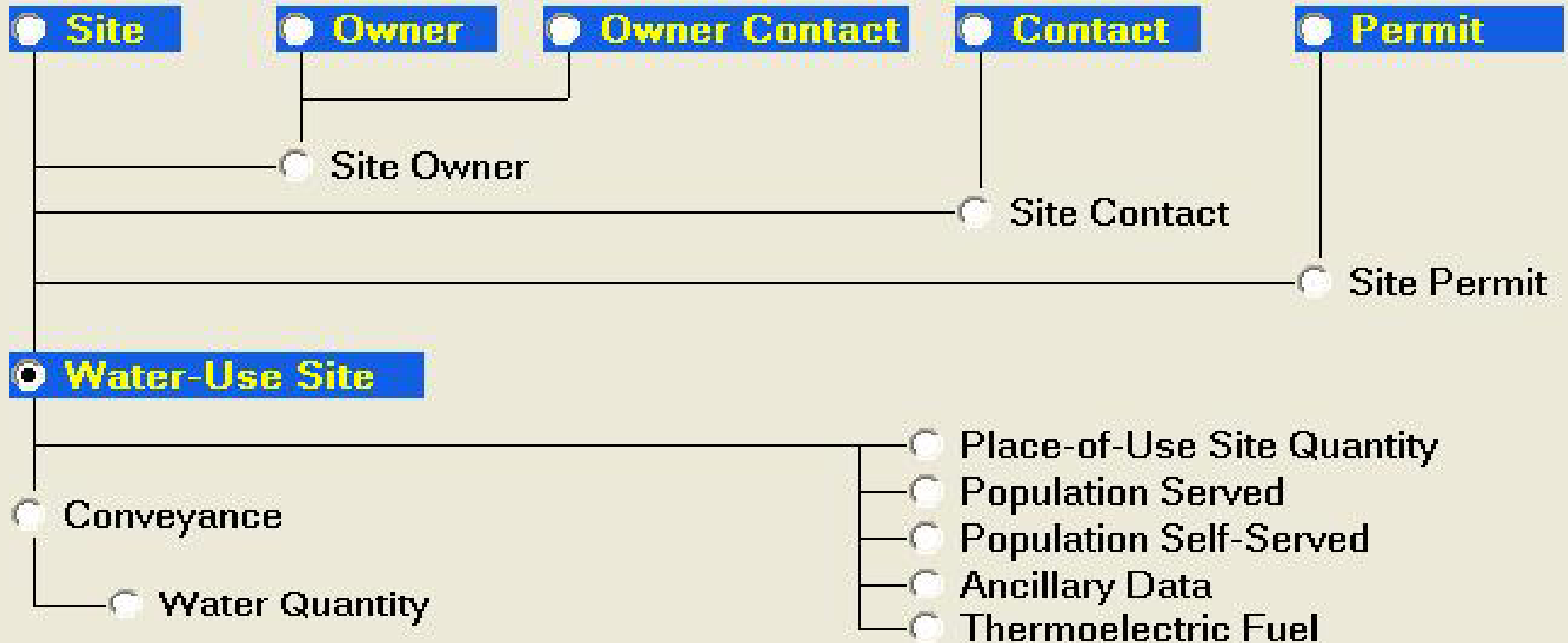
- **Template Builder**
- **Batch Entry to Create GWSI Transaction Records**

**Sitefile  
GW Tables**

# SWUDS Client



# SWUDS Client



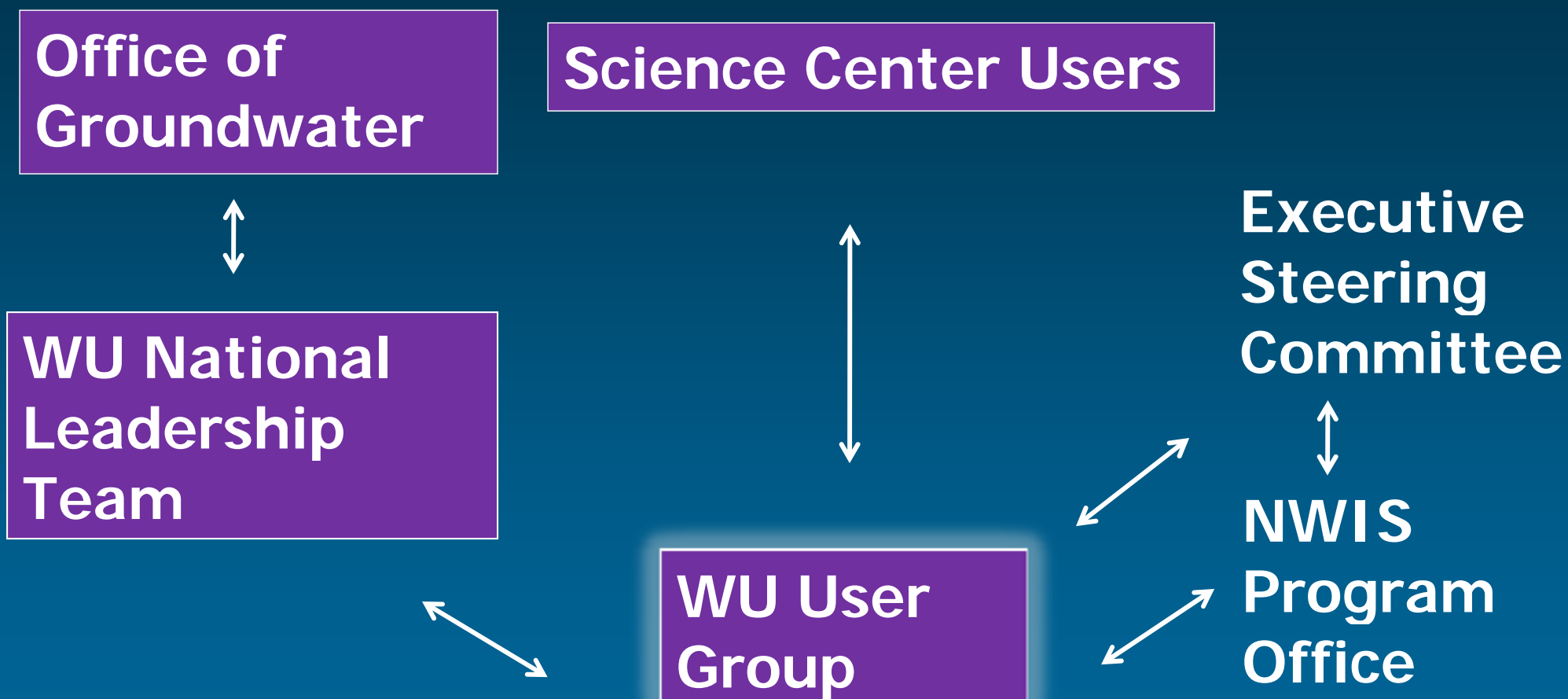
# AWUDS Interaction with Excel

- Import/Export Programs
- Retrievals
- (Advanced – ODBC Approved data)

A	B	C	D	
PUBLIC SUPPLY				
Area	PS-GWPop	PS-SWPop	PS-WGWFr	PS
001	2.000	3.000	5.00	
003	2.000	3.000	5.00	
005	2.000	3.000	5.00	

TP PS CO DO IN PO PC MI LS LA IC IG HY WW

# Water-Use Stakeholders/Communications



# NWIS Water-Use Communications

**WU User  
Group**

New requirements  
Enhancements

**NWIS  
Program  
Office**

Bug reporting  
Installation Support