IDAHO OIL AND GAS CONSERVATION COMMISSION
December 7, 2017
Information Agenda

SUBJECT

Class II Underground Injection Control Program

BACKGROUND

The Idaho Oil and Gas Conservation Commission (Commission) is authorized in Idaho Code § 47-315 to regulate the exploration for and production of oil and gas, prevent waste of oil and gas and to protect correlative rights. Idaho Code § 47-315(6)(e) reads "Without limiting its general authority, and without limiting the authority of other state agencies or local government as provided by law, the commission shall have the specific authority to regulate:" "(e) The disposal of produced water and oil field wastes."

Produced water is a common byproduct resulting from the development of hydrocarbon resources in Idaho. Currently, this produced water is disposed of through a surface waste processing facility in Kuna, Idaho at considerable cost to the Operator. As a result, the Operator is exploring other options to dispose of the produced water.

The Idaho Department of Water Resources (IDWR) is working in partnership with the United States Environmental Protection Agency (EPA), the Idaho Department of Lands (IDL) and the Idaho Department of Environmental Quality (IDEQ) to develop a Class II Underground Injection Control (UIC) Program in the state of Idaho. A Class II UIC Program could be a viable option to reduce overall development cost and increase production from the field.

DISCUSSION

This informational item is to inform the Commission of the current steps being taken by the IDWR, EPA, IDL and IDEQ to enable a Class II UIC Program in the state of Idaho.

ATTACHMENTS

1. Idaho Code § 47-315
2. PowerPoint – "Produced Water from Willow Field; Payette County, Idaho"
   James Thum, Idaho Department of Lands
3. PowerPoint – "Transferring Class II in Idaho"
   Evan Osborne, Environmental Protection Agency
4. PowerPoint – "Current Status of the Class II UIC Program"
   Tom Neace, Idaho Department of Water Resources
5. Flowchart – "Application of Idaho Ground Water Quality Rule, Class II Injection Well Process Overview"
   Ed Hagan, Idaho Department of Environmental Quality

Print Friendly

Idaho Statutes

TITLE 47
MINES AND MINING
CHAPTER 3
OIL AND GAS WELLS — GEOLOGIC INFORMATION, AND PREVENTION OF WASTE

47-315. AUTHORITY OF COMMISSION. (1) The commission is authorized and it is its duty to regulate the exploration for and production of oil and gas, prevent waste of oil and gas and to protect correlative rights, and otherwise to administer and enforce this act. It has jurisdiction over all persons and property necessary for such purposes. In the event of a conflict, the duty to prevent waste is paramount.

(2) The commission and the department shall protect correlative rights by administering the provisions of this chapter in such a manner as to avoid the drilling of unnecessary wells or incurring unnecessary expense, and in a manner that allows all operators and royalty owners a fair and just opportunity for production and the right to recover, receive and enjoy the benefits of oil and gas or equivalent resources, while also protecting the rights of surface owners.

(3) The commission is authorized to make such investigations as it deems proper to determine whether action by the commission in discharging its duties is necessary.

(4) The commission is authorized to appoint, as necessary, committees for the purpose of advising the commission on matters relating to oil and gas.

(5) Without limiting its general authority, the commission shall have the specific authority to require:

(a) Identification of ownership of oil and gas wells, producing leases, tanks, plants, structures, and facilities for the transportation or refining of oil and gas;

(b) The taking and preservation of samples and findings, if taken or analyzed;

(c) The drilling, casing, operation and plugging of wells in such manner as to prevent: (i) the escape of oil and gas out of one (1) pool into another; (ii) the detrimental intrusion of water into an oil and gas pool that is avoidable by efficient operations; (iii) the pollution of fresh water supplies by oil, gas, or saltwater; (iv) blow-outs, cavings, seepages, and fires; and (v) waste as defined in section 47-310, Idaho Code;

(d) The taking of tests of oil and gas wells;

(e) The furnishing of a reasonable performance bond with good and sufficient surety, conditioned upon the performance of the duty to comply with the requirements of this law and the regulations of the commission with respect to the drilling, maintaining, operating and plugging of each well drilled for oil and gas;

(f) That the production from wells be separated into gaseous and liquid hydrocarbons, and that each be measured

ATTACHMENT 1

by means and upon standards that may be prescribed by the commission;

(g) That wells not be operated with inefficient gas-oil or water-oil ratios, and to fix these ratios, and to limit production from wells with inefficient gas-oil or water-oil ratios;

(h) Metering or other measuring of oil, gas, or product;

(i) That every person who produces oil and gas in the state keep and maintain for a period of five (5) years complete and accurate records of the quantities thereof, which records, or certified copies thereof, shall be available for examination by the commission or its agents at all reasonable times within said period, and that every such person file with the commission such reasonable reports as it may prescribe with respect to such oil and gas production; and

(j) The filing of reports or plats with the commission that it may prescribe.

(6) Without limiting its general authority, and without limiting the authority of other state agencies or local government as provided by law, the commission shall have the specific authority to regulate:

(a) The drilling and plugging of wells and the compression or dehydration of produced oil and gas, and all other operations for the production of oil and gas;

(b) The shooting and treatment of wells;

(c) The spacing or locating of wells;

(d) Operations to increase ultimate recovery, such as cycling of gas, the maintenance of pressure, and the introduction of gas, water, or other substances into a producing formation; and

(e) The disposal of produced water and oil field wastes.

(7) The commission is authorized to classify and reclassify pools as oil, gas, or condensate pools, or wells as oil, gas, or condensate wells.

(8) The commission is authorized to make and enforce rules, regulations, and orders reasonably necessary to prevent waste, protect correlative rights, to govern the practice and procedure before the commission, and otherwise to administer this act.

(9) The commission shall require the department to perform the following activities on an annual basis:

(a) Inspect and report on all active well sites and equipment;

(b) Visit and file a report on production and processing facilities; and

(c) Submit an opinion as to any areas of concern, as identified on inspection reports.

History:

[(47-315) 47-319, added 1963, ch. 148, sec. 5, p. 433; am. 1990, ch. 213, sec. 63, p. 532; am. 2012, ch. 73, sec. 2, p. 211; am. 2012, ch. 111, sec. 3, p. 303; am. 2013, ch. 189, sec. 2, p. 469; am. 2015, ch. 64, sec. 1, p. 173; am. 2015, ch. 141, sec. 120, p. 469; am. 2016, ch. 47, sec. 21, p. 115;

am. 2016, ch. 194, sec. 3, p. 542; am. and redesig. 2017, ch. 271, sec. 7, p. 683.]

How current is this law?

Search the Idaho Statutes and Constitution

IDAHO OIL & GAS
CONSERVATION COMMISSION

IDAHO DEPARTMENT OF LANDS

Produced Water from Willow Field Payette County, Idaho

James Thum
Oil & Gas Program Manager
Idaho Department of Lands

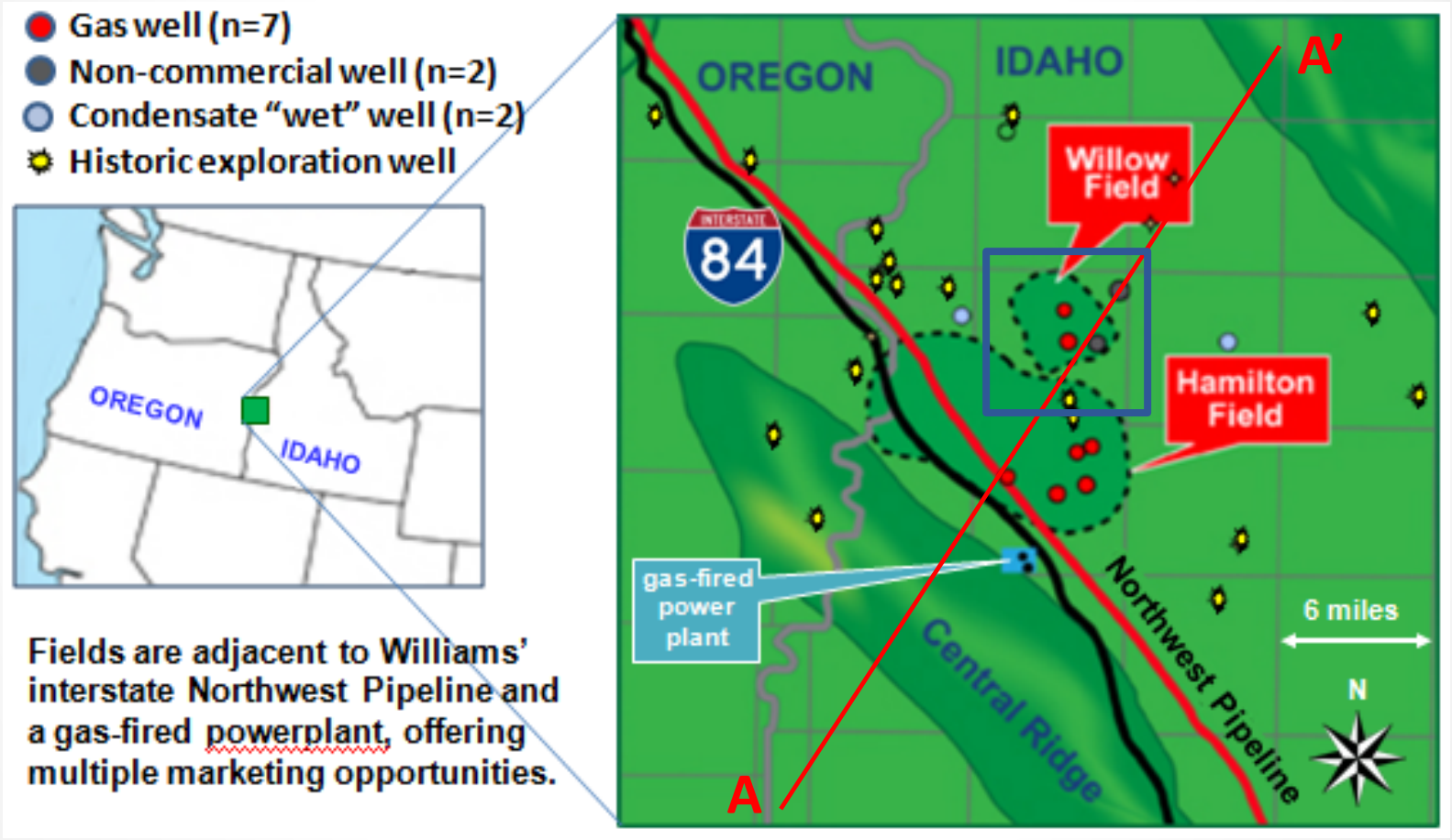
Idaho Oil & Gas Conservation Commission – December 7, 2017

ATTACHMENT 2

Willow Field, Payette Co.

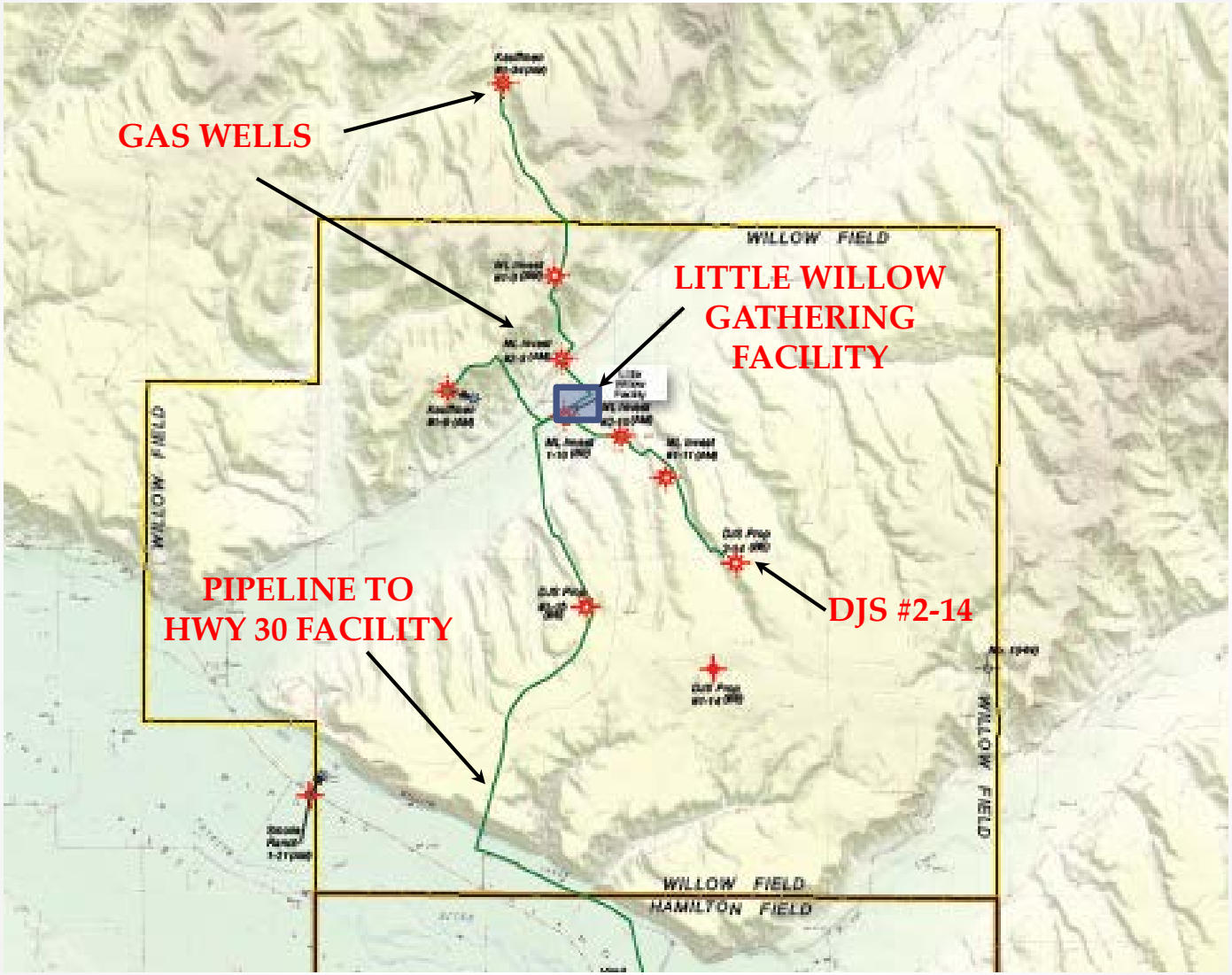
- **Discovered by Bridge Resources in 2010 Utilizing 2D Seismic Data**
- **Discovery Well – ML Investments #1-10**
  Tested 5.7 MMCFGD, 56 BCPD, 0 BWPD
- **Alta Mesa Acquired Bridge Assets in 2012**
- **AM Conducted 3D Seismic Surveys in 2012 & 2014**
- **5 Additional Wells Drilled Between 2013 & 2015**
- **Little Willow Gathering & Highway 30 Processing Facilities Came Online in August 2015 – Field Production Commenced**
- **Field Produces from 2 Zones 4000’ to 4500’**

Western Idaho Gas Play



From: Report No. 33, Oil and Gas Resource Exploration and Development Policies in Idaho, 2013

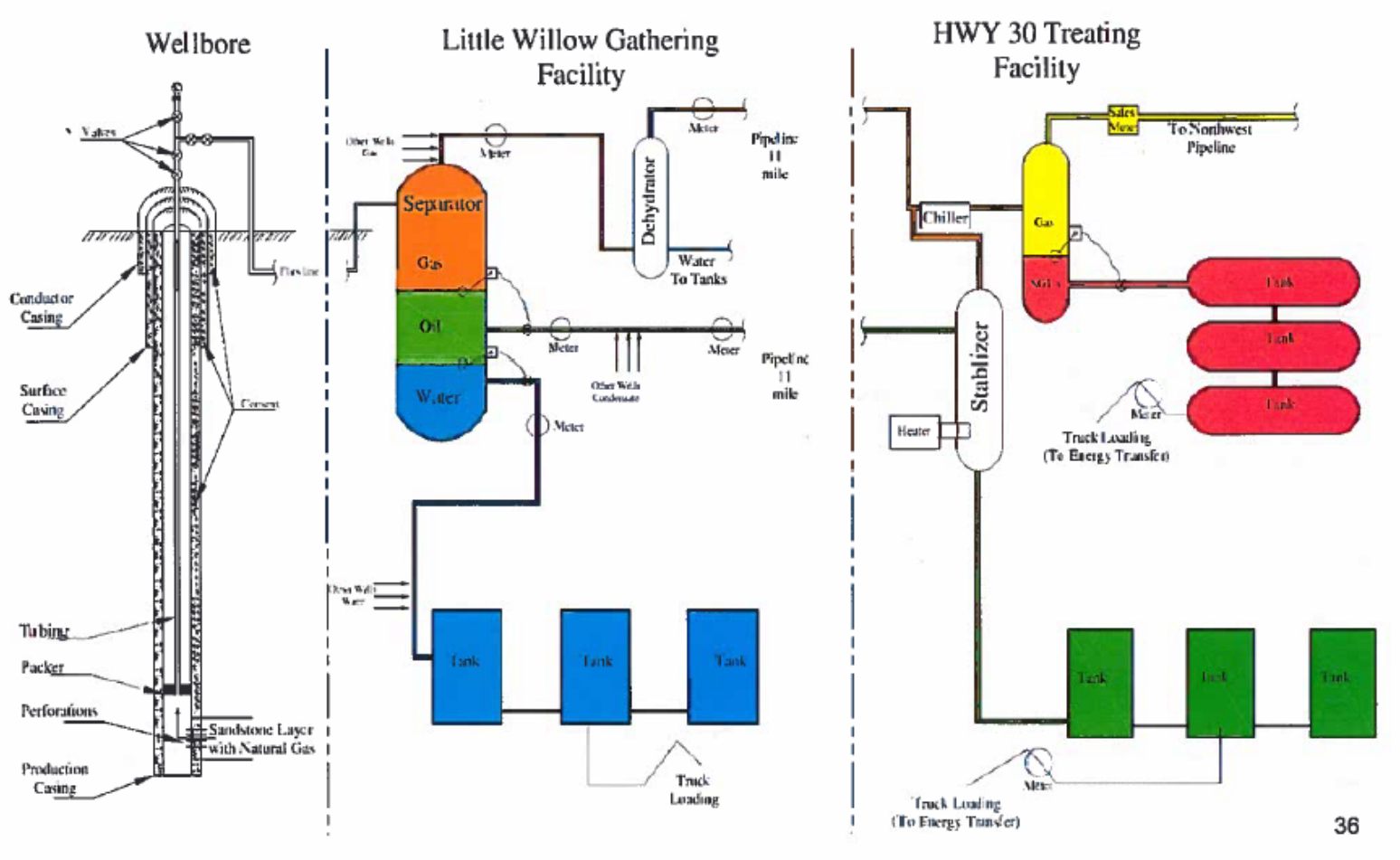
Willow Field, Payette County



Map Courtesy of
Idaho Geological Survey

Willow Field

Production Process



Little Willow Gathering Facility

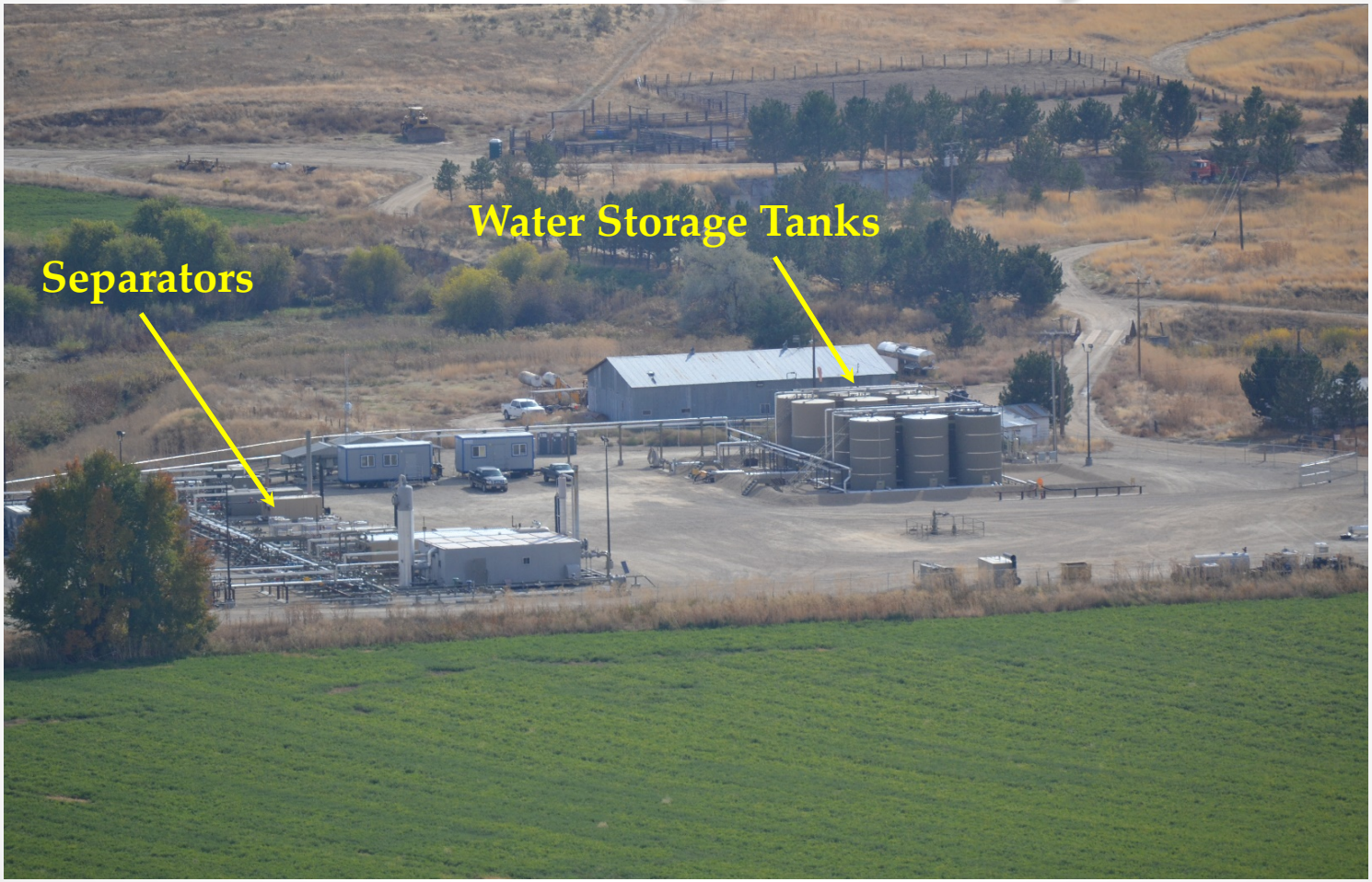


Photo courtesy C. Gozzo

Willow Field, Payette County

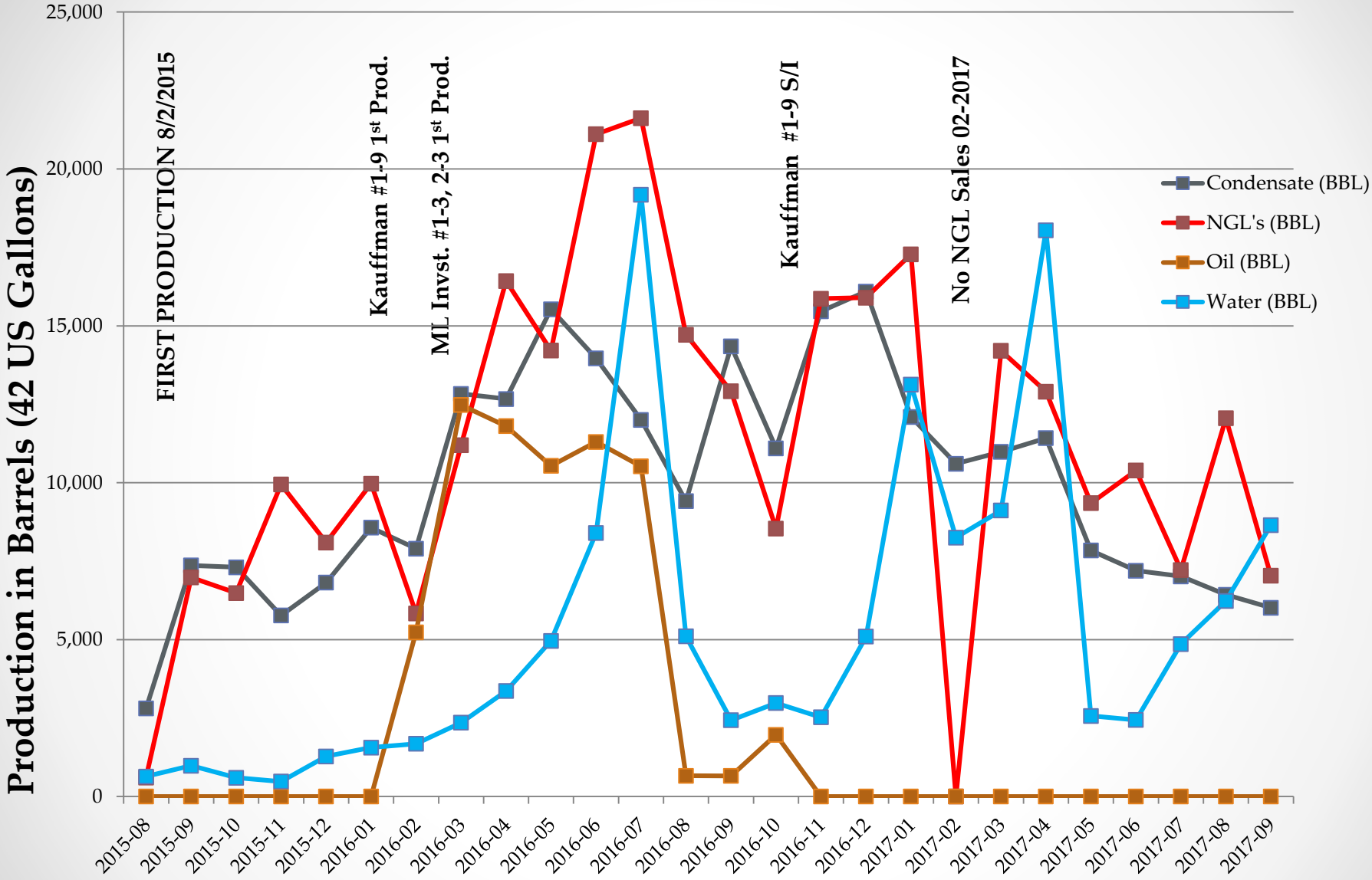
Cumulative Production Through Sept. 2017

Gas (MCF)	Liquids (BBL)			
	Condensate	NGL's	Oil	H2O
8,781,562	259,566	290,885	65,165	136,905

As of November 2017:

- **6 Producing Wells**
- **3 Shut-in Wells**
- **1 Drilling Development Well (ML Investments #3-10)**

WILLOW FIELD – LIQUIDS PRODUCTION BY MONTH



How Much Water is Produced?

From August 2015 to September 2017

(26 months):

1. **Total Reported Water Production: 136,905 Barrels**
2. **Total Volume Varies Each Month**
   - **Lowest: 479 barrels from 4 wells (11-2015)**
   - **Highest: 19,183 barrels from 6 wells (7-2016)**
   - **Average: ~5,266 barrels of water per month total**
3. **Volume per Well Varies Each Month Depending on Several Factors:**
   - **Geology of the Reservoir**
   - **Location of Perforations in the Hydrocarbon Column**
   - **"Economic Threshold" of Water Volume**

Where Does the Water Go?

1. **Water removed from production stream by separators at Little Willow Gathering Facility**
2. **Stored on-site in tanks, then transported via truck to L&R Environmental, Kuna ID**
   - **From the L&R website, the facility has six "solar distillation" ponds with a total capacity "exceeding 40 million gallons"**
3. **According to Alta Mesa, disposal costs have become uneconomic and they are exploring other options**

What Are Other Options for Disposal of Produced Water?

1. **Modular Large Volume Storage Tanks (MLVT's)**
2. **Centralized Water Treatment Recovery Systems**
3. **Producing Company Consortiums / Partnerships**
4. **Class II Injection Well Program** ←

4. Class II Injection Well Program

- **Disadvantages:**

  Primacy Process Can Take a Long Time (Kentucky – Gained Primacy in March 2017 After 9 Years)

- **Advantages:**

  1. Lower Transportation / Disposal Costs

  2. Less "Wear and Tear" on Road Infrastructure

  3. Reduced Incidents of Spills and Accidents

  4. Reinjection of Fluids into the Same Reservoir From Which They Were Produced May Help Maintain Reservoir Pressure – This May Increase the Economic Recovery of Hydrocarbons

  5. AM is Proposing to Utilize the DJS #2-14 Well for Re-injection of the Produced Water

Willow Field

Looking Southeast

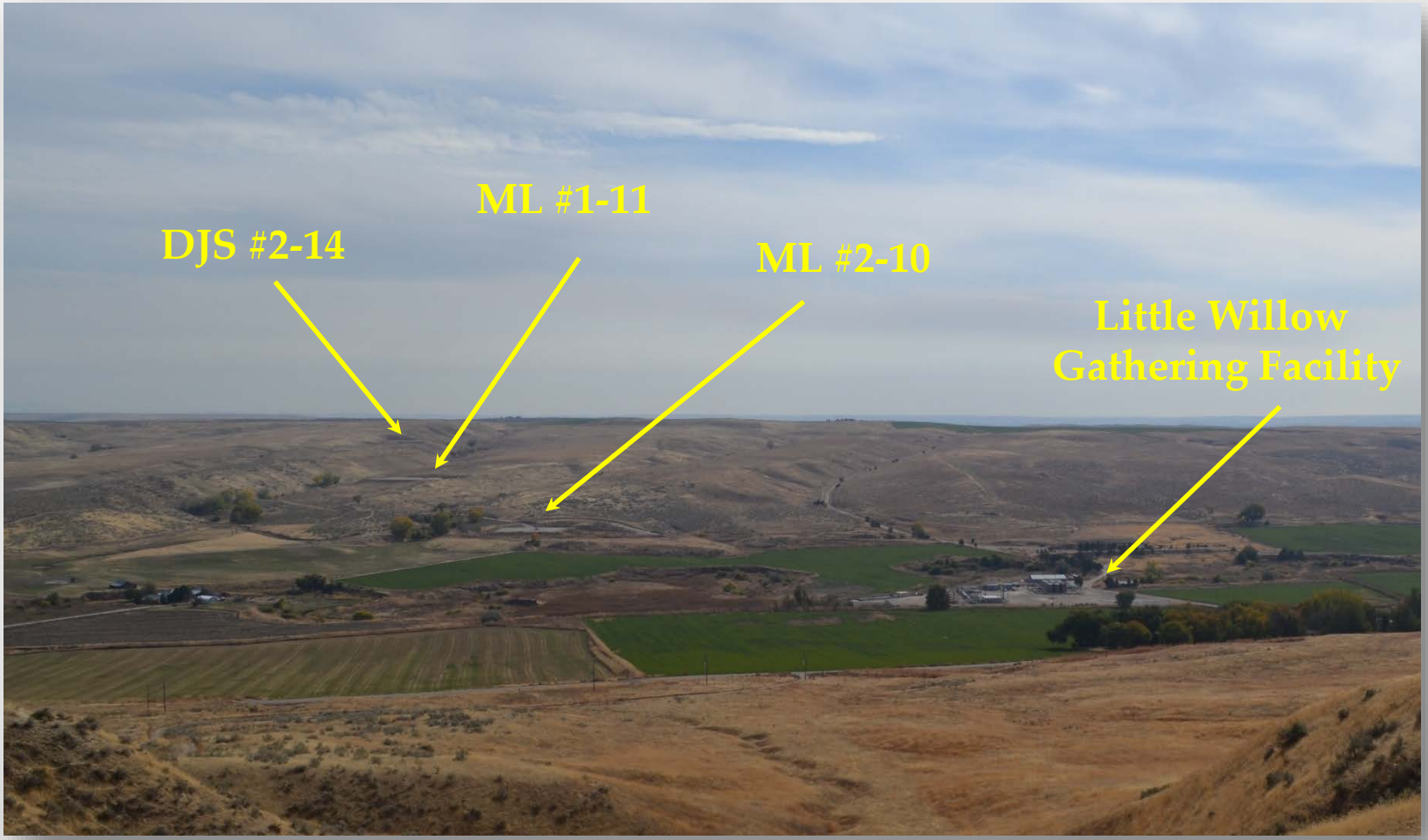


Photo courtesy C. Gozzo

Questions?

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Idaho Department of Lands
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https://ogcc.Idaho.gov

TRANSFERRING CLASS II IN IDAHO

- Program Approval and Transfer
  - Contacts and Resources
  - Attachment: EPA's Class II Program

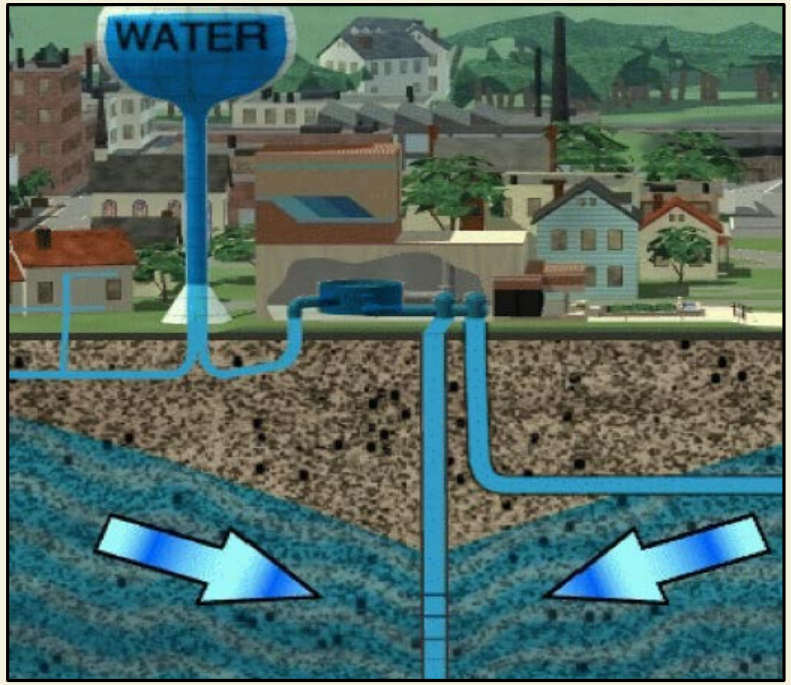
ATTACHMENT 3

EPA

Establishing UIC in Idaho

- **1974 - The Safe Drinking Water Act** (SDWA) statute was enacted
  - Injection wells are regulated to protect underground source of drinking water [USDWs].

- **1980 – Code of Federal Regulations;**
  - Parts 124, 144, 145, 146, 147
  - Underground Sources of Drinking Water:
    - Supplies any public water system *or*
    - Could supply a public water system

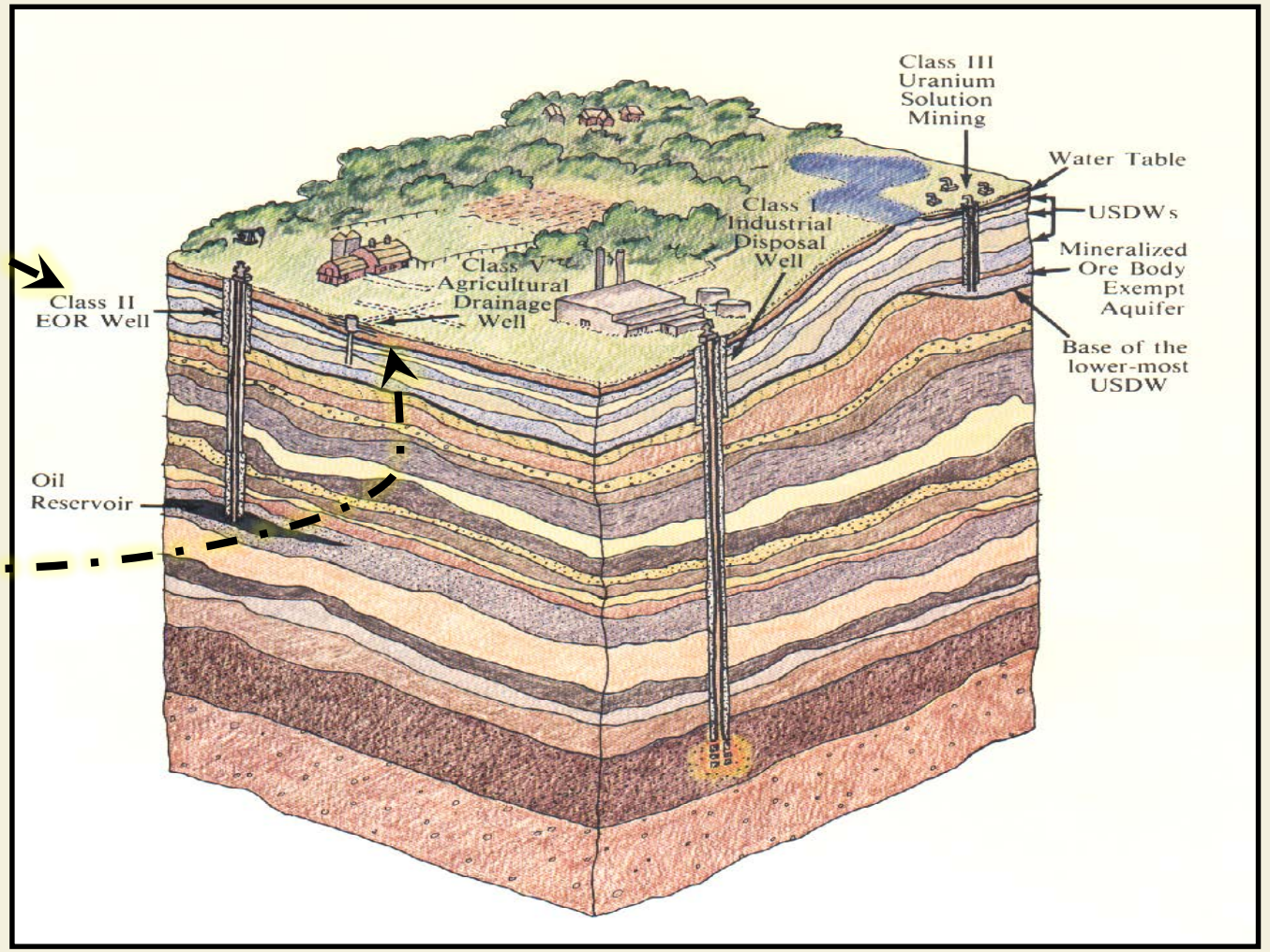


Injection Well Types

- Class I – Industrial
- **Class II – Oil and Gas Production Fluids**
- Class III – Solution mining
- Class IV – Hazardous Waste
- **Class V – Other** (shallow, above USDW)

  ~17,000 in Idaho, ex. Agricultural Drainage Well

- Class VI – Geosequestration



Federal and State Implementation

- EPA, states, and tribes (and combinations thereof) run UIC programs.
- Two routes for EPA to authorize primary enforcement authority or "primacy":
  - SDWA 1422 *(All classes)*
  - SDWA 1425 *(Class II only)*
- Ex. "The UIC program for Class I, II, III, IV, and V wells in the State of Idaho…[is] administered by [IDWR]…" (*40 CFR sec. 147.650)*

Updating Primacy: State/EPA Cooperation

- Document package for program primacy or modification:
    - *Updated rules and regulations*
    - *Letter from Governor*
    - *Program Description*
    - *Memorandum of Agreement*
    - *Attorney General's Statement*
- Region and states work together to revise draft materials.
- Ultimately codified in the Code of Federal Regulations (CFR).

Class II Primacy History in Idaho

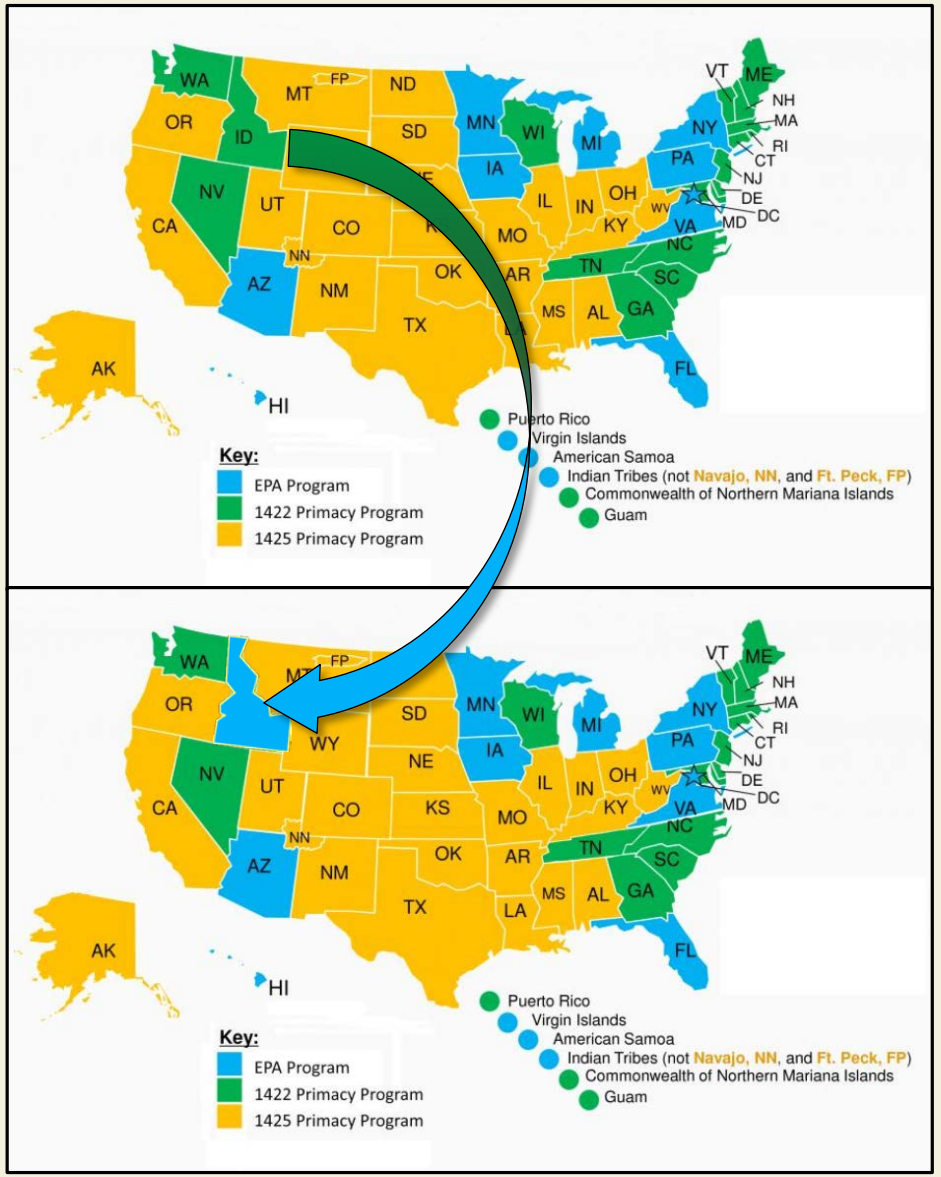
- 1985- Achieved Primacy (SDWA 1422) to regulate all injection well types.
  - **Banned Class I, II, III wells** in Idaho rules:

> *"The state will not issue a permit authorizing any Class I – III …unless… a program revision as specified in 40 CFR Part 145.32 [takes place]."* (MOA, 1985)

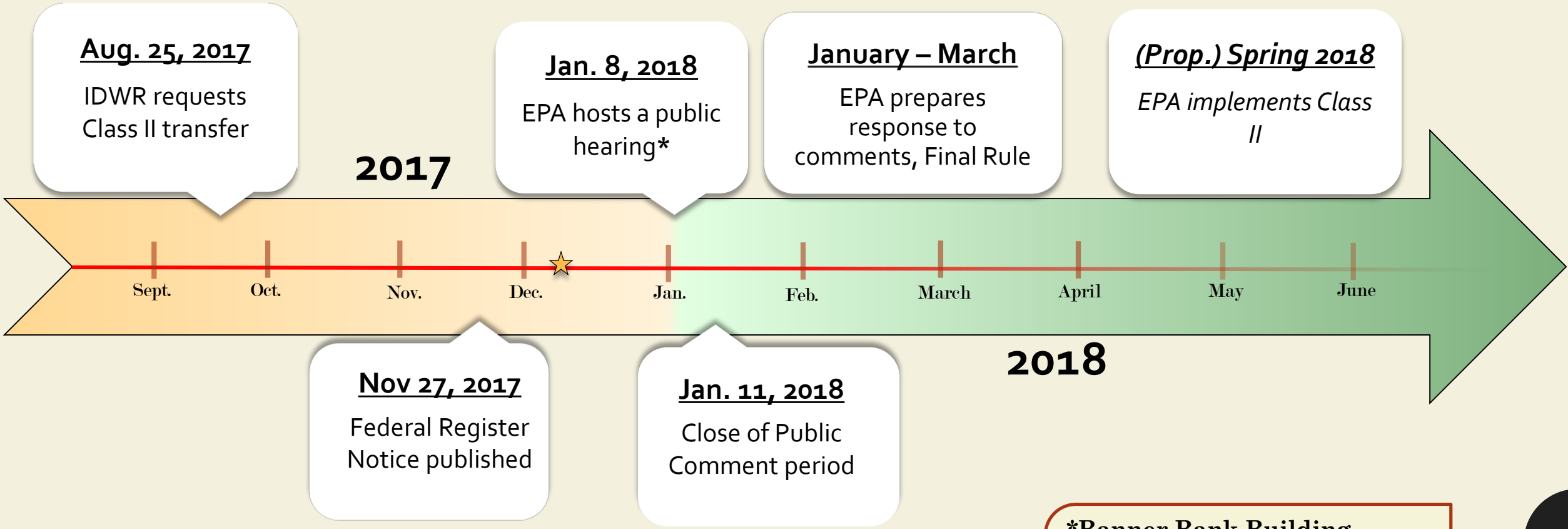
- Idaho's program: 40 CFR §147.650
  - Framework for EPA's recognized program– references MOA, AG, PD, etc.
  - Can be changed to revise primacy (i.e., program transfer)

Class II Transfer

- Voluntary Program Transfer Process (40 CFR §145.34(a)).
- EPA publishes notice in the Federal Register.
- No Class II wells in Idaho, slim transfer.
- Effectively removes the current ban of Class II Wells.



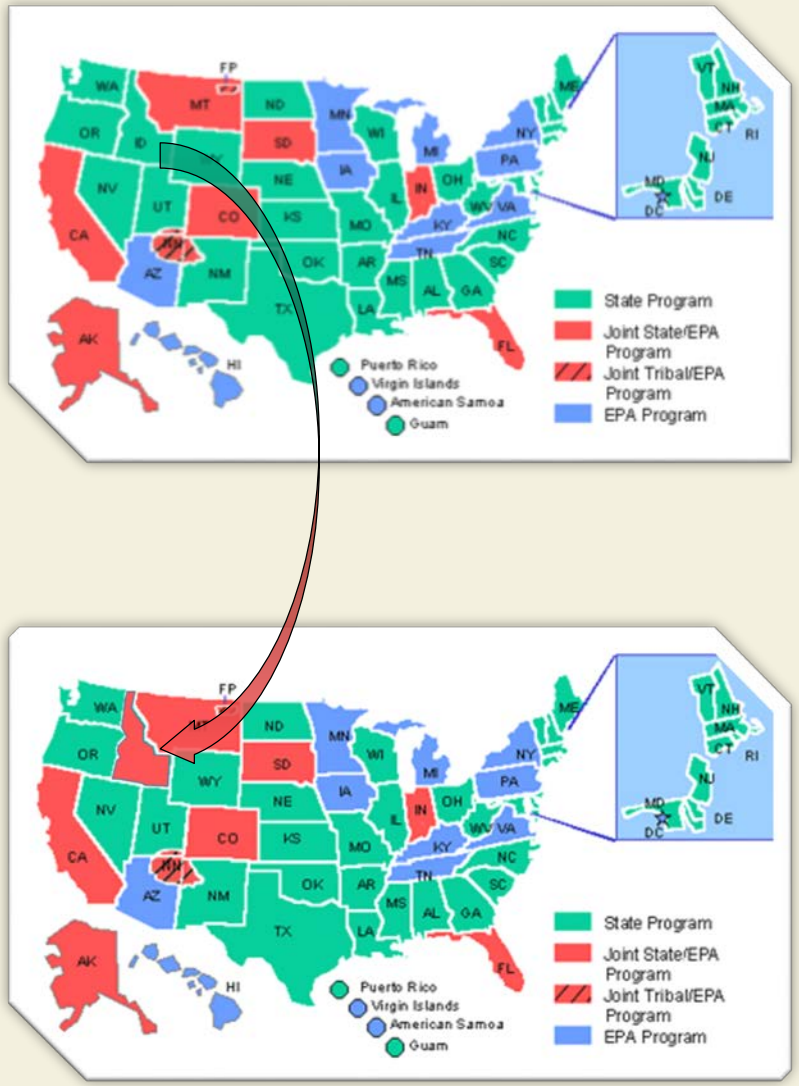
Class II Transfer Timeline



***Banner Bank Building**
950 W Bannock St, Boise, Idaho
2:00 – 5:00 PM MT

Sharing UIC Responsibility

- EPA implements UIC programs in absence of state program, as designated in *40 CFR Part 147.*
  - When EPA implements a UIC program, this is referred to as "Direct Implementation".
- Cooperation between federal and state agencies :
    - Share information re: USDWs, water wells, gas well req.'s, reporting, etc.
    - Communicating with regulated entities.
    - Ensure both state and federal rules are applied.
- Ex: MI, PA, FL, AK (Class 1)



Class II in Idaho: Future Implementation

1. **EPA Directly Implements**
    - *No further action after transfer.*
2. **Idaho retains primacy under SDWA 1422**
    - IDWR could be the state implementing agency.
    - *Completes SPA Revision of entire UIC program.*
    - *Program must be "as stringent as" EPA.*
3. **Idaho retains primacy under SDWA 1425**
    - IDL or IDWR could be the state implementing agency.
    - Program must be an "*effective program…to prevent underground injection which endangers drinking water sources.*"

Contacts

- Jim Werntz – Director, Idaho Operations Office, USEPA (Boise)
  - Werntz.James@epa.gov, 208-378-5743
- Peter Contreras – Groundwater Program Manager, USEPA (Seattle)
  - Contreras.Peter@epa.gov, 206-553-6708
- Evan Osborne – UIC Program, USEPA (Seattle)
  - Osborne.Evan@epa.gov, 206-553-1747

Resources

- **National Aquifer Exemption Map**: https://www.epa.gov/uic/aquifer-exemptions-map
- **National UIC Website**: https://www.epa.gov/uic
- **Class II application form**: https://www.epa.gov/uic/underground-injection-control-reporting-forms-owners-or-operators
- **Public Meeting:** January 8, 2018 | 2:00 – 5:00 PM MT

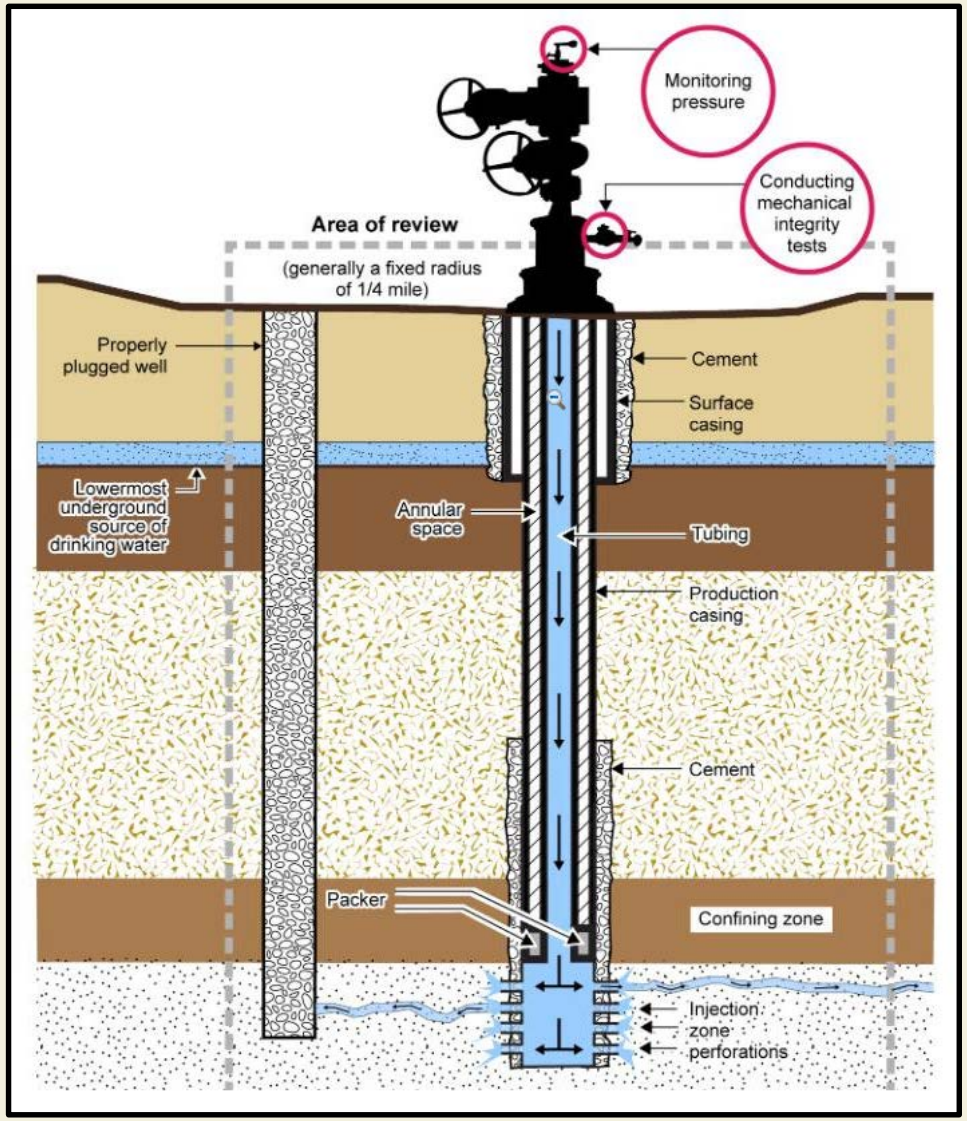
Banner Bank Building, 950 W Bannock St, Boise, Idaho

EPA

ATTACHMENT: EPA'S CLASS II PROGRAM

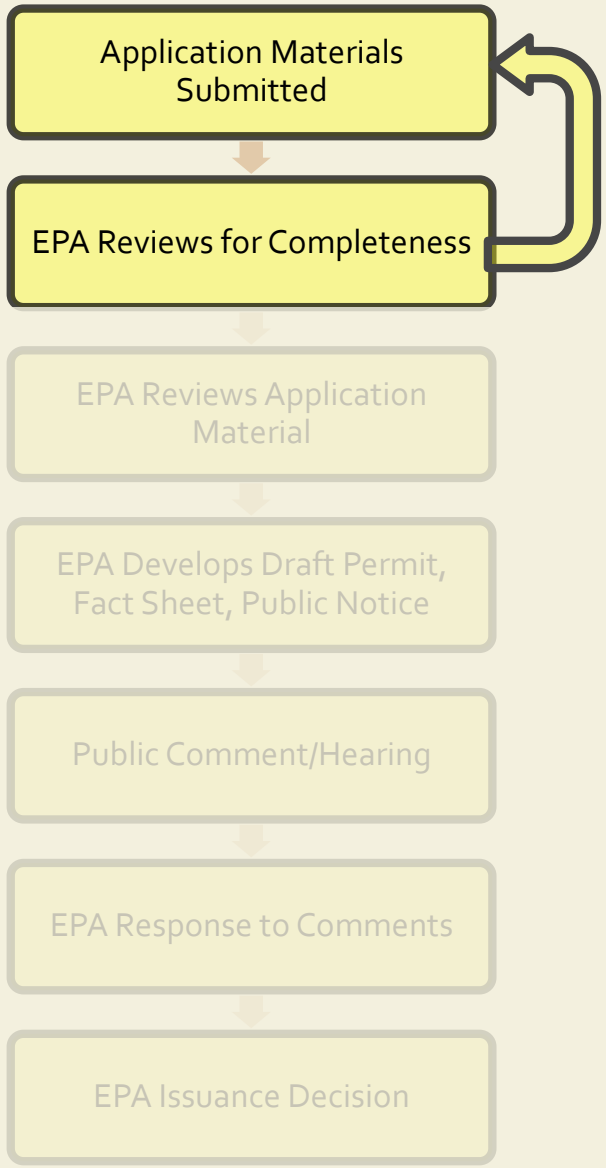
Class II: Injection

- Three Types
  - Disposal (D, ~20%)
  - Enhanced Oil Recovery (EoR, ~80%)
  - Liquid Hydrocarbon Storage Wells (*not pictured*)
- Underground source of drinking water separated from injection by confining formations
- Over 180,000 Class II wells in the U.S.
  - 2+ billion gallons injected per day
  - (*Zero in Idaho*)



Class II: Permit Application

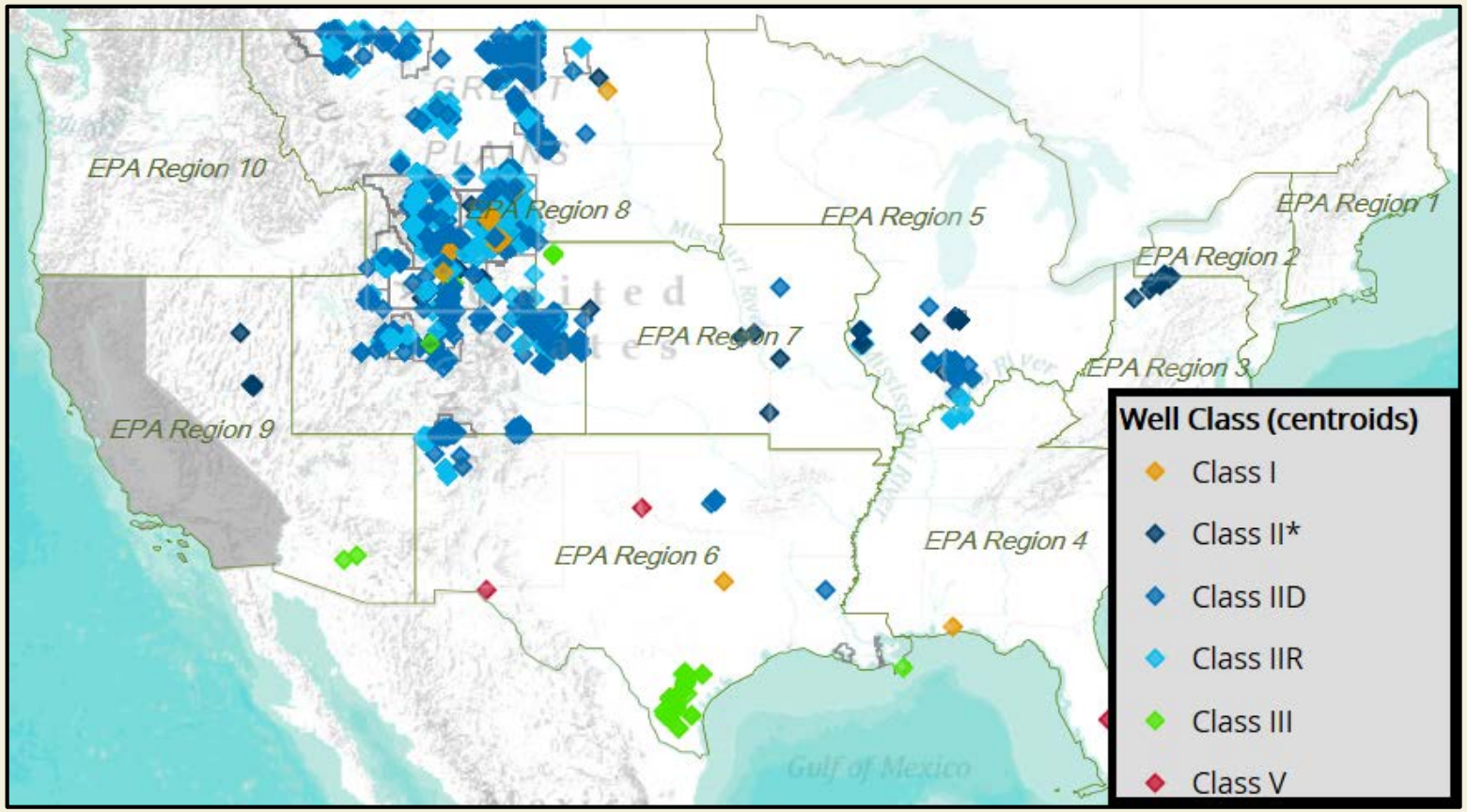
- *UIC Permit Application (Form 7520-6)*
  - Area of Review
  - Corrective Action Plans
  - Name and Depth of USDWs
  - Injection and Confining Zones
  - Operating Data (Injection Fluids)
  - Formation Testing Program
  - Stimulation Program
  - Injection Procedures
  - Construction Details
  - Plans for Well Failures
  - Monitoring Program
  - Plugging and Abandonment (P&A) Plan
  - Necessary Resources (Financial Assurance)
  - Aquifer Exemption



Aquifer Exemption: Process

1. Operator identifies area and submits request
2. EPA reviews request and application material
3. (EPA requests more information, if necessary)
4. EPA develops a decision document approving or denying
5. EPA Administrator or Regional Administrator Makes final determination

Aquifer Exemptions



Application Materials Submitted

Aquifer Exemption

EPA Reviews for Completeness

EPA Reviews Application Material

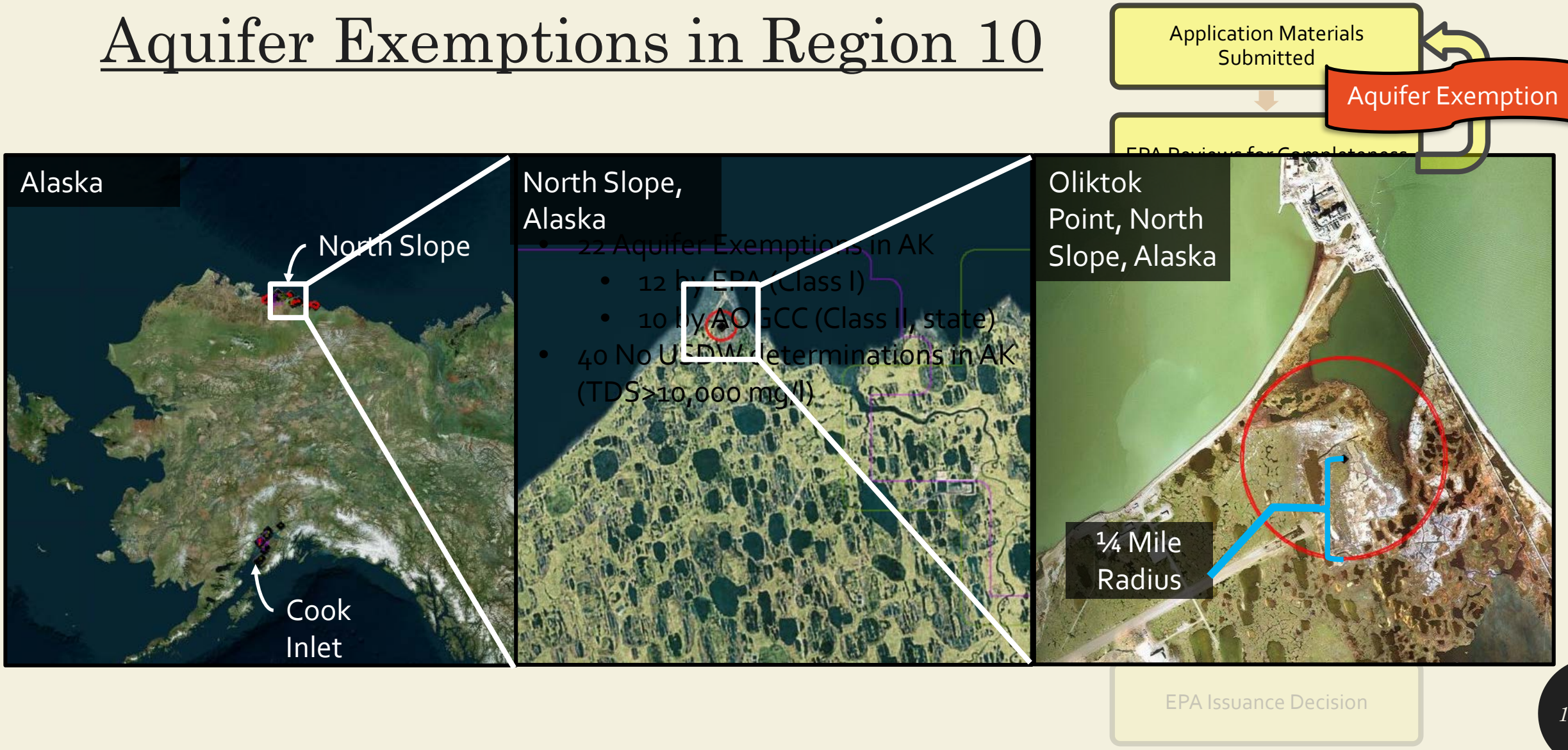
EPA Develops Draft Permit, Fact Sheet, Public Notice

Public Comment/Hearing

EPA Response to Comments

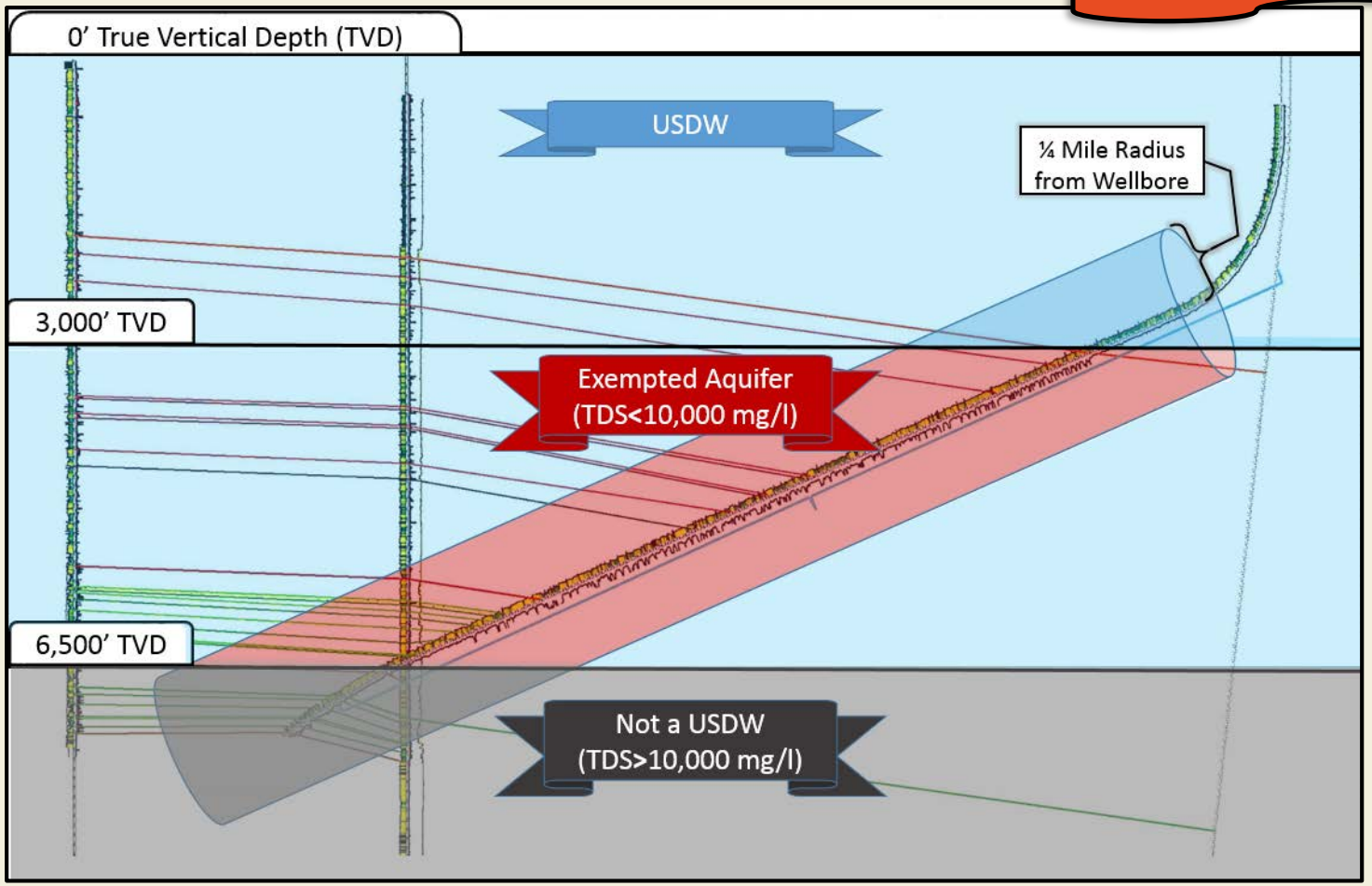
EPA Issuance Decision

Aquifer Exemptions in Region 10



Aquifer Exemption (*Example*)

- Salinity records and geophysical logs
- Below 6,500 ft., TDS > 10,000 mg/l
- Between 3,000 ft. and 6,500 ft., 3,000 mg/l < TDS < 10,000 mg/l
  - Not used for drinking water
  - Won't be used in future ($$, hydrocarbons, distance)
- Above 3,000 ft., TDS > 3,000 mg/l



Class II: Permit Application

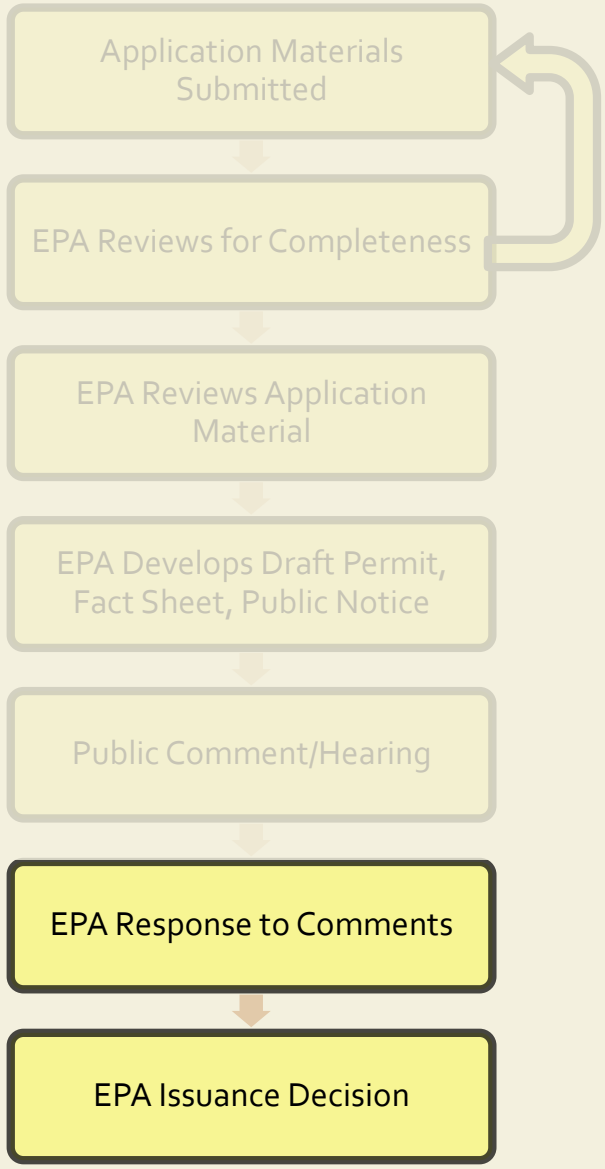
- EPA Reviews to confirm:
  - Presence of adequate confining zones
  - Location of USDWs
  - Presence of other wells in Area of Review
  - Adequate P&A cost est.
  - Max injection pressure
  - Injection zone salinity
  - Any additional logging req.'s
  - Any other site-specific considerations

Class II: Permit Application

- All draft permits require public participation
  - Tribal coordination/consultation
  - Endangered Species Act
- Published Notice
  - Newspaper
  - EPA webpage
- Minimum = 30 days
- Opportunity for public hearing (40 CFR §124)

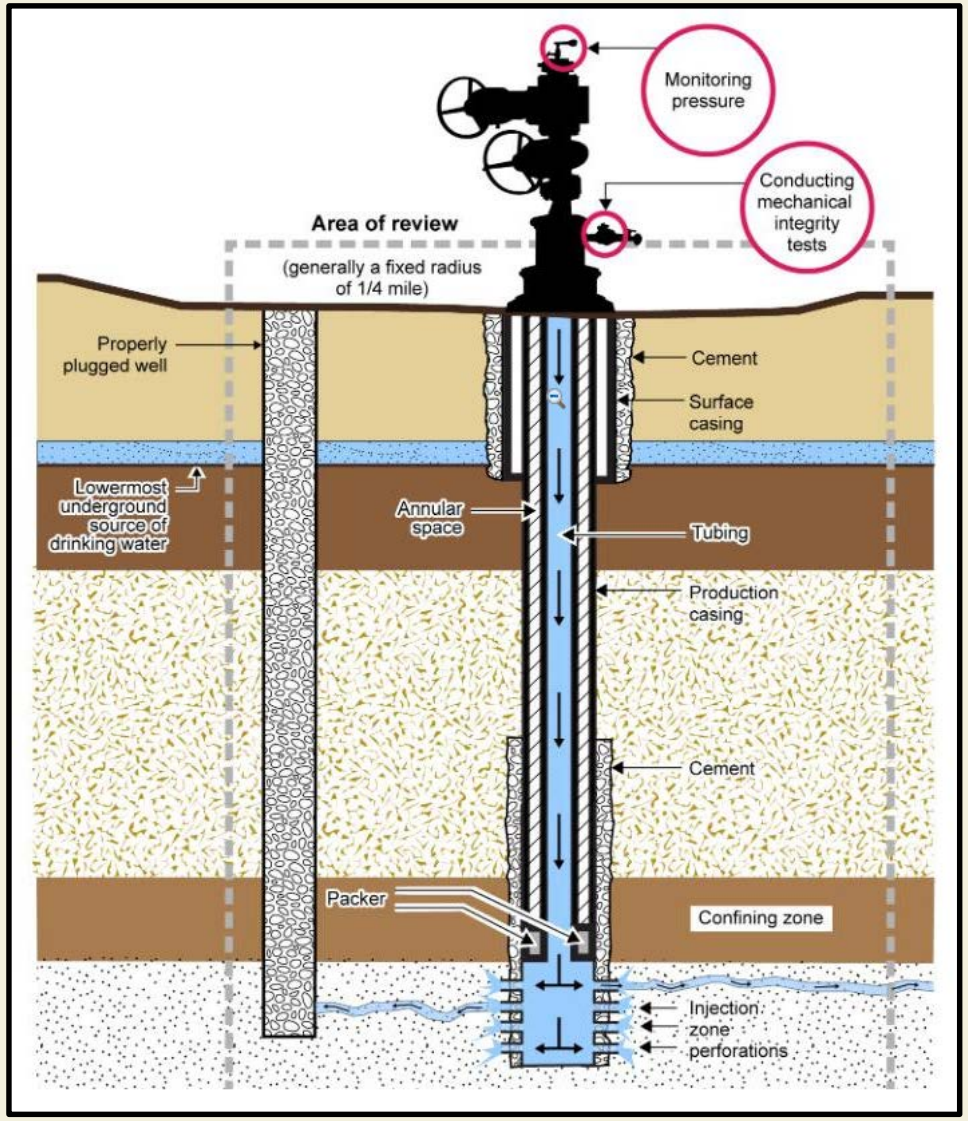
Class II: Permit Application

- EPA compiles and responds to comments
- Regional Administrator makes a decision to issue or deny the permit on merit and comments.
- Decision sent to applicant and all commenters.



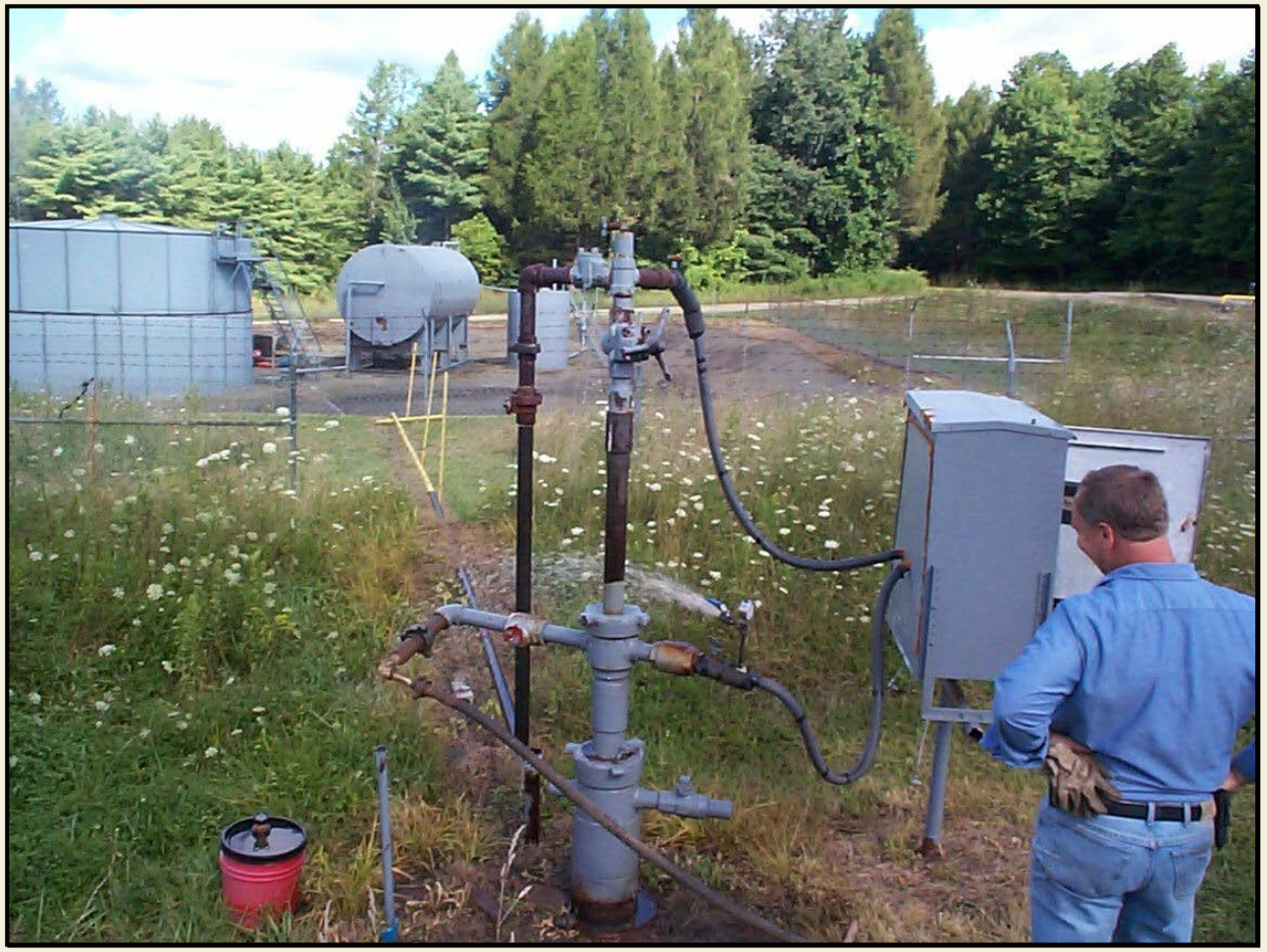
Class II: Construction Requirements

- Injection separated from any USDW.
- Tubulars, cement, packer.
- Appropriate logs and tests.
  - Aquifer depths and quality
  - Formation homogeneity and character
  - Tubing/casing integrity
- Determination of:
  - Fluid pressure
  - Fracture gradient
  - Characteristics of the injection zone



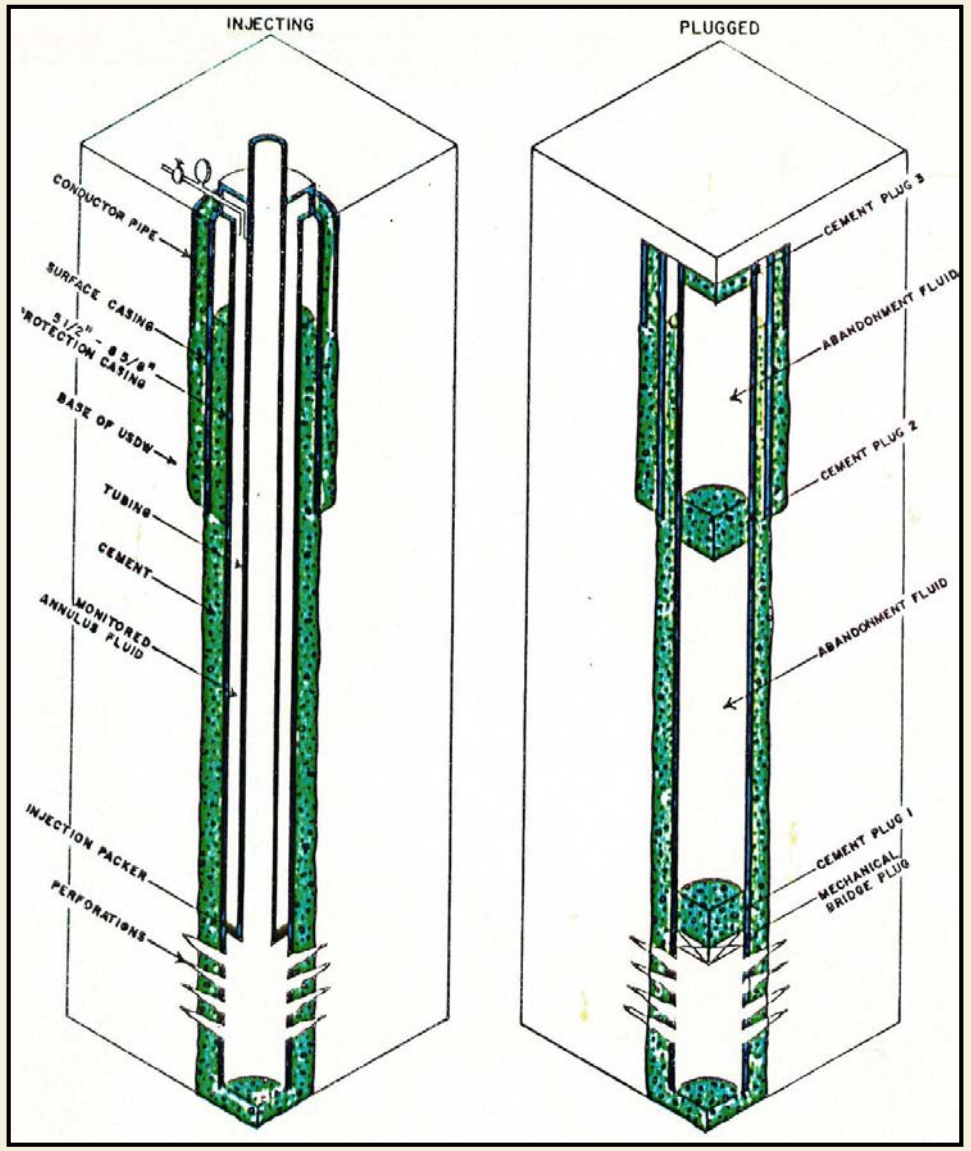
Class II: Operating Requirements

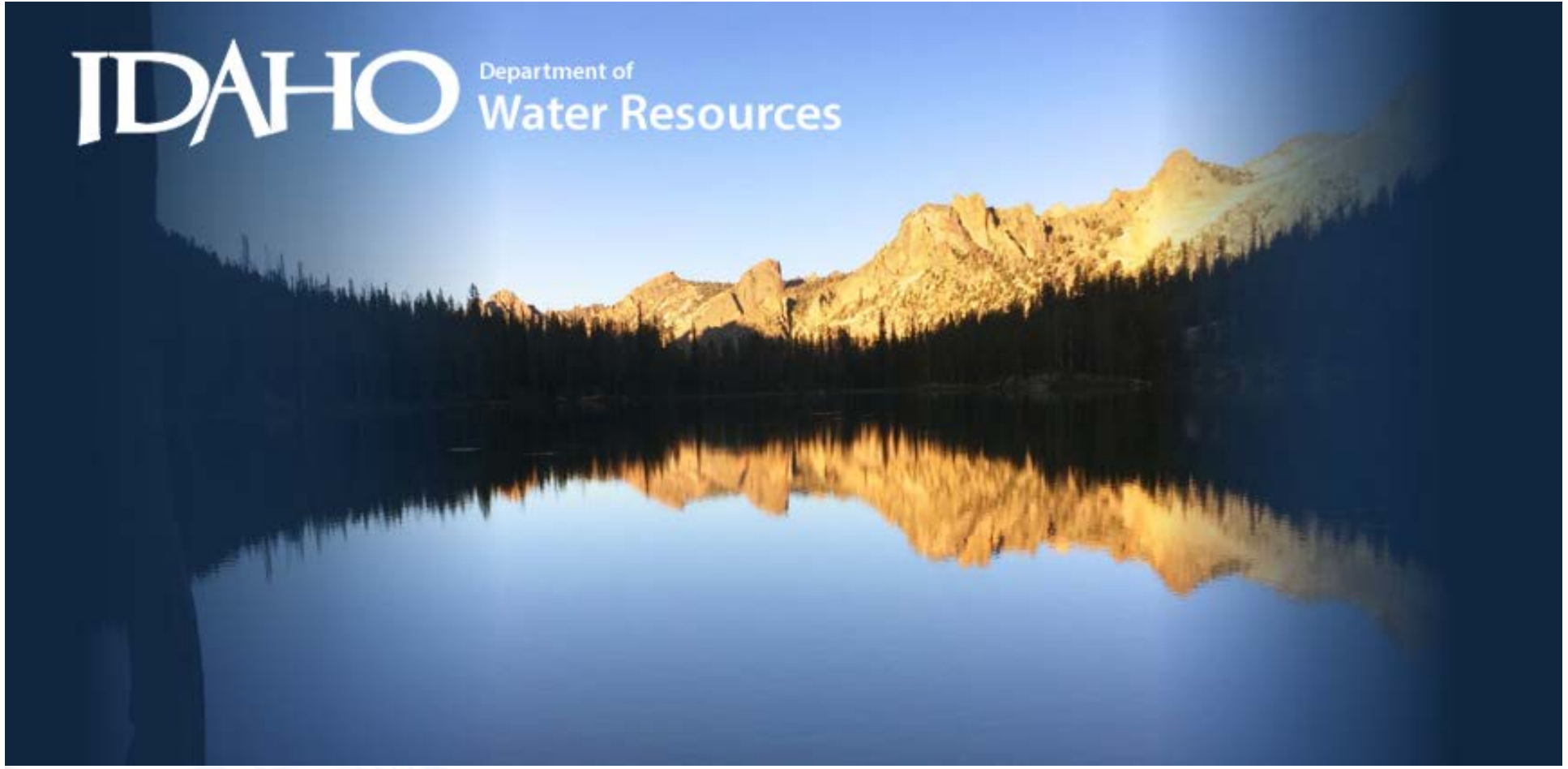
- Operating Requirements
  - Injection pressure
  - Fluid type limitations
- Monitoring Requirements
  - Injectate characteristics
  - Injection pressure, rate, cumulative volume
  - Mechanical Integrity Testing (inspections)
- Reporting Requirements
  - Monitoring results
  - Instances of non-compliance, loss of mechanical integrity



Plugging and Abandonment

- To ensure post-closure protection of USDWs
- Preventing migration of fluids between previously-isolated geologic intervals
- Guaranteed by P&A financial assurance





Current status of the Class II UIC Program

Idaho Oil and Gas Commission

December 7, 2017

ATTACHMENT 4

Idaho's Underground Injection Control (UIC) Program

I.C. §42-3901 – Ground Water as Public Resource, Protection

The legislature of the state of Idaho hereby declares the ground water of this state to be a public resource which must be protected against unreasonable contamination or deterioration of quality to preserve such waters for diversion to beneficial uses; that in order to protect such waters against contamination or deterioration in quality it is necessary that the construction and use of injection wells be controlled as provided in [Title 42 Chapter 39]. 1971

Injection Well Classes

- Class I: hazardous, industrial non-hazardous, or municipal wastewater (prohibited by IDAPA)
- Class II: oil and gas production fluids
- Class III: solution mining wastes (prohibited by IDAPA)
- Class IV: hazardous, radioactive wastes (prohibited by IDAPA and federal law)
- Class V: non-hazardous, non-radioactive fluids
- Class VI: geologic sequestration (prohibited by IDAPA)

Class V Injection Wells

- Comprised of “All injection wells not included in Classes I, II, III, IV, or VI.” (IDAPA 37.03.03 35.01.e)
- Most Class V injection wells are shallow, low-tech, and gravity driven
- Common well types (32 formal subtypes):
  - Storm water drainage wells
  - Agricultural drainage wells
  - Aquifer recharge
  - Geothermal energy plant returns
  - Septic systems

Class II Injection Wells

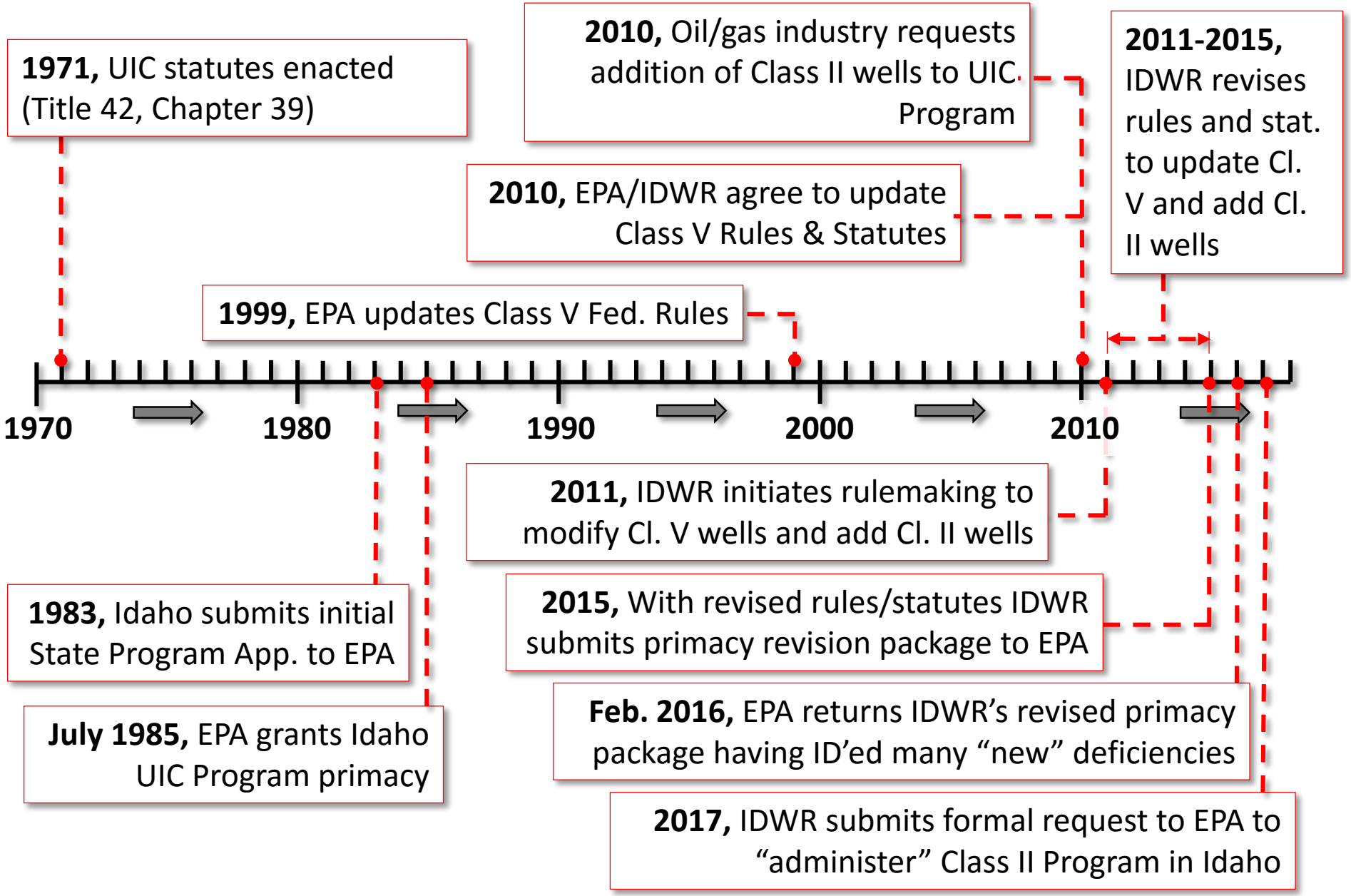
- Class II (IDAPA 37.03.03 35.01.b). Wells used to inject fluids:

II D
- Which are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production and may be commingled with waste waters from gas plants, dehydration stations or compressor stations which are an integral part of production operations, unless those water are classified as a hazardous waste at the time of injection;

II R
- For enhanced recovery of oil or natural gas; and

II H
- For storage of hydrocarbons which are liquid at standard temperatures and pressures.

The UIC Program Milestones



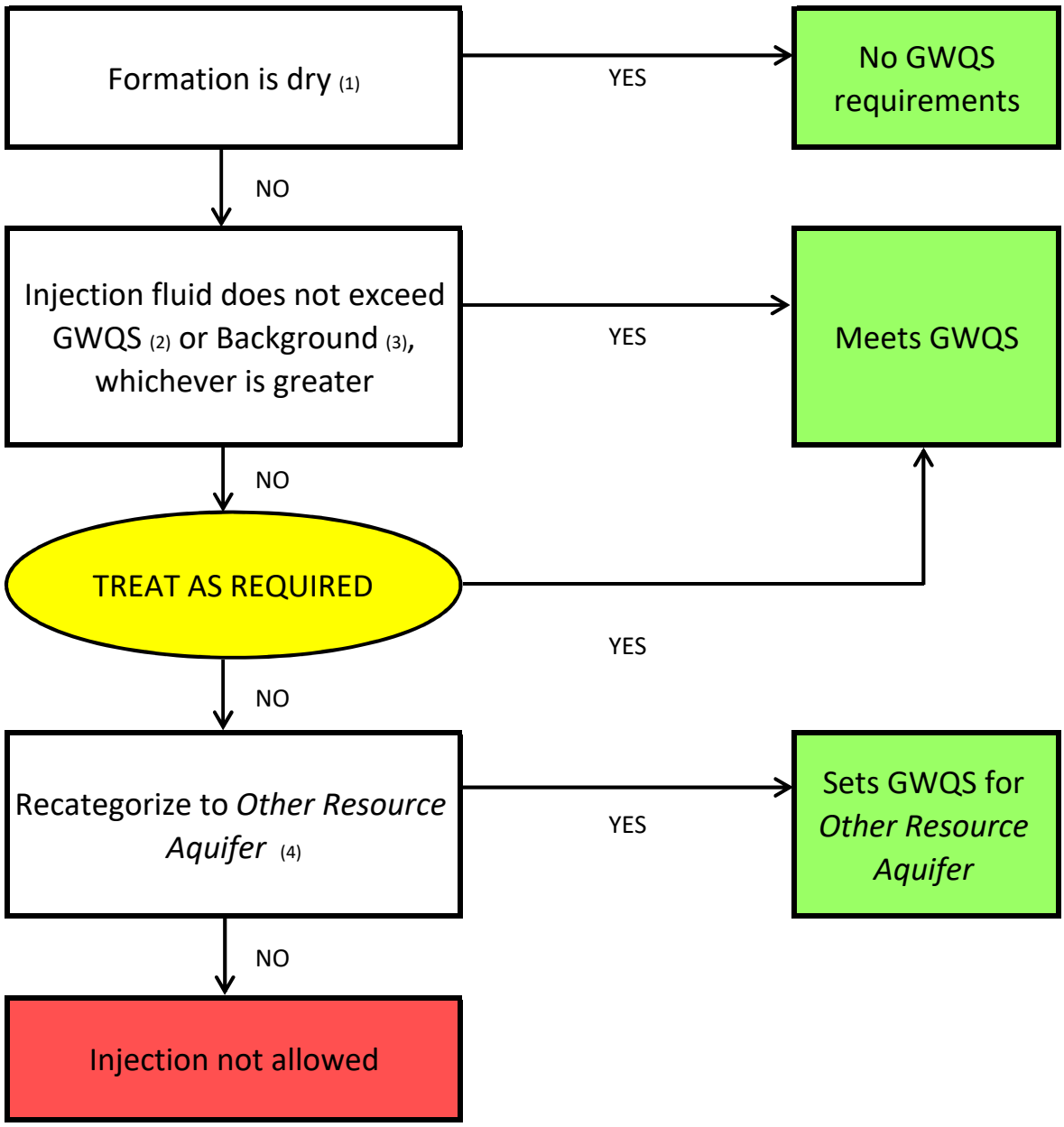
Class II Wells – Where are we now?

- IDWR will maintain primacy and carry out the UIC Program for Class V Wells
  - IDWR will continue to inventory, permit, and regulate Class V wells
- Class II UIC Program is being "transferred" back to EPA
  - EPA will be responsible for permitting, and regulation of Class II wells
  - All "major steps" in the "transfer" process requiring IDWR participation are completed (except courtesy participation in public comment session)
  - EPA estimates Class II Program will be transferred on March 18, 2018
  - Lone Idaho Class II injection well permit has already been filed with EPA…estimated permit issuance date April 2018

Questions and/or Discussion?

Shoshone Fall, March 2017.

Application of Idaho Ground Water Quality Rule
Class II Injection Well Process Overview



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(1) 58.01.11.007.02

(2) 58.01.11.200.01

(3) 58.01.11.200.03

(4) 58.01.11.350

GWQS - Numerical Ground Water Quality Standard

ATTACHMENT 5