


Water Resources and Oil and Gas Development in Colorado

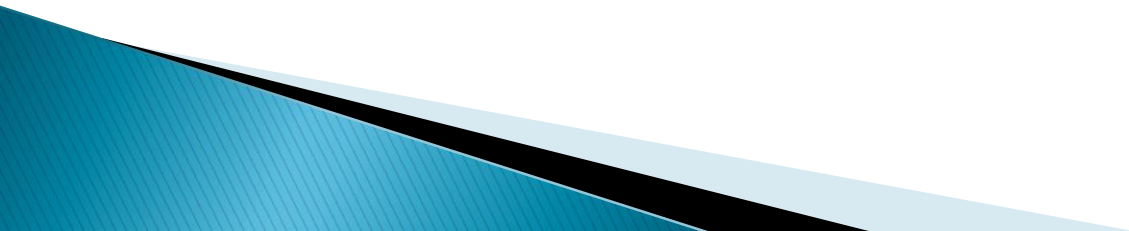
Kevin Rein, P.E., Deputy State Engineer
Colorado Division of Water Resources



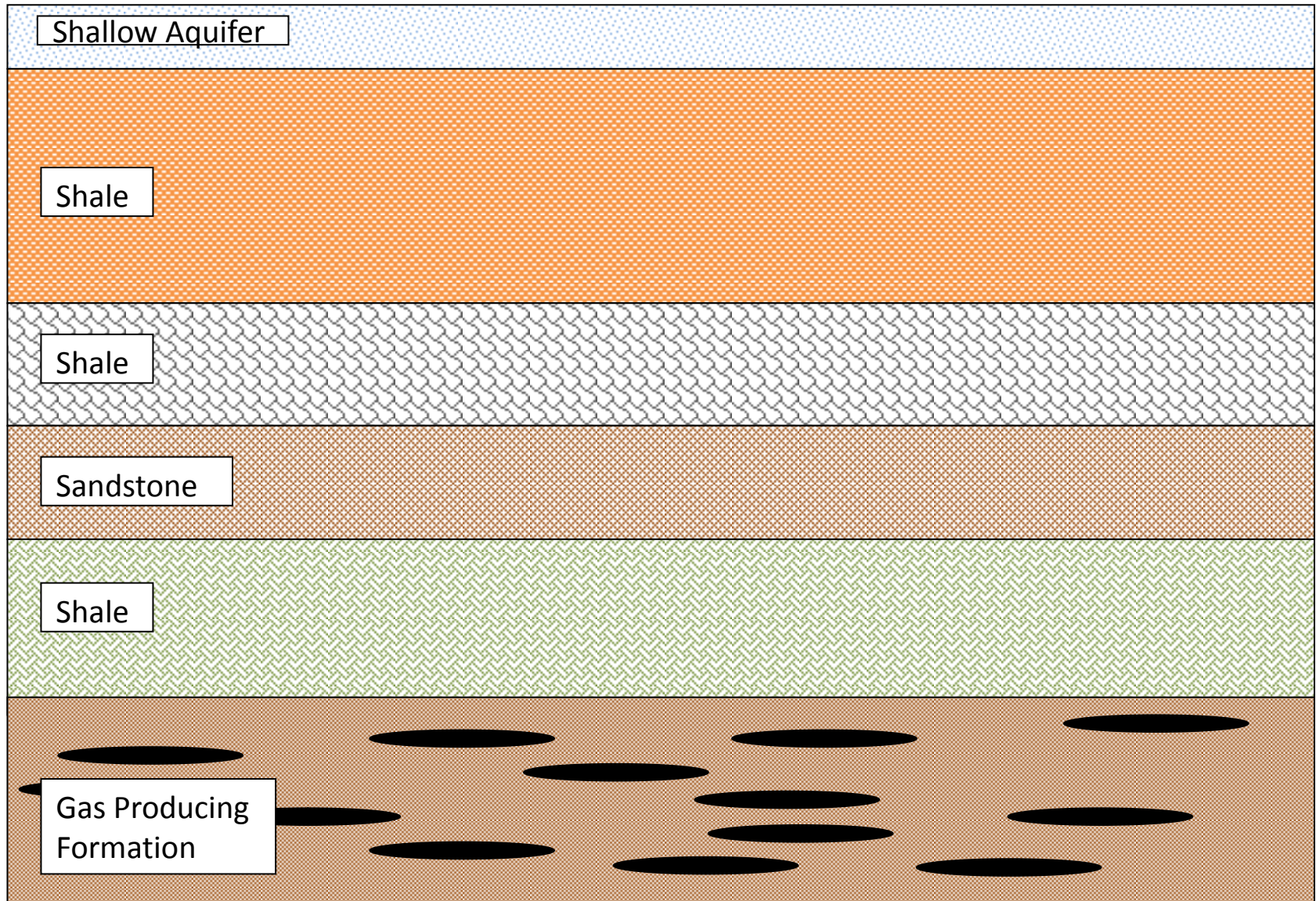
Discussion of Quantitative Injury to Water Right

- ***Energy production*** in Colorado meets
 - ***Hydrogeology***, which creates
 - A ***water rights*** issue, requiring a
 - Difficult ***regulatory obligation***.
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- The law provides for some ***discernment in administration***
 - The situation led to a ***legislative effort*** allowing
 - ***Efficient regulation***
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Geologic Perspective

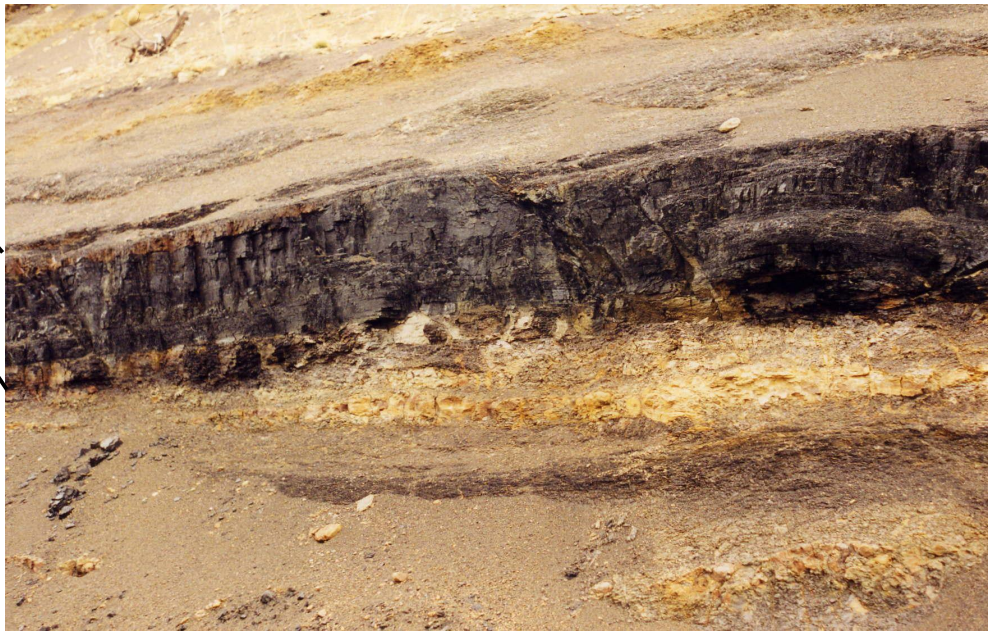
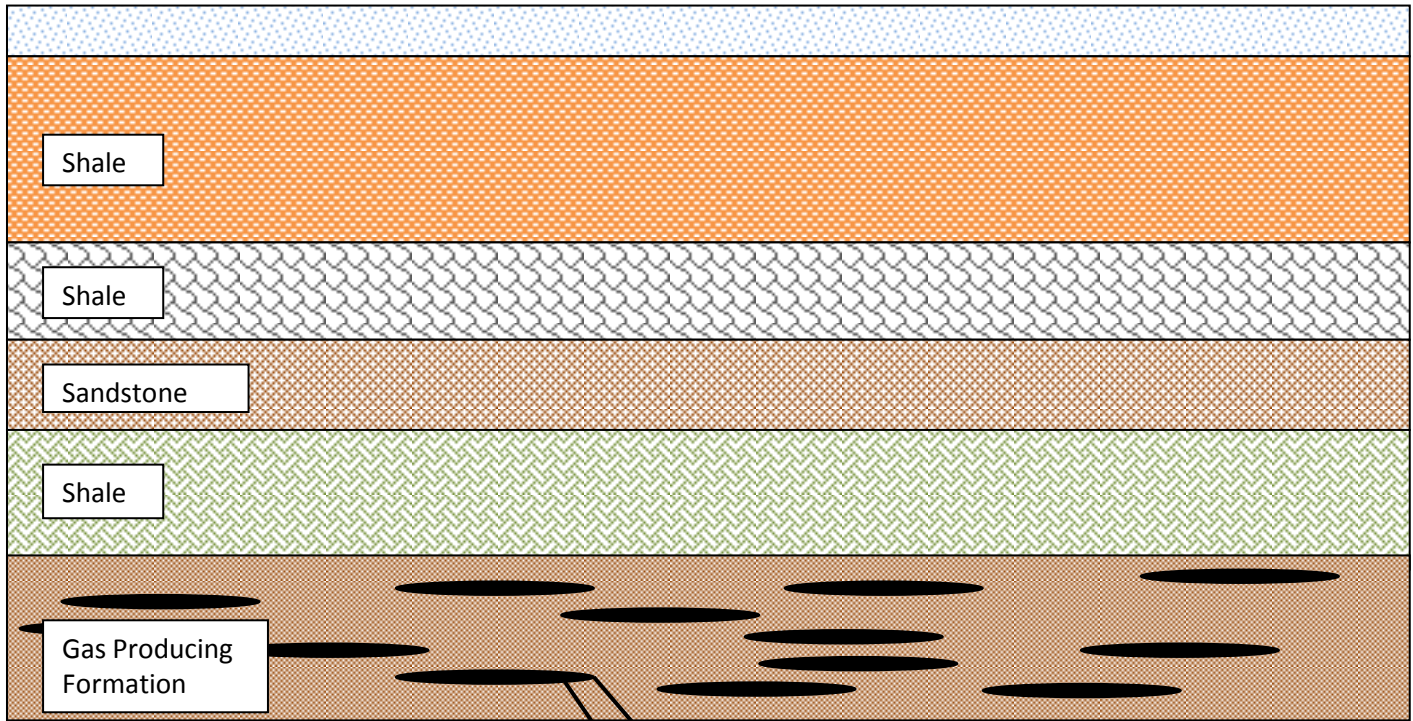


Idealized Cross Section showing Geologic Features and Gas Producing Formation

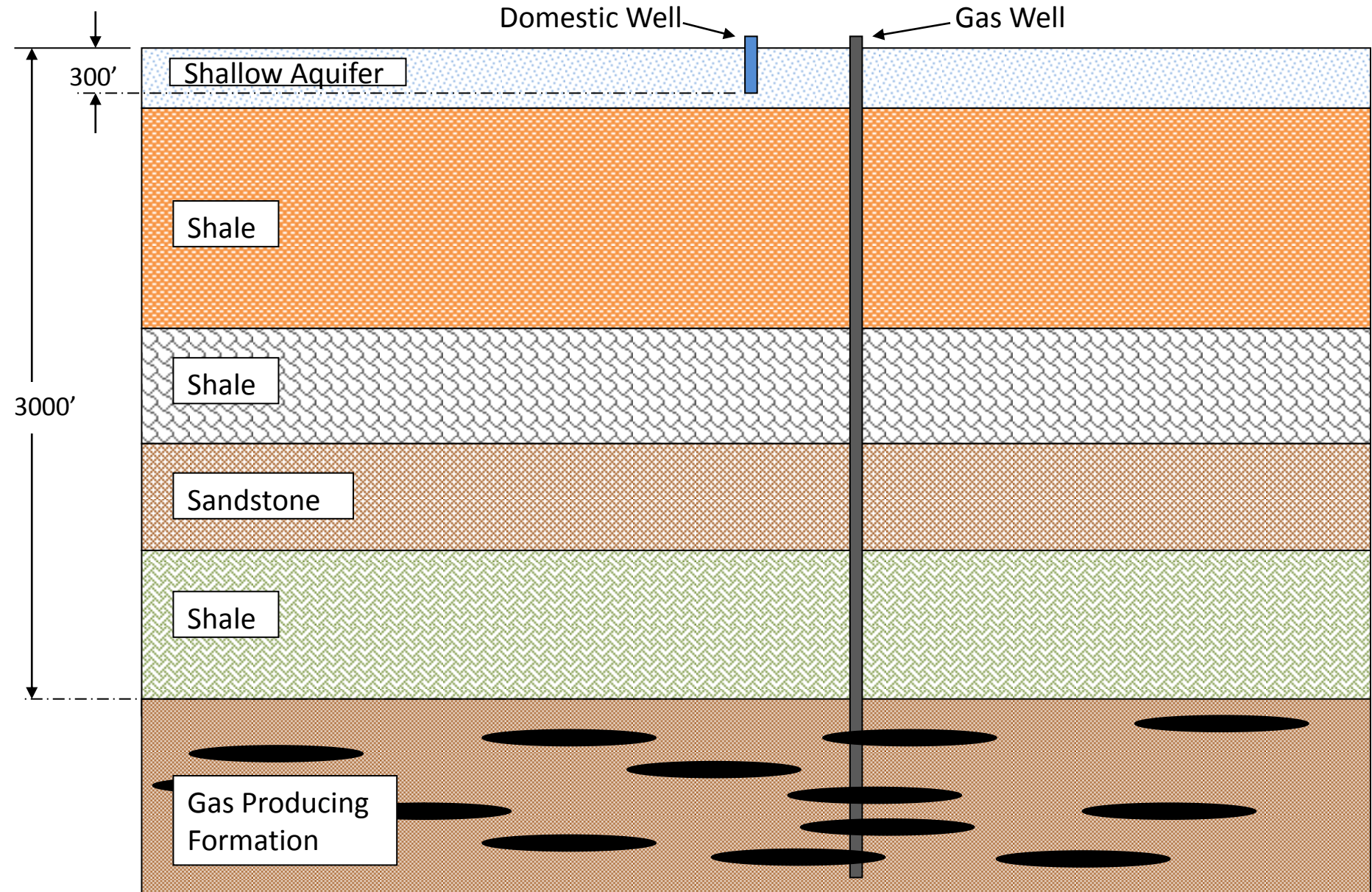


Coal Seam in Geologic Cross-Section

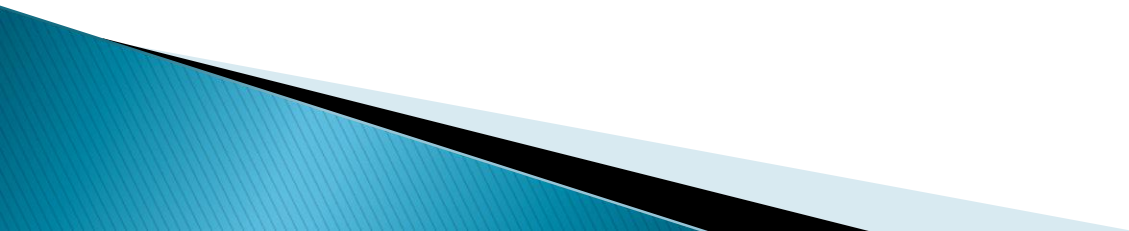




Example of Gas Well to Water Well Isolation



Findings of the Colorado Supreme Court Case 07CA293, Vance v. Wolfe



What did Vance v. Wolfe find?

- ▶ Coal bed methane wells that produce water make an “appropriation” of water for beneficial use.
 - Must obtain well permits from State Engineer
 - If tributary, must replace injurious out-of-priority stream depletions
- ▶ Non-Coal bed methane wells that produce water
 - Permit is dependent on subsequent use
 - If tributary, must replace injurious out-of-priority stream depletions

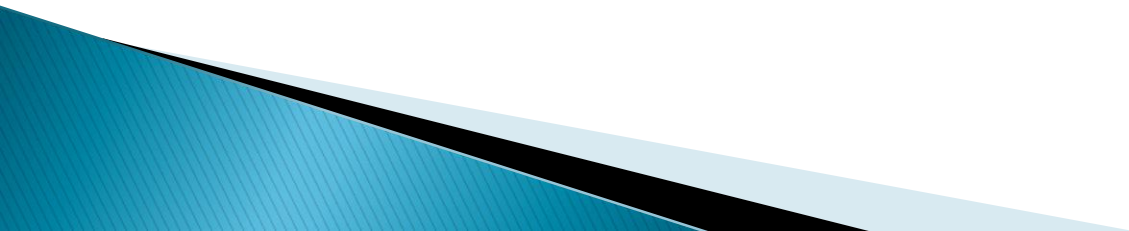
What does Vance v. Wolfe mean?

- ▶ Potential for State Engineer to issue many water well permits
- ▶ Potential for State Engineer curtail wells due to possible injury to surface water rights

However,

- ▶ If any wells produce nontributary ground water, regulation of those wells is reduced or eliminated
- 

Summary of HB 09-1303

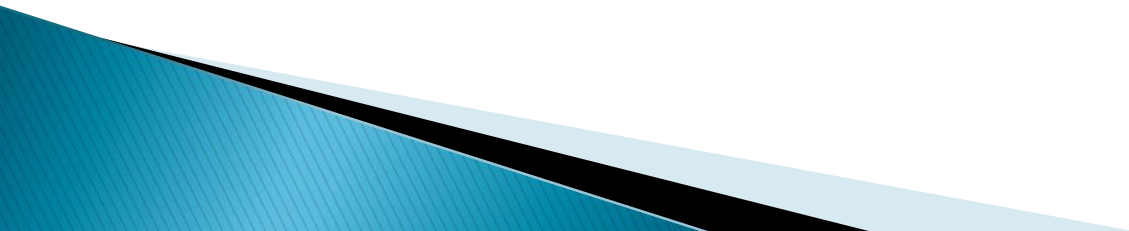


HB 09-1303

HB 09-1303 provides for rulemaking by the State Engineer

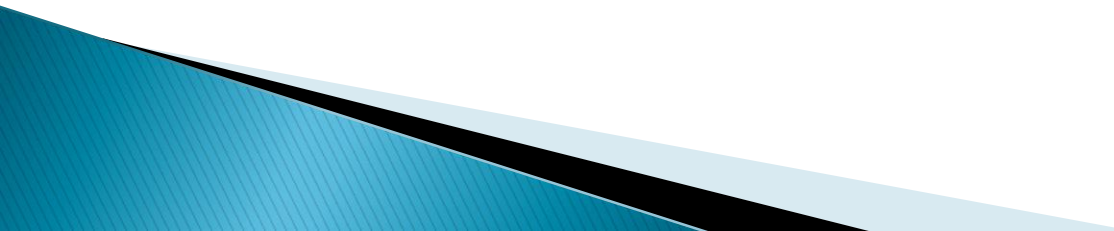
- ▶ HB 09-1303 provides that the State Engineer may adopt rules to assist in the process for determining that ground water meets the definition of *nontributary*.
- ▶ Scope of rulemaking
 - Identify methodologies, assumptions, accepted values, definitions, etc.
 - Consider proposals for nontributary determinations for formations that have, or will have oil and gas production

Why the Focus on Nontributary Ground Water?



Tributary versus Nontributary Ground Water

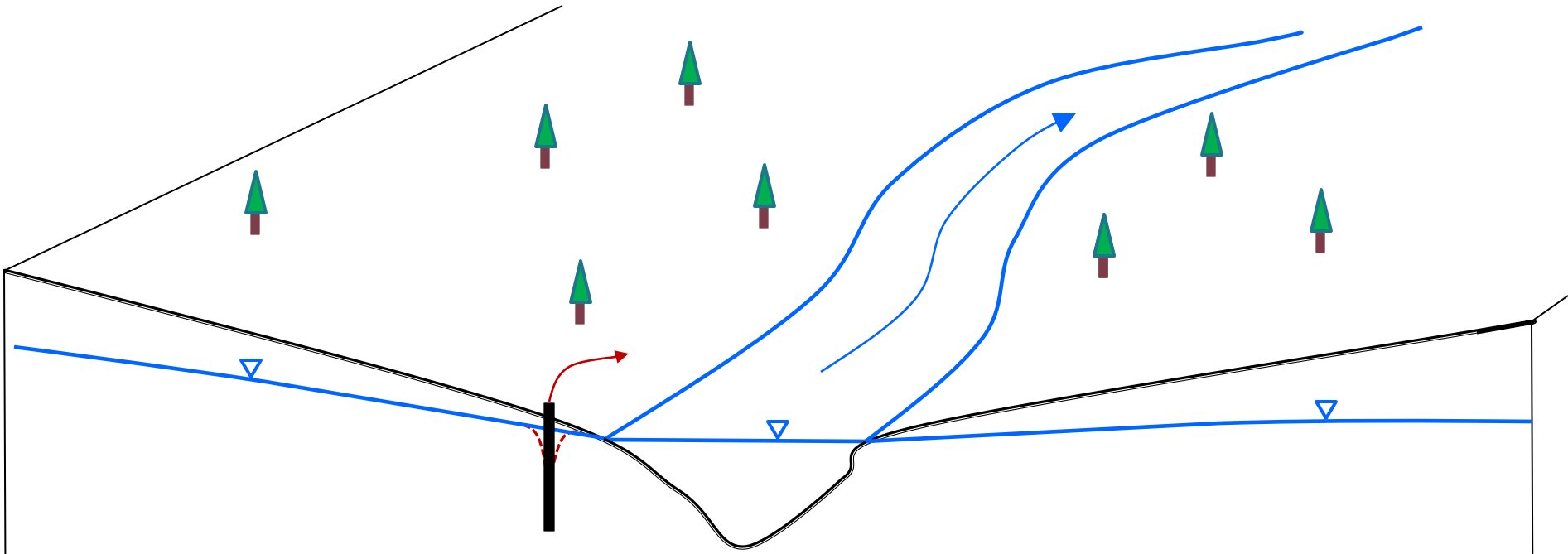
Tributary ground water

- ▶ All ground water is presumed *tributary* to natural surface streams (Colorado case law)
 - ▶ Withdrawal of *tributary* ground water impacts the surface streams and, therefore, senior water rights on the surface streams
 - ▶ That impact, in an over-appropriated stream system is presumed to cause injury (Colorado case law)
- 

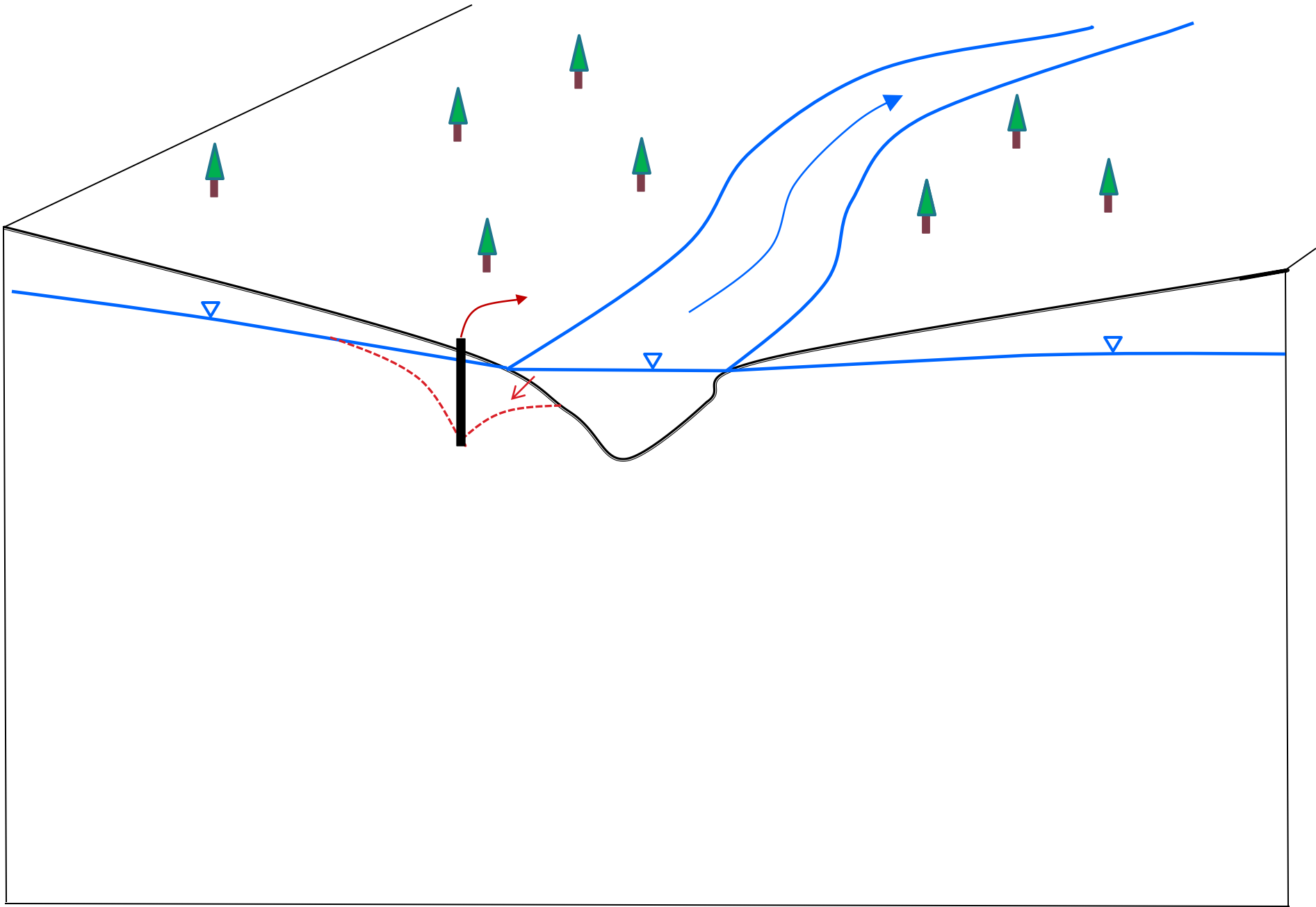
Tributary versus Nontributary **Ground Water**

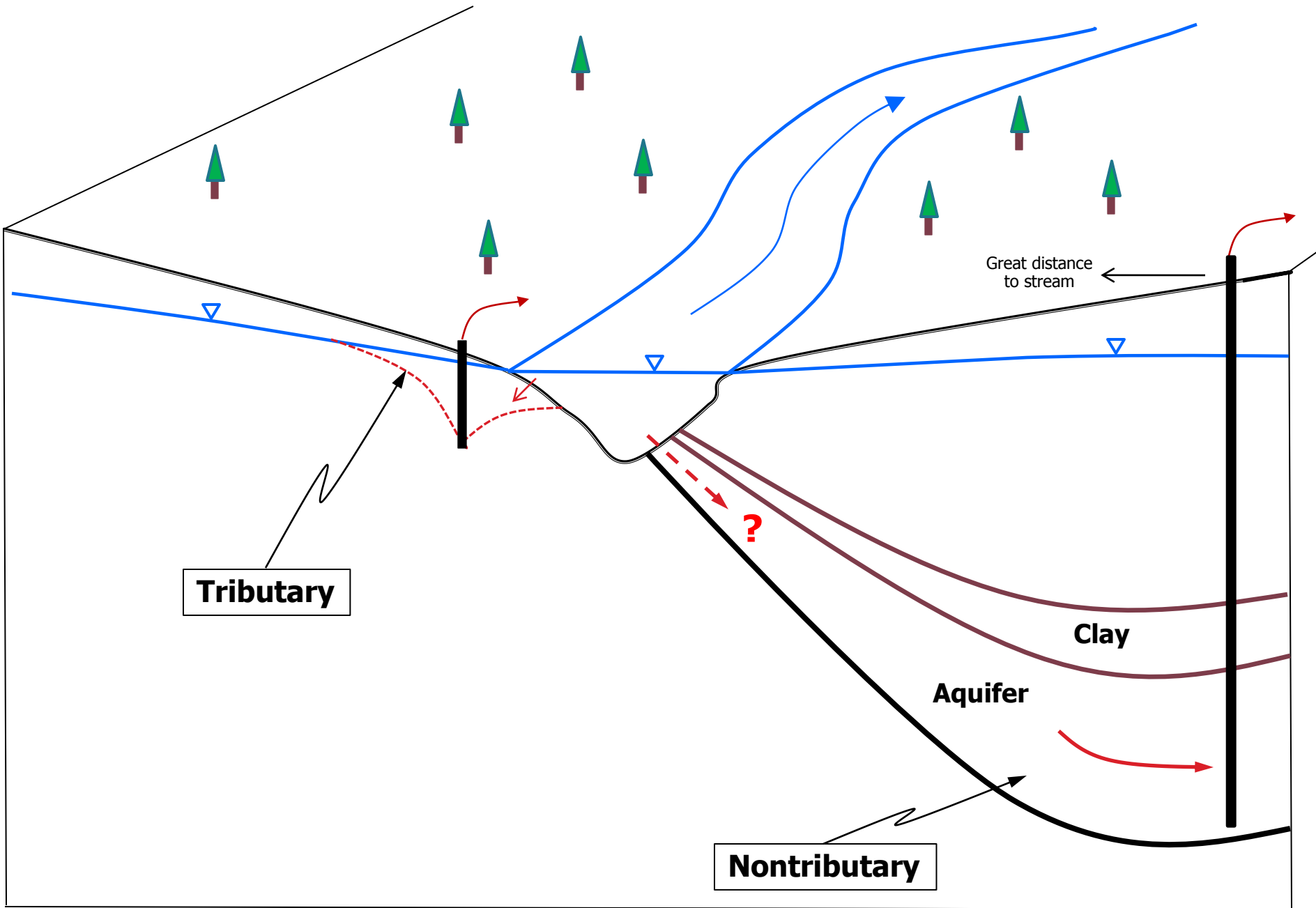
Nontributary ground water

- ▶ Some ground water is so isolated from surface water that the impact is minimal.
- ▶ Colorado statute acknowledges this type of ground water with the term “*nontributary*” and states a quantitative standard.



Tributary and Nontributary -
It's all about ground water's
interaction with surface water





Produced Nontributary Ground Water Law

1985 Law (SB5)

- ▶ Allows nontributary water withdrawal when mining minerals
- ▶ Premised on incidental withdrawal (dewatering of a geologic formation)
 - This necessarily limits the amount that can be withdrawn
 - This necessarily limits the duration

Produced Nontributary Ground Water Law

Therefore, a determination of nontributary is desirable because:

- ▶ No water well permit will be required in many situations
- ▶ No administration under the prior appropriation system
 - No substitute water supply plan or augmentation plan required (we'll discuss this further later)

Produced Nontributary Ground Water Rules

RULES AND REGULATIONS FOR THE DETERMINATION OF
THE NONTRIBUTARY NATURE OF GROUND WATER
PRODUCED THROUGH WELLS IN CONJUNCTION WITH
THE MINING OF MINERALS

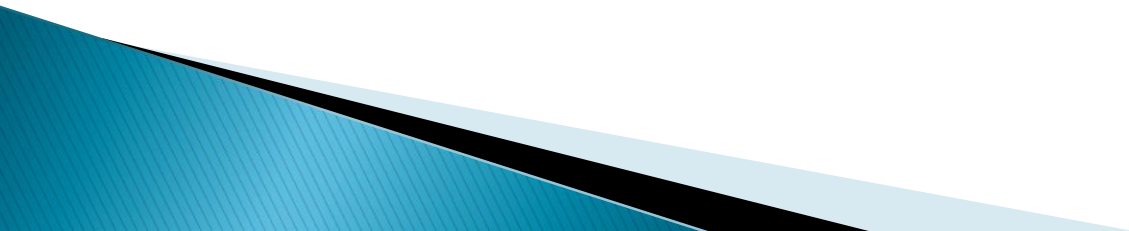
“PRODUCED NONTRIBUTARY GROUND WATER RULES”

2 CCR 402-17

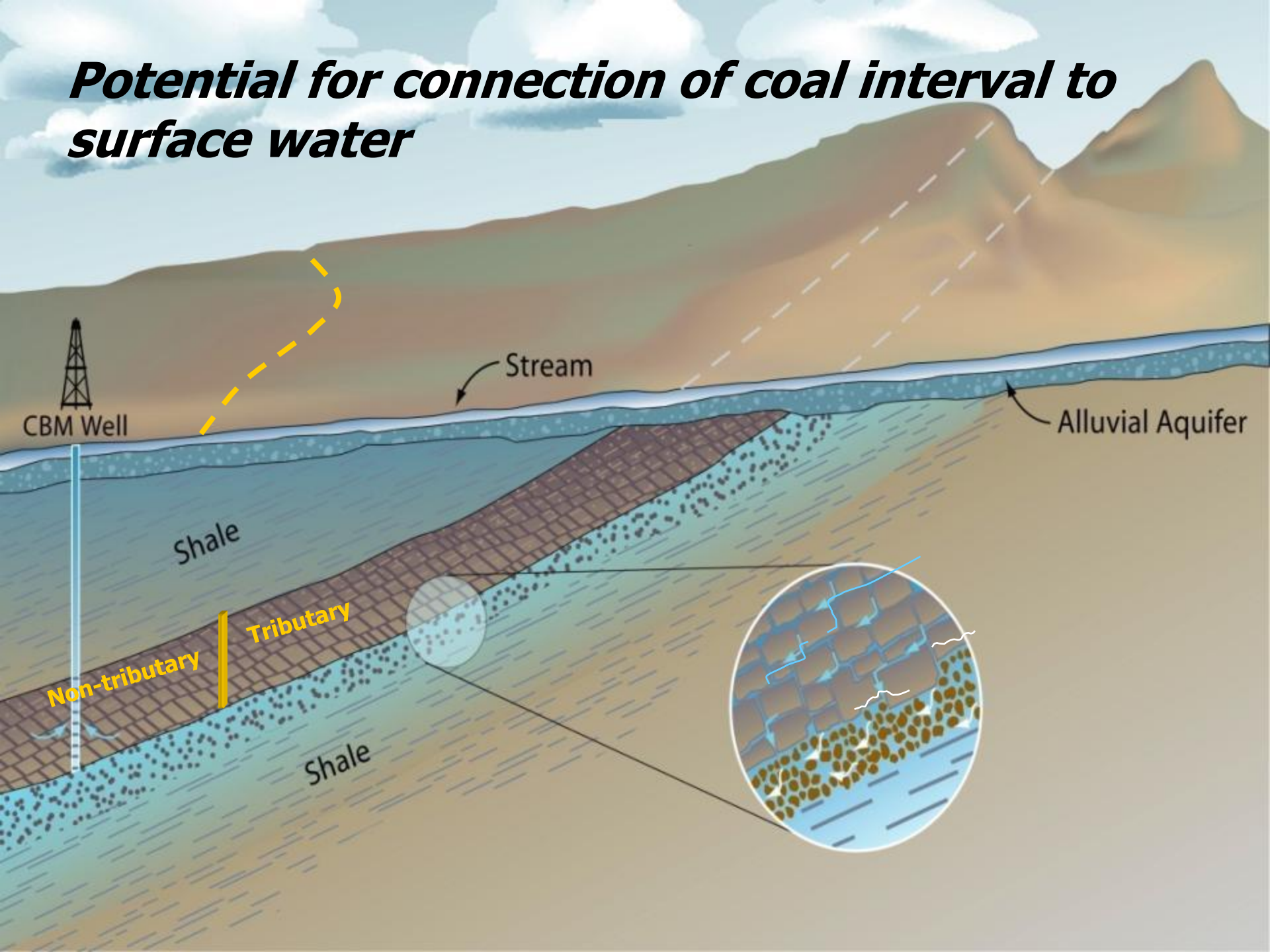


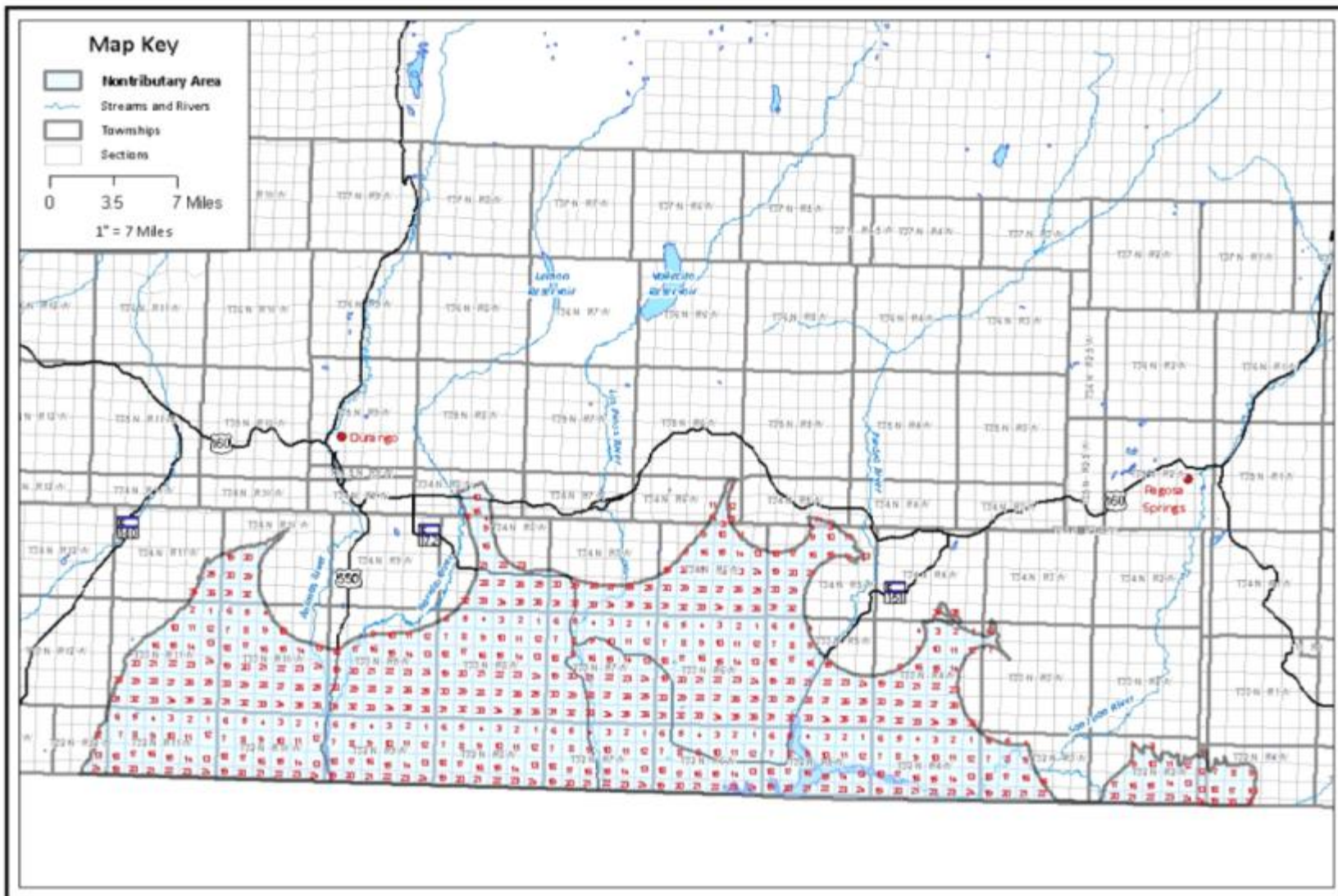
Rules and Rulemaking

(Exactly what kind of rules?)



Potential for connection of coal interval to surface water





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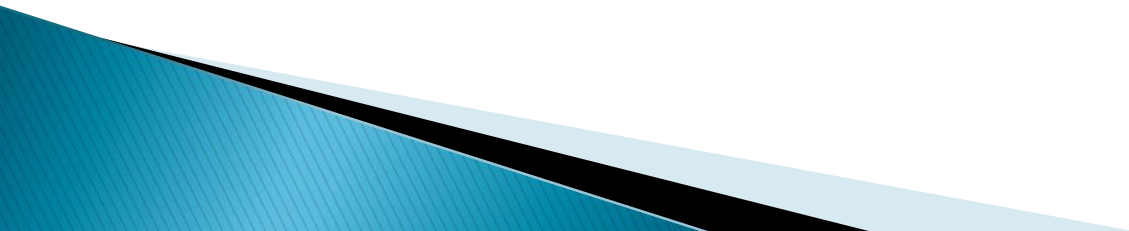
State of Colorado – Division of Water Resources
Produced Nontributary Ground Water Rules; 2 CCR 402-17
Nontributary Ground Water in the Northern San Juan Basin
Fruitland Formation

Map
A-2

Well Permit Requirements

Water Administration

Requirements



Well Permit and Administration Requirements

Beneficial Use ?		
	Tributary	Nontributary
CBM	Permit ?	Permit ?
	Replace ?	Replace ?
Non-CBM	Permit ?	Permit ?
	Replace ?	Replace ?

Well Permit Requirements

Coal Bed Methane (“CBM”) Wells

- Wells that produce ground water through the CBM extraction process are ***putting the water to beneficial use*** and must obtain a water well permit

Well Permit Requirements

Non CBM Wells

- Non-CBM wells that put ground water to a ***beneficial use*** require well permits; if no beneficial use, no permit is required
- How does SB10-165 impact this?

Well Permit Requirements

SB10-165

- Enacted a new statutory provision that nontributary, non-CBM wells do not require permitting if produced water is for mining purposes (injection, evaporation, percolation, disposal, road spreading, well construction, equipment washing, discharge, etc.)

Well Permit Requirements

No Subsequent Beneficial Use		
	Tributary	Nontributary
CBM	Permit?: Yes	Permit?: Yes
	Replacement required?: Yes¹	Replacement required?: No
Non-CBM	Permit?: No	Permit?: No
	Replacement required?: Yes¹	Replacement required?: No

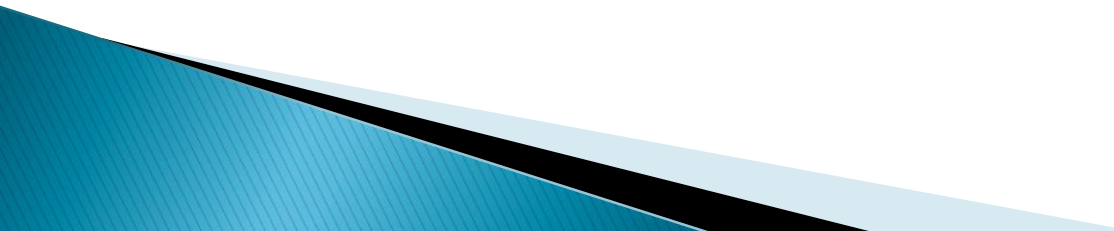
1. For depletions that impact an over-appropriated stream. No replacement is required for depletions that impact a stream that is not over-appropriated.

Well Permit Requirements

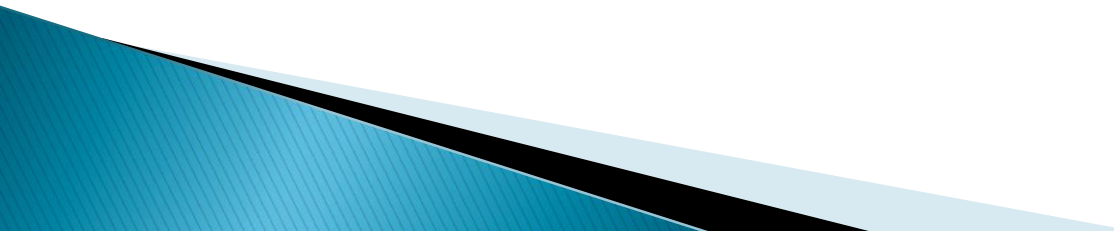
Subsequent Beneficial Use		
	Tributary	Nontributary
CBM	Permit?: Yes	Permit?: Yes
	Replacement required?: Yes¹	Replacement required?: No
Non-CBM	Permit?: Yes	Permit?: Yes²
	Replacement required?: Yes¹	Replacement required?: No

1. For depletions that impact an over-appropriated stream. No replacement is required for depletions that impact a stream that is not over-appropriated.
2. No permit required if “Subsequent Beneficial Use” is limited to uses in SB-165

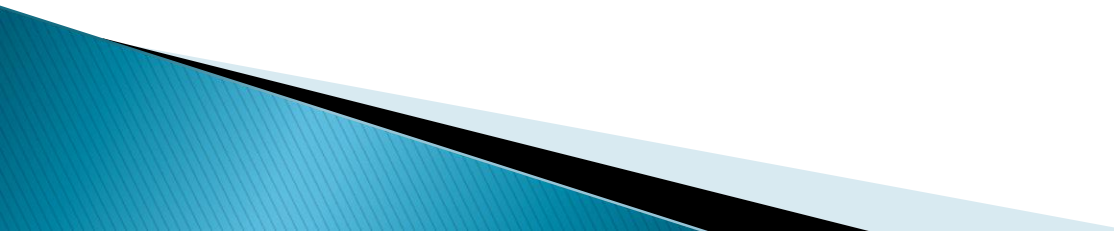
What's happening now?

- ▶ The State Engineer's staff issued well permits for approximately 5,600 CBM wells
 - ▶ Oil and gas operators have filed applications in water court to obtain judicial approval of augmentation plans and water rights for their appropriations of water (southern part of the state)
 - ▶ Oil and gas operators have filed substitute water supply plan applications with the State Engineer (southern part of the state)
- 

What does this mean to landowners?

- ▶ Under 27 year-old law, operators removing water to facilitate mining are not required to obtain additional consent from landowner
 - ▶ Only applies to water removed in course of mining
 - ▶ Can only remove water necessary for mining
 - ▶ No-injury standard applies
- 

What does this mean to landowners?

- ▶ Oil and gas operators that file for water rights in water court will be subject to same standards as other water users—no speculation, no injury, administered in priority.
 - ▶ Division Engineer will hold oil and gas operators to these standards.
 - ▶ If you own a water right, you can file a statement of opposition in water court.
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What's happening now?

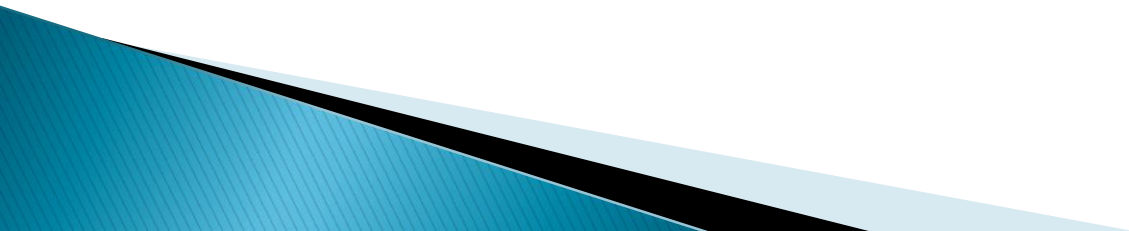
- ▶ Water users filed a lawsuit against the State Engineer
 - Find that State Engineer did not have authority
 - Find that there were procedural issues
 - Determine the effect of rules in water court
- ▶ HB11-1286
 - Clarify authority of State Engineer
 - Clarify the effect of the Rules in limited cases
 - Signed by the Governor on May 4, 2011

What's happening now?

- ▶ Division 1 Judge Rules on Lawsuit
 - September 8, 2011
 - Affirmed the State Engineer's authority
 - Found no procedural issues
 - Clarified the effect of rules in court
 - Fruitland formation rule in Division 7 set aside on jurisdictional question
- ▶ Fruitland formation rule
 - January, 2012, the judge's decision was appealed to the Supreme Court
 - January 17, 2012, the Division 1 judge stayed the decision on the Fruitland Rule pending the outcome of the appeal

Hydraulic Fracturing

Division of Water
Resources' Involvement



Division of Water Resources' Purview

- ▶ What sources are allowed for well construction
- ▶ Landowners' adjudication of Denver Basin water rights

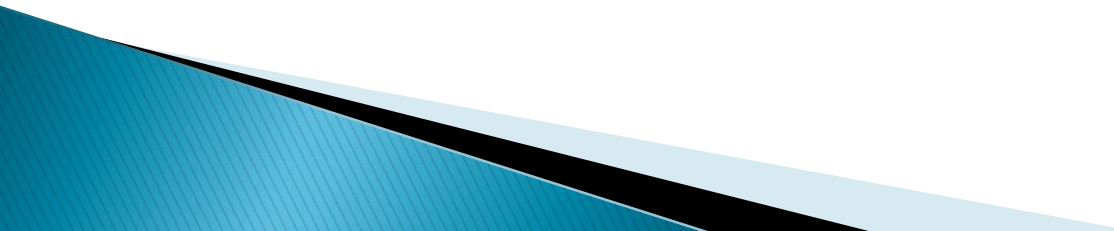
Allowed Sources

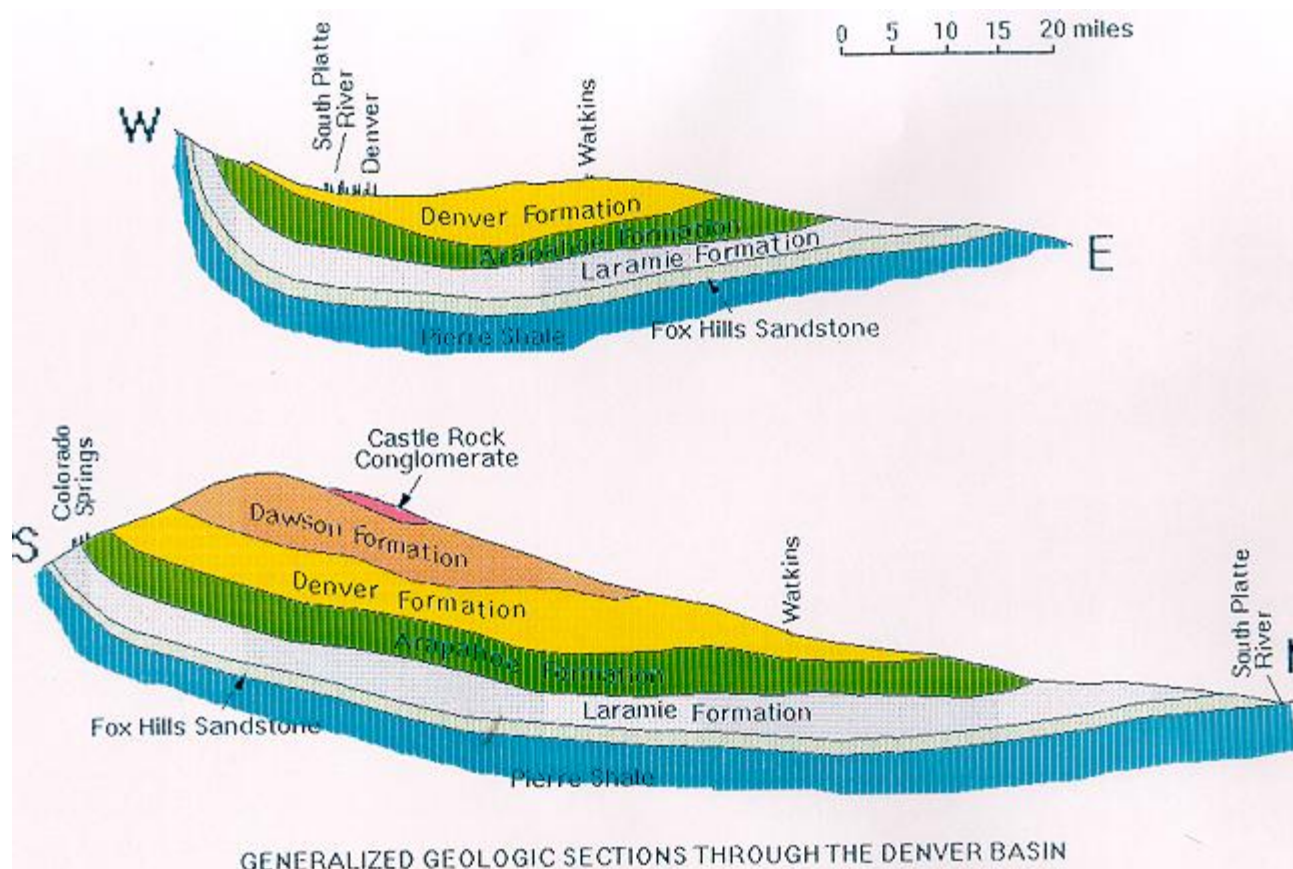
- ▶ Water must be legally allowed
 - Leased or purchased irrigation water
 - Must be changed
 - Municipal lease/purchase (industrial uses)
 - New diversion, in priority
 - Fully consumable water
 - Leased/purchased effluent
 - Denver Basin nontributary ground water
 - Tributary ground water
 - Nontributary ground water
 - Produced water
 - Must be nontributary (SB10-165) or
 - Augmented and decreed tributary

Division of Water Resources' Purview

- ▶ What sources are allowed for well construction
- ▶ Right to use of Denver Basin ground water

Landowners' adjudication of Denver Basin water rights

- ▶ Advantages
 - ▶ Is it necessary?
 - What is the law?
 - ▶ Distinguish Denver Basin aquifers from other gas formations determined to be nontributary
 - ▶ What are the operators' rights to nontributary ground water
 - Again, what is the law?
- 



Nontributary Water Rights

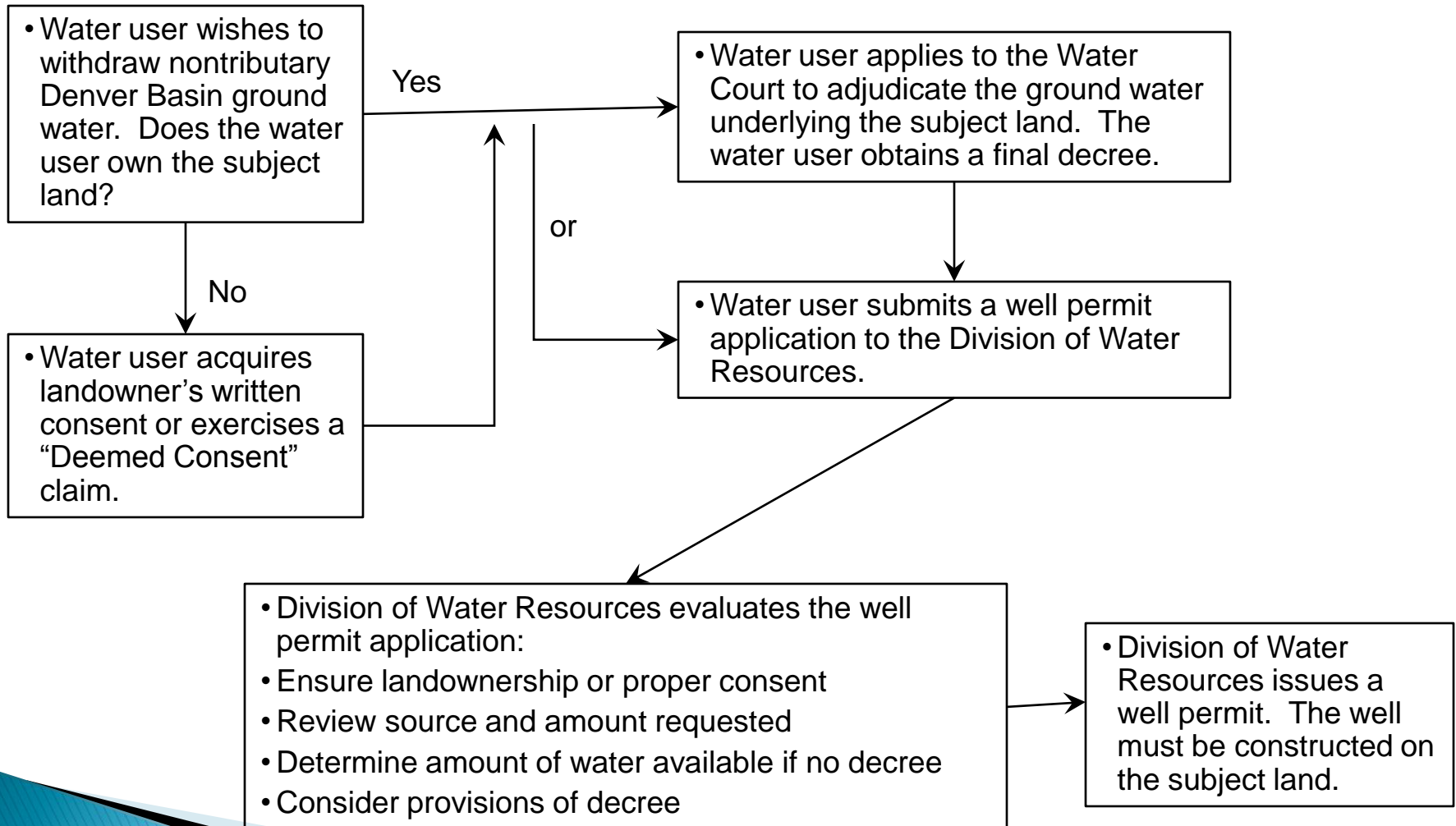
1973 Law (SB213)

▶ Land ownership-based

- How is the water right quantified?
 - Physical amount is based on aquifer properties (thickness and specific yield)
 - Withdrawal is limited to one percent annually of physical amount annually (“100-year aquifer life”)
- Requirements
 - Must have land ownership
 - Must demonstrate nontributary
 - Must determine “saturated thickness” and “specific yield”

Denver Basin Ground Water, outside Designated Ground Water Basins

Start



Questions?

