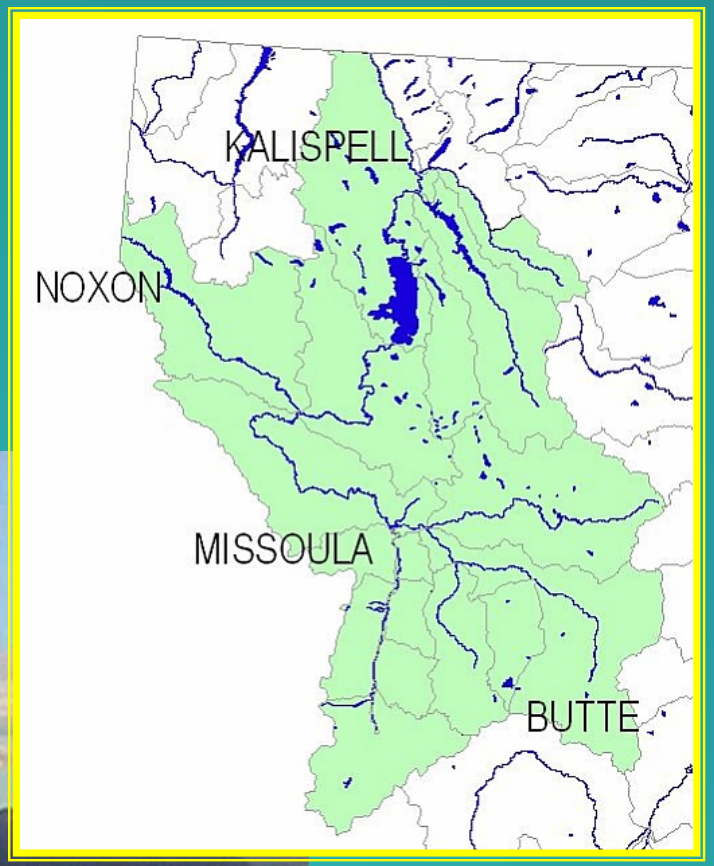
"Water for Future Projects"

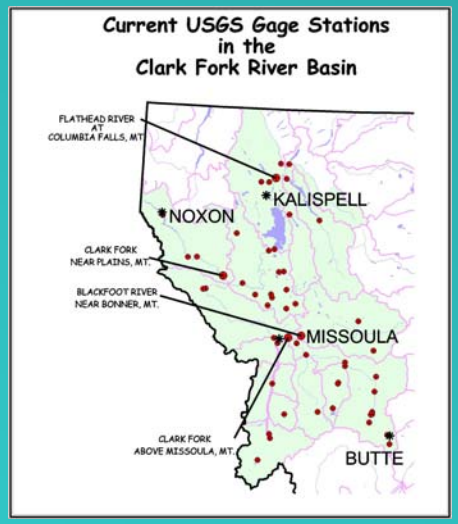
Are New Approaches Needed?

Clark Fork Basin

An Orientation



Basin Water Yield below Noxon MT



USGS Water Resources Data

Montana 2003 Period of record 1960-2003

- Annual Discharge: 15,014,732 Acre Feet
- Spring Runoff: April – 1,349,828

  May - 2,488,427

  June - 3,008,409

  July - 1,419,719

subtotal 8,266,484 (55%)

- 90% exceedance: 7,260 cubic feet/second (cfs)
- 50% exceedance: 15,000 cfs
- Seven Day minimum(s): 2,250 cfs (wy 1963)

  6,280 cfs (wy 2002)

  5,330 cfs (wy 2003)

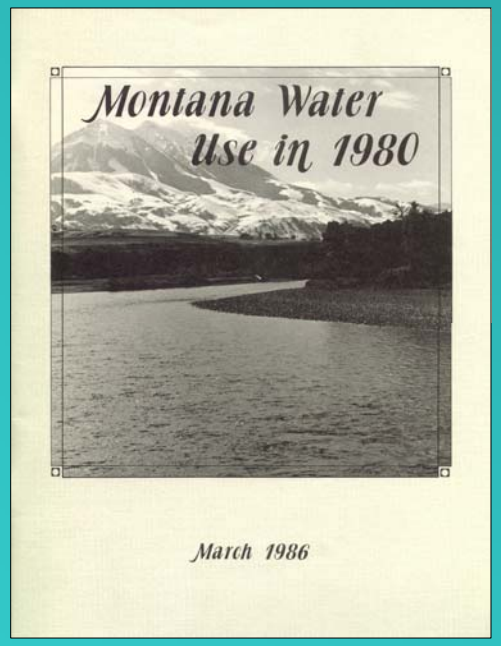
Reservoir Storage

Total 5,933,000 ac-ft
(14% average annual runoff)

- Hungry Horse
  (3.5m ac-ft)
- Flathead Lake
  (1.8m ac-ft)
- Thompson Falls
  (14,970 ac-ft)
- Noxon Rapids
  - (334,600 ac-ft)
- Milltown dam (minimal)

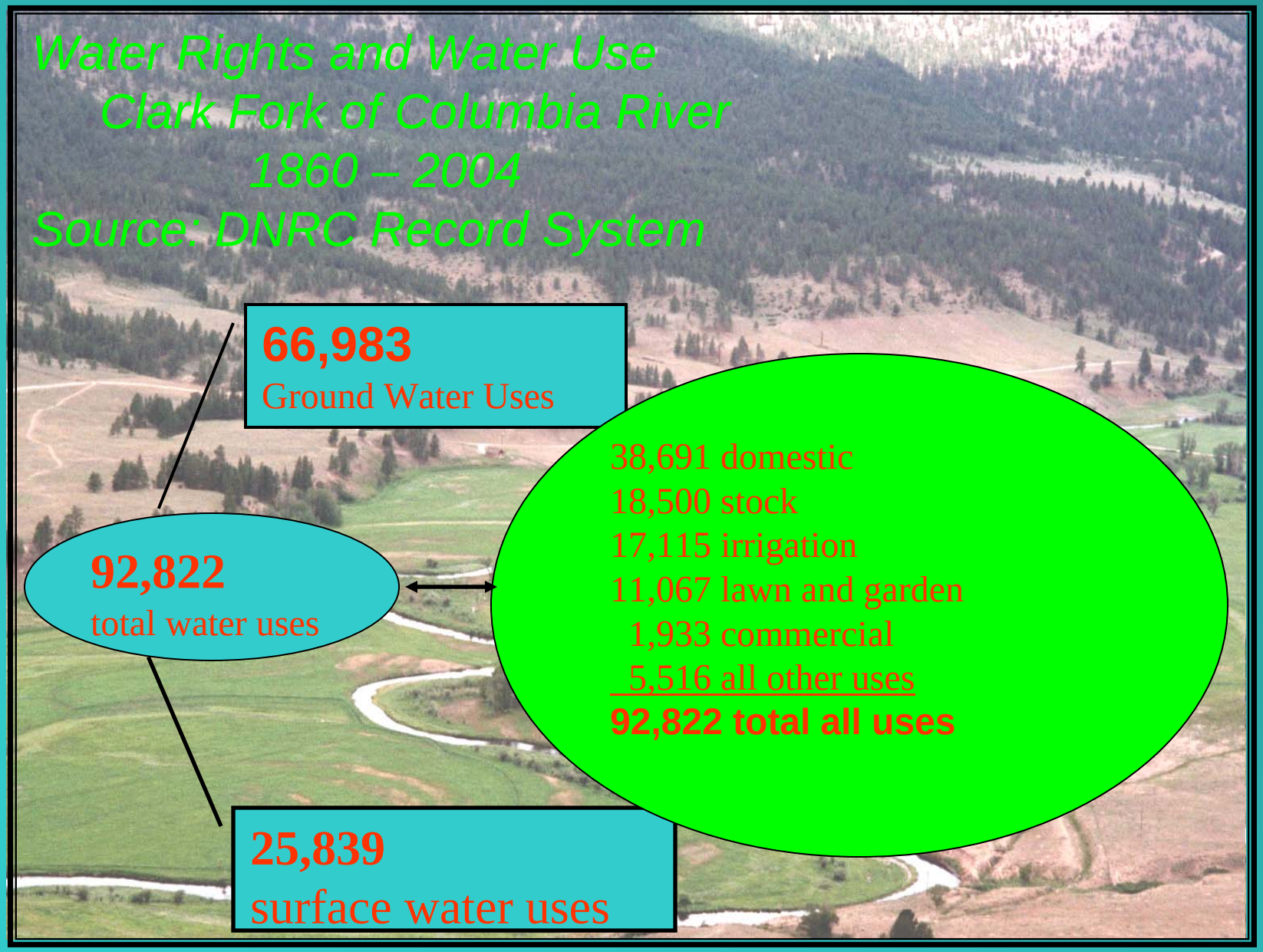
- DNRC-
  - E. Fk. Rock Ck,
  - Nevada Res.,
  - Painted Rocks
  - (60,000 ac-ft)
- Georgetown
  - (31,040 ac-ft)
- Flathead Reservation
  - (about 14 small sites),
  - 157,740 ac-ft
- Lake Como
  - 34,920 ac-ft

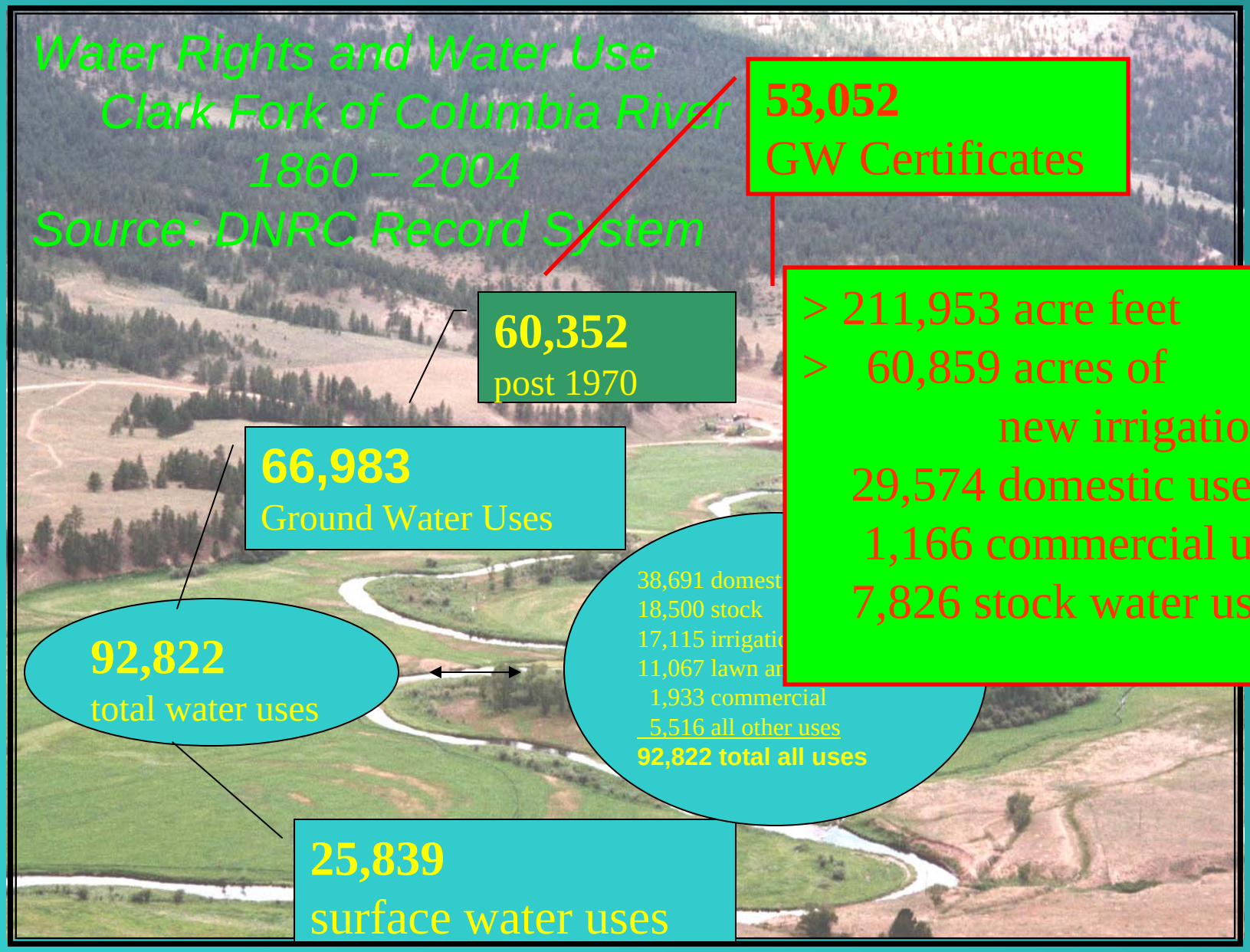
Western Montana Water Use



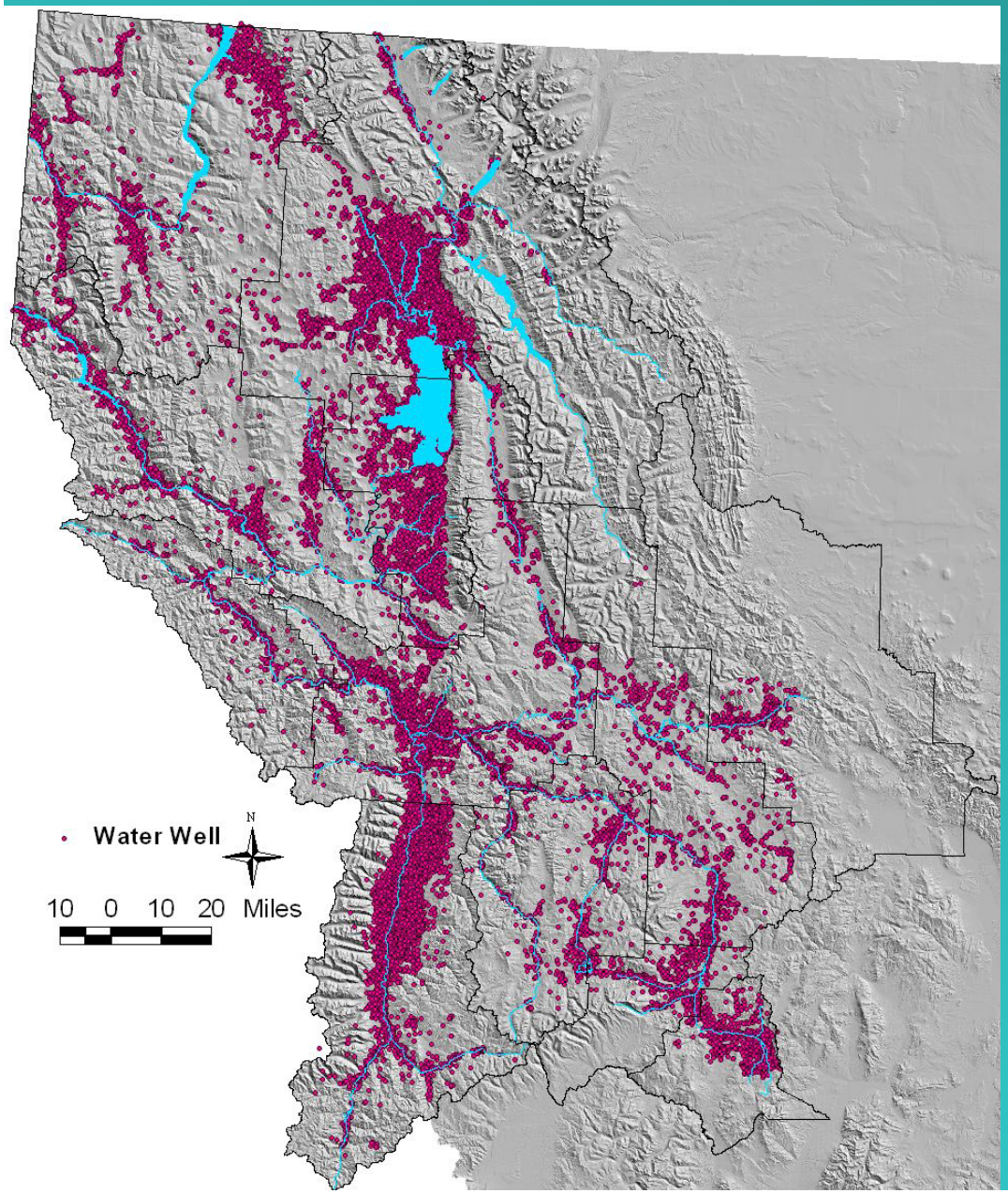
- Withdrawal (Est.)
  - 29,550,041 acre feet
- Consumed (Est.)
  - 551,836 acre feet

- **From**
- "Montana Water Use in 1980"
- MT DNRC, published March 1986

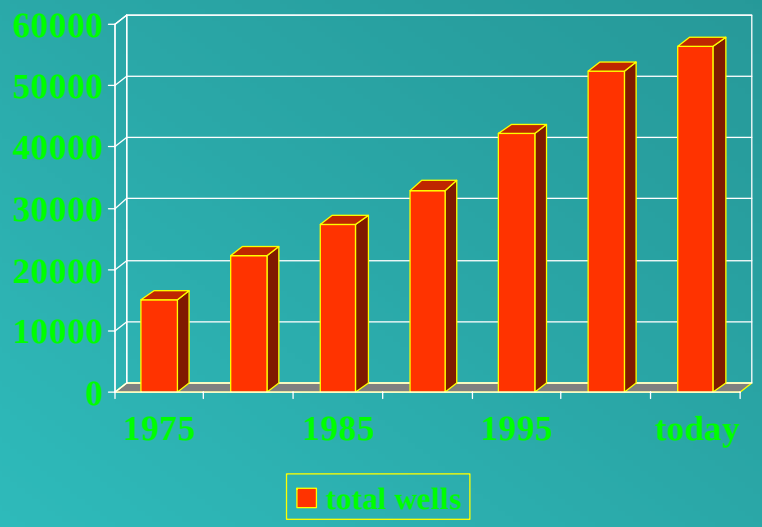

Water Rights and Water Use
Clark Fork of Columbia River
1860 – 2004
Source: DNRC Record System
66,983
Ground Water Uses
92,822
total water uses
38,691 domestic
18,500 stock
17,115 irrigation
11,067 lawn and garden
1,933 commercial
5,516 all other uses
92,822 total all uses
25,839
surface water uses


Water Rights and Water Use
Clark Fork of Columbia River
1860 – 2004
Source: DNRC Record System
53,052
GW Certificates
60,352
post 1970
66,983
Ground Water Uses
92,822
total water uses
38,691 domest
18,500 stock
17,115 irrigatio
11,067 lawn ar
1,933 commercial
5,516 all other uses
92,822 total all uses
25,839
surface water uses
> 211,953 acre feet
> 60,859 acres of
new irrigation
29,574 domestic uses
1,166 commercial use
7,826 stock water uses

Wells in the Clark Fork Basin

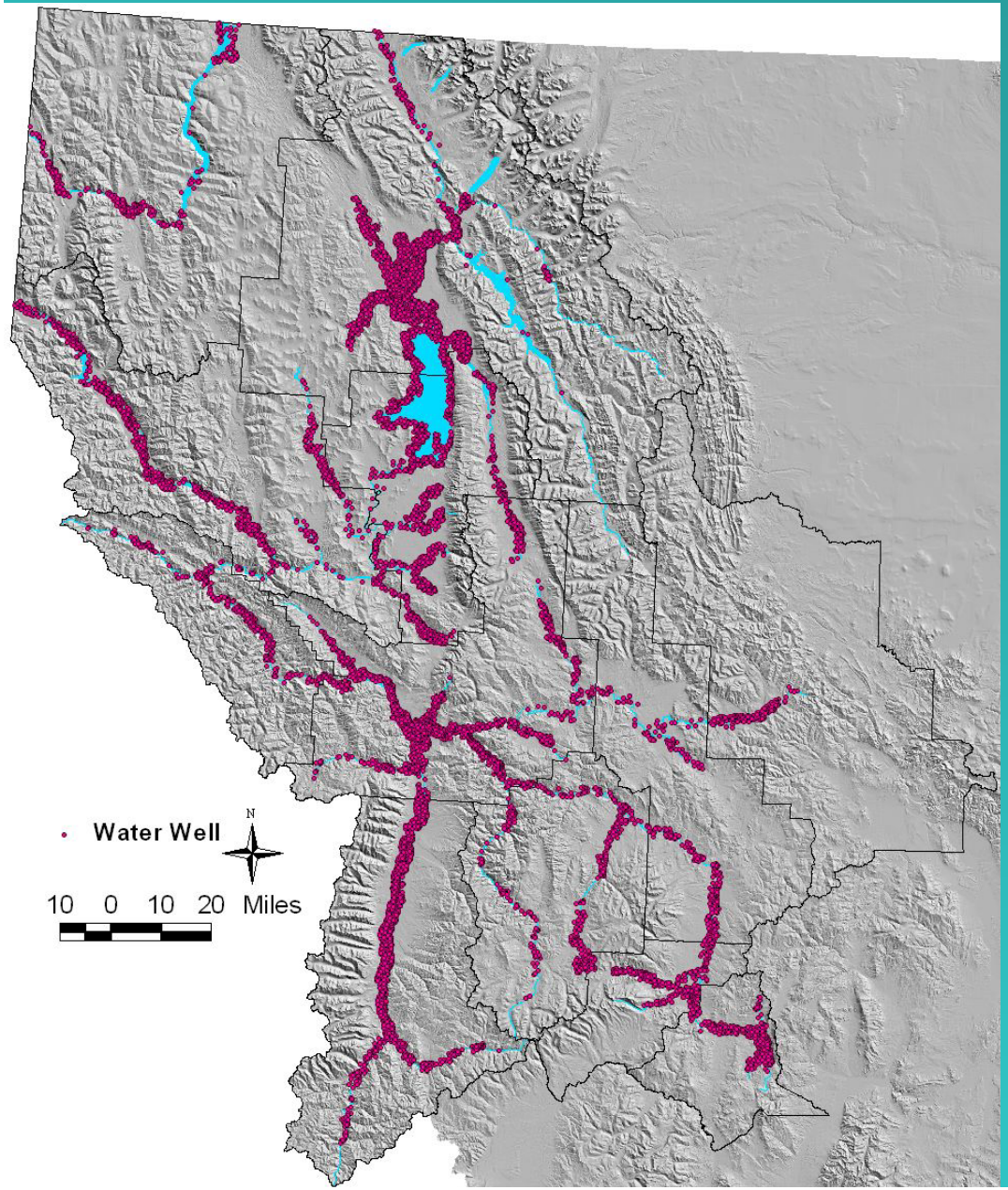


There are records of More than 58,000 wells



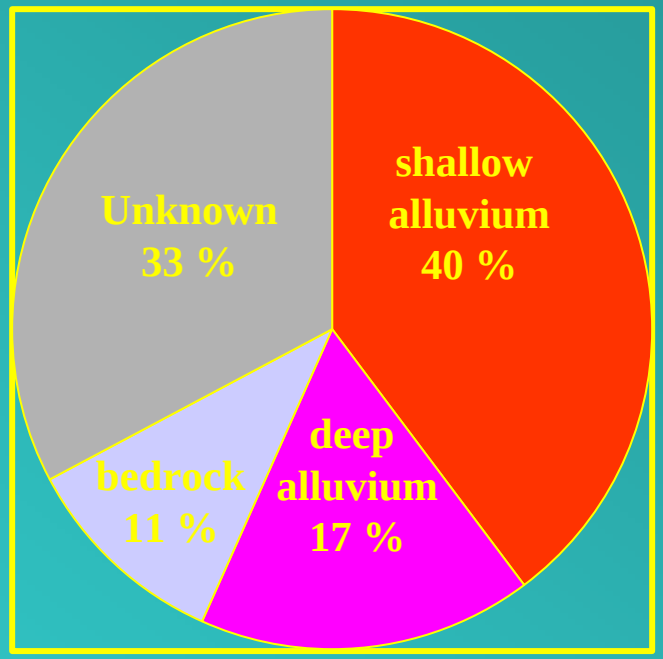
40 % of all wells have been installed since 1990

Wells Within 1 Mile of Major Streams



52 % of the wells (30,400) are located within 1 mile of streams

…most, but not all, are in shallow alluvium



Over - Appropriation

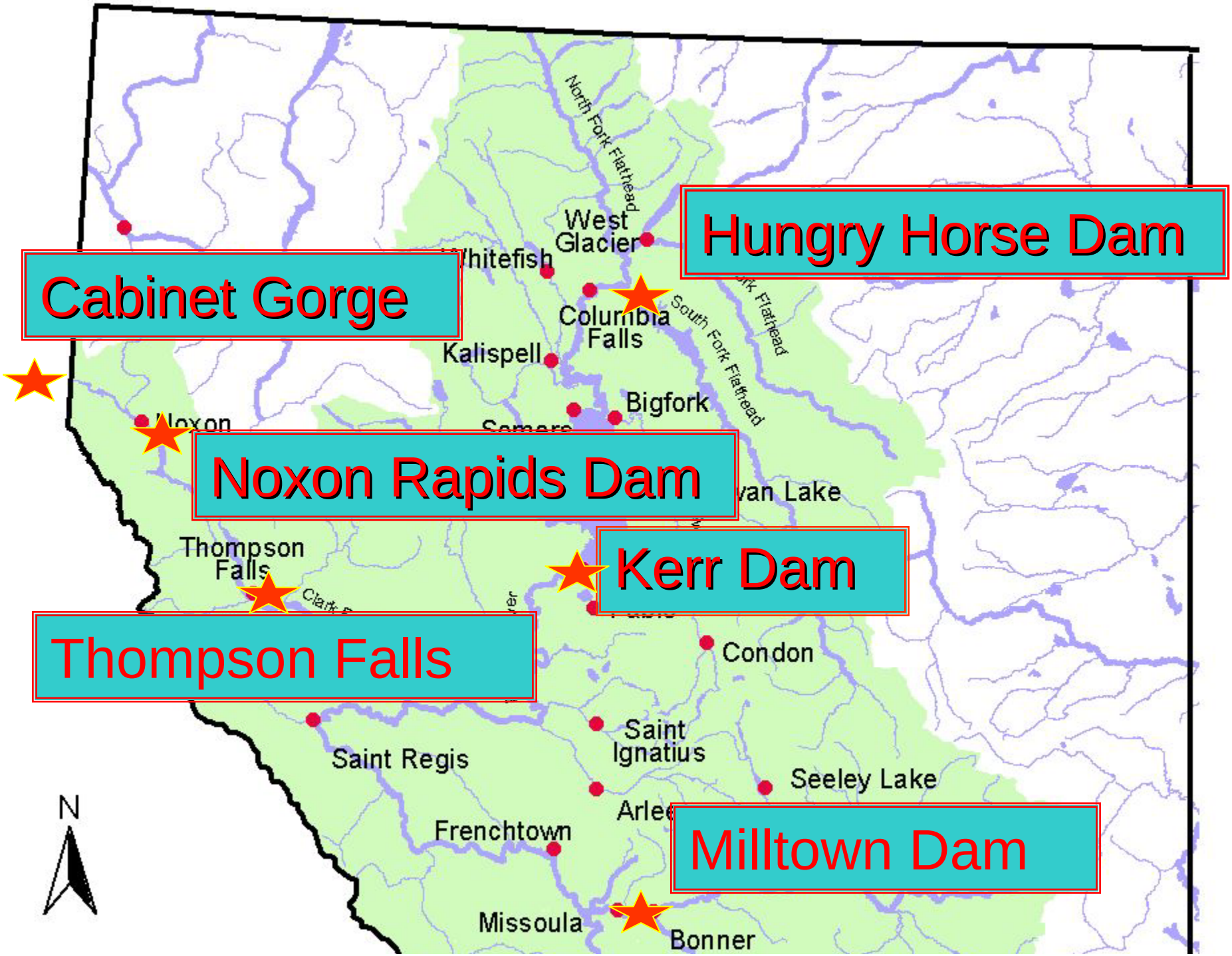
- Clark Fork River at 4 cfs

- Minimum flow for aquatic life support = 40 cfs

Basin Closures:

via

Legislation,
Adm. Rule,
Compacts,
&
Judicial Decision


Hungry Horse Dam
Cabinet Gorge
Noxon Rapids Dam
Kerr Dam
Thompson Falls
Milltown Dam
North Fork Flathead
West Glacier
Whitefish
Columbia Falls
Kalispell
South Fork Flathead
Bigfork
Thompson Falls
Condon
Saint Ignatius
Saint Regis
Seeley Lake
Frenchtown
Missoula
Bonner
N

Hydropower & Water Use

- Example: Hydropower Demand
  - Noxon Rapids water rights total 50,000 cfs,
  - Rights filled on average only 8% of the time,
  - Predominantly during 22 days in May and June of wet years.

- Affected parties:
  - Surface water uses (& connected ground water)
  - Junior water users appear to be a risk much of the time
    - Noxon (1951, 1959 & 1974),
    - Kerr (1920) and
    - Thompson Falls (1909 & 1992)

The risk that these constraints will actually be imposed is unknown.

Past Policy Actions

I. New Appropriations Program:

1. Permitting (new water rights)

2. Water Reservations
   (future water & instream water)

3. Changes
   (Modifying Existing Water rights)

Getting a New Water Right

- Single and Exclusive!
- Must apply for & receive a ***permit*** via DNRC.
  - Must apply <u>before</u> development.
  - Process is public and fact based.
- End product is a "Provisional Permit"
  - The MOST Junior Water Right in the system,
  - May have operational conditions, and
  - Subject to Water Commissioner's administration.

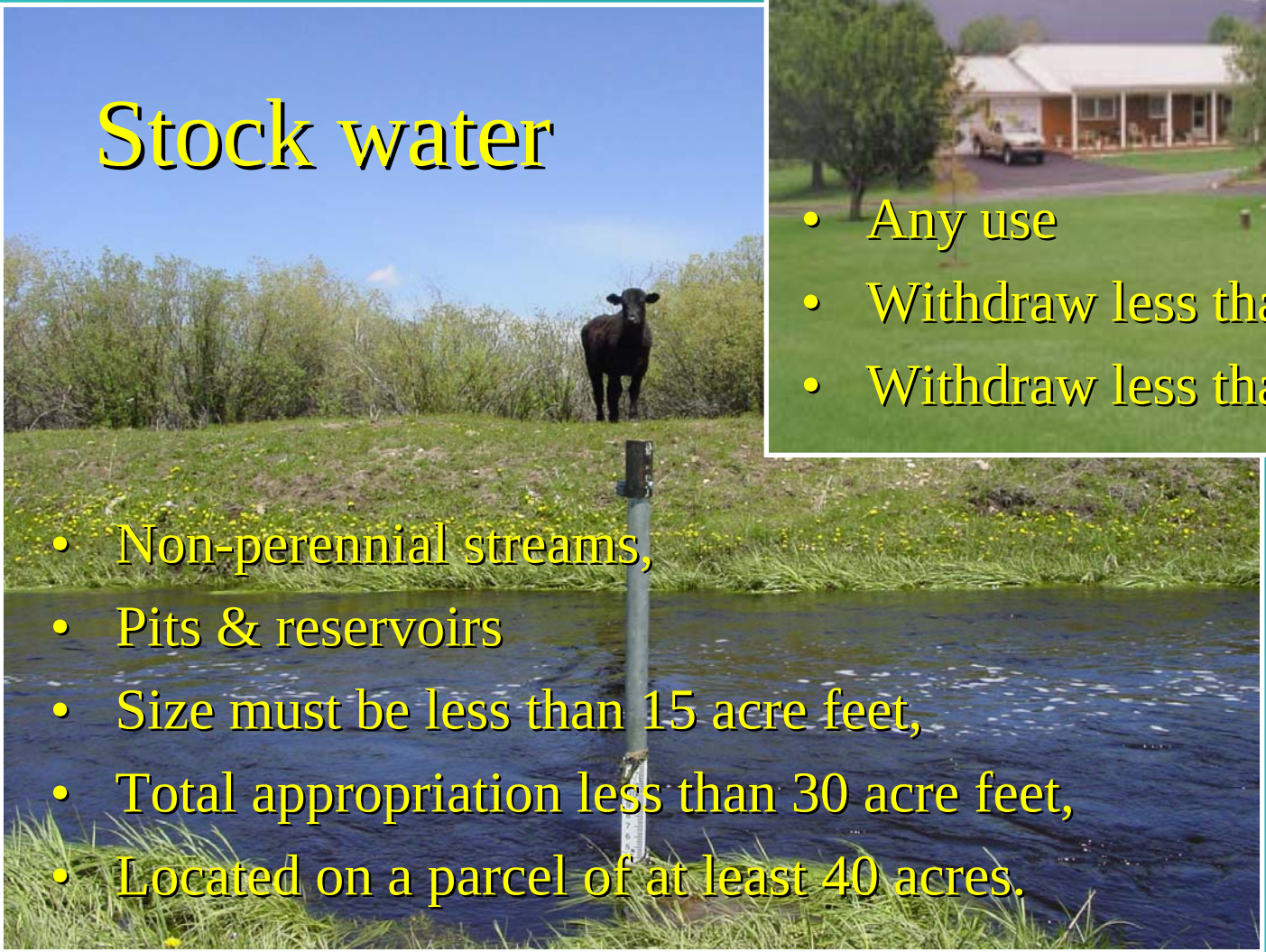
85-2-301 MCA 2001

Exemptions:

Small Wells

- Any use
- Withdraw less than 35 gpm,
- Withdraw less than 10 acre ft/year

Stock water



- Non-perennial streams,
- Pits & reservoirs
- Size must be less than 15 acre feet,
- Total appropriation less than 30 acre feet,
- Located on a parcel of at least 40 acres.

Past Policy Actions - cont.

II. Water Reservation Statute

(85-2-316 MCA)

III. Emphasis on market exchanges:

a. Temporary Change of Use provisions (85-2-407 MCA)

b. Salvage Statute (85-2-419 MCA)

c. Instream flow water leasing (85-2-408 and 436)

Past Policy Actions - cont.

IV. Water Marketing

Water Leasing Program (85-2-141 MCA)

- State run program
- DNRC is to hold and acquire water
- Water from new or existing storage reservoirs
- Specific reference to federal reservoirs
- Limited to 50,000 acre feet
- State remarkets water via leases
- State's response to export of water and to future water supplies – not yet implemented

Past Policy Actions – cont.

V. Water Storage: Dams

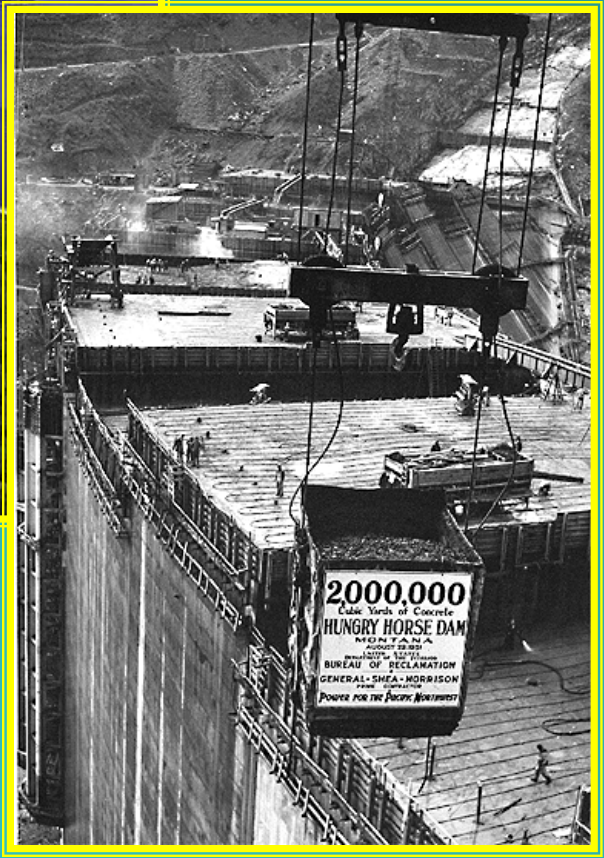
- Developed state policy. (85-1-701 MCA)
- Priority to enhancements @ existing sites,
- Water Storage Account developed (get $ figure),
- Increased access to grant funds, (85-1-602 (2) MCA)

- Constraints to new storage:,
  - **High costs,**
  - **Are the best sites used (?),**
  - **Environmental Impacts,**
  - **Long term mitigation, &**
  - **Ability & Willingness to pay**

If existing water supplies won't support new basin water uses,

Are there New Alternatives And Opportunities?

1. How About Existing Storage?

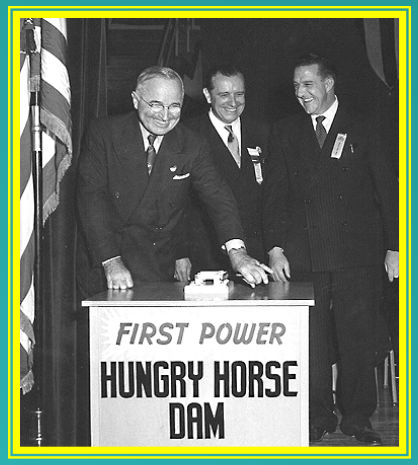


House Joint Resolution 3

(2005 session)

Funding to DNRC for BOR analysis

(2007 session)



- Realities
  - Existing uses
    - (Power, flood control, fish mitigation)
  - Challenges
    - Prevent conflicts with existing use & mitigation activities,
    - $ for investigation & analysis, and
    - Marketing / contracting options.

2. Active Water Leasing Program

- Should the "state" lease water as an alternative?
- Acquire both Stored & Natural Flows
- Lease would be based upon
  - "real", "wet", & "secure" water rights.
- Leases set for adequate time to capture values
- Charges should cover costs of acquisition & mgmt.
- Water could be easily renewed or reallocated.

3. Substitute Water Supply Plans

1. Most new, junior uses, are domestic and urban use
2. Most new use do NOT adapt well to prior appropriation.
3. Need some mechanism to protect from water shortage.

- Substitute plan allows “out of priority use”
  - Depletions by junior use trigger plan implementation
    - In times of shortage, the Plan finds replacement water to mitigate water consumed by the junior use, and
    - Replacement is to occur in such a manner as to make the senior user whole.

4. "Changes of Use"

(Policy questions)

Redefine a "Change" to include or allow:

1. **Altering the Period of Diversion / Use**

2. **Method of Application Review**

   (conversions from flood to sprinkler review to assess third party affects)

3. **Allow Inefficiencies of flood irrigation to become a recognized use i.e. "ground water storage" or "augmentation"**

5. New Storage:

Ground Water Recharge

Ground Water

- “non-structural storage”
- Technical Management Issues
- Statutory Authorizations and Protection.
- Water Quality Concerns
- Geotechnical concerns

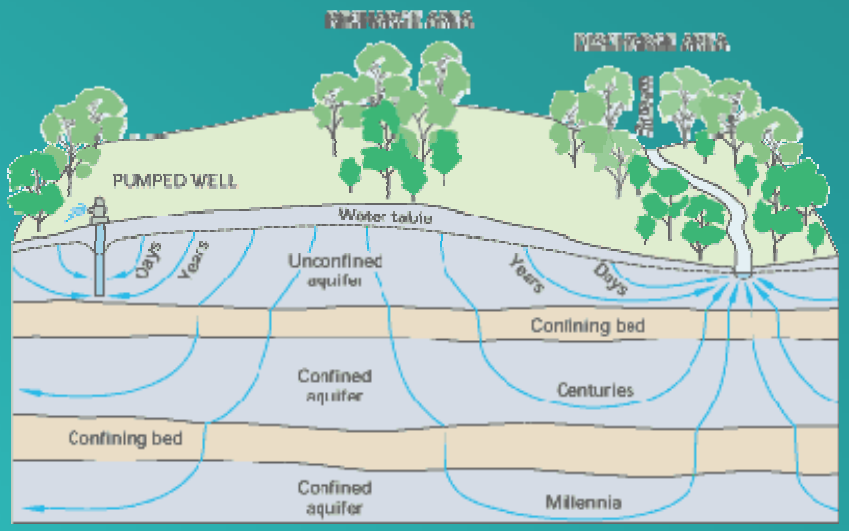
6. Water Banking

1. Facilitate the transactions of water exchanges.
2. Manage both the acquisition and marketing of water.
   - Acquire rights and lease
   - Acquire contracts from storage and “remarket”
   - Create new storage and market
   - Markets “augmentation or mitigation” credits
3. Who? (DNRC, a new entity, use Conservancy Districts)

7. Ground & Surface Water:

A single resource

- Benefits:
  1. Increased flexibility
  2. Refection of natural systems
  3. Reduces future risks



- What are our challenges?
  - May need additional system characterization.
  - Need development of quantifiable basin models.
  - Need enhanced monitoring systems.
  - Outreach and education!
  - Undoubtedly will result in legislation or litigation.

8. Increased Administration

Water Commissioners:

(Basin wide, Sub-basins, Stream reach)

- After Adjudication Water Rights Will Be Decreed
- Who has
  - the right to use,
  - how much water, over what period,
  - where, and for what purpose will be documented.

– All water rights will be administrable.

Discussing Water Rights, A Western Pastime

9. Water Conservation

Efficiencies of use:

- When does return flow end and waste begin?
- Are economic conditions / scarcity the most effective stimulant?
- Should governments provide incentives?
- Should state develop efficiency standards for water rights?
  »
- Should “waste of water” be defined statutorily?

Today is an Opportunity

We can choose.

Actions will define our future

What do we want?

Water Rights & Uses
Clark Fork Basin (2004)

Analysis of DNRC' s State Centralized Water Right Data Base – Identification of Unique uses by priority date. M Mclane

Purposes	Surface & Ground Water	Surface Water Uses	Ground Water Uses	Surface Water Post 1970	Ground Water Post 1970
All Uses	92,822	25,839	66,983	4,462	56,262
Summary of Similar Uses					
Domestic	39,997	3,914	36,083	1,246	31,779
Gen. Municipal	2,868	433	2,435	68	1,732
Irrigation, including L&G	28,182	12,532	15,650	1,866	13,630
Irrigation	17,115	12,005	5,110	1,387	3,831
Agricultural all	28,200	19,464	16,696	2,466	12,091
Wildlife	1,647	1009	636	466	436
Power Generation	151	127	24	39	11