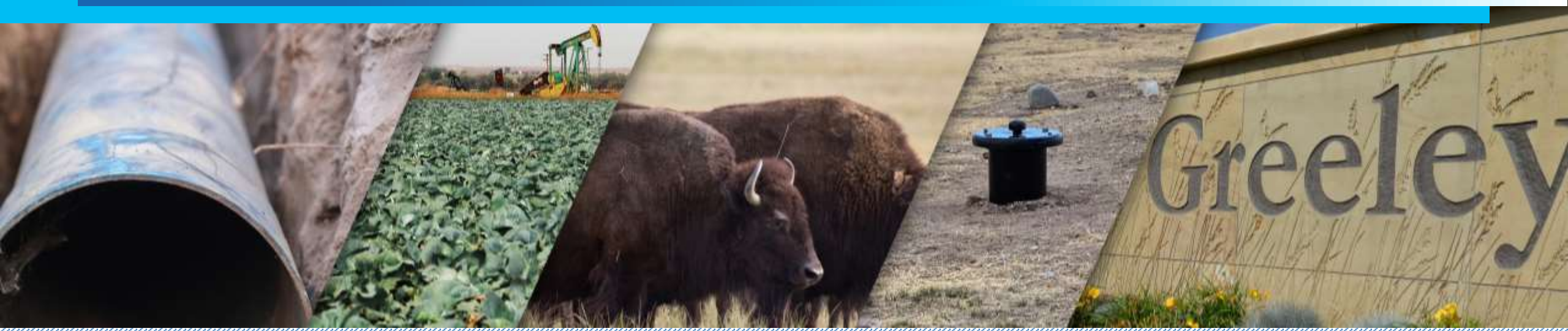
Terry Ranch Project

Greeley City Council

March 2, 2021



Agenda

Tonight's agenda includes **two** items concerning Terry Ranch:

1. Resolution authorizing closing and related actions
2. Ordinance amending Municipal Code to allow acceptance of Raw Water Credits

Outreach

- ✓ City Boards & Commissions – Planning Commission and many others
- ✓ Social Media – Facebook, Twitter, YouTube, NextDoor
- ✓ Community Open Houses - December 2 and February 10
- ✓ City Council Meetings - October 13, January 12, February 16, March 2
- ✓ Media – KFKA, Tribune, BizWest, CBS4, Denver Channel 7, KUNC
- ✓ Monthly Water & Sewer Board Meetings – Project Investigation Reports
- ✓ 25+ Community Organizations, Boards & Commissions
- ✓ City Chats, City Scoop, W&S Newsletter
- ✓ Website – www.greeleygov.com/terryranch

Background & Overview

Presenting Information

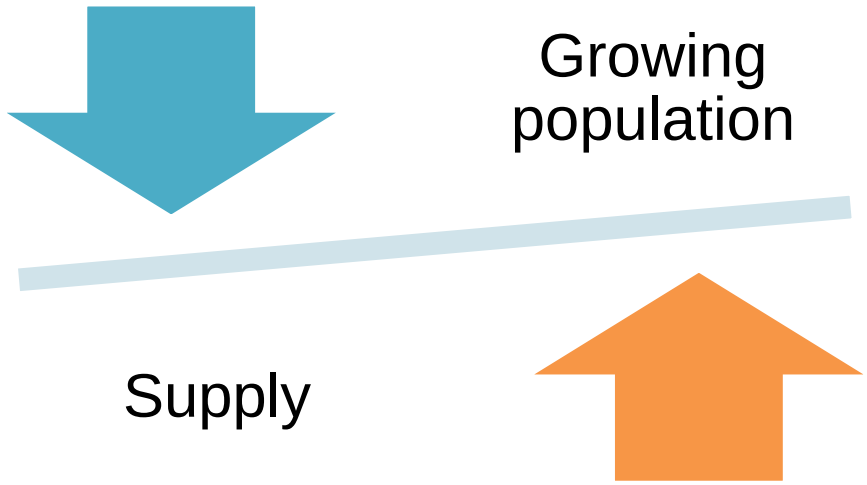
- Cortney Brand, P.G. – President and CEO of LRE Water. Mr. Brand is a recognized expert in hydrogeology, aquifer recharge and aquifer storage and recovery systems.
- Adam Jokerst, P.E. – Deputy Dir. of Water Resources Mr. Jokerst has oversight of Greeley's long range water supply planning, conservation program and water acquisition. Adam holds bachelors and masters degrees in Civil Engineering. He is a registered professional engineer in Colorado.

LRE WATER

City of Greeley Colorado

Planning for Growth

- ✓ 260,000+ people by 2065
- ✓ Current supply not enough to meet future needs
- ✓ Must develop new water sources while maintaining affordable water rates



Milton Seaman Enlargement

- ✓ Large impacts to wetlands, streams, and habitat
- ✓ Inundation of Forest Service, State, Larimer County, and Fort Collins lands
- ✓ Many federal, state, & local permits needed - 15 years and $19M to date
- ✓ **Unlikely that Greeley would ever receive necessary permits**
- ✓ Evaluated hundreds of alternatives

Terry Ranch Project

- ✓“Non-tributary” Aquifer
- ✓1,200,000 acre-feet
- ✓Underground water storage
- ✓Drought supply – supplements surface water system
- ✓Could meet Greeley’s water needs for generations to come

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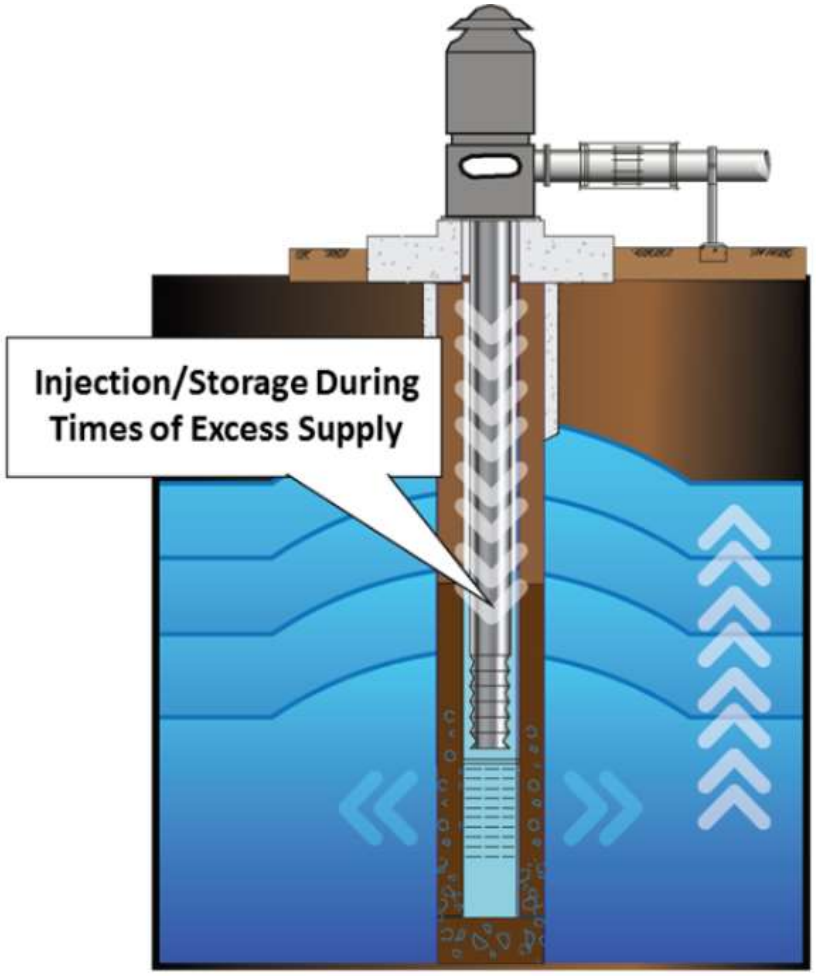
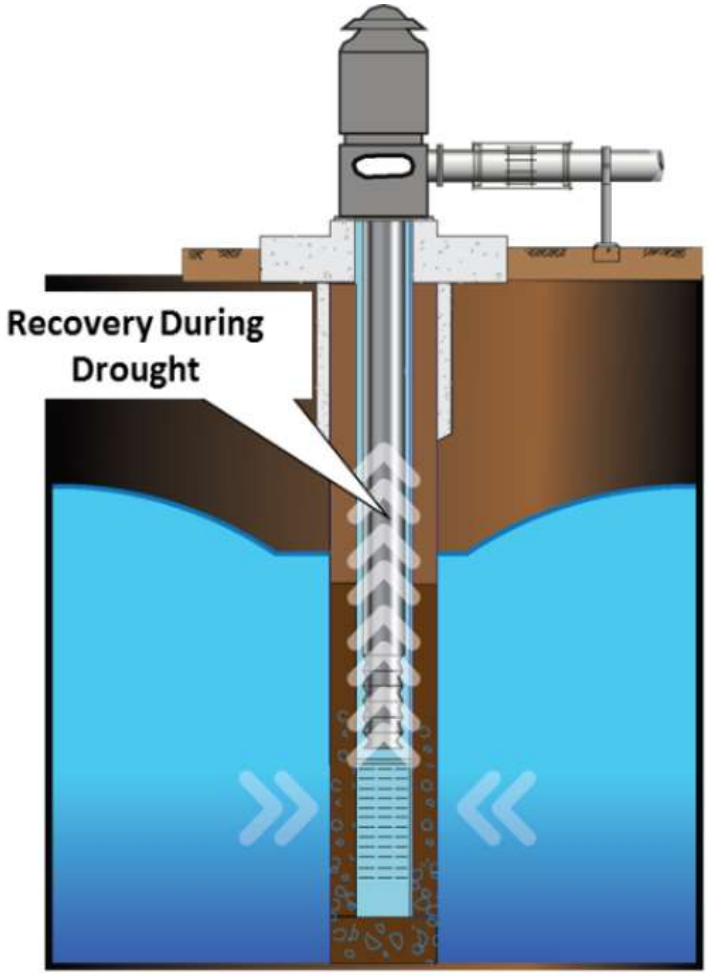
Underground Storage





- ✓ New to Greeley but common throughout U.S.
- ✓ PRO: few environmental impacts, no evaporation
- ✓ CON: requires treatment & pumping

Purchase Agreement

Unique Transaction

- ✓ Purchase with raw water “credits” rather than cash
  - ✓ Credits redeemable to meet Greeley’s water dedication requirements
  - ✓ Raw water dedication is payment in form of water rights or cash required to receive city water service
  - ✓ 12,121 Credits, each Credit = 1 acre-foot dedication
  - ✓ Wingfoot sells Credits to developers or other 3rd parties
  - ✓ Adds third source of raw water dedication
  - ✓ Greeley sets Credit price ceiling with cash-in-lieu rate

Unique Transaction

- ✓ Greeley foregoes future cash-in-lieu revenue, revenue that would have been spent on a water project
- ✓ Greeley receives assets upfront and $125M towards building infrastructure
- ✓ Typical water projects: large upfront bond, rely on fees from new growth to pay off debt – **Risky**
- ✓ Terry Ranch: seller takes on risk of new growth – **Reduces Greeley's Risk**

Transaction Recap

Greeley Receives:

1. Non-tributary Decree
2. Access easement
3. State Land Board lease
4. Five existing wells
5. $125M towards infrastructure
6. Option to buy back Credits

Wingfoot Receives:

1. 12,121 Credits
2. Revenue sharing for water sold outside Greeley & hydropower
3. Option to sell Credits to Greeley

Master Agreement negotiated with input from Water & Sewer Board (monthly) and City Council (two Executive Sessions)

Transaction Recap

- **Agreement DOES NOT**
  - Give Wingfoot control
  - Benefit any other city
  - Sacrifice existing water
  - Restrict buying other water
  - Create any obligation to Wingfoot other than to accept & not devalue credits

Policy Changes

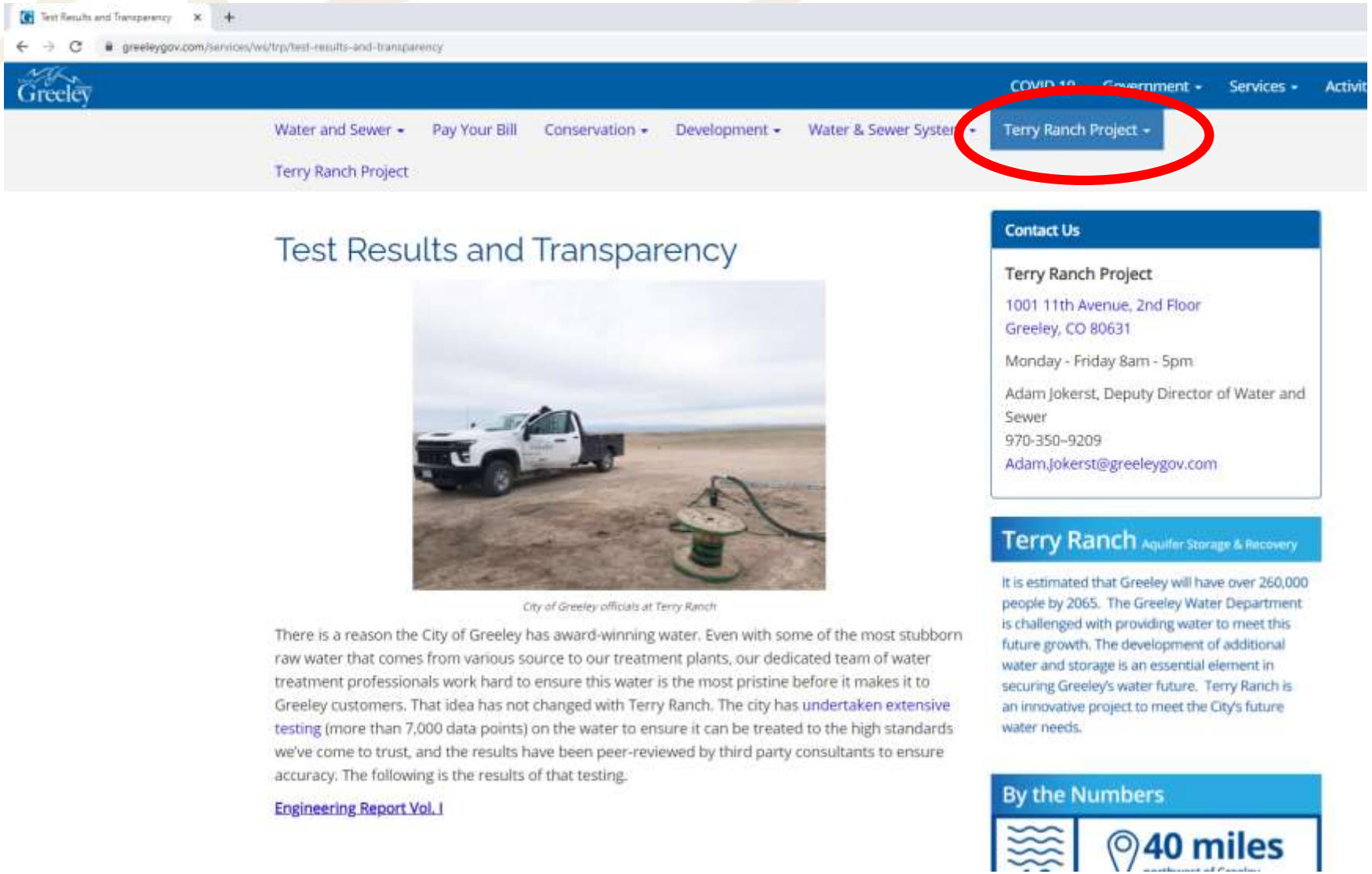
- ✓ Credit value affected by raw water dedication policy
- ✓ Greeley defaults if it enacts certain policy changes
  - ✓ Disallowing Credit redemption
  - ✓ Disadvantaging Credits relative to other sources
  - ✓ Adding new sources of dedication within 10-years
- ✓ Can address changes in usage based on consumption data and best practice

Due Diligence

Inspection Studies

1. Water quality sampling & analysis
2. Drilled/tested two monitoring wells
3. Spectral gamma logging
4. Hydrophysical logging and depth-specific sampling/analysis
5. Treatment evaluation
6. 30-day pilot treatment test
7. Distribution system corrosion, metal release, and disinfection study
8. Bench-scale testing (water-rock column tests)
9. Geochemical modeling
10. Aquifer storage and recovery pilot testing
11. Water compatibility testing (physical mixing tests)
12. Mineralogical characterization and trace metal analysis
13. Groundwater contamination vulnerability assessment
14. Concept infrastructure design
15. Capital and operational cost estimates
16. Environmental assessment
17. Ecological and cultural resources evaluations
18. Peer reviews

Inspection Results



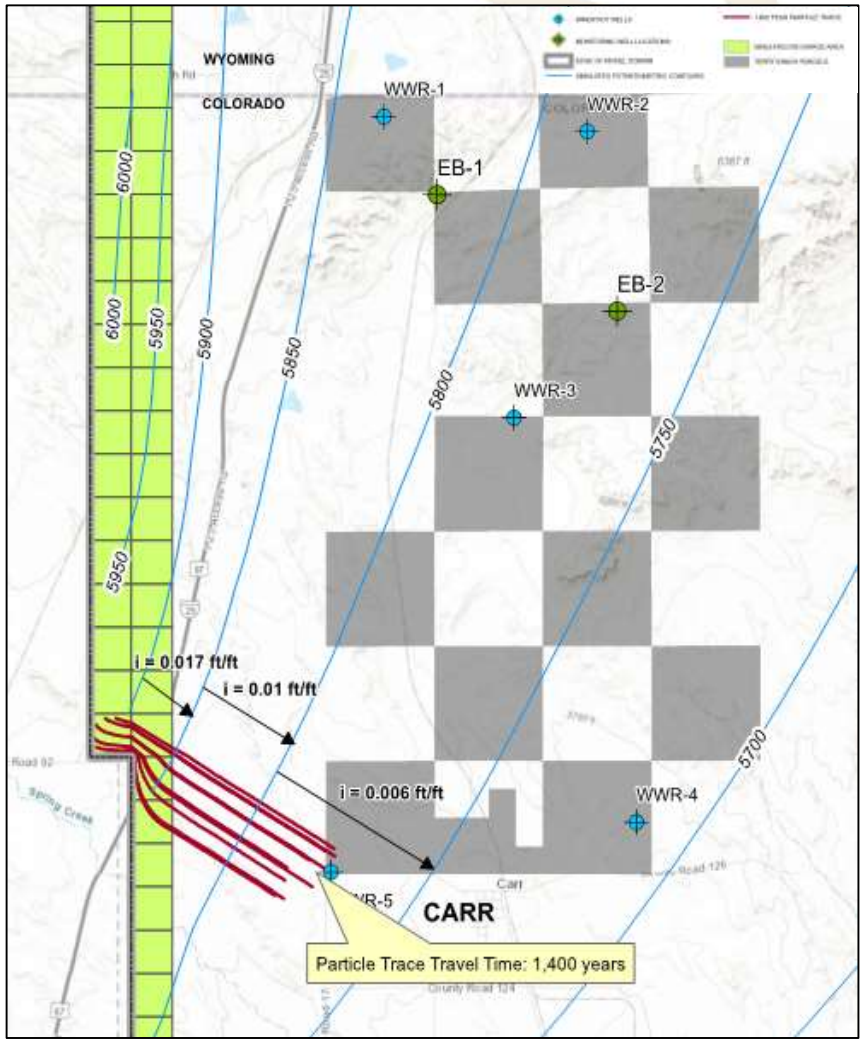
- ✓ All diligence reports available on project website
- ✓ Preliminary findings shared with City Council on Oct. 13 and Jan 12
- ✓ Final findings presented to W&S Board on Feb. 17; video provided

Key Findings

- ✓ Extensive water quality study: over 7,000 data points & 575 compounds from 7 wells
  - ✓ Overall water quality is excellent
  - ✓ Uranium is present but can be removed by proven treatment (ion exchange)
  - ✓ **Greeley customers will not receive water with measurable uranium**
- ✓ Injection will not mobilize metals
- ✓ Water is compatible with existing supplies
- ✓ Pipe corrosion/metal release not expected

Contamination Risk

- ✓ Risk of groundwater contamination is low
  - ✓ Groundwater is generally deep and isolated
  - ✓ Groundwater flow rates are low (10-12 ft/yr or ~1 mile in 500 years)
  - ✓ No producing oil & gas wells
  - ✓ Apparently low oil & gas potential



Contamination Risk

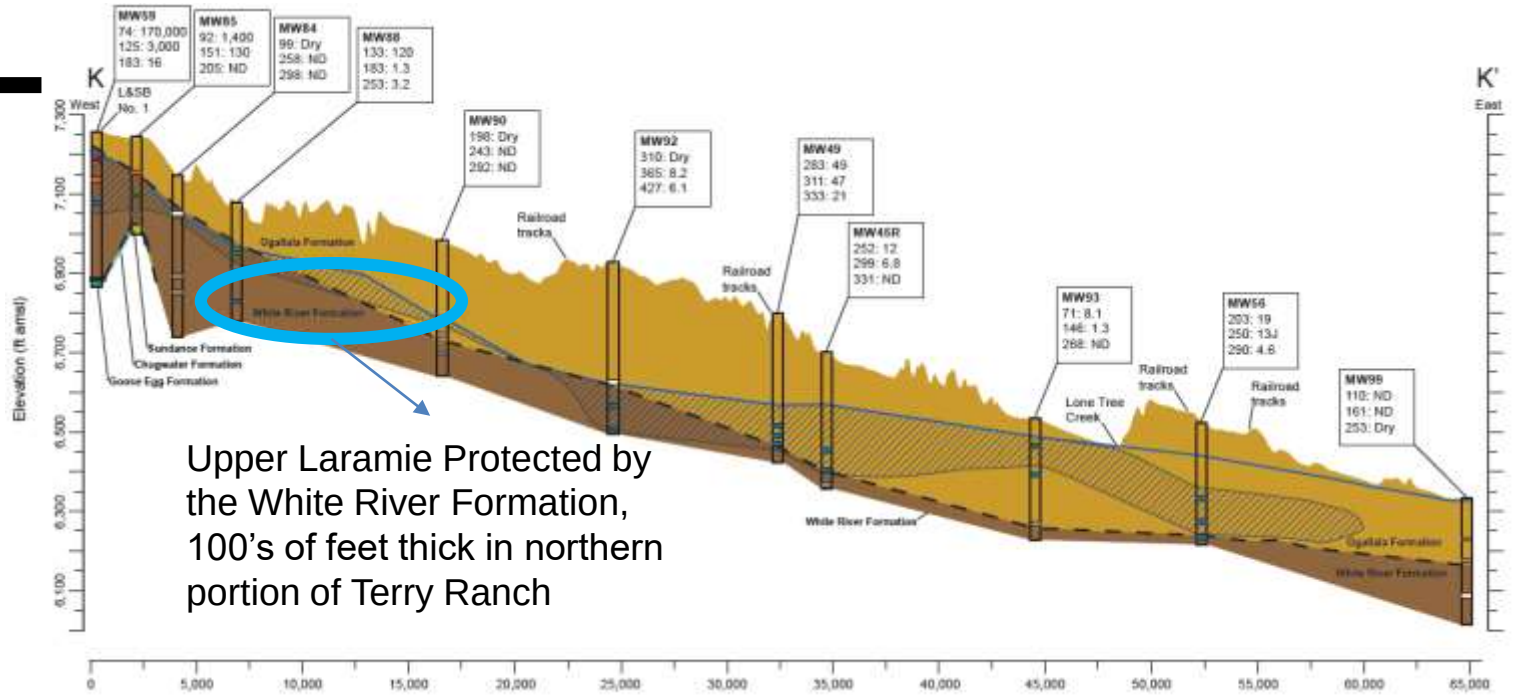
Contrast in land surface between the Denver Basin Aquifers and Upper Laramie Aquifer

Trichloroethylene (TCE) Risk

- ✓ Investigated TCE plume from Atlas D missile site
  - ✓ TCE plume is in a different geologic formation (Ogallala and Brule Member of White River Formation)
  - ✓ Terry Ranch aquifer is protected by the claystone/shale layers in the White River Formation
  - ✓ Plume is migrating East-Northeast towards Cheyenne, not towards Terry Ranch
  - ✓ Plume is well-characterized and actively being remediated by the USACE
  - ✓ Edge of the plume has very low TCE concentrations (5 to 10 ppb)

West ← K

K' → East

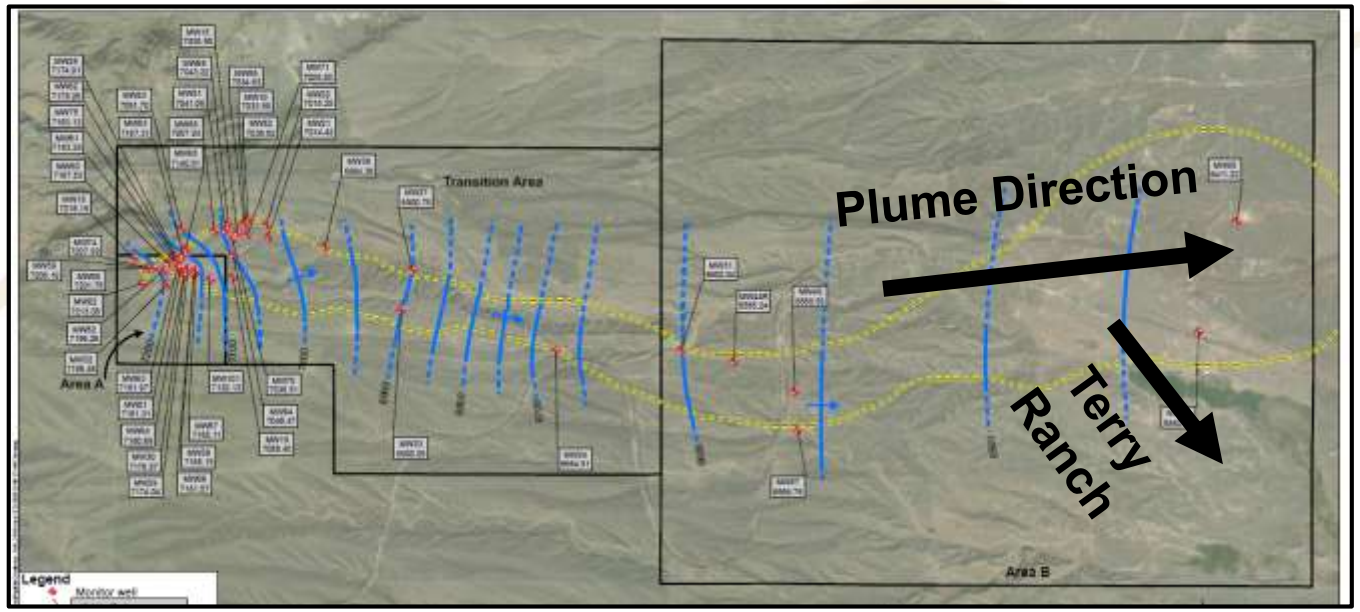


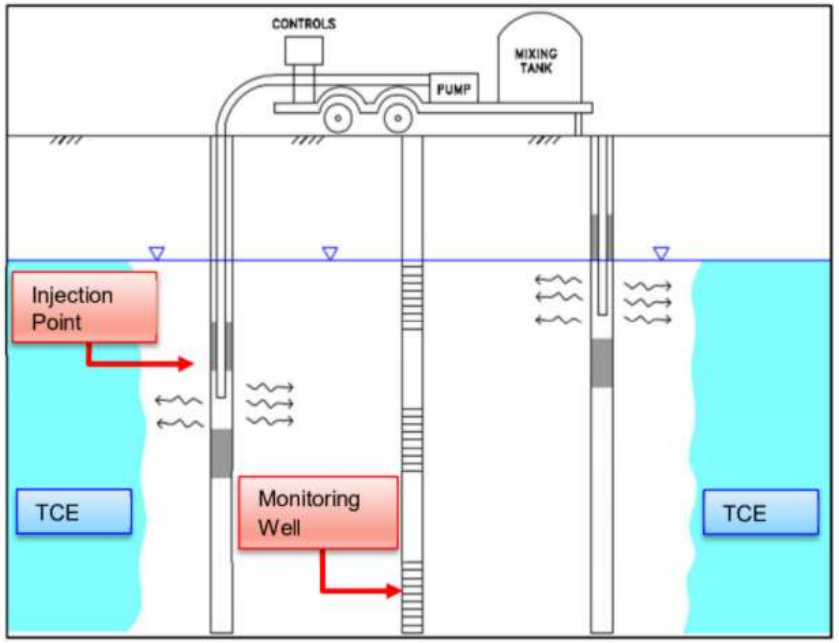
Upper Laramie Protected by the White River Formation, 100's of feet thick in northern portion of Terry Ranch

Geologic cross-section West to East through the axis of the plume

Source: USACE Area-Wide Remedial Investigation Report Former Atlas D Missile Site 4 Laramie County, Wyoming Contract No. W9128F-13-D-0004, 0001. August 2020

TCE Risk





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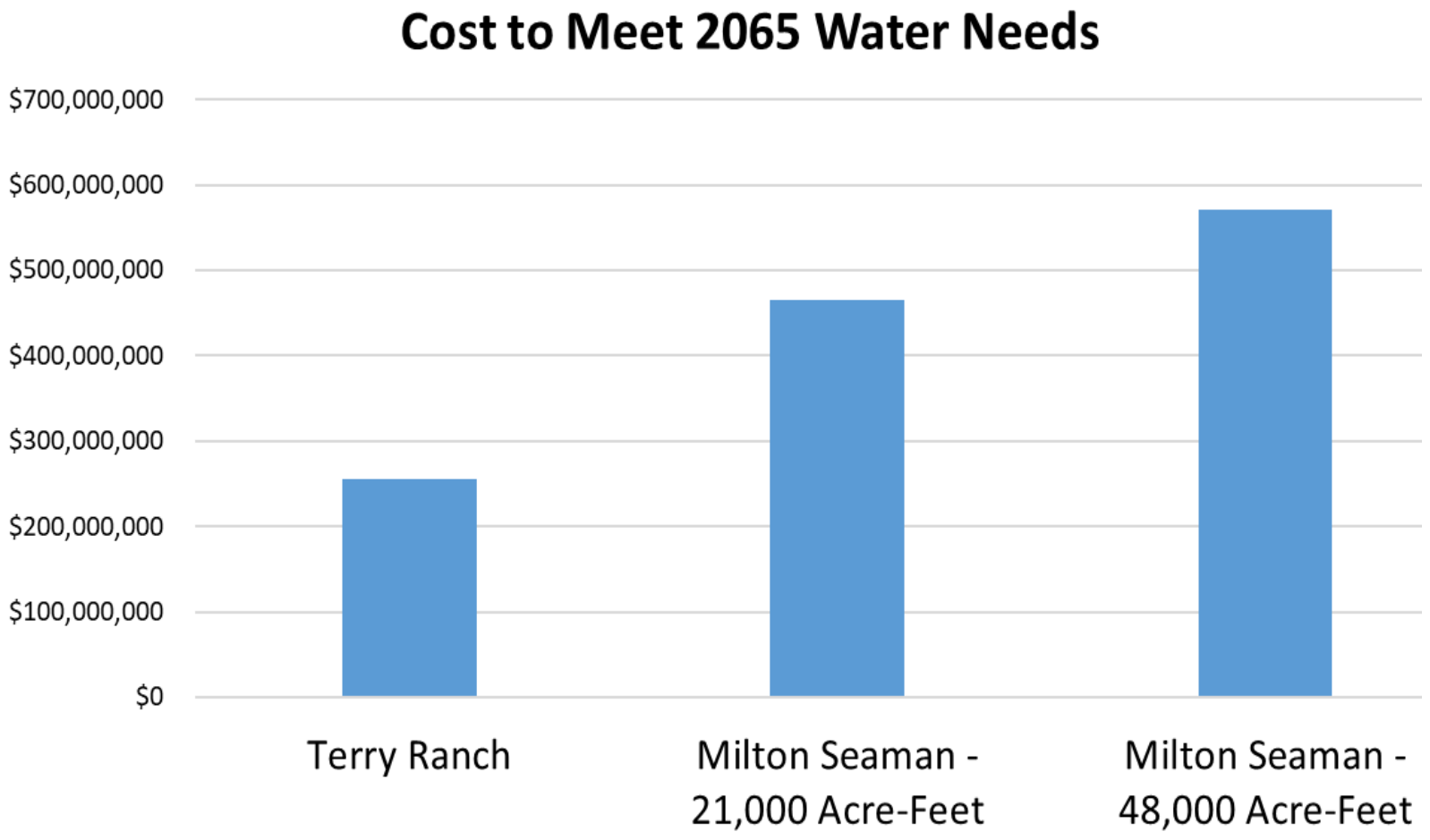
- ✓ TCE is not a risk to Terry Ranch groundwater
- ✓ TCE is treatable
  - ✓ Cheyenne uses groundwater within plume area for drinking water
  - ✓ Treated below detection by air-stripping
  - ✓ Paid for by Army Corps
- ✓ TCE can be remediated

Peer Review

- ✓ Independent, third-party peer review
  - ✓ City performed adequate testing and diligence followed established professional guidelines
  - ✓ Terry Ranch is a high quality potable water source
  - ✓ Treatment can remove uranium and provide safe water supply
  - ✓ Concur with conceptual design
  - ✓ Additional testing to refine operations and cost

Costs

Cost Comparison

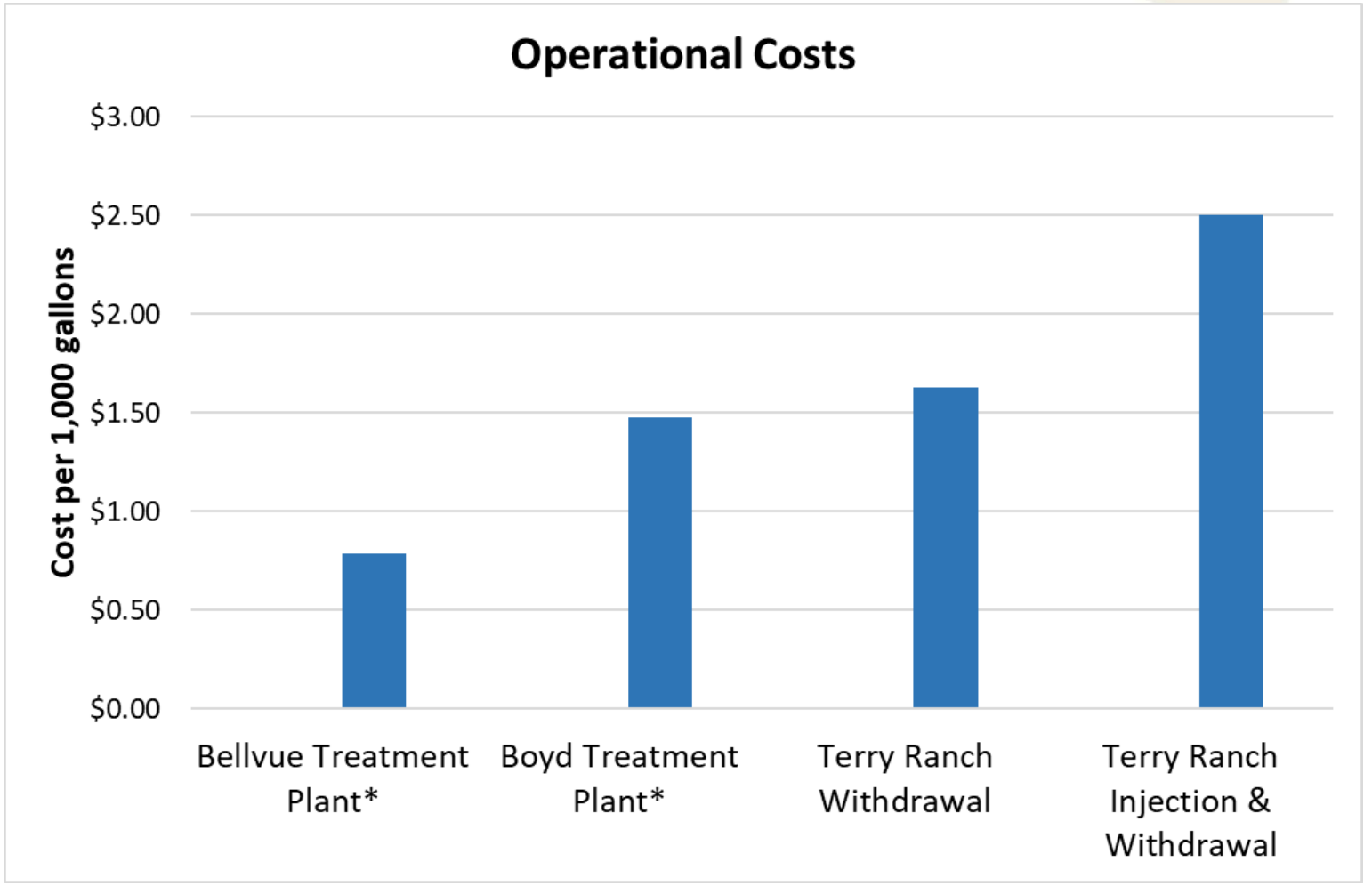


- ✓ Terry Ranch construction will be phased
- ✓ Milton Seaman/other reservoirs cannot
- ✓ Phasing lowers water rates

*Costs presented as 2020 net present values using 5% construction escalation and 3% discount rate. Timeline assumed.

Operational Costs

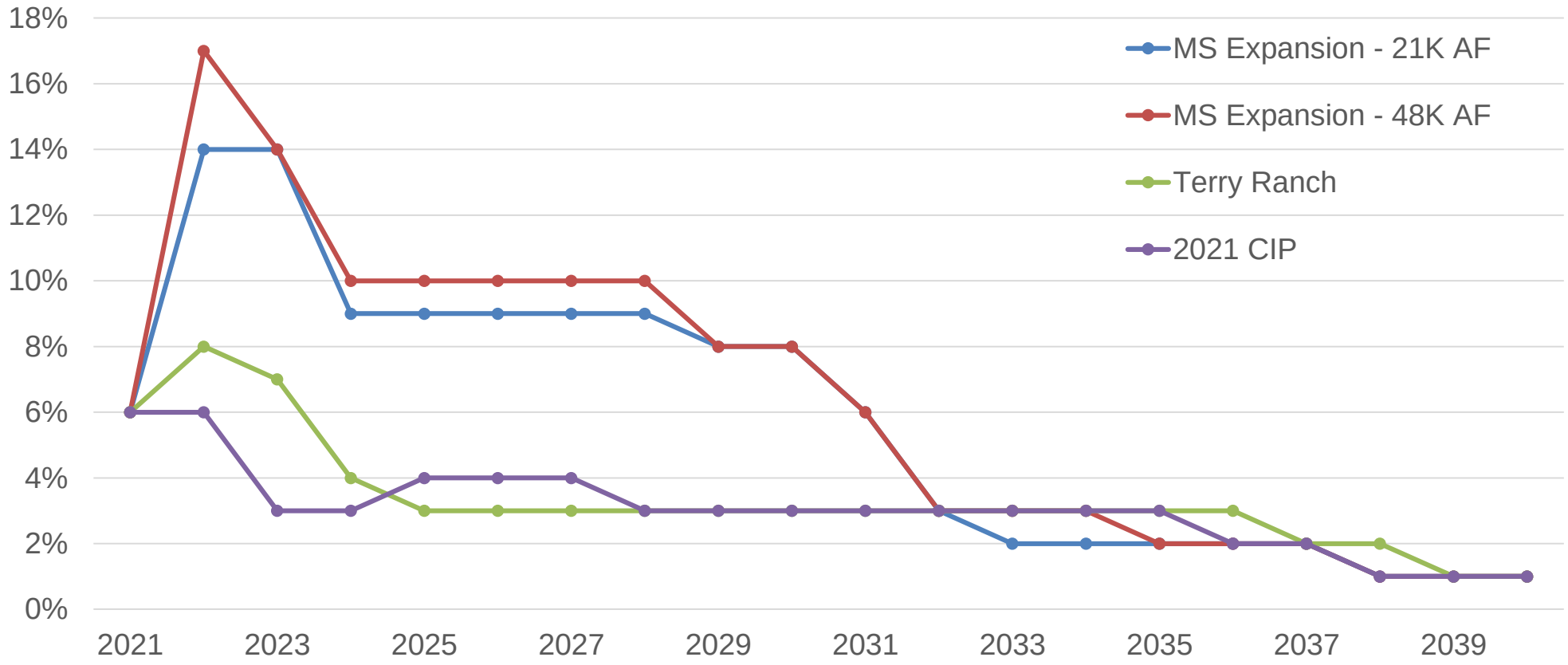
- ✓ Terry Ranch will be more expensive to operate than existing treatment plants
- ✓ Higher operational costs are vastly outweighed by lower construction costs
- ✓ Avg. 2065 operational costs: $530,000/year ($810,000/year with injection)



*2016-2019 Boyd & Bellvue Averages

Rate Comparison

Annual Rate Impacts



Rates calculated with future, escalated project costs.

Recommendations

Staff Recommendations

- ✓ Additional water supplies and storage are needed to support a growing city
- ✓ Developing new water projects is extremely difficult in today's regulatory environment and highly competitive water market
- ✓ Terry Ranch is least costly and most certain among hundreds of alternatives evaluated
- ✓ Terry Ranch will be a safe and reliable water supply

Water & Sewer Board Recommendations

- ✓ Closely guided project development and negotiations over last two years
- ✓ Received monthly diligence updates since June 2020
- ✓ Approved closing and related actions on February 17, 2021

Staff and the Water & Sewer Board recommends City Council authorize the closing and related actions for acquisition of Terry Ranch water rights and storage

More information at:

greeleygov.com/terryranch