

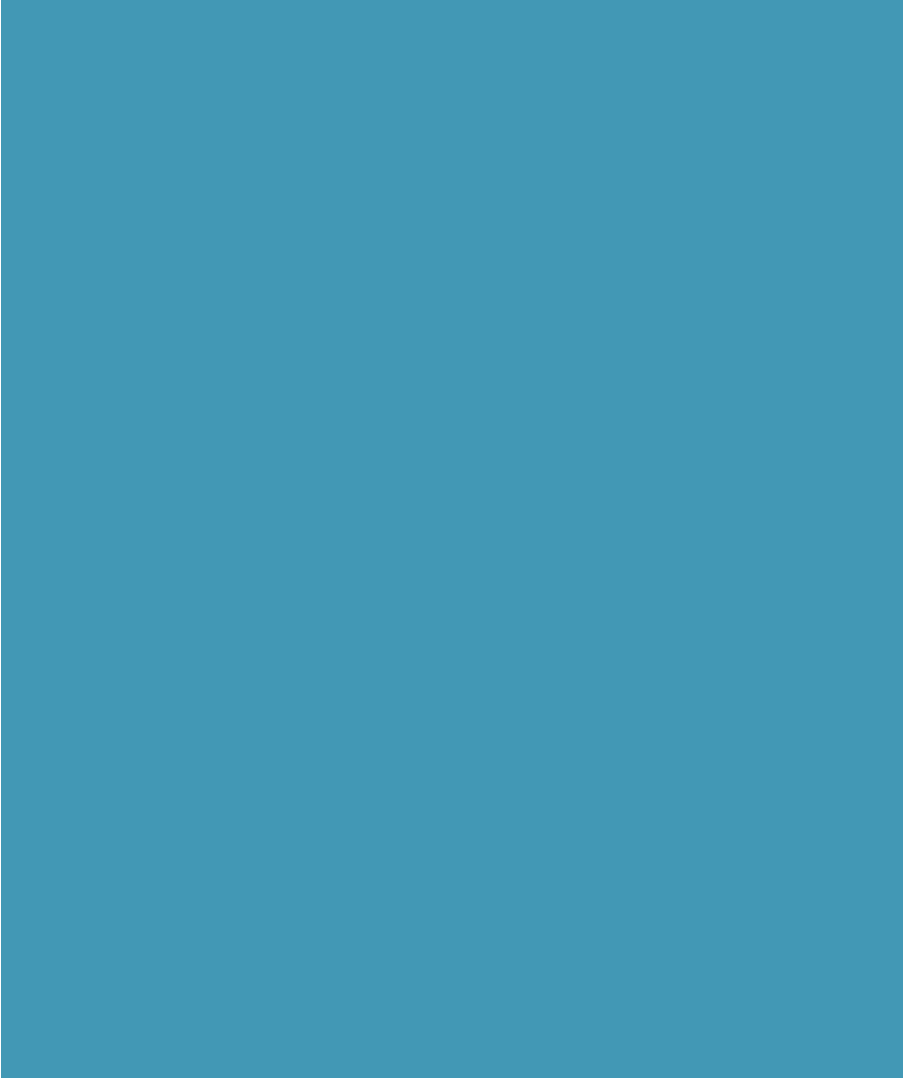


# Design of a 7.5 Million Gallon a Day Water Treatment Plant Project #2018-20

Ashland City Council Study Session Briefing

August 5, 2019



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- 01 **Background and Additional Information**
  - 02 **What Have We Been Doing?**
  - 03 **Alternatives Reviewed**
  - 04 **Path Forward**



**01**

# Background and Additional Information

# Project Execution

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- Four Project Phases
  1. Alternatives Analysis and Preliminary (30%)  
Engineering – hired HDR
  2. Final Engineering – future
  3. Bidding Assistance – future
  4. Construction Administration – future

# Building Upon 2016-2018 Work

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- New plant at the Granite Site
- Existing plant to be decommissioned
- 7.5 MGD expandable to 10.0 MGD in the future
- Incorporate clearwell for additional future storage
- Not membrane filtration processes
- Need to address taste-and-odor compounds, algae, and algal toxins

# Issues We Are Facing Now

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- Defining the treatment processes
- Obtaining Oregon Health Authority acceptance for the future processes and regulatory requirements
- How to fit everything onto the challenging Granite site
- Planning what to do with existing plant once new plant is operational
- Determining construction and lifecycle costs
- Identifying permitting requirements





# 02 What Have We Been Doing?

# Two Phased Approach

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- Phase 1A – Alternatives Evaluation
  - August 2018 to February 2019
  - October 11, 2018 – first alternatives workshop
  - January 23, 2019 – second alternatives workshop
  
- Phase 1B – Preliminary (30%) Design
  - February 2019 to July 2019
  - Value Engineering workshop – June 11, 2019



# Phase 1A – Treatment Alternatives

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- ✓ Conducted geotechnical investigations
- ✓ Completed ground survey
- ✓ Identified and evaluated treatment processes
- ✓ Sized the new WTP clearwell/reservoir
- ✓ Identified and located buried and aboveground piping
- ✓ Prepared cost estimates for alternatives
- ✓ Prepared design recommendation

# Phase 1B – Preliminary Design

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- ✓ Conducted additional geotechnical investigation
- ✓ Evaluated the potential of a secondary intake
- ✓ Completed construction and value engineering review
- ✓ Developing the plan and process for abandoning existing WTP
- ✓ Finalizing 30-percent design documents



Overall site has shallow fractured bedrock

Site's flat area is lower than HGL so pumping may be required

Site has debris that needs to be removed

Steep rock hillsides

Available flat area is small so fill and/or re-grading may be needed

Finished water and sewer connections are on the opposite side of the Ashland Creek

A woman wearing a white hard hat with the letters 'HR' on it, safety glasses, and a high-visibility yellow safety vest is looking intently at a laptop screen. She is standing on a construction site. In the background, another person in a similar safety vest is partially visible. The entire image has a light blue overlay.

03

Alternatives Reviewed

# Design Alternatives Evaluated

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- What treatment process should the new plant have?
- How to incorporate water storage requirements associated with the Water Master Plan outcomes?
- How to fit all the facilities on the site?
- How will we connect new plant to the existing system?



# Processes at New Plant

## Same as existing plant

- Coagulation and filtration systems to remove turbidity and pathogens
- Chlorine addition to further disinfect the water



# Processes at New Plant

## New processes

- Ozone addition to eliminate taste-and-odor issues and destroy potential algal toxins
- Solids removal for better filter operations and greater disinfection



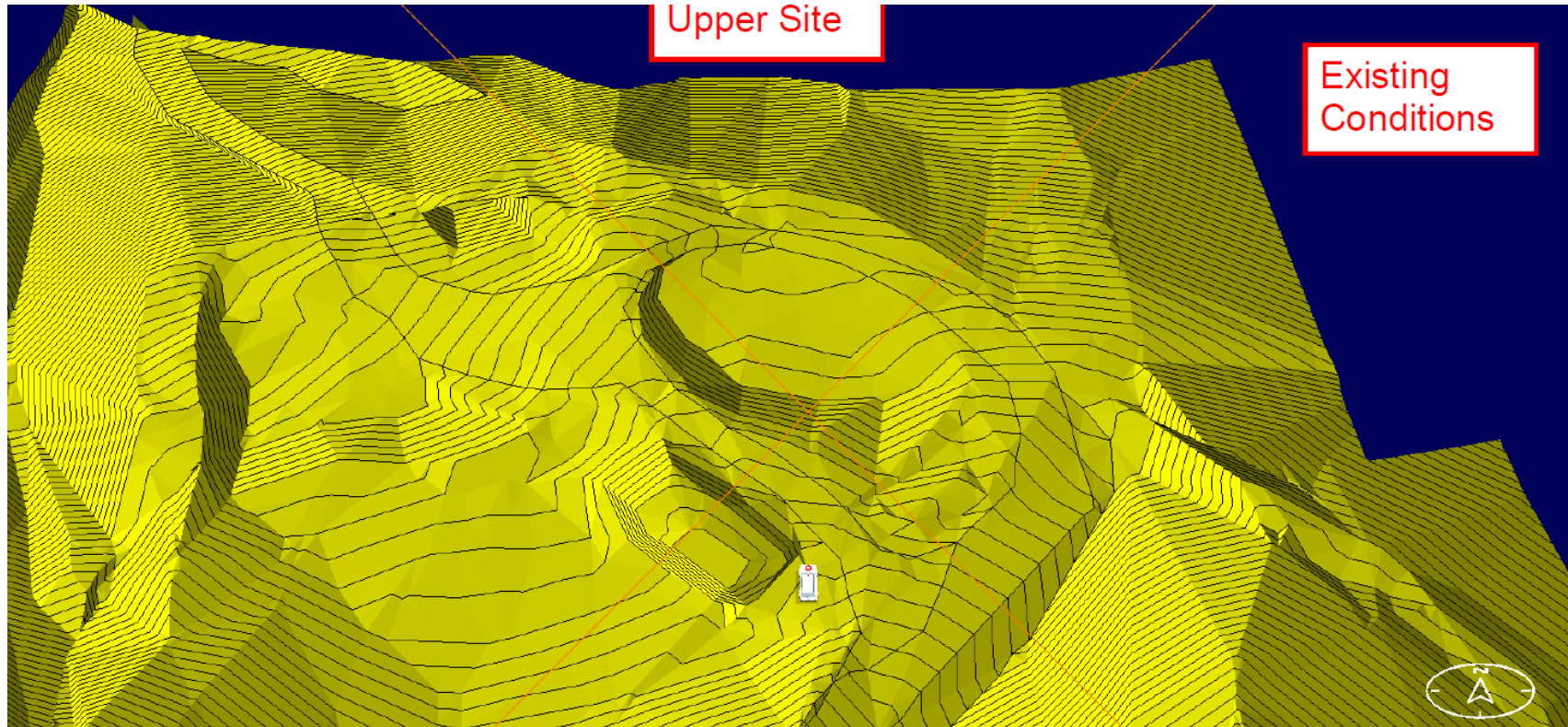


# Storage Volumes

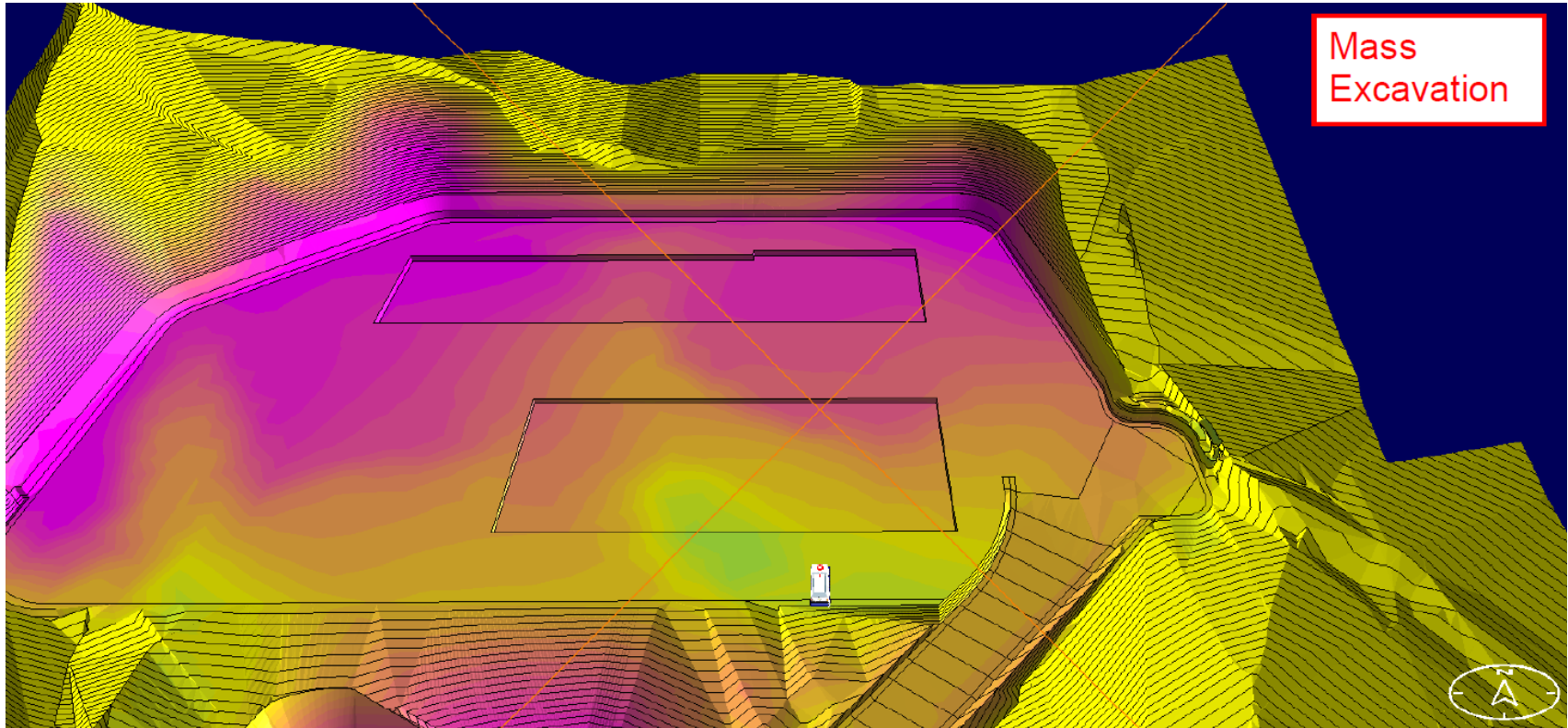
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- New clearwell at plant site
- Around 850,000 gallons
- Used for:
  - Cleaning filters
  - Improving pumping operations
  - Time to disinfect the water
  - Storage for distribution system
  - Emergency water storage

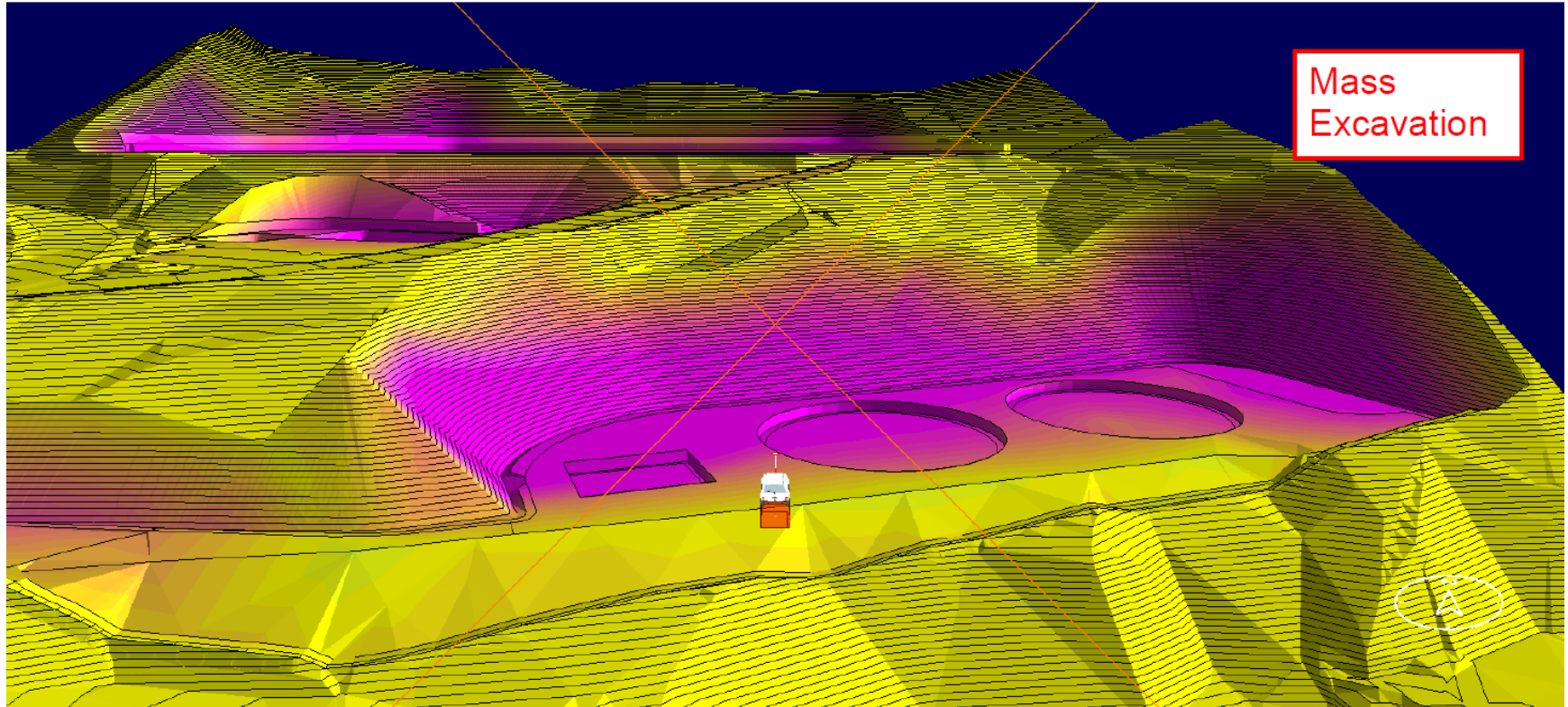
# Site Layout – Existing Area



# Site Layout – An Initial Concept



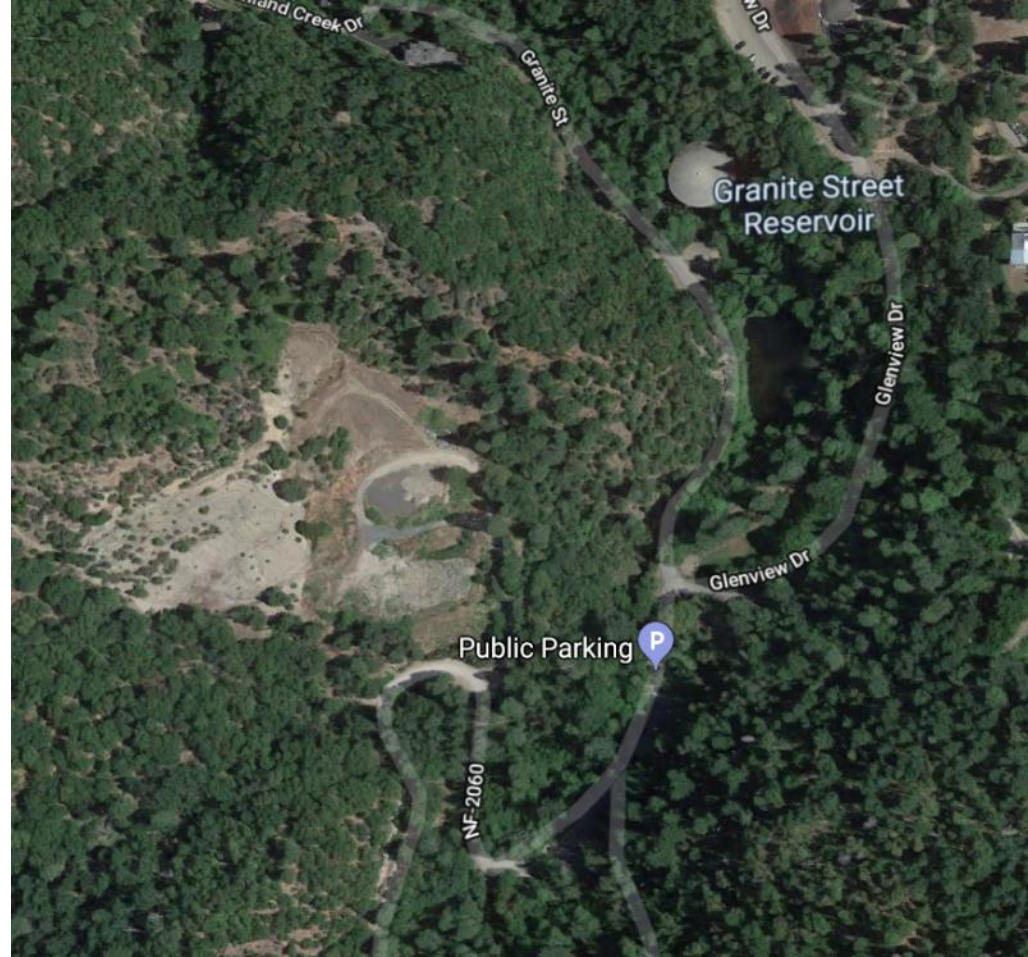
# Site Layout – An Initial Concept





# Crossing Ashland Creek

- All existing pipes on the east side of the creek.
- New plant site is on the west side of the creek.
- Evaluating:
  - Going over the creek on a new bridge
  - Burying pipes underneath the creek

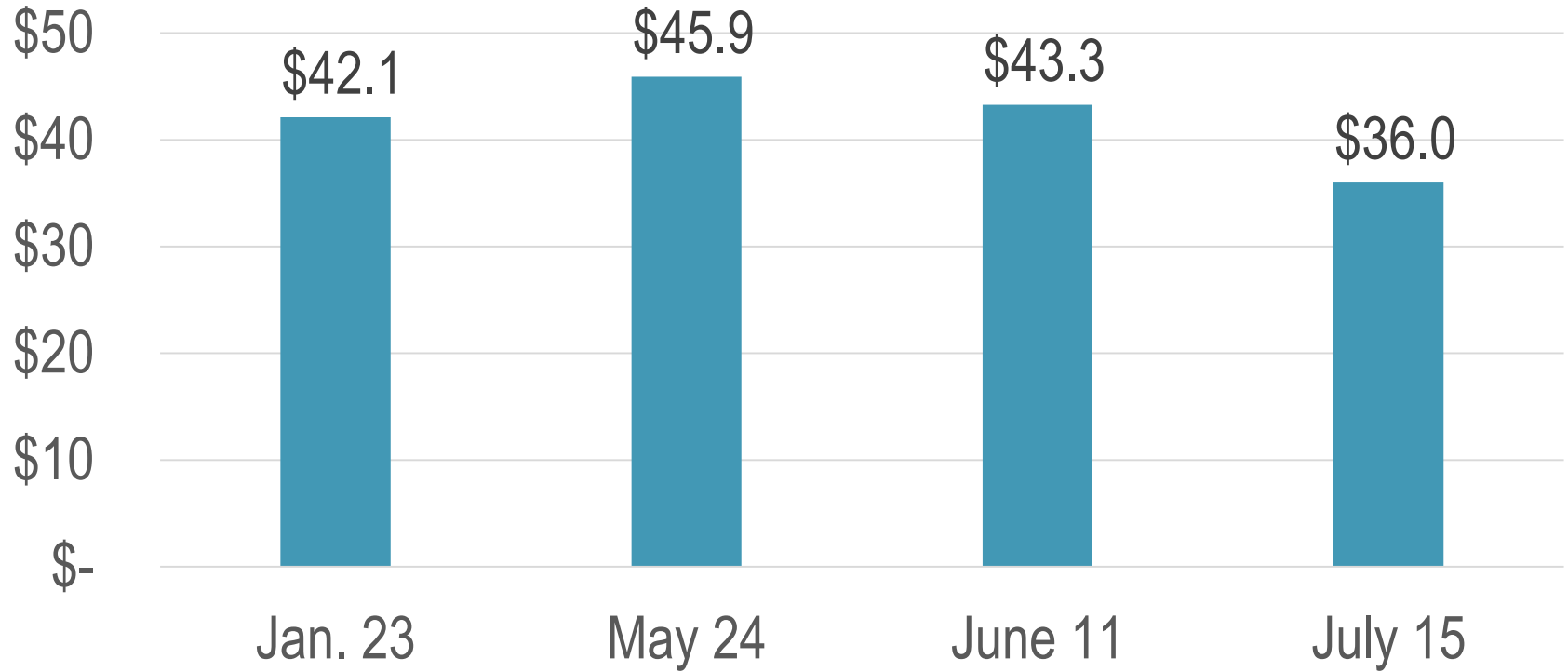


# Cost Estimating and Constructability Review



- Cost estimating services provided by Mortenson Construction.
- Four rounds of cost estimating:
  - Jan. 23 treatment alternatives workshop
  - May 24 alternatives workshop
  - June 11 Value engineering & constructability session
  - July 15 Basis of Design Report

# Est. Treatment Construction Cost (\$M)





# Additional Power-Savings Costs

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- Additional Hydropower
  - \$2.3+ million for 46 to 78 kW hydropower system
  - Upgrades to Gulch Power House is a better return-on-investment
- Solar Power
  - \$1.0 million for 200 kW solar power array
  - Size constrained by City's power purchase agreement

A construction site with a dirt road, workers in safety gear, and a large yellow tracked vehicle. The scene is bathed in a warm, orange light. Two workers in high-visibility vests and hard hats are walking away from the camera on the dirt road. In the background, a large yellow tracked vehicle is visible, along with other construction equipment and trees. The overall atmosphere is one of active construction work.

# 04 Path Forward

# Follow-Up Activities

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Phase 2 – Final Engineering/Permitting (2019 to 2020)

Phase 3 – Bidding Assistance (2020)

Phase 4 – Construction (2020 to 2022)

- Build new facilities and decommission existing plant



# Design of a 7.5 Million Gallon a Day Water Treatment Plant

Project #2018-20

Pierre Kwan – HDR



# New Site Layout

- Consolidated buildings.
- Moved clearwell up to a flatter upper location.
- Reduced delivery truck driving areas.
- Switched to more compact treatment processes.

