

Bull Run
TREATMENT
PROJECTS

*Our water: Safe and abundant
for generations to come*


PORTLAND WATER BUREAU

Bull Run Treatment Projects

Building Teams over Teams and Overcoming Other Collaboration Challenges

May 9, 2025










in association with

and other firms

Objectives

- Discuss importance of building strong teams
- Share strategies for effective videoconferencing
- Share approaches for using project management processes to create more effective teams

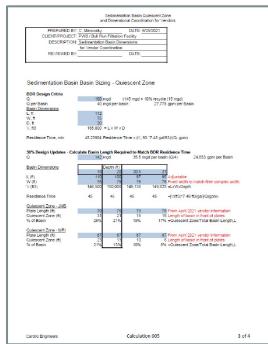
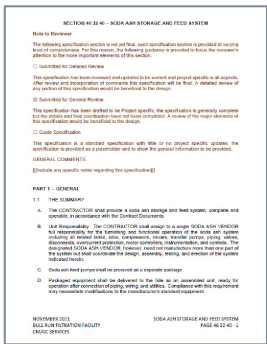
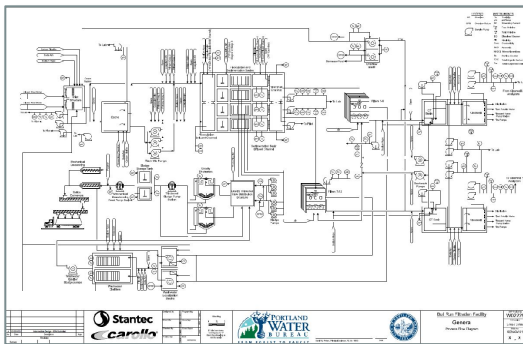
Portland's Water System



- | | |
|--|---|
|  Water Storage Facility |  Portland Water System Distribution Area |
|  Water Supply Pipes |  Water Source |
|  Water Treatment Facility |  Protected Area |
|  Dam | |

- Serves almost a million people
- Uses 100 million gallons of water on an average day
- Serves the City of Portland and 19 wholesale water districts

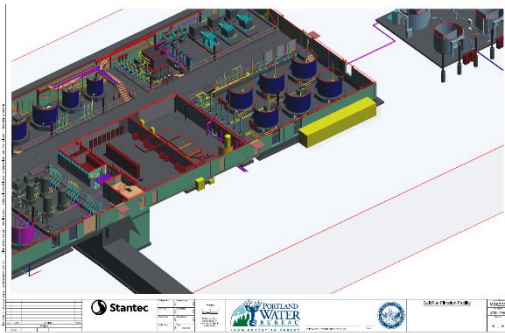
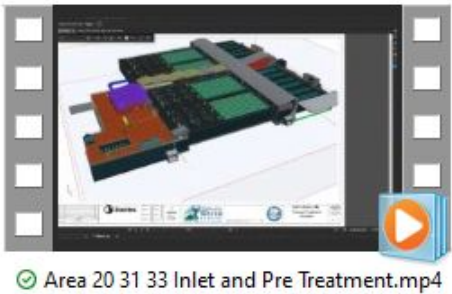
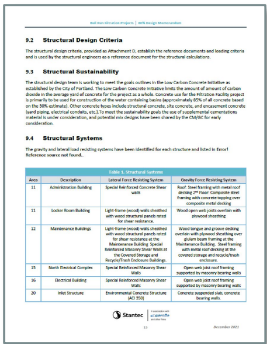
Filtration 100% Milestone Deliverable Content



2,428 Drawings

6,328 pages of Specifications

10,000+ pages of Calculations

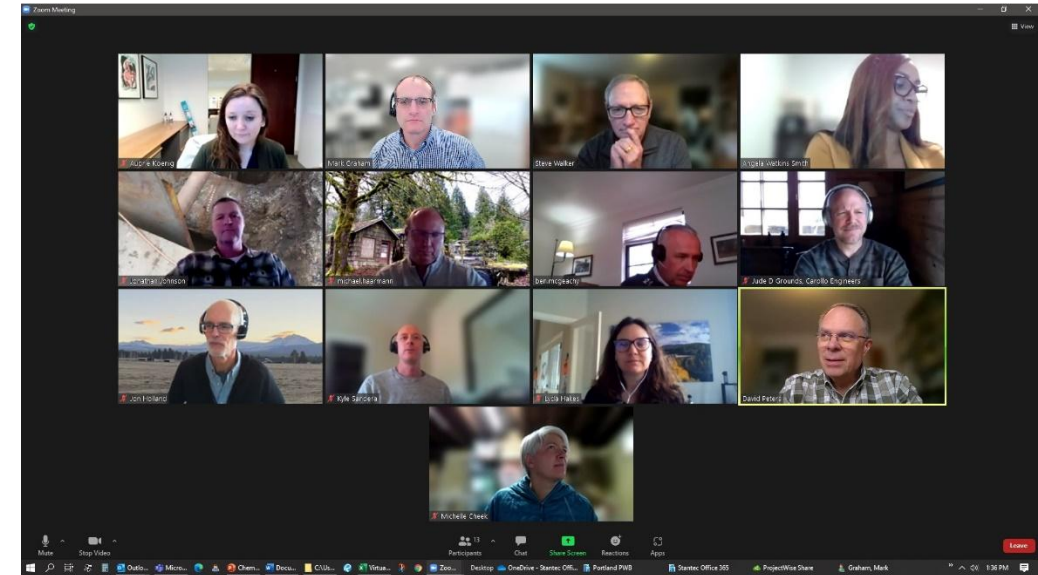


483 page Design Summary TM

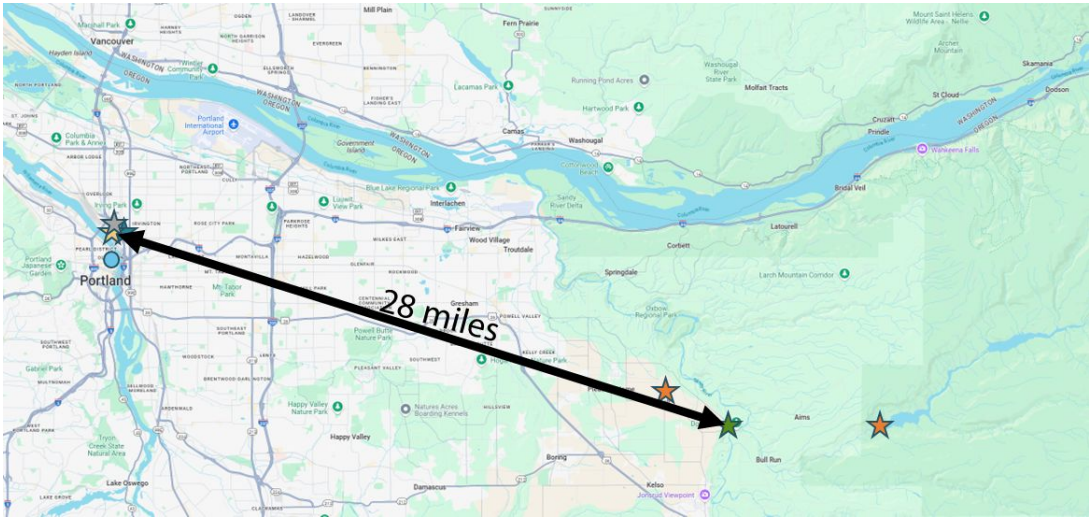
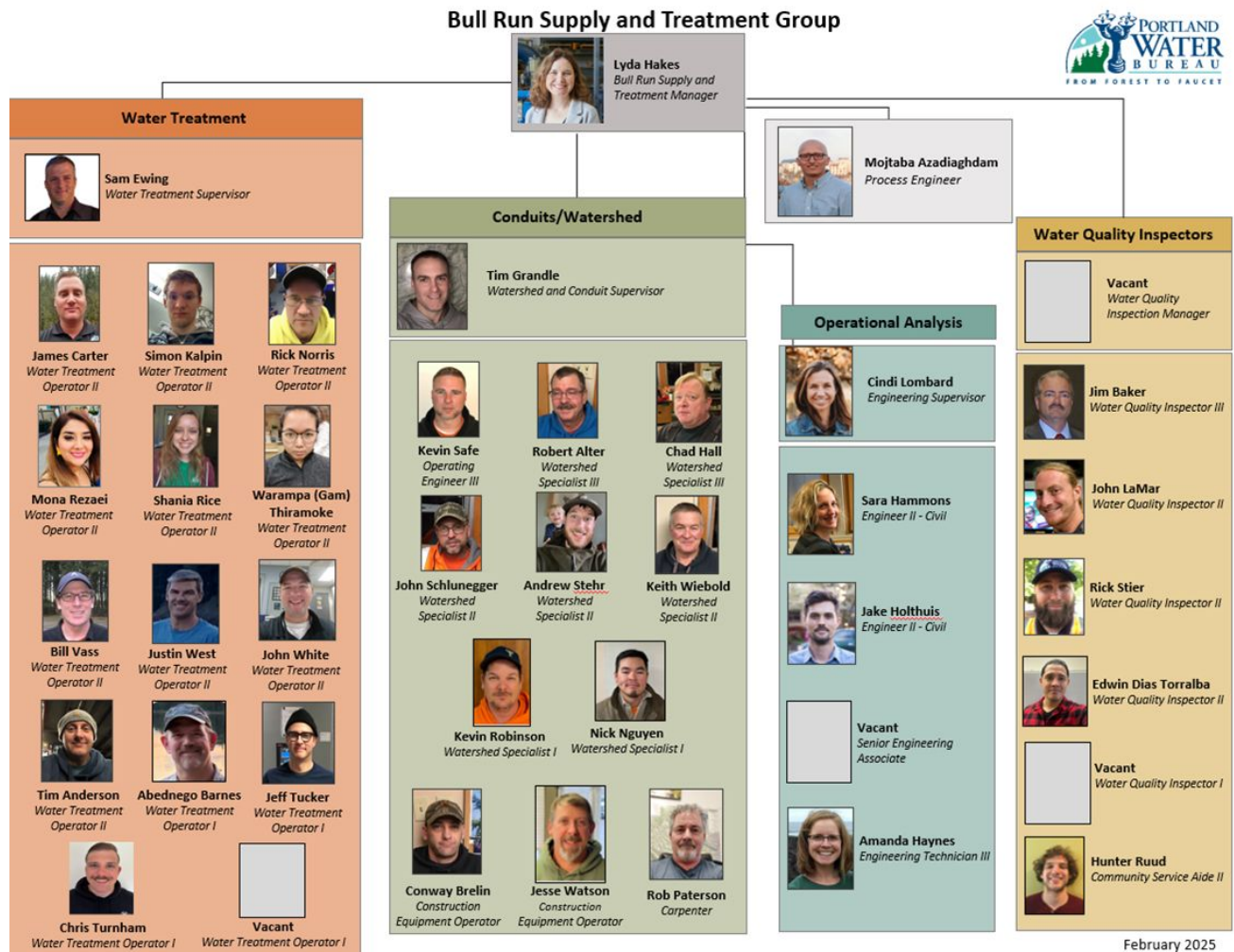
69 minutes of Videos

15 3D Models

Teams over Time

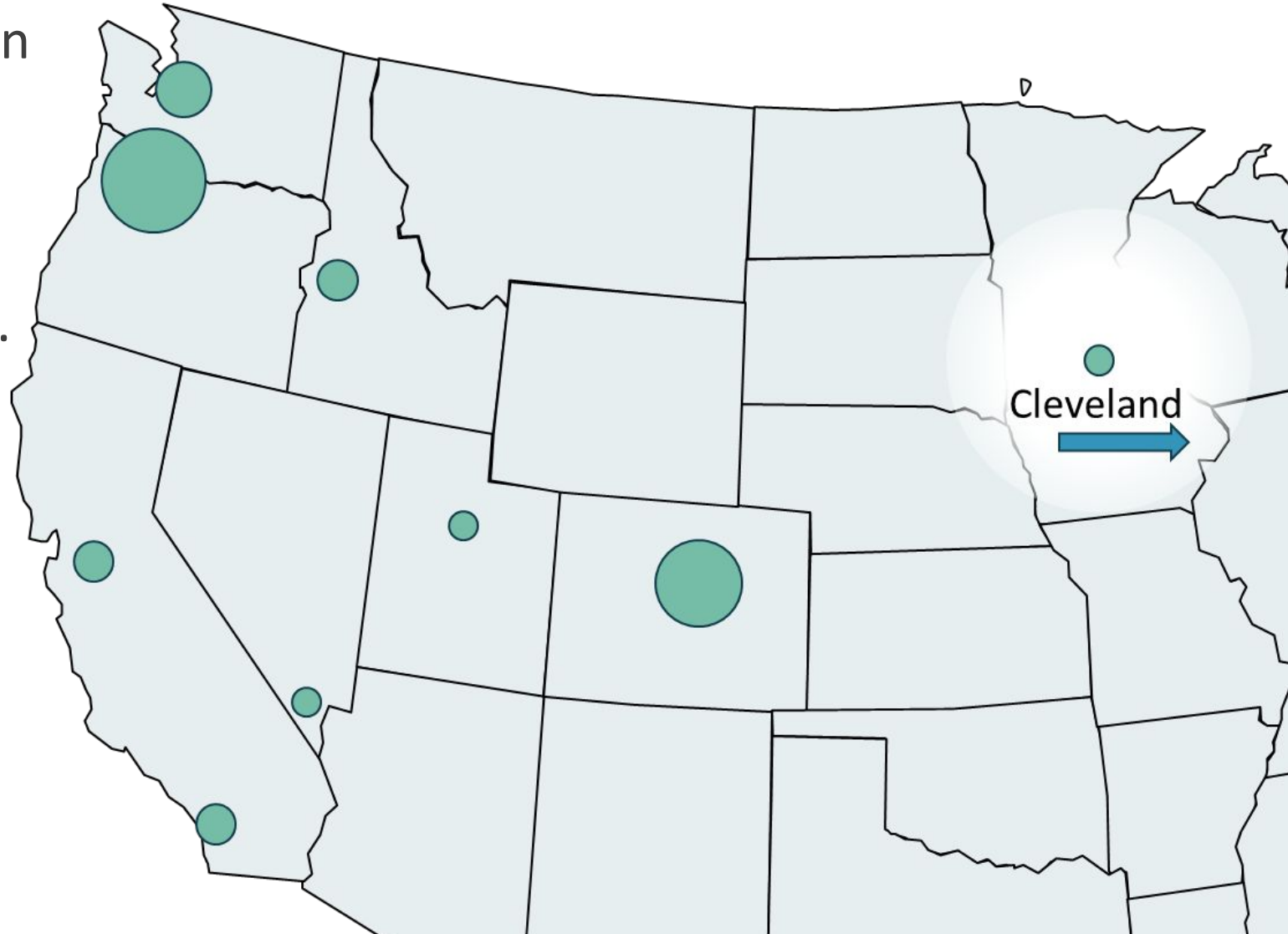


PWB Team



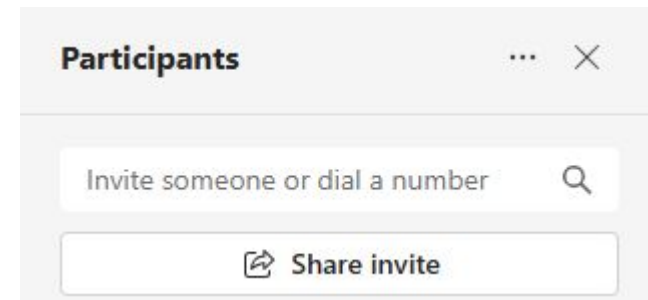
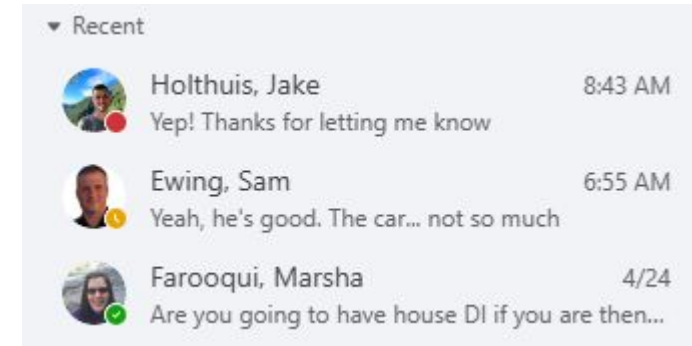
Consultant Team

- Consultant Team largely based in Portland Metro region
- Significant support from across Western U.S.
- Cultural norms differ across U.S. (“Northwest Nice”?)



How I Use Teams (almost) Every Day

- Say the person's name before asking them a question
- Share relevant info on the screen
- Relaxed chat for the first few minutes, end early if possible
- Use the chat to share links
- Have a known cameras culture
- Know the Teams status colors
- Need someone and they're red? Send a chat (even across organizations!)
- Need someone and want to eliminate back-and-forth, Teams call!
- Pull more people into your meeting as needed
- Use headphones



Our Approach to Remote Workshops

1. Plan
2. Communicate
3. Plan Some More
4. Revise Your Approach to Planning
5. Communicate Some More
6. Plan Again

July 2020 ☒ Include Planning Meetings on Calendar

Sat	Sun	Mon	Tue	Wed	Thu	Fri
27	28	29	30	1	2	3
		19 Infrastructure and Control (I&C) Design Criteria Workshops	Mtg 22 Site Utilization Workshop 2 Plan	Weekly PM Meeting Mtg 21 Landscape Design Criteria Workshop: Draft Slides		
4	5	6	7	8	9	10
			Mtg 23 Site Utilization Workshop 2 Plan	Weekly PM Meeting Mtg 22 Site Utilization Workshop 2 Draft Slides		
11	12	13	14	15	16	17
		21 Landscape Design Criteria Workshop	Mtg 20 Geotechnical Report Review Plan Mtg 22 Site Utilization Workshop 2 Final Slides	Weekly PM Meeting Mtg 24 Infrastructure and Control (I&C) Design Criteria Workshop: Draft Slides		
18	19	20	21	22	23	24
		22 Site Utilization Workshop 2	Mtg 24 Infrastructure and Control (I&C) Design Criteria Workshop: Draft Slides	Weekly PM Meeting Mtg 20 Geotechnical Report Review Draft Slides		
25	26	27	28	29	30	31
		23 Resiliency, Reliability, and Recovery Workshop Plan	Mtg 24 Condition Protection Workshop Plan Mtg 25 Process and Water Focus Draft Slides Mtg 20 Geotechnical Report Review Final Slides	Weekly PM Meeting Mtg 24 Infrastructure and Control (I&C) Design Criteria Workshop: Draft Slides		

- Regular workshop schedule
- 3-week planning cycle

3	PDR Validation	3/3/20
---	----------------	--------

Design Lead	Jude Grounds
Program Team Lead	Lydia Hakes

	Program Team	Design Team	Others
Meeting Attendees	David Peters, Michelle Cheek, Lydia Hakes, Tony Re, Christopher Bowker, Ben Gossett, Jan Johnson, Bonita Oswald, Jeanna Ott, Humberto Piedra-Ruiz, Jaideep Singh, Ken Ackerman, Yone Akagi, Kim Gupta, Jodie Inman, Mike Saling, Rich Benight, Janet Senior, Jan Holland, Kyle Sanders, Jeremy Williams (p), Tyler Bird (p), Bill Persich (p?)	Jude Grounds, Mark Graham, Pete Krell, Andrew Nishihara, Austin Peters, Steve Schenk, Olanu Deng (p), Ali Leeds (p), Bill Carr*, Patrick Carlson (p)	

Workshop Purpose and Goals

No.	Description
1	Review preliminary LOS (Oregon Resiliency Plan) goals (45 min)
1a	Oregon Resiliency Plan summary
1b	Normal Conditions and Catastrophic Events (Seismic, Watershed WO - volcanic ash, algae, climate change, wildfire)
1c	Response Time
1d	Capacity
1e	Finished Water Quality
2	Review & Confirm PDR Recommendations & areas for further consideration (75 min)
2a	Process Flow Diagram - Verification and Opportunities for Refinement
2b	Initial, ultimate, minimum design capacities
2c	Life Cycle Cost Assessment
2d	Bypass and Shutdown Conditions

Make or Validate Decisions to Be Made at Workshop

No.	Description	Decision Log Info
		No. MV/D
112	Ultimate Plant Capacity (M)	2 M
222	Partnership for Safe Water (V)	22 V
329	Raw Water Quality Baseline (D)	29 D
453	LOS Goals (M)	53 M
554	Use of Wellfield (M)	54 M
690	Finished Water Goals (V)	90 V
7102	Minimum Operating Rate (D)	102 D
8104	Lifecycle Cost Assumptions (V)	104 V
9106	Challenged WO Capacity (D)	106 D
10108	Plant bypass (V)	108 V
11111	Shutdown Conditions (D)	111 D

Workshop Development Gateway Checklist

Gateway	Lead	Status	Date	Design Team	Program Team	Approval
Draft Workshop Plan Approval by Design Lead	J. Grounds	Complete	2/11/20	Grounds, Krell, Nishihara	Peters, Cheek, Hakes	2/11/2020 J. Grounds
Workshop Plan Approval by PWB	J. Grounds	Complete	2/12/20	Grounds, Nishihara, Graham	Peters, Cheek, Hakes	2/13/2020 L. Hakes
Draft Slides Approved by PWB	J. Grounds	Complete	2/20/20	Grounds, Nishihara, Carr	Peters, Cheek, Hakes	2/20/2020 L. Hakes
Final Slides Approved by PWB	J. Grounds		2/26/20			2/27/2020 L. Hakes
Workshop			3/3/20			
Meeting Summary	A. Nishihara		3/3/20			3/17/2020 L. Hakes

• Workshop planning sheets

Final Oregon Pacific Workshop Planning
m:\g_pac_09_pac_validation\02.docx

Page 1
5/5/2020

- Workshop planning sheets

Setting ourselves up for success and fun

- Set up clear decisions
- Right people in the right room so decisions stick
- Put some fun in with the engineering

Poll 0: It's Taco Tuesday on Cinco De Mayo!

What Level of Service do you expect from your Tacos, based on Shell Integrity Rate (SIR)?

1. Standard Taco
 - 75% SIR
2. Resilient-Shell Taco
 - 90% SIR through use of flour tortilla
 - 1.0x cost
 - Significantly reduced crunch factor
3. Redundant Shell (e.g. Cheesy Gordita Crunch)
 - 95% SIR
 - 1.8x cost
4. N+2 Redundant Units
 - 98% SIR
 - Free Pepsi
 - 3.0x cost



1. Standard Taco



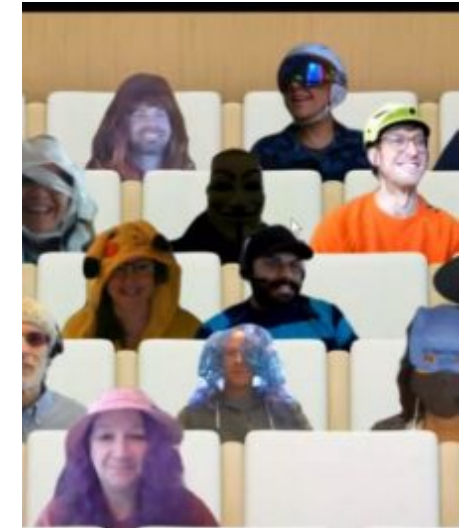
2. Resilient Shell



3. Redundant Shell



4. Redundant Tacos



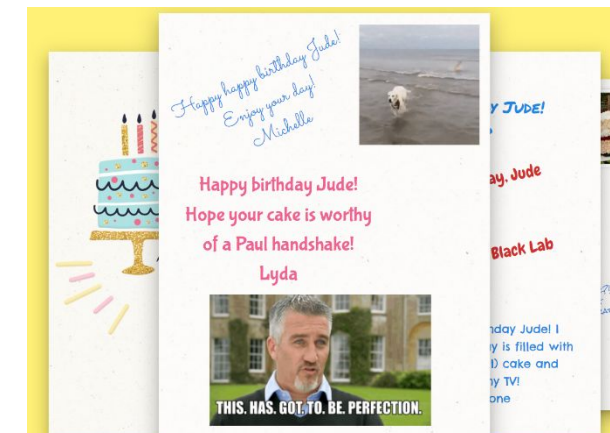
LYDA HAKES

FACILITY DESIGN PROJECT MANAGER
PORTLAND WATER BUREAU

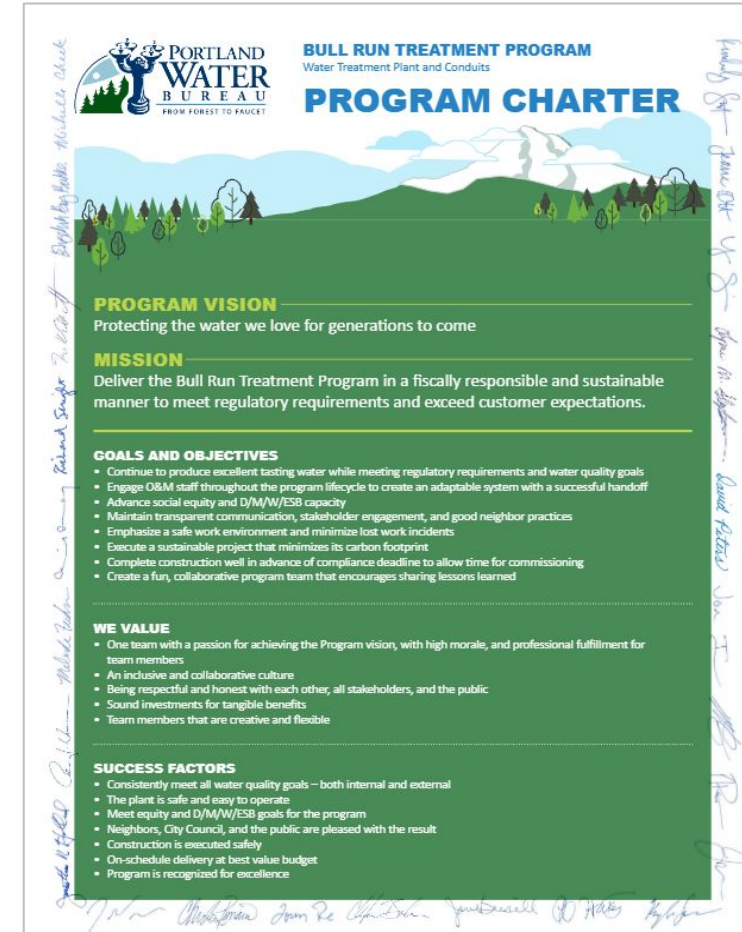


JEREMY WILLIAMS

FACILITY DESIGN TECHNICAL LEAD
BROWN AND CALDWELL

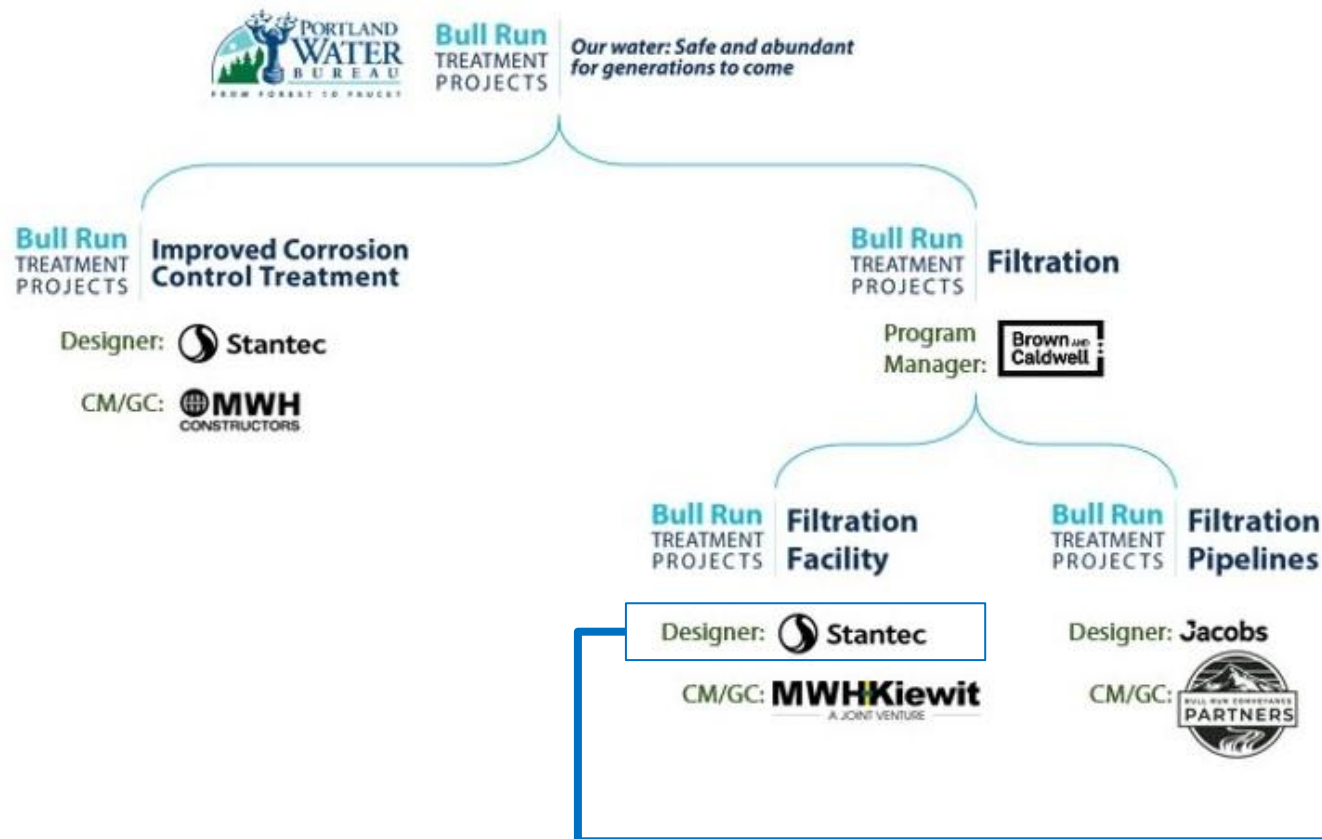


Approach to Project Management Guided by Program Charter



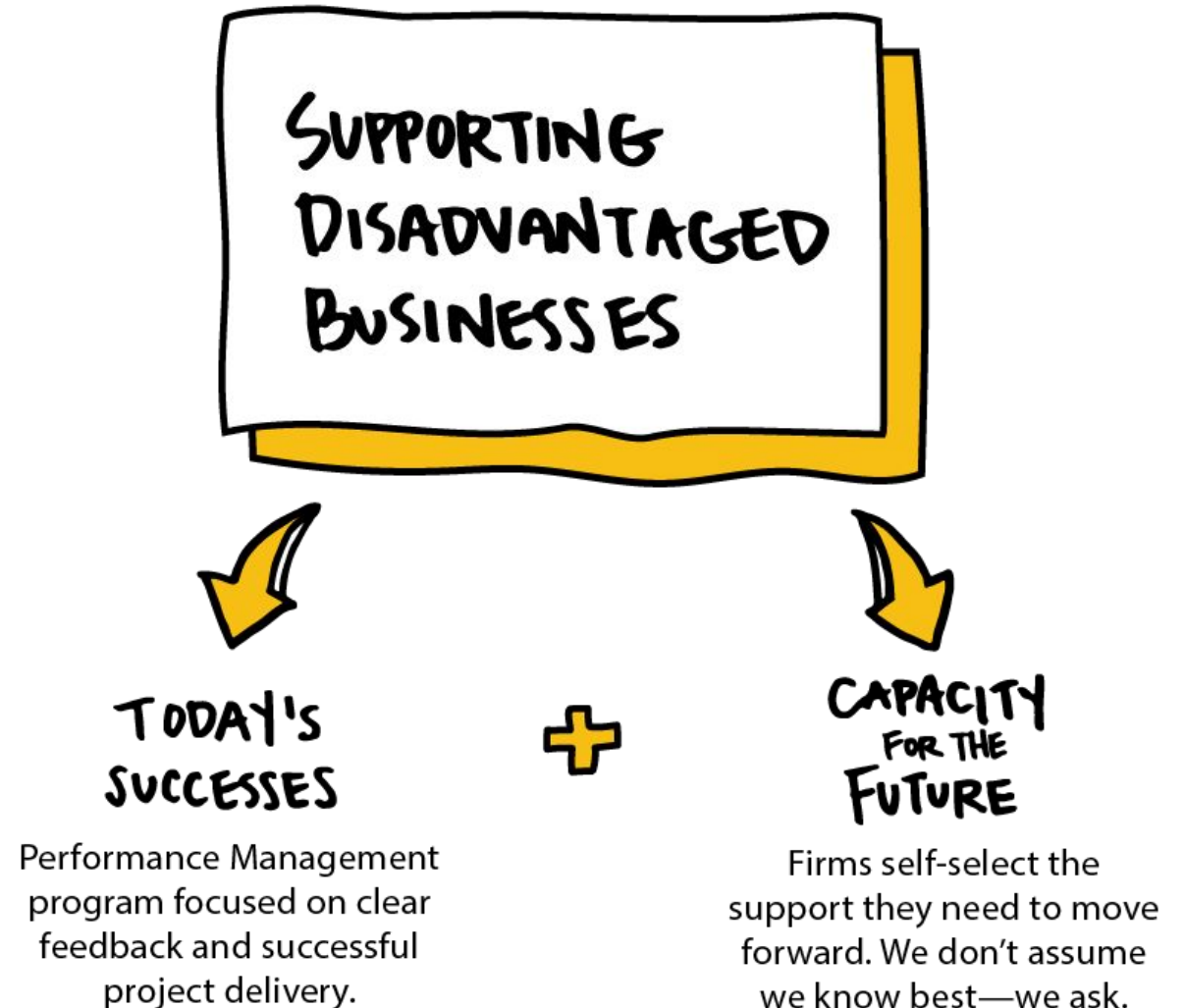
Managing a Large, Diverse Team

- 17 firms
- 11 equity contractors*



Supporting Small Firms

- We can put systems in place to support small firm success—both now and into the future



Planning to be successful

Challenges

- Bilateral Compliance Agreement with September 2027 deadline for serving filtered water
- Water Bureau's largest project ever
- No current filtration facility
- COVID



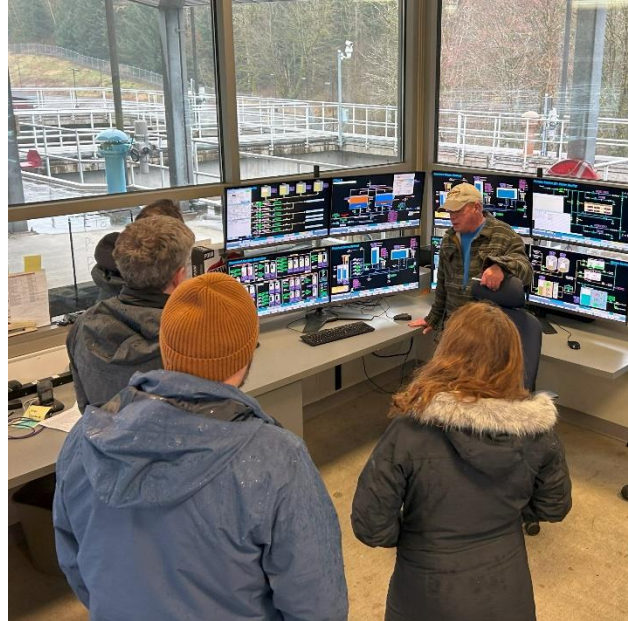
Solutions

- “Go slow to go fast”
- Developed dedicated internal team
- Tours and chats
- Online and offline tools



Maintaining Engagement

- Regular communication with entire team
 - Weekly coordination meetings
 - Update emails
 - Small-team coordination calls
 - Management team meetings
 - Quarterly all-hands meetings
 - In-person meetings
 - Site visits
- 



- Early definition of decision, stakeholders, and process

Ball Park Finition - On-Site Design Basis of Design Decision Log														Decision Process												
No.	Decision	Description/Decision/Impact	Type	Subsystem	Effect	Cause/Problem	Recommendation	Cost (\$)	Schedule (mo)	Area 1/2/3					Area 4/5/6					Status	Workshop	Other Factor	Decision Date	Decision Description	Notes	
										Area 1	Amount (\$K)	Area 2	Amount (\$K)	Area 3	Amount (\$K)	Area 4	Amount (\$K)	Area 5	Amount (\$K)							Area 6
001	Building Design	How will design be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
002	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
003	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
004	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
005	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
006	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
007	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
008	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
009	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
010	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
011	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
012	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
013	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
014	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
015	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
016	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
017	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
018	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
019	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
020	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
021	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
022	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
023	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
024	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
025	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
026	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
027	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
028	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
029	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
030	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
031	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
032	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
033	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
034	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
035	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
036	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
037	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
038	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
039	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
040	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
041	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
042	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
043	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
044	Climate Control/Heat Loss	How will climate control be supported? (Design team, owner, etc.)	Design Process	Structural	Primary	Owner for support	Design team for support	100K	12	Area 1	100K	Area 2	100K	Area 3	100K	Area 4	100K	Area 5	100K	Area 6	100K	100K	100K	100K	100K	100K
045	Climate Control/Heat Loss																									

Better Communication ☐ Better Engagement

- Pre-populated and regularly updated decision log
 - Early definition of decision, stakeholders, and process
- Interactive review workshops

poll 2 results.txt

File Edit View

1. PWB: Which one of the following types of facility and equipment access would you prioritize?

A. Walking/pedestrian and cart/forklift access	4/40 (10%)
B. Vehicle/large equipment and crane access	8/40 (20%)
C. Defer to others	4/40 (10%)
D. Defer, need more information	1/40 (3%)
No Answer	23/40 (58%)

	A	B	C	D
Austin Peters				
Matthew Huang				
akimoo			X	
Casey Hagerman				
Alli Leeds				
Ben				
Qiancu Deng				
BGOSSETT			X	
apeck				
ksandera				
RNELSON		X		
Ryan Roepke				
Mark Graham				
MYLAT				
wbtanyr	X			
hpiedcaruiz		X		
pkreft				
lbird				
Bonita Oswald		X		
Steve Schenk				
YONEA	X			
JRHolland				
michelle cheek	X			
David Peters		X		
jsingh		X		
Patrick Carlson				
jlinman				X
Kimberly Gupta	X			
Chris Johnson				
Jeremy				
Patrick Carlson				
JANETS			X	
tim				
cbowker				X
lhakes		X		
Andrew Nishihara				
jmcgcaw		X		
MIKESA		X		
RICH		X		

Poll #2

SITE LAYOUT OPTIONS

Q1. (PWB) / Q5. (Consult.): Which one of the following types of facility and equipment access would you prioritize?

- A. Walking/pedestrian and cart/forklift access
- B. Vehicle/large equipment and crane access
- C. Defer to others
- D. Defer – need more information

Q2. (PWB) / Q6. (Consult.): Which process structure does operations staff (control room) need to be closest to? (Choose all that apply)

- A. Ozone?
- B. Floc/Sed?
- C. Filters?
- D. Solids Handling?
- E. Chemical Building?
- F. Defer to others
- G. Defer - need more information

Q3. (PWB) / Q7. (Consult.): From finished grade (surface) which would you rather have:

- A. Easier access to equipment located at the bottom of structures (pumps, valves, pipes)
- B. Easier access to the top deck of structures (above the water surface)?
- C. Defer to others
- D. Defer – need more information

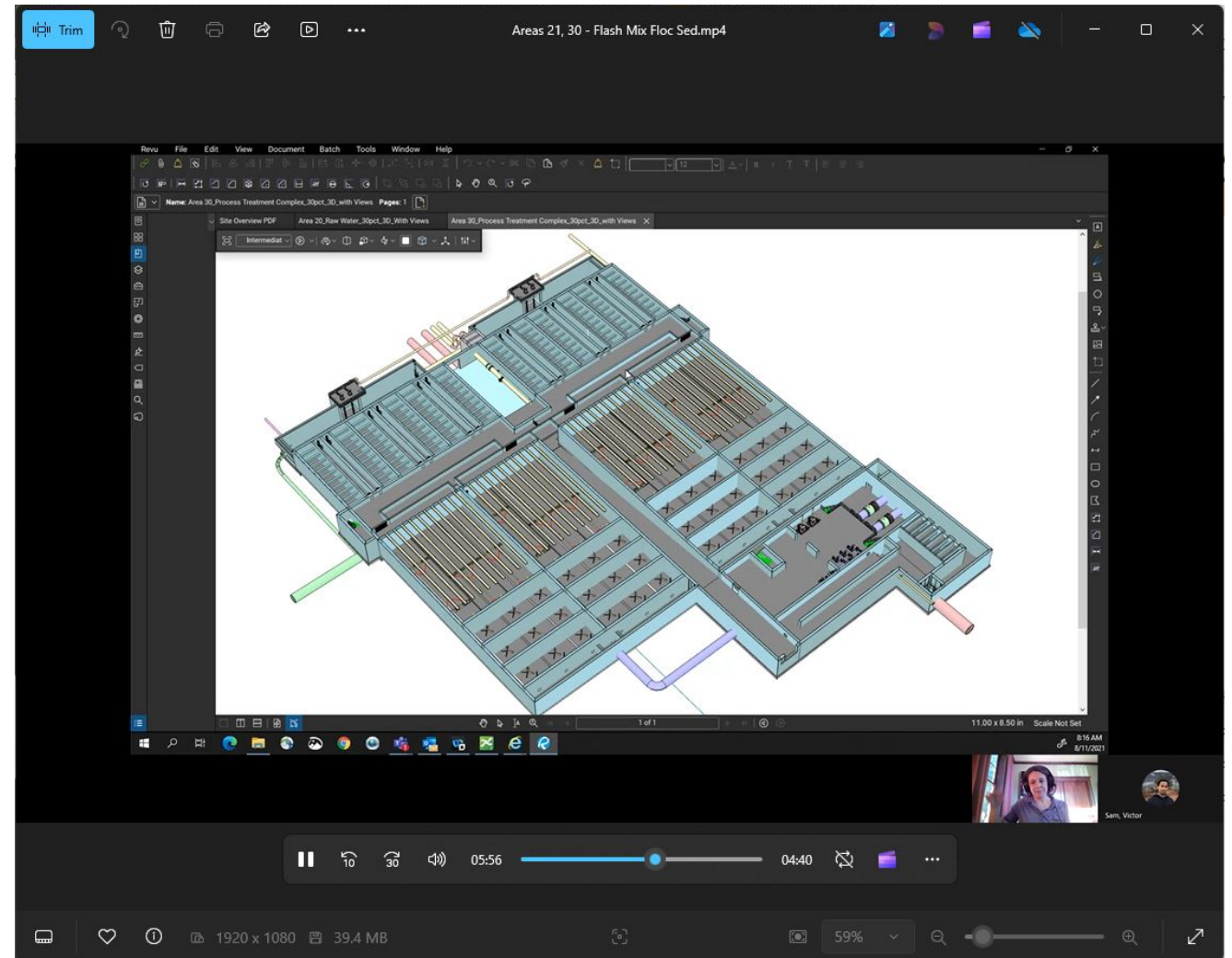
• Q4. (PWB) / Q8. (Consult.): Considering access to the Administration facility for public, deliveries, staff, etc.) which strategy do you prefer?

- A. A 'public facing' administration building separated from the process to receive visitors and control access
- B. A more plant-oriented administration building with direct access to process facilities.
- C. Defer to others
- D. Defer – need more information

Q9. (All): If you need more information, please specify below.

Better Communication ☐ Better Engagement

- Pre-populated and regularly updated decision log
 - Early definition of decision, stakeholders, and process
- Interactive review workshops
- Recorded model walk-throughs



Success comes in many forms

- Seamless transition from in person collaboration to fully remote during the pandemic.
- Buy-in from executive committee and technical advisors has led to decisions that stick.
- Project has remained on schedule despite the complexity.
- Team has successfully navigated value engineering changes needed to maintain affordability.
- Equity contractors have greatly benefited from participation in this project—both in economic opportunity and technical and project management skills they can continue to build on.

Today's Takeaways

- Microsoft Teams has excellent features to help teams work from different locations
- Great online experiences start offline
- Plan for the team you want and the outcomes you need

Questions?



Bull Run
TREATMENT
PROJECTS

*Our water: Safe and abundant
for generations to come*

Learn More portland.gov/bullrunprojects



in association with

and other firms