

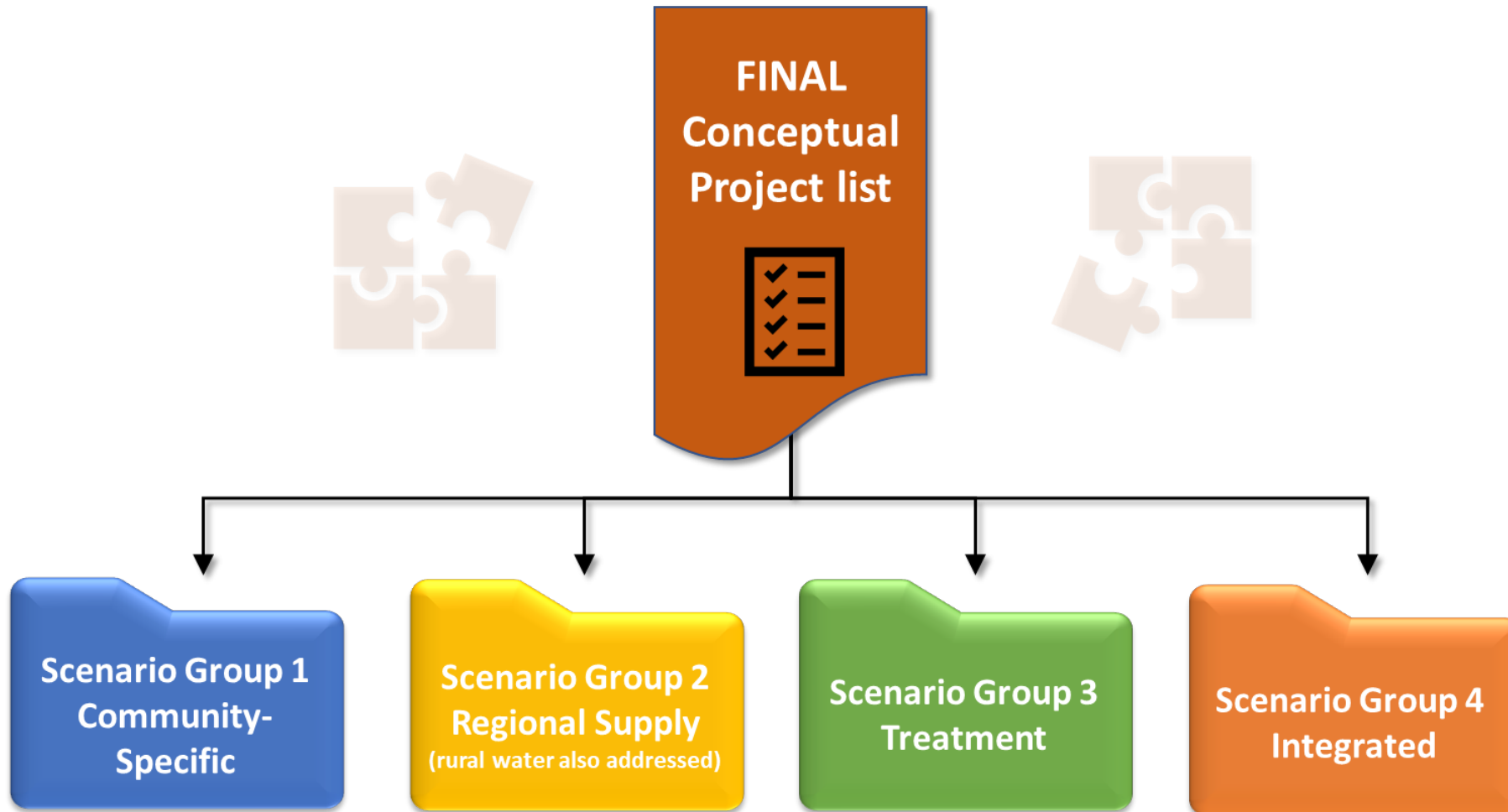
Conceptual Drinking Water Supply Plan: Scenario Development Update

Hannah Albertus-Benham and Shalene Thomas, Wood
3M PFC Settlement Work Group Meetings
November 19-20, 2019

- ❑ Scenario Development Recap and Progress Update
- ❑ Groundwater Model update- obstacles and options
- ❑ Preliminary Results Summary – what costs will be included?

SCENARIO DEVELOPMENT RECAP

SCENARIO DEVELOPMENT – September-October



Reviewed Community-specific, Regional, and Treatment scenario layouts in 1:1 meetings

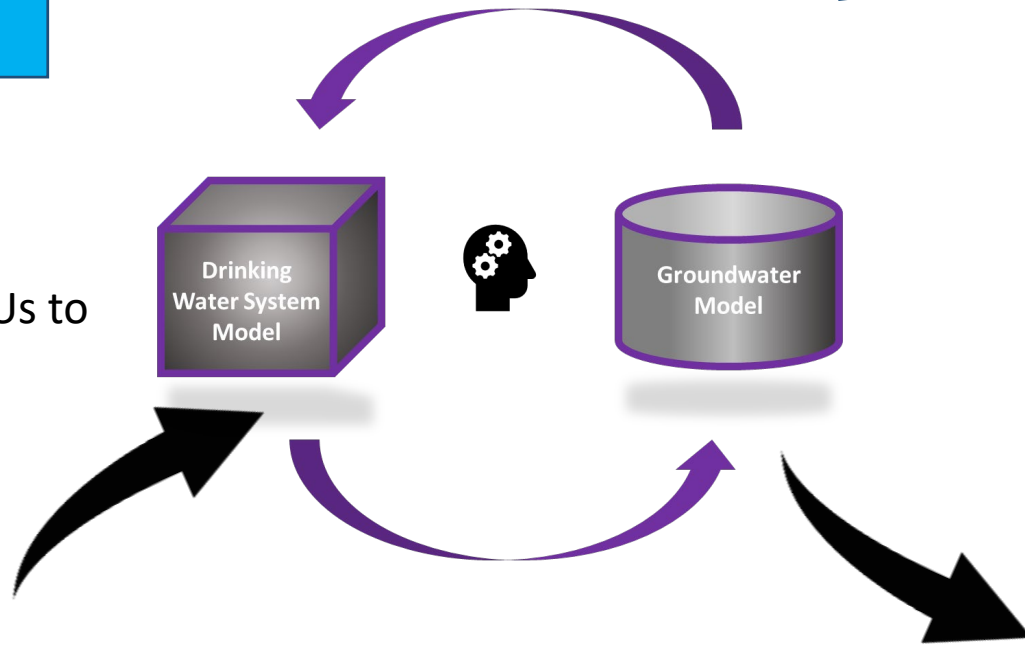
LGU Q&A:

- Wood to reach out as necessary during refinement of scenarios

- Phone meetings with Maplewood and SPRWS
- Email follow-up with other communities
- Updating SharePoint with scenario layouts as they become available

LGU Meetings:

- Wood will meet with LGUs to ensure appropriate infrastructure
- Concurrent with other scenario modeling



Wood Progress Update – November meetings:

- Opportunity for discussion

SCENARIO DEVELOPMENT (revised explanation - UPDATED)

Scenario Group 1 Community- Specific

- A. This scenario will consist of the projects submitted by the LGUs.
- B. To be determined based on the initial Community Scenario A projects and identifying the overlapping projects that were left out of Group A. Overlapping projects to be included here. This grouping may consider centralized treatment of municipal wells versus individual treatment of municipal wells.
- C. As needed to work through overlapping projects that cannot be dismissed.

Scenario Group 2 Regional Supply (rural water also addressed)

Surface Water

- A. One surface water plant that feeds all impacted communities
- B. One surface water plant on the Mississippi River and one on the St. Croix (two water delivery options for Woodbury)
- C. Extend St. Paul Regional Water System to ~~western communities, with a surface water plant on the St. Croix for the eastern communities~~ all impacted communities

Groundwater

- A. One well field, likely with treatment, and distribute throughout the East Metro region using a combination of existing and new infrastructure
- B. Multiple well fields...

All supplemented by POET or cluster systems for rural areas if extending water mains is not cost effective

SCENARIO DEVELOPMENT (revised explanation - UPDATED, cont'd)

Scenario Group 3 Treatment

Includes treatment for wells with Health Index (HI) of:

- A. $HI(\text{PFAS}^*) > 0$
- B. Detection of [PFOS] OR [PFOA] OR [PFHxS]
- C. $HI(\text{PFAS}^*) > 0.5$
- D. $HI(\text{PFAS}^*) > 1.0$

Each: Year 2020 with GAC
 Year 2020 with IX
 Year 2040 with GAC
 Year 2040 with IX

Note: this is a desktop exercise to determine relative costs associated with each level of contamination. The priority of safe drinking water only includes wells impacted above health risk limits, as calculated by the HI.

Scenario Group 4 Integrated

Wood will create scenarios to maximize the projects when bundled and incorporate shared/regional systems wherever possible (above and beyond LGU priorities) for a final integrated scenario grouping.

*This does not include ALL PFAS, but rather only those that have health risk limits or health based values, as defined by the Minnesota Department of Health – PFOS, PFOA, PFHxS, PFBA, and PFBS.

SCENARIO DEVELOPMENT PROGRESS UPDATE

Progress Overview

- Primarily working on Regional, Community-Specific and Treatment scenarios
 - Piping layouts
 - Costing, block flow diagrams, getting quotes from vendors
- Worked through assumptions on well counts with MDH for Treatment Scenarios
- Finalized GW model and began calibration- obstacles and options
- Updated Chapters 1-3 and provided Draft Chapters 4-6

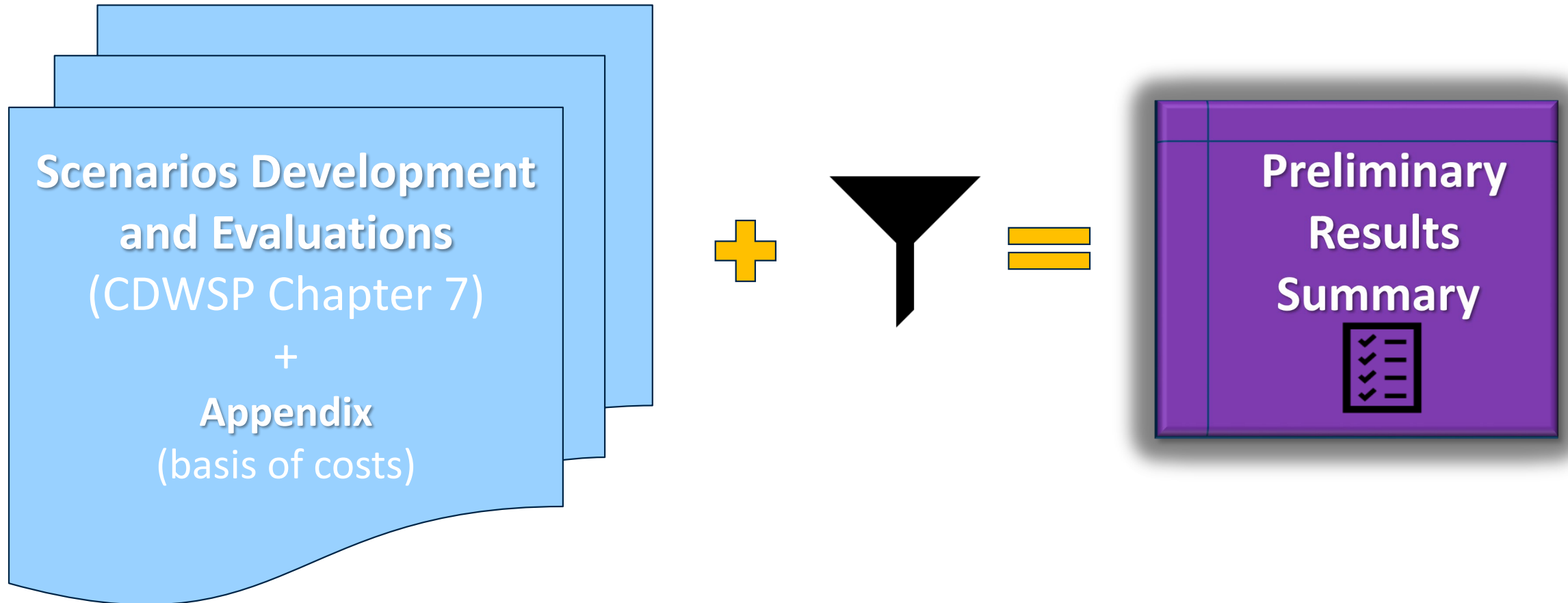
Groundwater Model Update

Steps to functioning GW model:

- Data gathering – COMPLETE ON SCHEDULE
- Model build – COMPLETE ON SCHEDULE
- Calibration – in progress
 - While beginning calibration phase, a **software error** was discovered
 - Actively addressing the issue
 - Have identified a preferred option (patch from software developer), with back up options
 - Will send an **email update next week** with plan moving forward

PRELIMINARY RESULTS

Overview



PRELIMINARY RESULTS SUMMARY

Results Summary

- ❖ Scenario overviews – linked to full results with maps
- ❖ Cost Summary (across all scenarios/projects) – example table

Scenario Alternatives	Cap Cost	O&M Cost	Total 20 Year NPW	Cost/1000 gal
Community Scenario 1A				
Community Scenario 1B				
Community Scenario 1C				
Regional Scenario 2A				
Regional Scenario 2B				
Regional Scenario 2B-1				
Regional Scenario 2B-2				
Regional Scenario 2C				
...				

PRELIMINARY RESULTS

Preliminary Results Outline (per scenario)

- ❖ Scenario Description – assumptions, siting, treatment components, distribution system
- ❖ Map/Layout
- ❖ Drinking Water Modeling Considerations – 2020 to 2040 (line sizing, booster pumps, storage, pressure zones, etc.)
- ❖ Groundwater Modeling Considerations – safe yield, PFAS movement (related to public and private wells)
- ❖ Cost Estimate – cost per component as well as overall costs

PRELIMINARY RESULTS SUMMARY

Scenario Costs Example – One Surface Water Plant:

- Total cost of plant (via vendor from block flow diagrams), lump sum
- Land acquisition cost
- Distribution system:
 - Pipe – depends on size (diameter and length) and % of road/pavement disturbance (0%, 50%, or 100%) vs. jack and bore
 - Booster pump station
 - Water Storage Tank
 - Pipeline easements
- Contingency (20%)
- Engineering/Administration/Legal (15%)

December Meeting Options

1. Hold all three December meetings and present partial preliminary results summary
2. Cancel December work group meetings, but hold Subgroup 1 meeting (work group members can attend)
3. Cancel all December meetings and provide an update via email

Questions or Comments?

Thank you!

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