Longview Drinking Water Supply Improvement Study

Customer Advisory Committee Recommendation

August 20, 2015

Longview Drinking Water Supply Improvement Study

PRESENTATION AGENDA

1. CAC Process and Recommendations – CH2M
2. Ranney Collector Implementation Steps – CH2M
3. Project Financial Status – Jeff Cameron
4. Discussion

CAC Process and Recommendations

CAC Process and Recommendations

- Mint Farm RWTP began service – January 31, 2013
- Water quality complaints began – March 2013
  - July 2013: Hired Confluence Engineering to identify causes and potential solutions
  - August 2014: Hired CH2M/JLA Public Involvement to perform water supply review
    - Customer telephone survey
    - CAC Formation and Chartering
    - Evaluation Criteria
    - Options and Evaluation Process
    - Public Outreach
    - CAC Recommendations

WATER QUALITY RATING

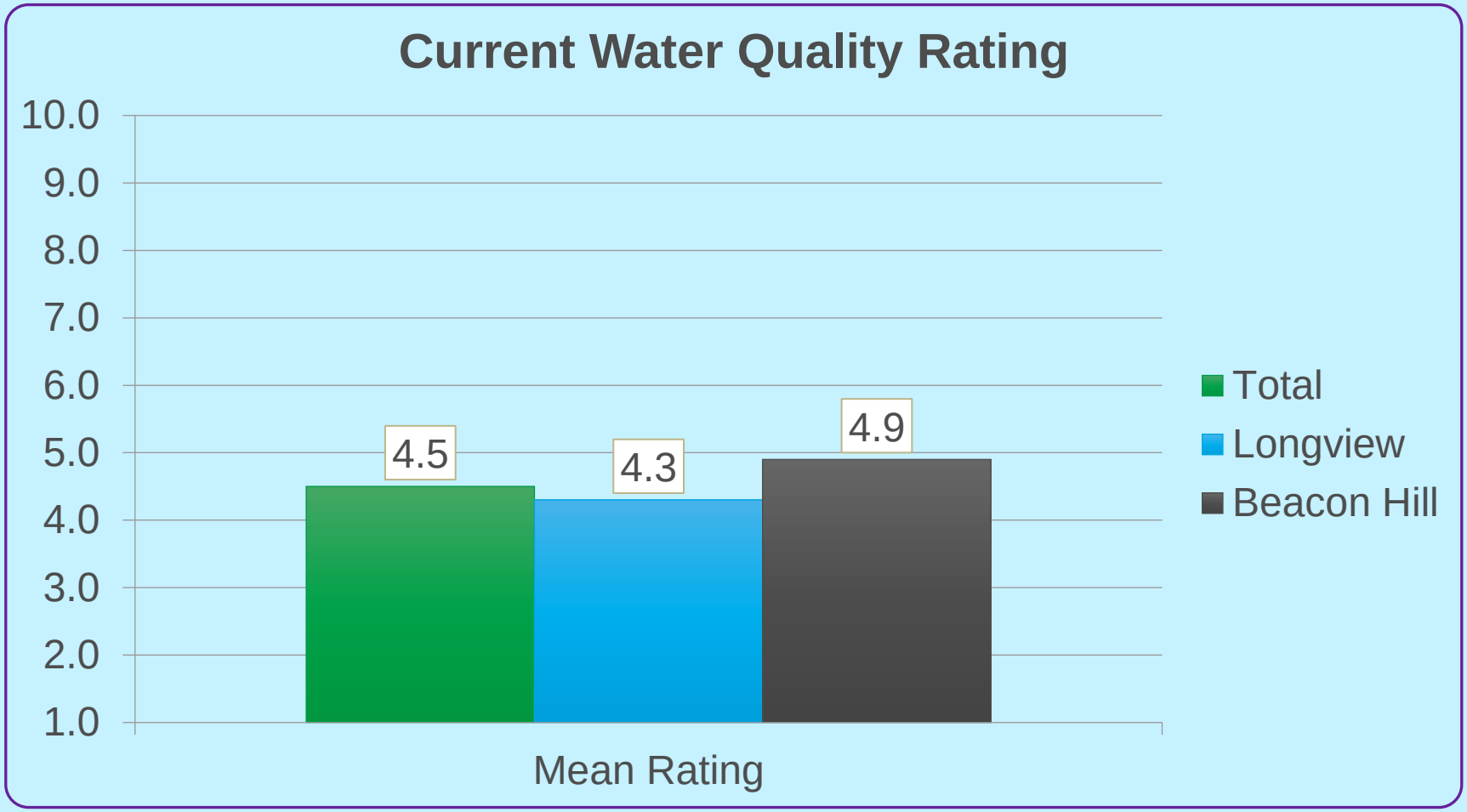
TEN-POINT SCALE WHERE "10" IS "VERY GOOD"
TELEPHONE SURVEY – OCTOBER 2014

WATER QUALITY CUSTOMER SURVEY

City of Longview
Beacon Hill Water and Sewer District

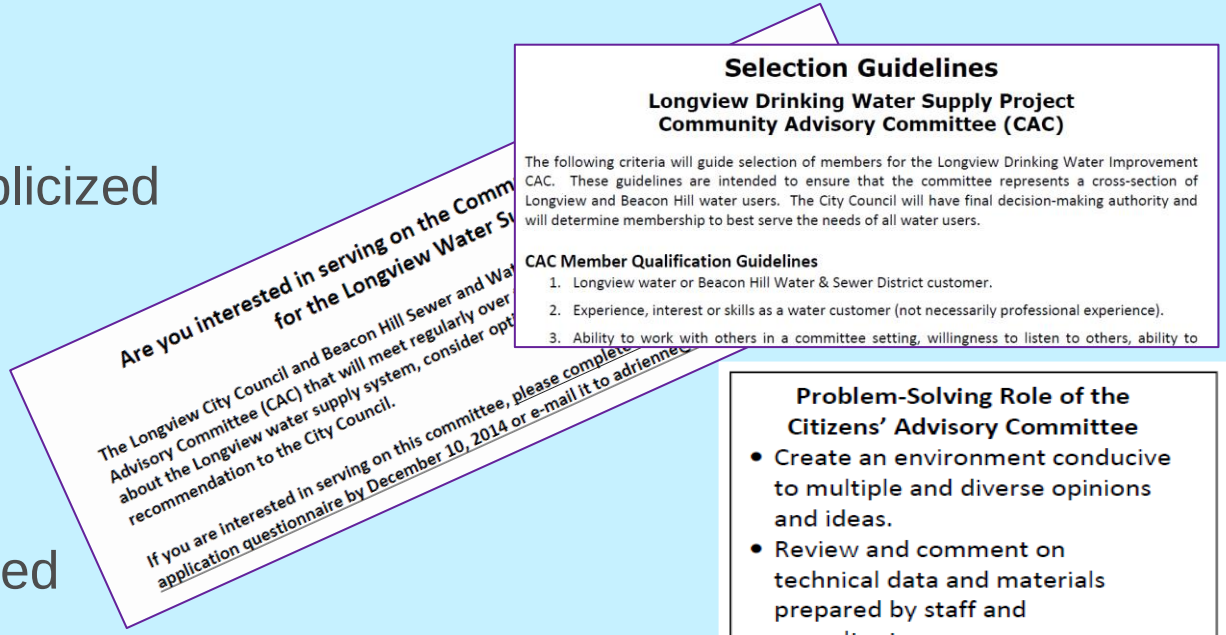
Preliminary Survey Results
October 21, 2014

Riley Research Associates



Selection of Customer Advisory Committee (CAC)

- Formal application
- Recruitment widely publicized
  - Council meetings
  - City website
  - Reader boards
- 100 applications received
- Defined evaluation process – by consultant staff
  - Applicants anonymous
- Recommendations submitted to Council and Board
  - Total of 14 appointed



Are you interested in serving on the Comm
for the Longview Water S

The Longview City Council and Beacon Hill Sewer and Wa
Advisory Committee (CAC) that will meet regularly over
about the Longview water supply system, consider opt
recommendation to the City Council.

If you are interested in serving on this committee, please complete
application questionnaire by December 10, 2014 or e-mail it to adrienne

Selection Guidelines

Longview Drinking Water Supply Project
Community Advisory Committee (CAC)

The following criteria will guide selection of members for the Longview Drinking Water Improvement CAC. These guidelines are intended to ensure that the committee represents a cross-section of Longview and Beacon Hill water users. The City Council will have final decision-making authority and will determine membership to best serve the needs of all water users.

CAC Member Qualification Guidelines

1. Longview water or Beacon Hill Water & Sewer District customer.
2. Experience, interest or skills as a water customer (not necessarily professional experience).
3. Ability to work with others in a committee setting, willingness to listen to others, ability to

Problem-Solving Role of the Citizens' Advisory Committee

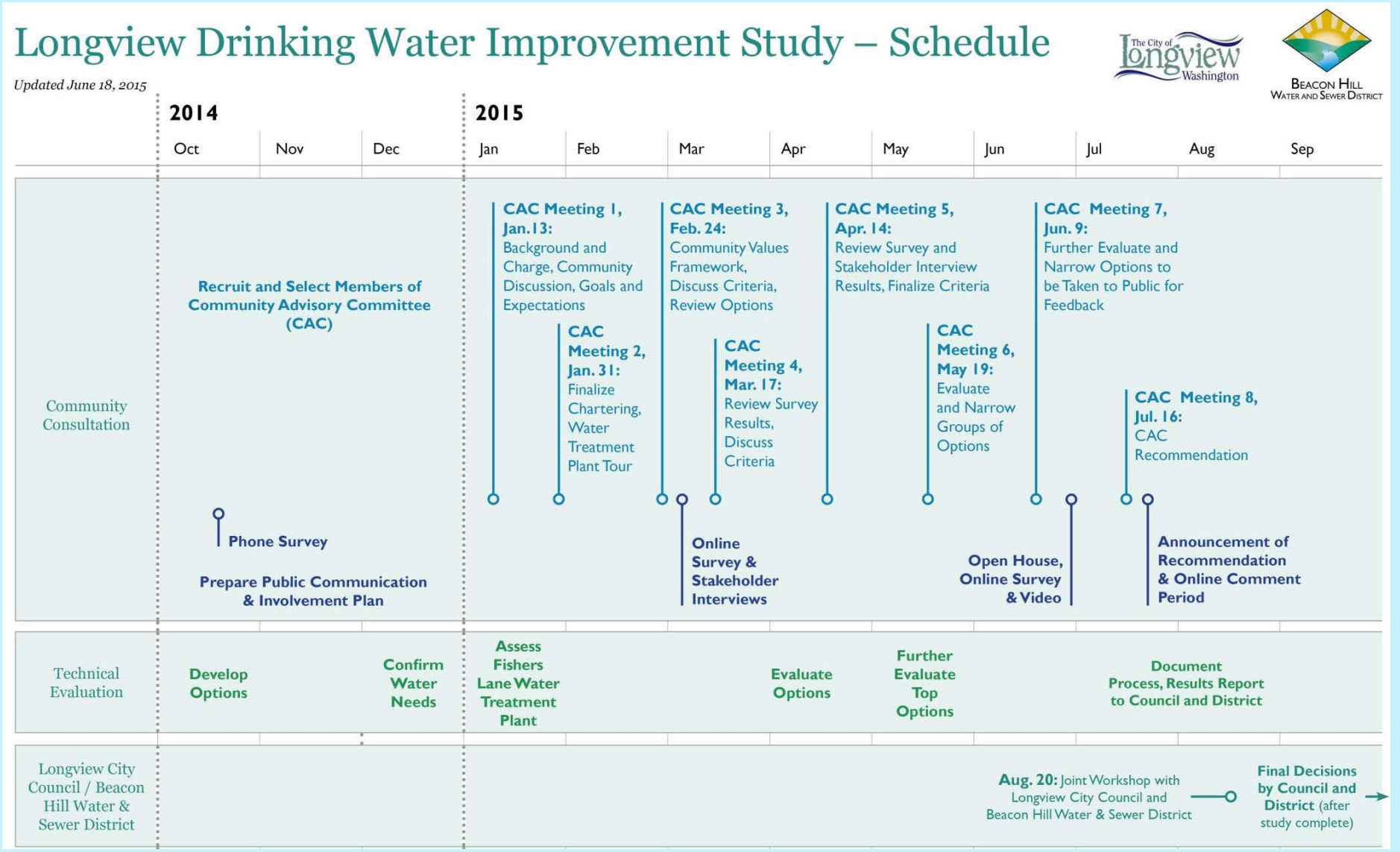
- Create an environment conducive to multiple and diverse opinions and ideas.
- Review and comment on technical data and materials prepared by staff and consultants.
- Discuss community concerns and balance interests in order to establish evaluation criteria that will help to narrow possible solutions to improving Longview's water supply.
- Ensure the preferred alternative for improving Longview's Water Supply is consistent with and supportive of the project purpose and need as well as the evaluation criteria established by the CAC, with input from the community.
- Promote public understanding of the Longview Water Supply Alternatives.

Recruitment and Selection Process Resulted in Diverse Membership on the Customer Advisory Committee (CAC)

NAME	BACKGROUND	NEIGHBORHOOD
William Beltz	Business Owner	Columbia Valley Gardens
Mark Bergeson	Educator	N. 50th Ave
Orranda Chamberlin	Resident	Lone Oak
Raymond Colwell	Chemist	Columbia Heights
Philip Dennis	Scientist & Accountant	Coal Creek
Dave Hooper	Environmental Scientist	Robbins Addition
Rich Kirkpatrick	Health Care Professional	Cascade Way
Alissa Lee	Food Service Industry	West Beacon Hill
David Patrick McCoy	Business Owner	Old West Side
Amber Olson	Undergraduate Student	Willow Grove
Stephanie Owens	Resident	New West Side Longview
Dave Quinn	Electrical Engineer	Coal Creek
Vincent Scalesse	Mechanical Engineer	Olympic
Preston Worth	Business Owner	City View
Bonnie Decius	Beacon Hill Water and Sewer District Board Liaison	
Ken Botero	Longview City Council Liaison	

First CAC Meeting: Background Provided and CAC Set the Stage for Their Work

The CAC Held a Series of Eight Meetings, Corresponding with Community Outreach and Technical Evaluations



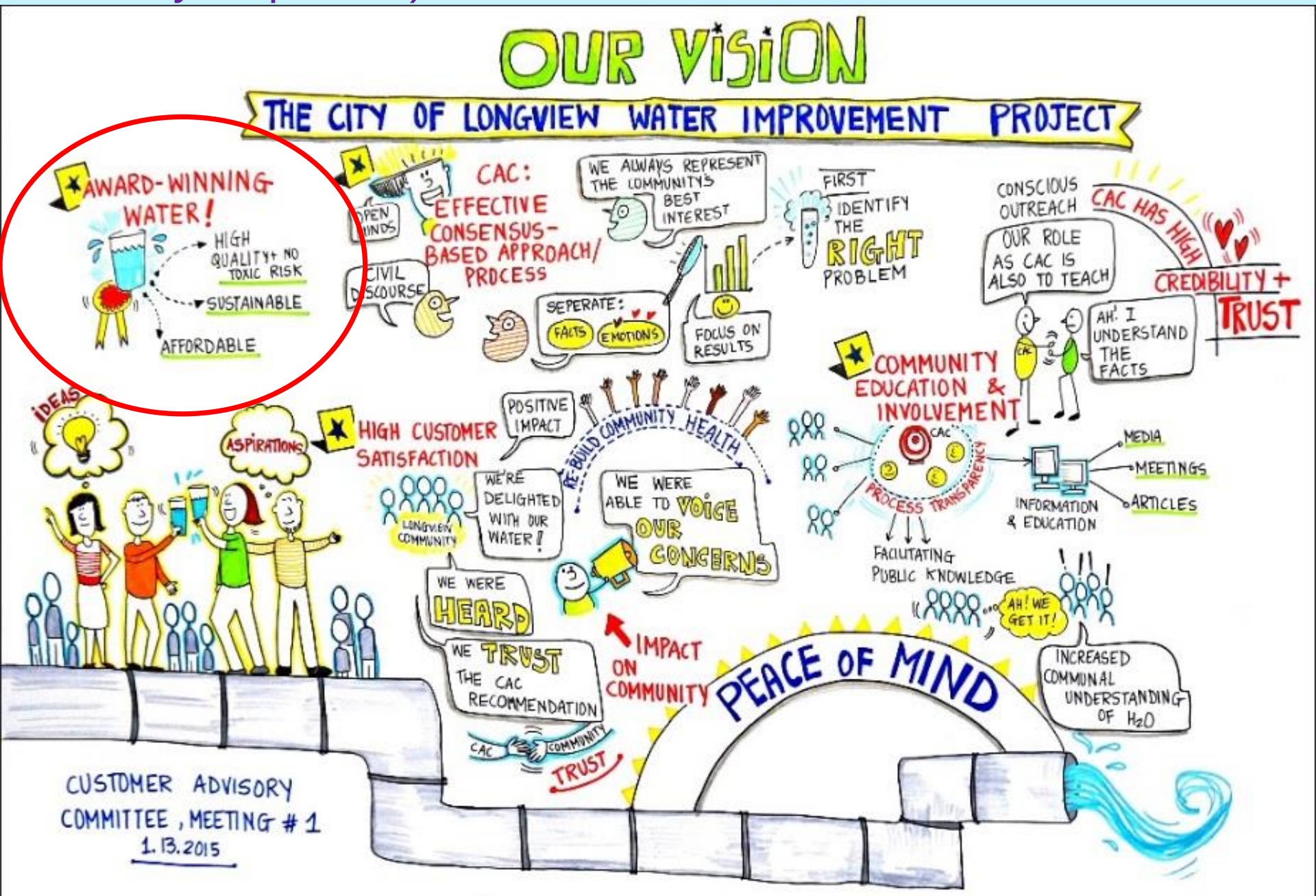
CAC Toured former Fisher's Lane Water Treatment Plant and new Mint Farm Treatment Plant

3 Key Values Guided Evaluation Criteria (reflected customer survey responses)

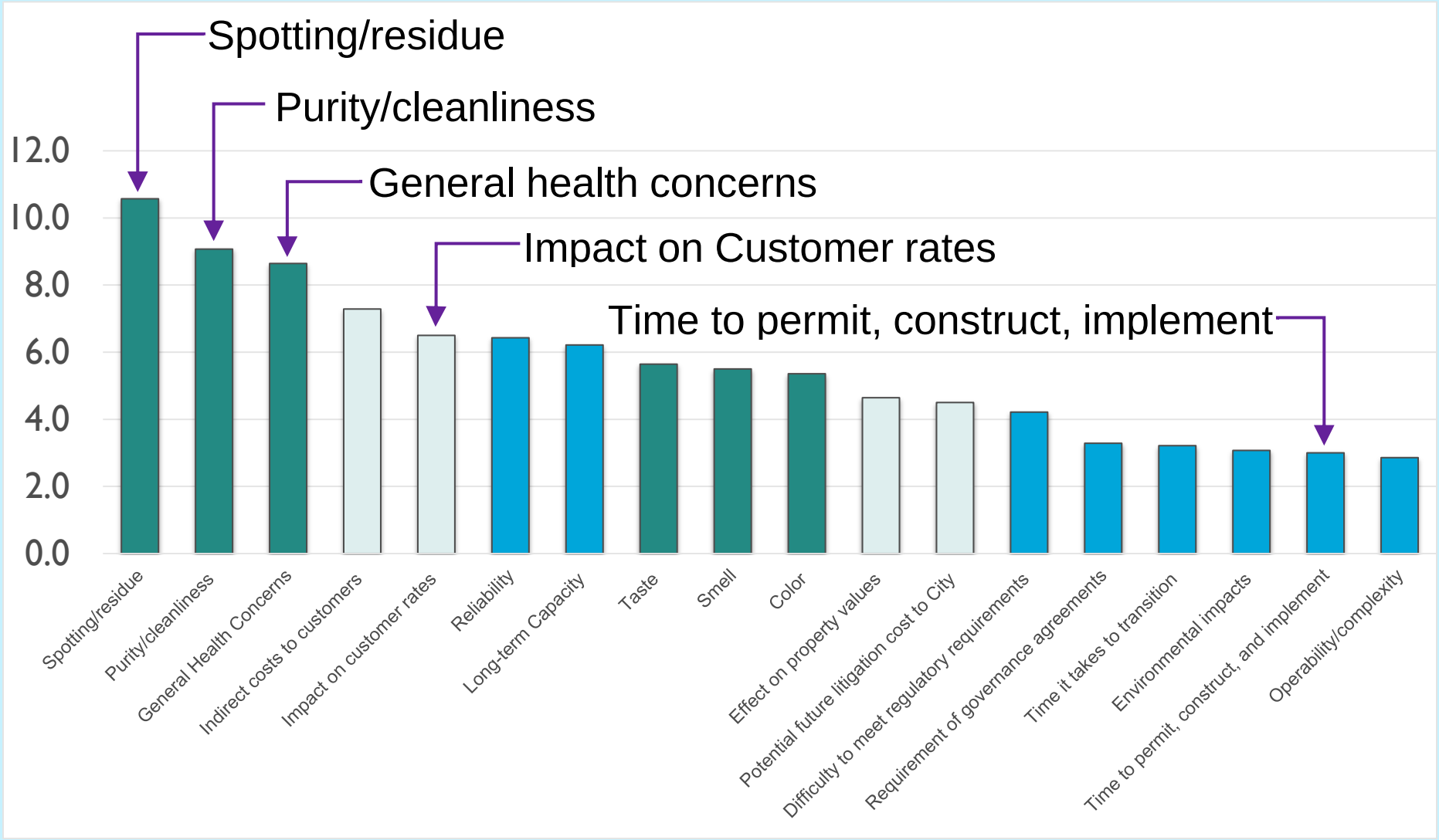
1. Customer Perspectives (High Quality, No Toxic Risk)
   - Aesthetic concerns – Spotting/Residue, Taste, Color, Smell
   - General Health concerns – Purity, Cleanliness
   - Impressions of safety – Source water quality, vulnerability to contamination
2. Technical (Sustainable)
   - Long-term capacity
   - Reliability
   - Environmental
3. Cost (Affordable)
   - Rate impacts
   - Indirect costs to customers
   - Effect on property values
   - Potential litigation costs to city

- Solicited community input on list of criteria

3 Key Values Guided Evaluation Criteria (reflected customer survey responses)



Evaluation Criteria were Weighted and Ranked for Importance



56 Options Listed to Address the Water Supply Situation

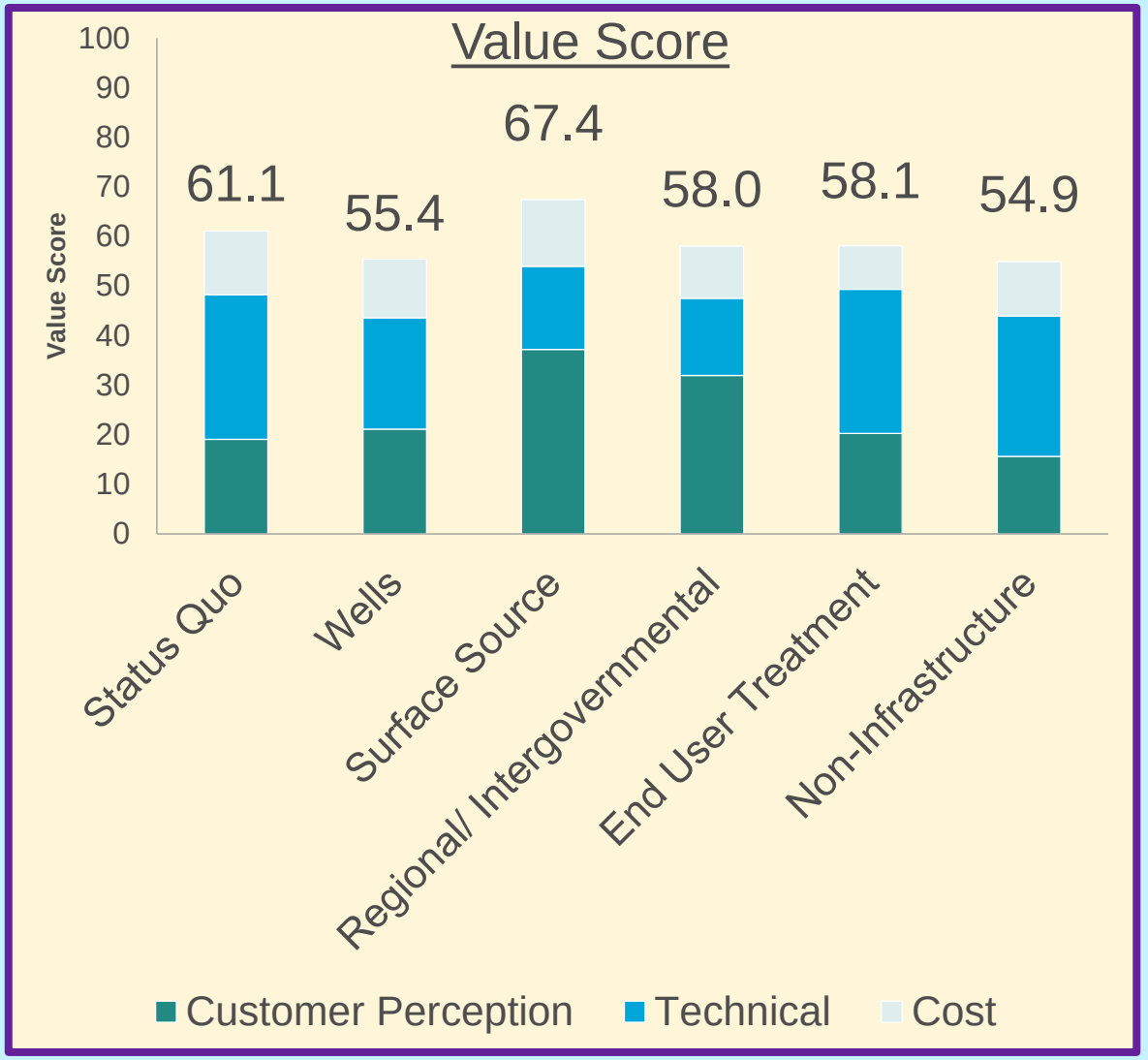
- Stay the course / no change
- Modified treatment of the existing wells, or changes in the distribution system
- Change to a surface water source
  - Direct withdrawal
  - Ranney collector wells
  - Aquifer storage & recovery (ASR)
  - Blending surface water with groundwater
- Buy water from or collaborate with another entity
- End user treatment at the individual home/business level
- Non-infrastructure products and education to deal with water issues

Longview Drinking Water Improvement Study
Water Supply Improvement Options Complete
March 2015

Category	Source	Option ID	Description
Status Quo	Mint Farm Wellfield	A	No Additional Treatment; Optimize Existing Mint Farm Water Treatment Plant (WTP)
Wells	Mint Farm Wellfield	B	Add Dissolved Oxygen to Mint Farm WTP
		C	Add Post Chlorination to Mint Farm WTP
		D	Add Softening to Mint Farm WTP
		E	Add Silica Removal to Mint Farm WTP
		E_2	Isolate Well Screens in potential Silica strata layer(s) at Mint Farm WTP
		E_3	Utilize Scavenger Wells at Mint Farm WTP
	Unspecified Location	F	Other Groundwater Sources
Distribution/ Transmission System Changes	Mint Farm Wellfield	G	Add Chlorine Booster Stations to Distribution System
		H	Add Dissolved Oxygen Injection to Distribution System
		I	Replace Pipes in Distribution System
		J	Mint Farm WTP Finished Water Conveyed to Fishers Lane for Connection to Distribution System
Surface Source	Cowlitz River	K	Rehabilitate Fishers Lane WTP and Existing Intake
		L	Rehabilitate Fishers Lane WTP with New Cowlitz River Intake Near Existing (within 5 miles +/-)
		M	Rehabilitate Fishers Lane WTP with New Cowlitz River Intake above Toutle River
		N	Replace Fishers Lane WTP with New Cowlitz River Intake Near Existing (within 5 miles +/-)
		O	Replace Fishers Lane WTP with New Cowlitz River Intake above Toutle River
		P	Rehabilitate Cowlitz River Intake; Treat at Mint Farm WTP
		Q	New Cowlitz River Intake (within 5 miles +/-); Treat at Mint Farm WTP
		R	Rehabilitate Cowlitz River Intake; Clarification at Fishers Lane and Filtration at Mint Farm WTP
		S	New Cowlitz River Intake (within 5 mi +/-); Clarification at Fishers Lane and Filtration at Mint Farm WTP
	Columbia River	T	Columbia River Intake with New WTP
		U	Columbia River Intake; Treat Water at Mint Farm WTP
		V	Columbia River Intake; Treat Water at New/Rehabilitated Fishers Lane WTP
	Unspecified Location	W	New Upland Water Source with Surface Dam and Treatment
	Aqueduct	W_2	Conveys surface water to treatment plant in open channel
Ranney Collector	Cowlitz River	X	Ranney Collectors on Cowlitz River Downstream; Treat at Fishers Lane WTP
		Y	Ranney Collectors on Cowlitz River Downstream; Treat at Mint Farm WTP
		Z	Ranney Collectors on Cowlitz River Downstream with new WTP at New Location
		AA	Ranney Collectors near Fishers Lane; Treat at Fishers Lane WTP
		AB	Ranney Collectors near Fishers Lane; Treat at Mint Farm WTP
		AC	Ranney Collectors near Lexington; Treat at Fishers Lane WTP
		AD	Ranney Collectors near Lexington; Treat at Mint Farm WTP
		AE	Ranney Collectors and new WTP near Lexington
	Columbia River	AF	Ranney Collectors on Columbia River; Treat at Mint Farm WTP
		AG	Ranney Collectors on Columbia River; Treat at Fishers Lane WTP
		AH	Ranney Collector on Columbia River with WTP at New Location
	Kalama River	AI	Ranney Collector on Kalama River
Aquifer Storage & Recovery (ASR)	Cowlitz River	AJ	ASR at Mint Farm WTP; Rehabilitate Fisher's Lane WTP and Intake
	Cowlitz River	AK	ASR at Mint Farm with New Cowlitz River Intake and WTP
	Cowlitz River	AL	ASR at Mint Farm with Cowlitz River Ranney Collector
	Columbia River	AM	ASR at Mint Farm with Columbia River Ranney Collector
	Columbia River	AN	ASR at Mint Farm with Columbia River Intake and Treatment
Blending	Cowlitz River and Mint Farm	AO	Cowlitz River Blending with Mint Farm WTP; Surface Intake or Ranney Collectors
	Columbia River and Mint Farm	AP	Columbia River Blending with Mint Farm WTP; Surface Intake or Ranney Collectors
Regional/ Intergovernmental	Cowlitz River	AQ	Connect to City of Kelso System
		AR	Joint Expansion with City of Kelso; Ranney Collectors and Treatment
	Columbia River	AS	Connect to Port of Kalama Ranney Collector
	Kalama River	AT	Connect to City of Kalama Ranney Collector
Private/Public Partnership	Columbia River	AU	Utilize Weyerhaeuser or Kapstone Surface Water System
End User Treatment	Mint Farm Wellfield	AV	Customer Treatment Systems - Whole house, City-owned
		AW	Customer Treatment Systems - Whole house, Resident-owned
		AX	Customer Treatment System at the Faucet, Resident-owned
Non-Infrastructure	Mint Farm Wellfield	AY	Conduct Public Education about Water Purity, Safety, Aesthetics, Comparisons with Other Cities
		AZ	Conduct Public Education about Using Hard Water, Preventing and Removing Water Spots
		BA	Provide Products for Preventing and Removing Water Spots

Evaluation Involved Multiple Steps

- Six categories of options
  - Evaluated using decision support model
  - Eliminated 3 categories of options
    - Regional/Intergovernmental
    - End User Treatment
    - Non-Infrastructure



Evaluation Involved Multiple Steps

- After 3 categories dropped
  - Created 14 groupings from remaining 45 options
  - CAC ranked groupings
  - Identified 6 highest-ranked groupings
  - Dropped Columbia River and Mint Farm Wells groups due to concern about potential contamination
  - Dropped Kalama River group due to distance and questions about amount of available water
- Identified 2 preferred groups
  - **New Surface Water Source – Cowlitz River**
  - **Ranney Collector – Cowlitz River**

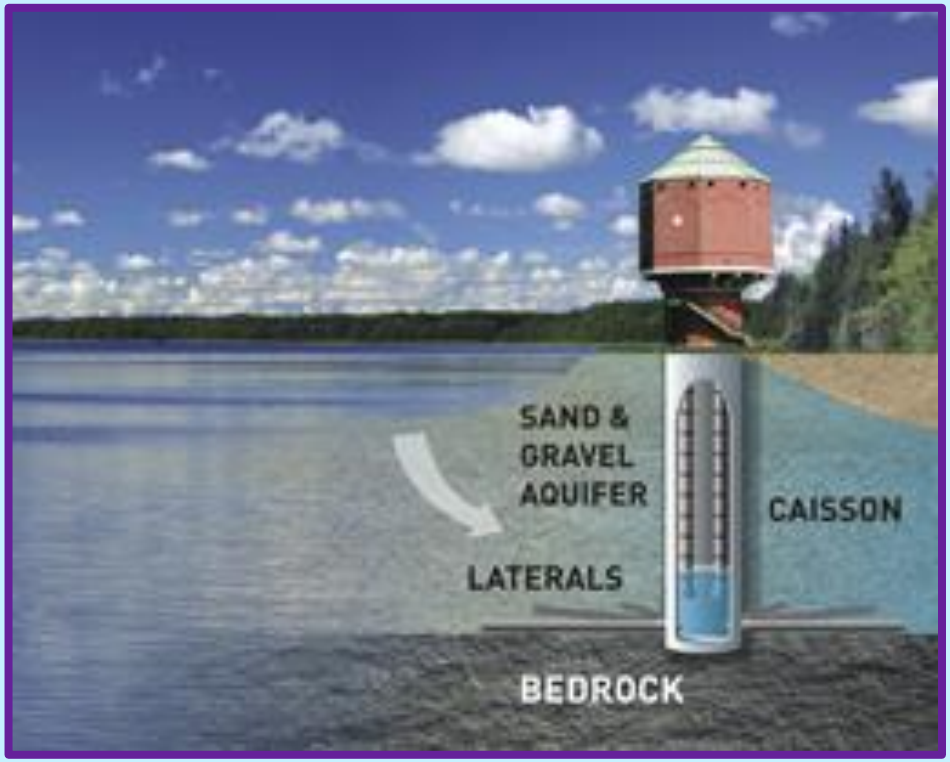
Public Outreach Activities Included

- Statistically valid telephone survey
- Project Website www.longviewwater.org
- Stakeholder contact database and email distribution list
- CAC Survey Number 1 – community feedback on evaluation criteria
- Stakeholder interviews
- Project fact sheet
- Explanatory videos
- Public Open House

- Virtual Open House and CAC Survey Number 2 – community feedback on primary water supply improvement options
- Media outreach – media releases, newspaper and radio coverage

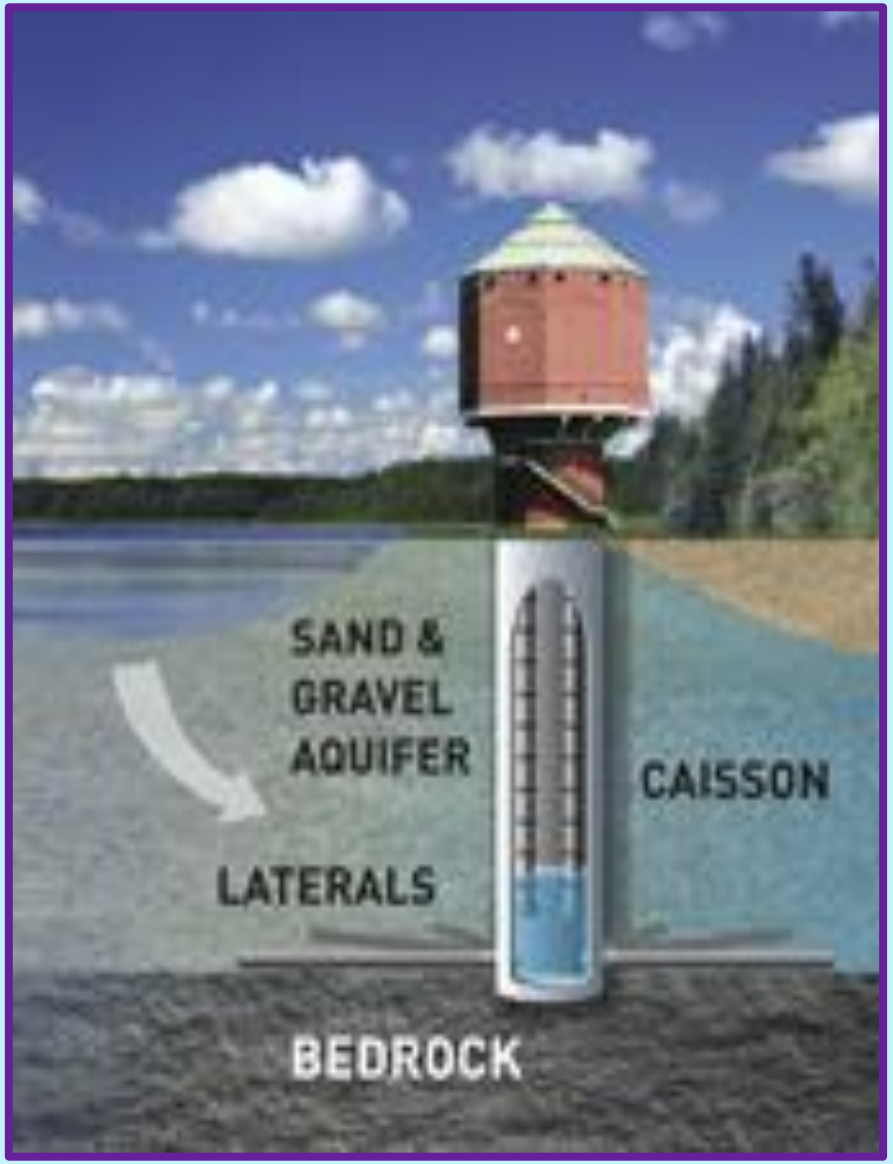
CAC Recommendation

- Recommended **Ranney Collector on the Cowlitz River**
- Concerns about Surface Water Source on the Cowlitz River
  - Complex permitting
  - Regulatory requirements
  - Sediment



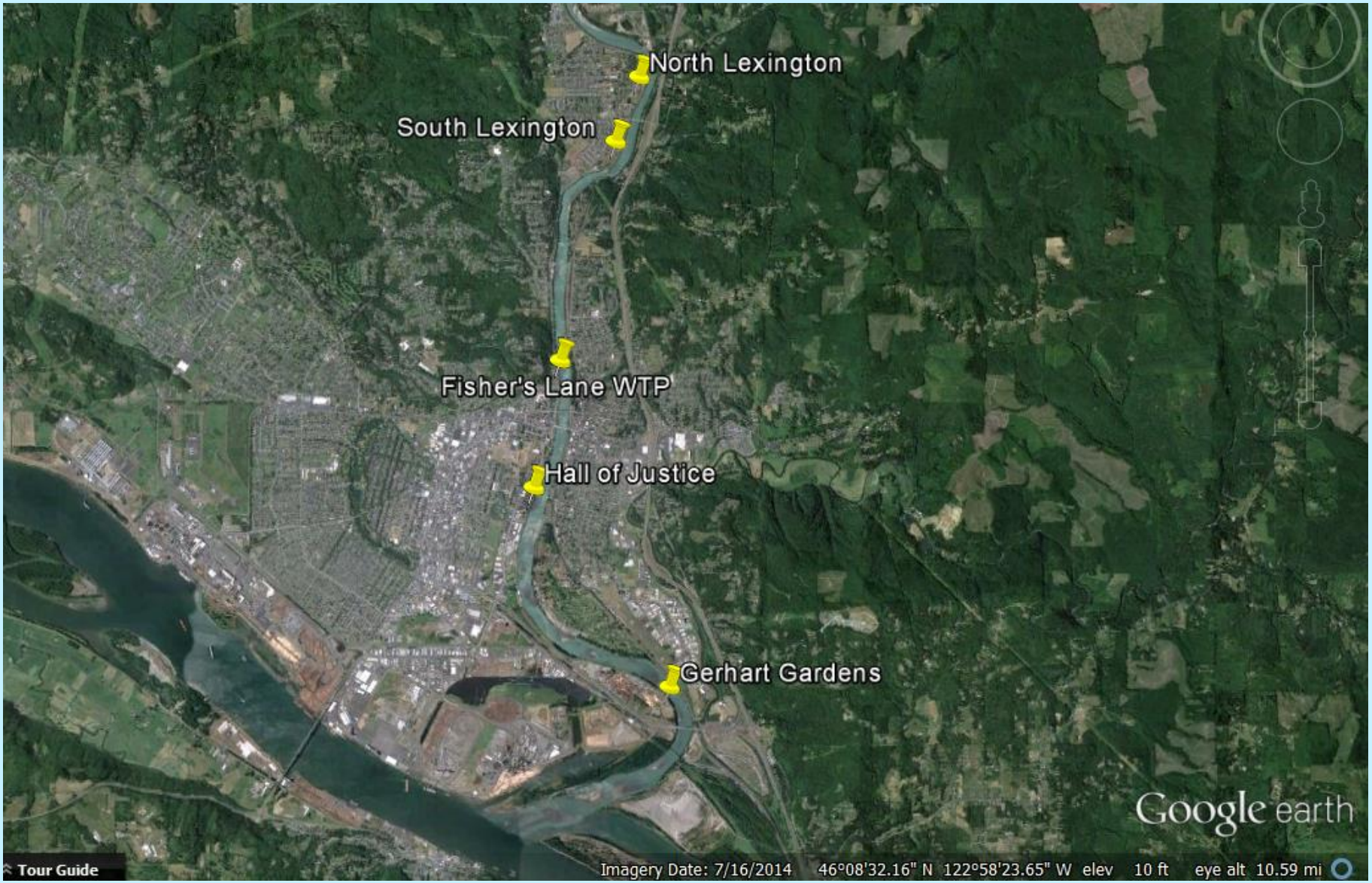
Ranney Collector Well

- Center Caisson is constructed to depth of targeted water-bearing formation
- Laterals are installed horizontally from the center caisson to collect water
- Pumps are installed inside or above the Caisson



Ranney Collector Implementation

Ranney Collector Location Alternatives



Implementation
Ranney Collector Location Alternatives

Potential Location of Ranney Well(s)	Raw Water Transmission Distance (feet)	
	to Fishers Lane	to Mint Farm
Gerhart Gardens	21,000	27,000
Near Hall of Justice	7,000	16,000
Near Fishers Lane WTP	300	20,000
South Lexington	12,000	32,000
North Lexington	15,000	37,000

Implementation
Ranney Collector Treatment Scenarios

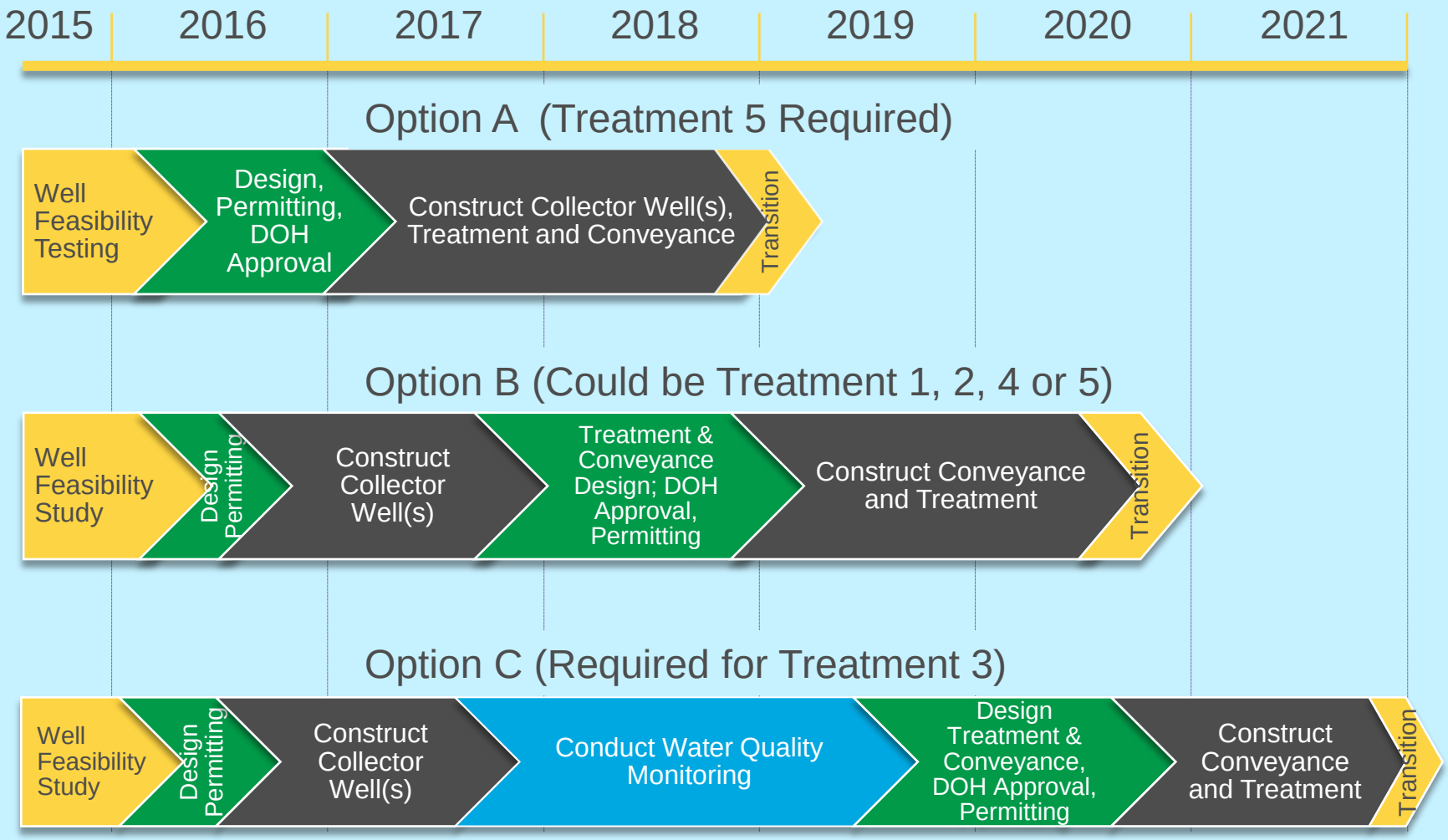
Groundwater		Groundwater Under the Direct Influence of Surface Water (GUI)		
Treatment 1	*Treatment 2*	*Treatment 3*	*Treatment 4*	*Treatment 5*
Chlorination Only	Use Mint Farm Pressure Filters	Ultraviolet Disinfection and Chlorination Only	Coagulant Addition, Filtration, Disinfection	Coagulant Addition, Clarification, Filtration, Disinfection
Groundwater with No Iron or Manganese	Groundwater with Iron and Manganese	Allowed if Riverbank Filtration credit is granted	Allowed if water quality meets certain limits	Required if little water quality data is available, or if turbidity is above 5 NTU

Implementation Costs

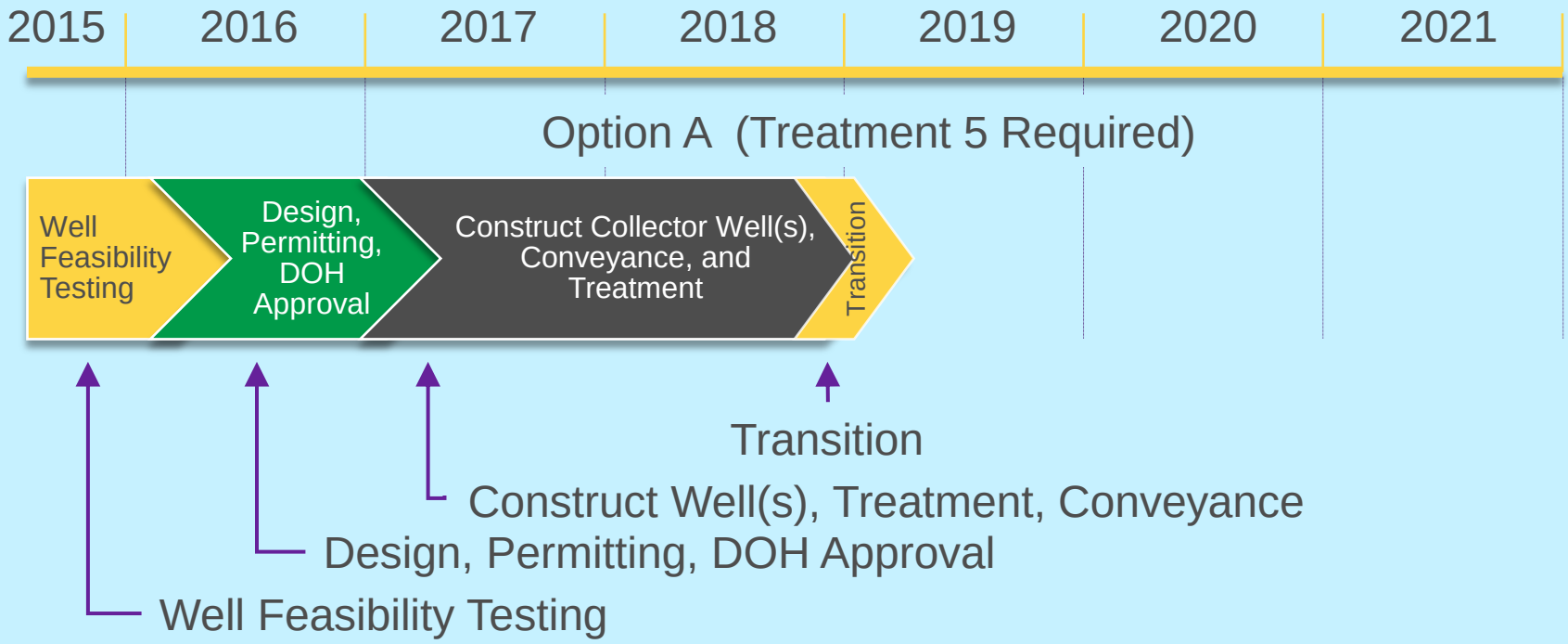
Total Project Cost:
Estimates Developed for 2 Ranney Wells, Transmission and Treatment from North Lexington Site

No.	Treatment Scenarios	Capital Cost (+50% to -30%)	Change In Annual O&M	ERU Cost
		(millions)		(monthly)
T1	Groundwater – No Iron or Manganese	$29.5	($0.6)	$5.26
T2	Groundwater with Iron/Manganese	$40.4	$0	$9.65
T3	GUI – with Riverbank Filtration Credit	$33.2	($0.5)	$6.44
T4	GUI – Coagulation, Filtration, Disinfection	$48.9	($0.1)	$11.38
T5	GUI – Coagulation, Clarification, Filtration, Disinfection	$55.1	$0	$13.16

Implementation
Cowlitz River Ranney Collector Schedule Options



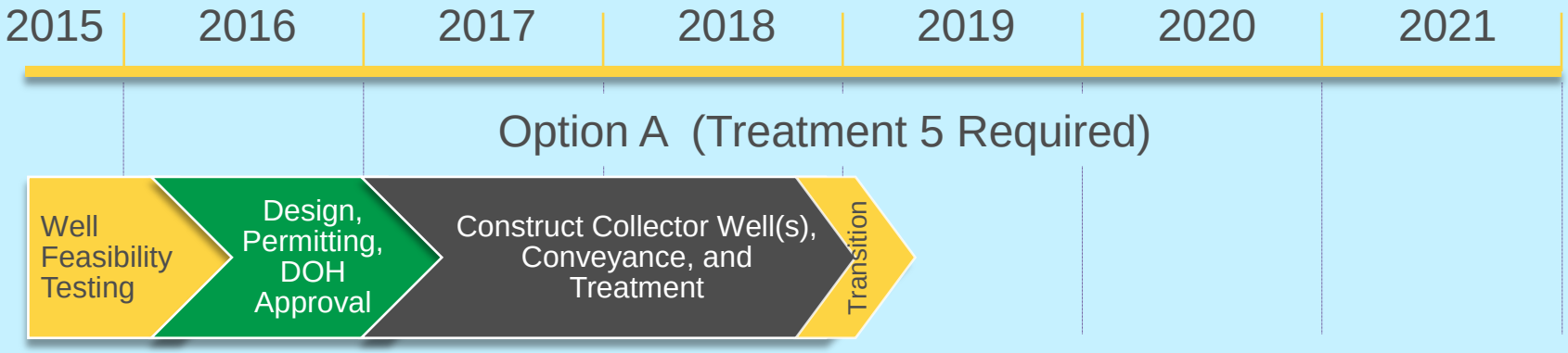
Implementation
Ranney Collector – Option A



Treatment	Feasibility	Design	Construction
	(millions)		
T5	$0.3	$8.9	$45.9

Requires Highest Level of Treatment - no Water Quality data collected over multiple seasons

Implementation
Ranney Collector – Option A

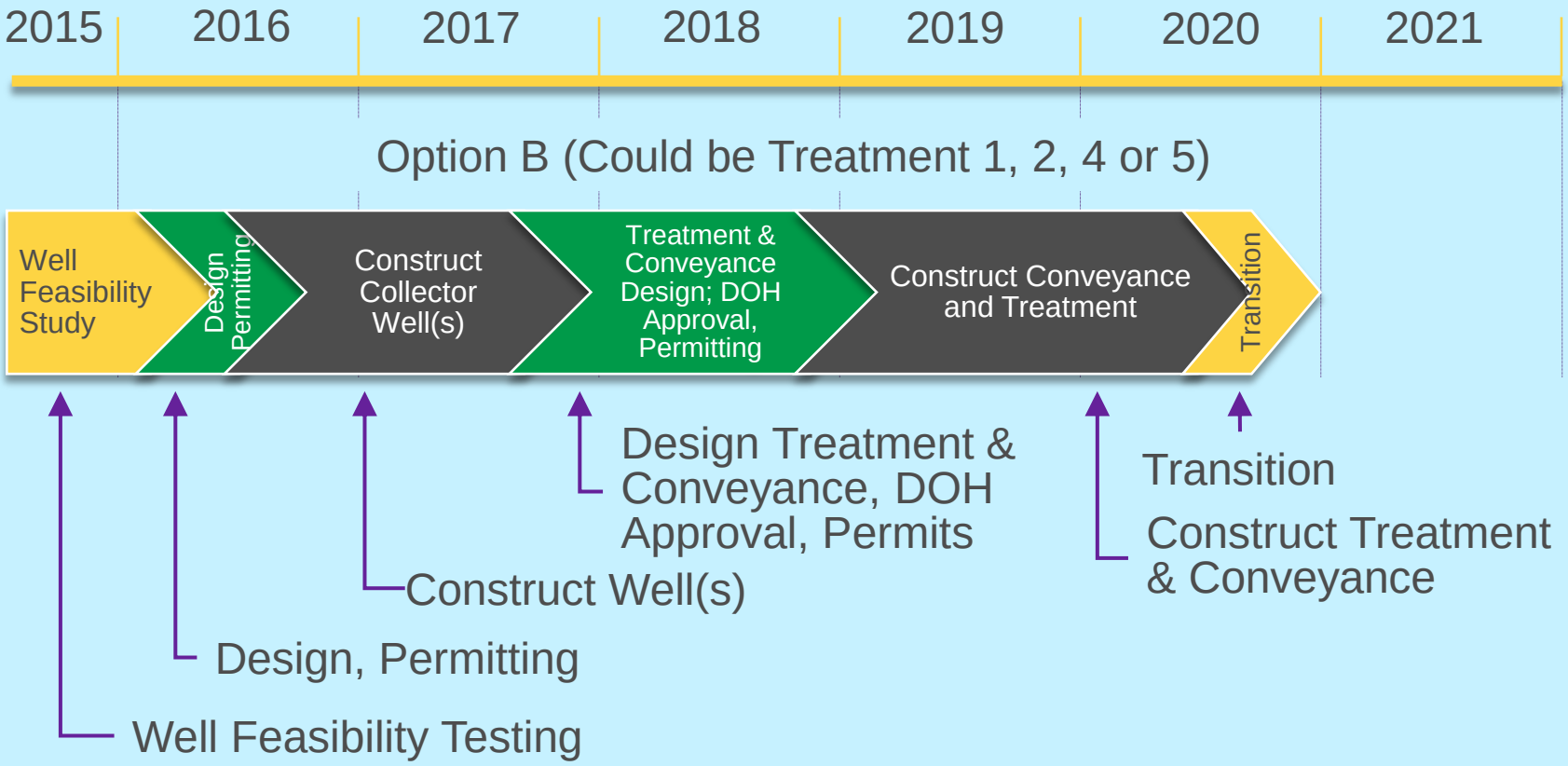


New Water Source: 3+ Years

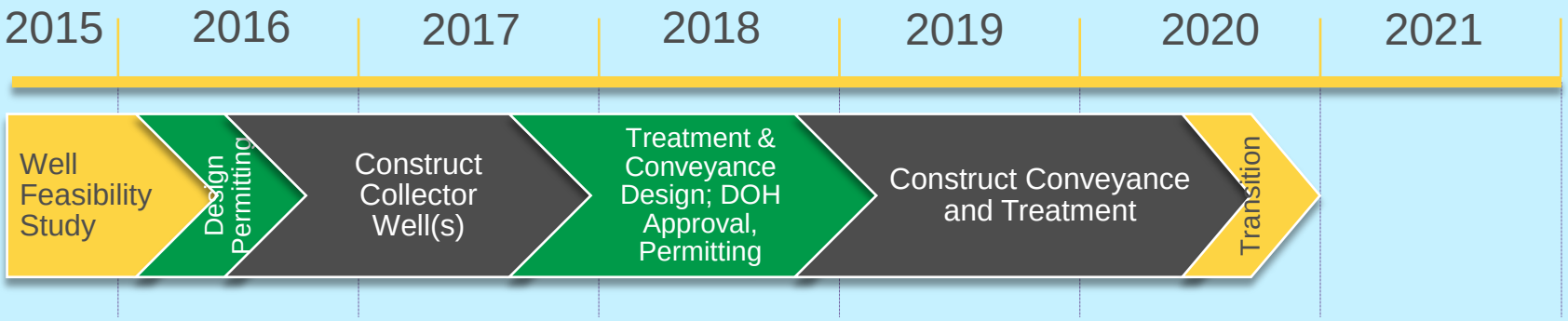
- Conduct Well Feasibility Testing
- Confirm Water Availability and General Water Chemistry
- Design Collector and Surface Water Treatment Processes
- Obtain Water Rights, Regulatory Approval, and Permits
- Construct All Facilities Simultaneously

Pros	Cons
• Most Expedient Path to New Water Source	• Potentially Highest Cost Option • May result in Facilities not needed when water quality is known

Implementation
Ranney Collector – Option B (Treatment 1, 2, 4 or 5)

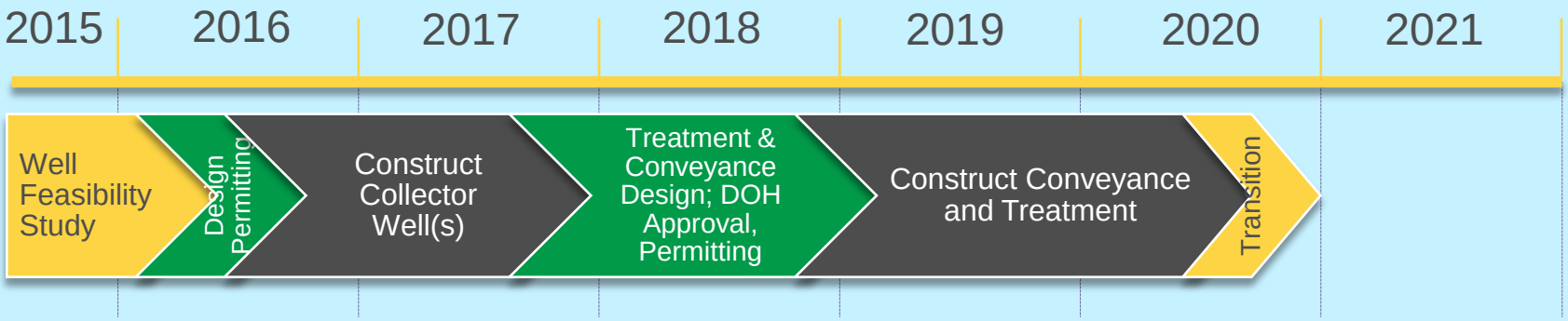


Implementation
Ranney Collector – Option B (Treatment 1, 2, 4 or 5)



No.	Feasibility	Ranney Design	Ranney Construction	Design of Conveyance and Treatment	Construction of Conveyance and Treatment
	(millions)				
T1	$0.3	$2.3	$10.5	$2.3	$14.1
T2	$0.3	$2.3	$10.5	$4.1	$23.2
T4	$0.3	$2.3	$10.5	$5.5	$30.3
T5	$0.3	$2.3	$10.5	$6.6	$35.4

Implementation
Ranney Collector – Option B (Treatment T1, T2, T4 or T5)

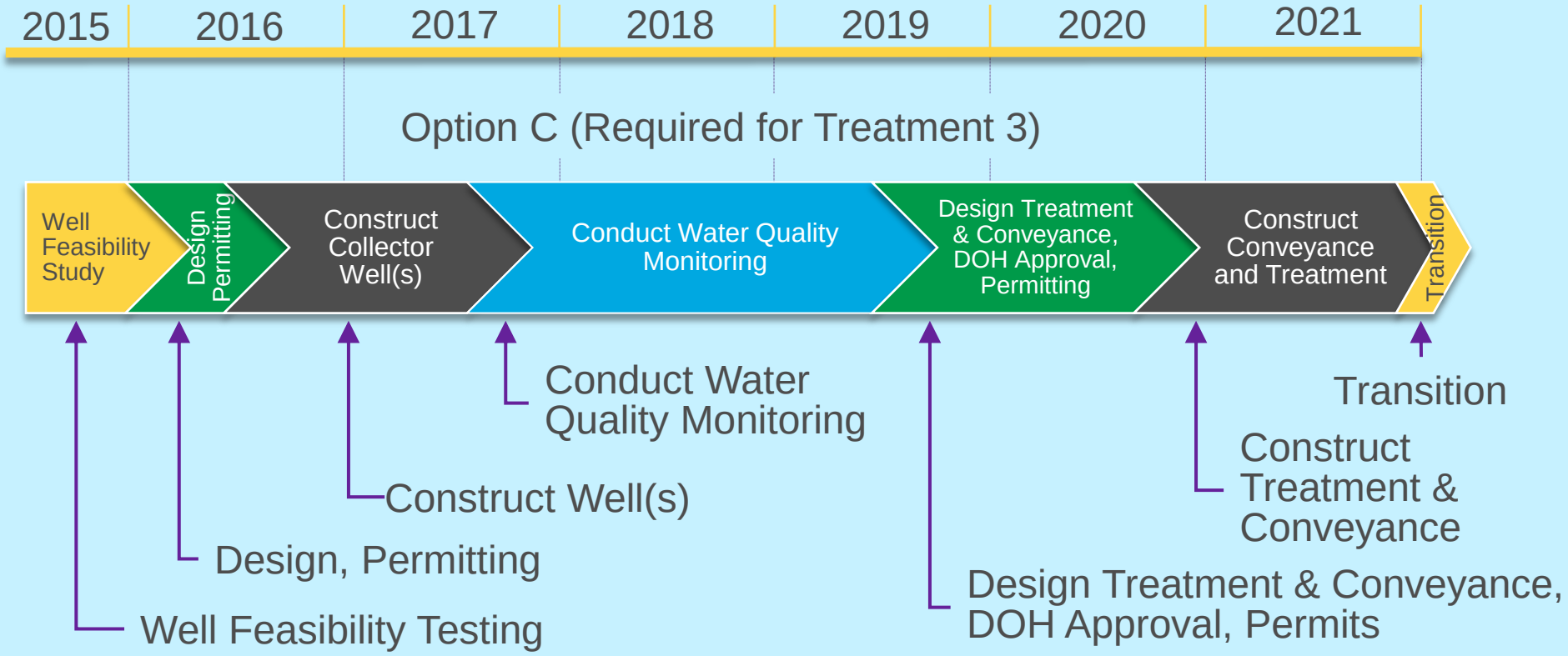


New Water Source: 5+ Years

- Conduct Well Feasibility Testing
- Confirm Water Availability and General Water Chemistry
- Design and Obtain Permits to Construct Ranney Collectors
- Construct Ranney Collectors – Confirm Water Quantity & Quality
- Determine if Groundwater or GW under the Influence of Surface Water
- Obtain Permits for Additional Construction; Water Rights; DOH Approval
- Construct Treatment and Conveyance

Pros	Cons
• Better knowledge of water quantity and quality to determine necessary facilities • Potentially lowest cost if water determined to be groundwater	• If under the influence of Surface Water, Treatment Costs Remain High • No credit for Riverbank Filtration

Implementation
Ranney Collector – Option C (Treatment 3 - Riverbank Filtration Credit)



Implementation
Ranney Collector – Option C (Treatment 3 - Riverbank Filtration Credit)

No.	Feasibility	Design/ Permit Well	Construct Well	Water Quality	Design Conveyance/ Treatment	Construct Conveyance/ Treatment
	(millions)					
T3	$0.3	$2.3	$10.5	$0.6	$2.3	$17.2

Implementation
Ranney Collector – Option C (Treatment 3 - Riverbank Filtration Credit)

New Water Source: 7+ Years

- Conduct Well Feasibility Testing
- Confirm Water Availability and General Water Chemistry
- Design and Obtain Permits to Construct Ranney Well
- Construct Ranney Well(s)
- 2 Year Water Quality Testing Period for Riverbank Filtration
- Obtain Permits for Additional Construction; Water Rights; DOH Approval
- Construct Treatment and Conveyance

Pros	Cons
• Provides best knowledge of necessary facilities for New Source • Potentially Second Lowest Cost if Riverbank Filtration Credit is Granted	• Longest Implementation Timeframe • May not receive Riverbank Filtration Credit and treatment costs still high

Water Supply Project Financial Status

Water Supply Project Financial Status

- MFRWTP Cost to Date……...$33,711,906
- Filter Plant Construction Fund Balance……$ 3,661,192
  - Longview (85.41%): $ 3,127,024
  - BHWSD (14.59%): $ 534,168
- DWSRF Loan
  - Remaining Balance……$ 2,172,336
  - Expires December 31, 2015
  - Potential to extend expiration date
  - Water Supply Review and new Ranney source are not eligible expenses

Water Supply Project Financial Status

- Ranney Source Costs
  - Capital: $29.5 M to $55.1 M
  - Monthly: $5.26 / ERU to $13.16 / ERU (including change in O&M cost)

- Existing Customer Bills – Single Family Residence
  - Longview (inside City):

    Winter Avg = $ 25.91/mo (Cons = 6 CCF)
    Summer Avg = $ 28.32/mo (Cons = 7 CCF)

  - Longview (outside City):

    Winter Avg = $ 42.75/mo (Cons = 6 CCF)
    Summer Avg = $ 46.72/mo (Cons = 7 CCF)

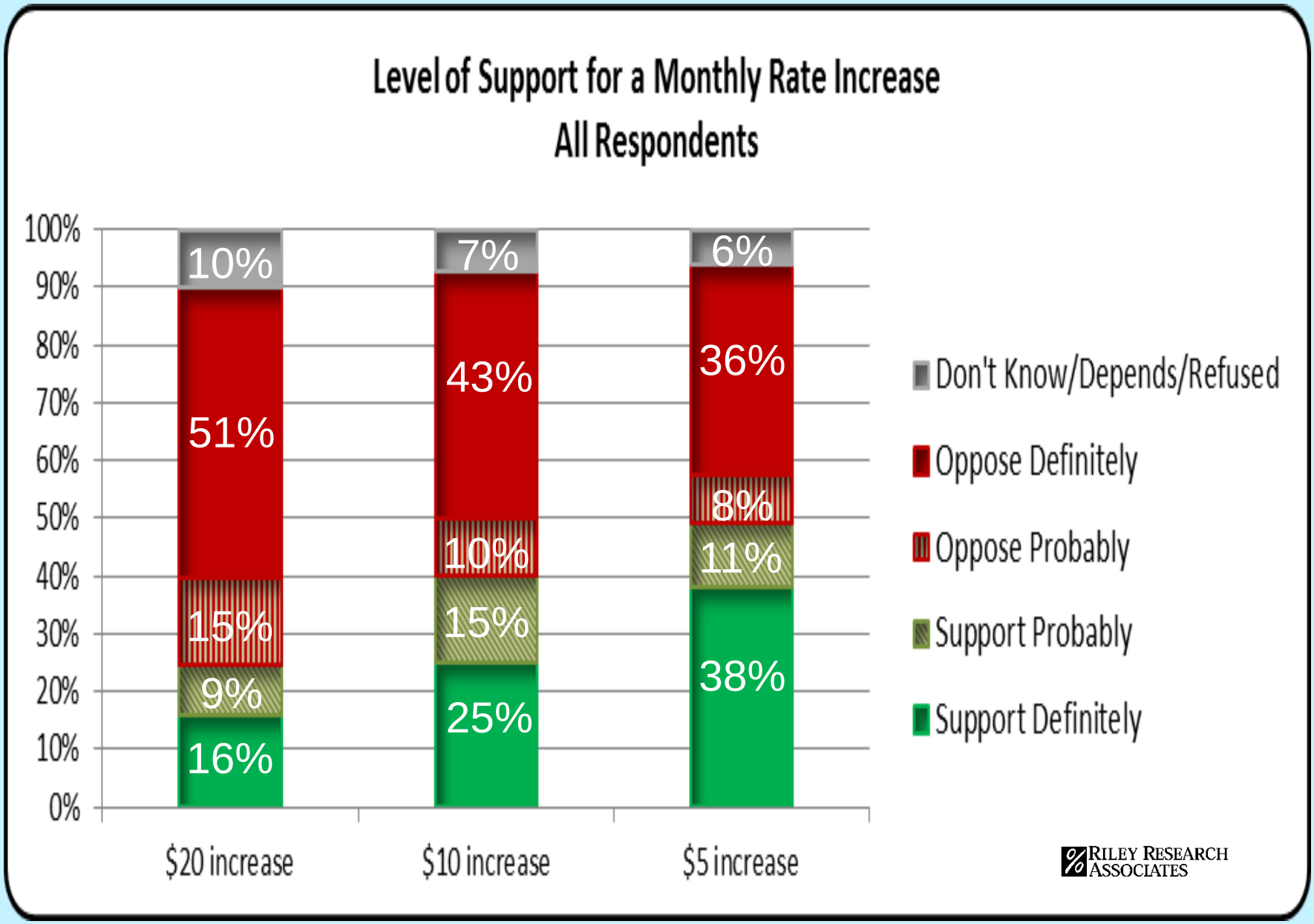
  - BHWSD: Winter Avg = $ 39.85/mo (Cons = 5 CCF)
    Summer Avg = $ 44.35/mo (Cons = 7 CCF)

Water Supply Project Financial Status

- Ranney Source Financing
  - Potential obligation to pay back $1 M EPA grant if MFRWTP not used for municipal supply
  - Not eligible for Federal or State grants or loans
  - Revenue bonds
    - Interest Rate Projection: 4% to 5%
    - Issuance Costs (Underwriter; Bond Counsel): 2% of bond amount
    - Bond proceeds must be spent within 3 years

Water Supply Project Financial Status

TELEPHONE SURVEY – OCTOBER 2014



DISCUSSION