Clean Water Plan

Making the Right Investments at the Right Time

MWPAAC Briefing

August 26, 2020

Clean Water Plan
Making the right investments at the right time

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

Today's Presenters:

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Agenda

- Clean Water Plan Approach and Complexity
- Planning Process
- Regional Engagement Activities

Approach to the Clean Water Plan

Core Planning Question:

What is the most appropriate path to ensure we direct the right public investments to the right actions at the right time for the best water quality outcomes?

Using an

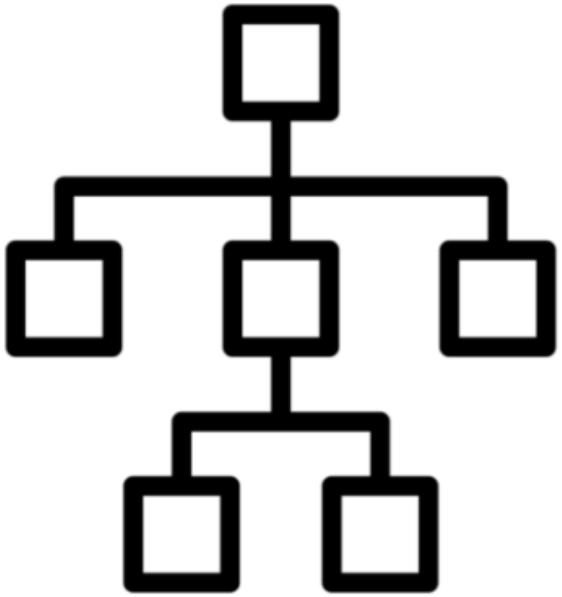
Exploratory

approach to address this question

Analyze different strategies for regional water quality investments to gain insights and understanding of the outcomes – leading to the development of a preferred strategy.

Why an exploratory approach?

The Clean Water Plan is navigating a complex problem in order to define appropriate path.



Examples of WTD Planning efforts addressing **complicated** problems:

- Strategic Asset Management Plan
- CSO Long-term Control Plan
- Conveyance System Improvement Plan

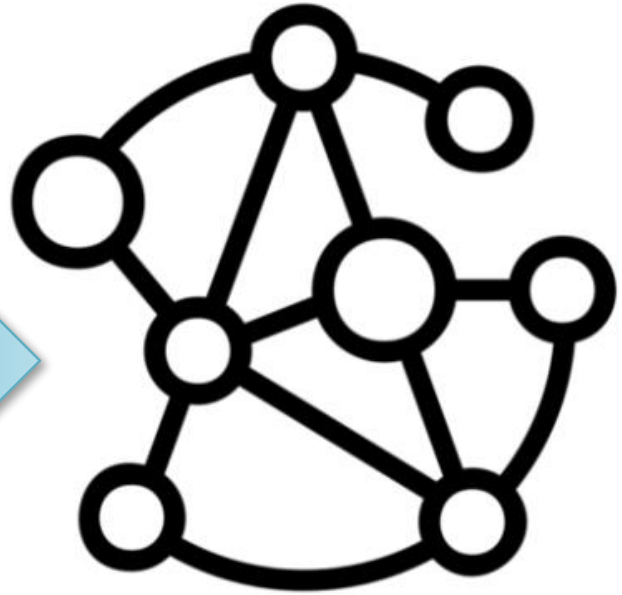
Complex problems:

- Interconnected causes
- System context with multiple functions
- Emergent patterns from dynamic interactions

Complicated problems:

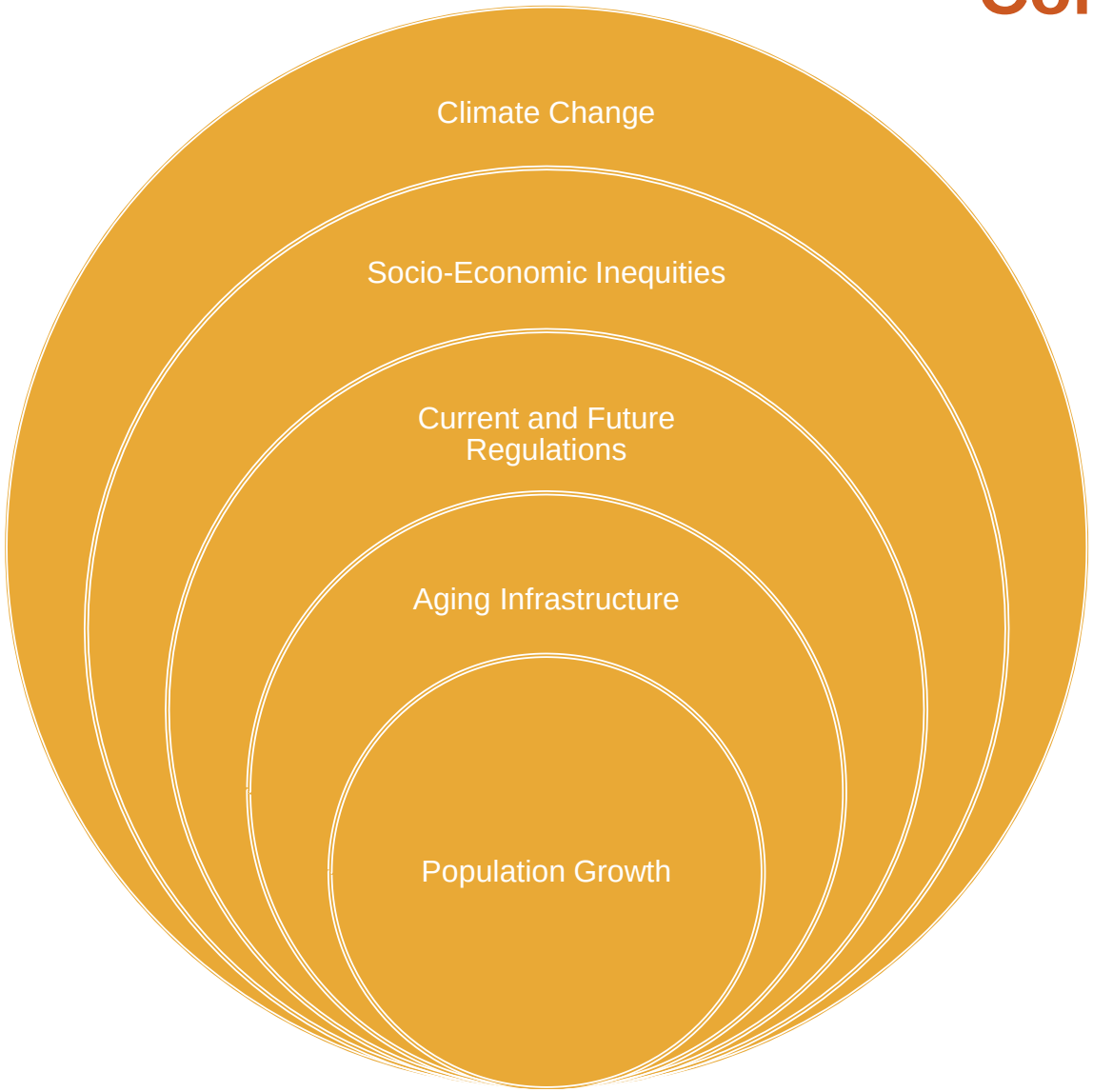
- Linear cause and effect
- One structure – one function
- Interactions can be controlled

Clean Water Plan is addressing a **complex** problem

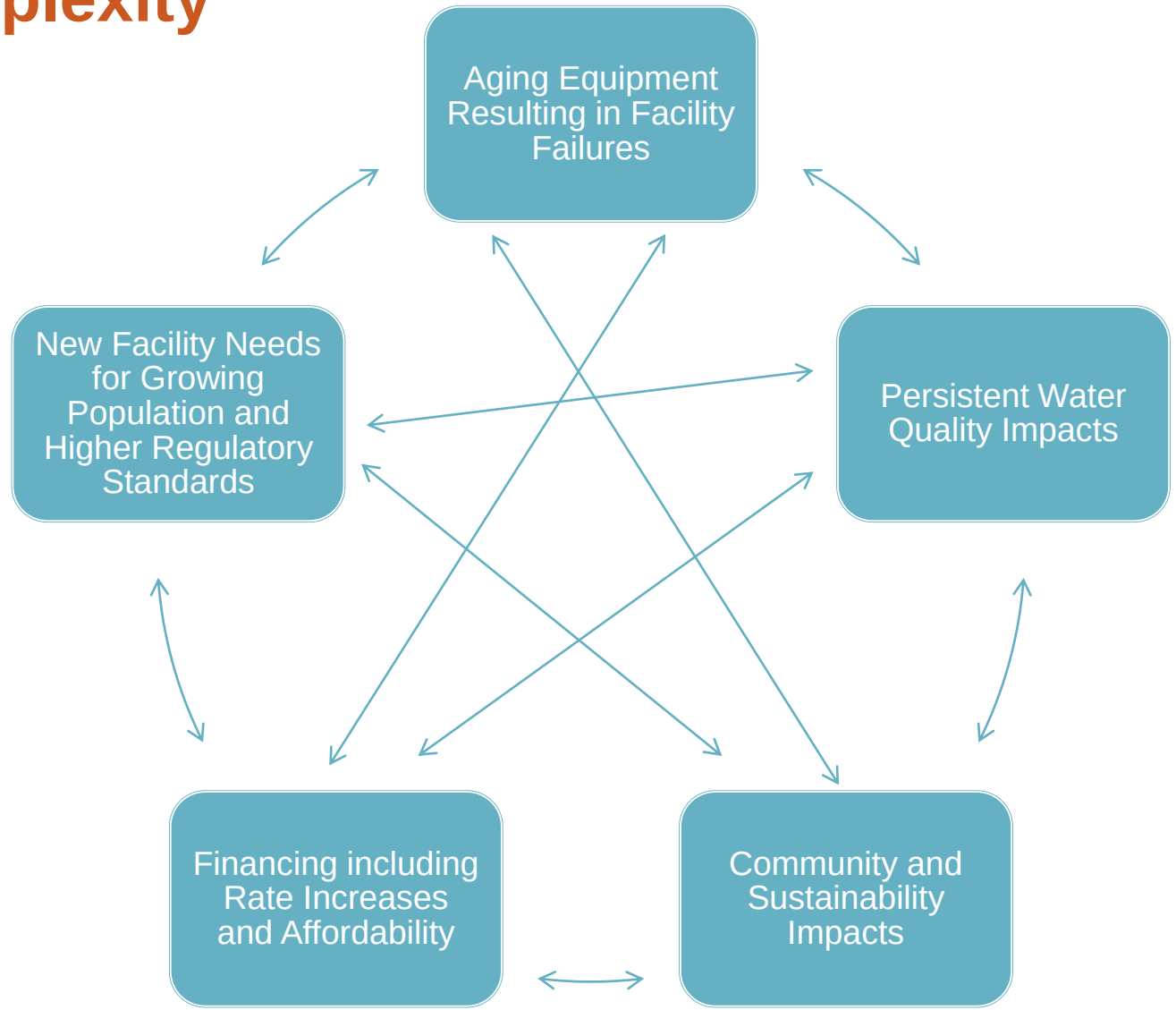


Clean Water Plan Complexity

Causes



Problems



Right Investment Decisions

Major Investment Needs	Order of Magnitude Cost Estimate[1]	Current Planned Timeframe of Expenditure[2]
Asset Management (maintaining system)	$+	2020 – 2030
Conveyance System Capacity Improvements (pipes and pumps)	$$	2020 – 2060
Combined Sewer Overflow Control[3]	$$+	2020 – 2030
Treatment Plant Capacity Expansion (population growth)	TBD[4]	2020 – 2060
Treatment Plant Treatment Upgrades (higher level of treatment)	TBD[5]	2020 – 2060
Other Water Quality Programs (e.g., sediment management)	TBD	2020 – 2060

Notes:

1: $ = Approximately $1 Billon

2: Timeframes shown relate to identified forecasted needs. System needs extend into the future outside of these timeframes.

3: Cost estimate under review. Revised estimate expected.

4: Clean Water Plan will develop order of magnitude cost. Cost of capacity expansion at the three regional treatment plants will be multi-billion-dollar investments.

5. Clean Water Plan will develop order of magnitude costs. The concepts assessed will include upgrades at treatment plants to remove nutrients (nitrogen) and advanced treatment improvements to remove trace pollutants, such as pharmaceuticals.

Exploring a Range of Actions Within Each Decision Area to Identify the Right Actions

Status Quo or Lower Performance

Intermediate Performance

Higher or Much Higher Performance

Treatment Plants

What treatment plant and wet weather facility investments should be made?

Pollution Source Control / Product Stewardship

Are there more efficient or effective methods to address pollutants of concern than wastewater treatment?

Stormwater and Combined Sewer Overflows

What approach should be taken to address stormwater and combined sewer overflows in King County's system?

Wastewater Conveyance System

What are the best investments in collections systems to ensure sufficient capacity and improve system condition?

Asset Management, Resiliency, and Redundancy

What investments should be made to care for an aging regional wastewater system and protect the investments that have been made?

Legacy Pollution

What are the opportunities to address legacy pollution?

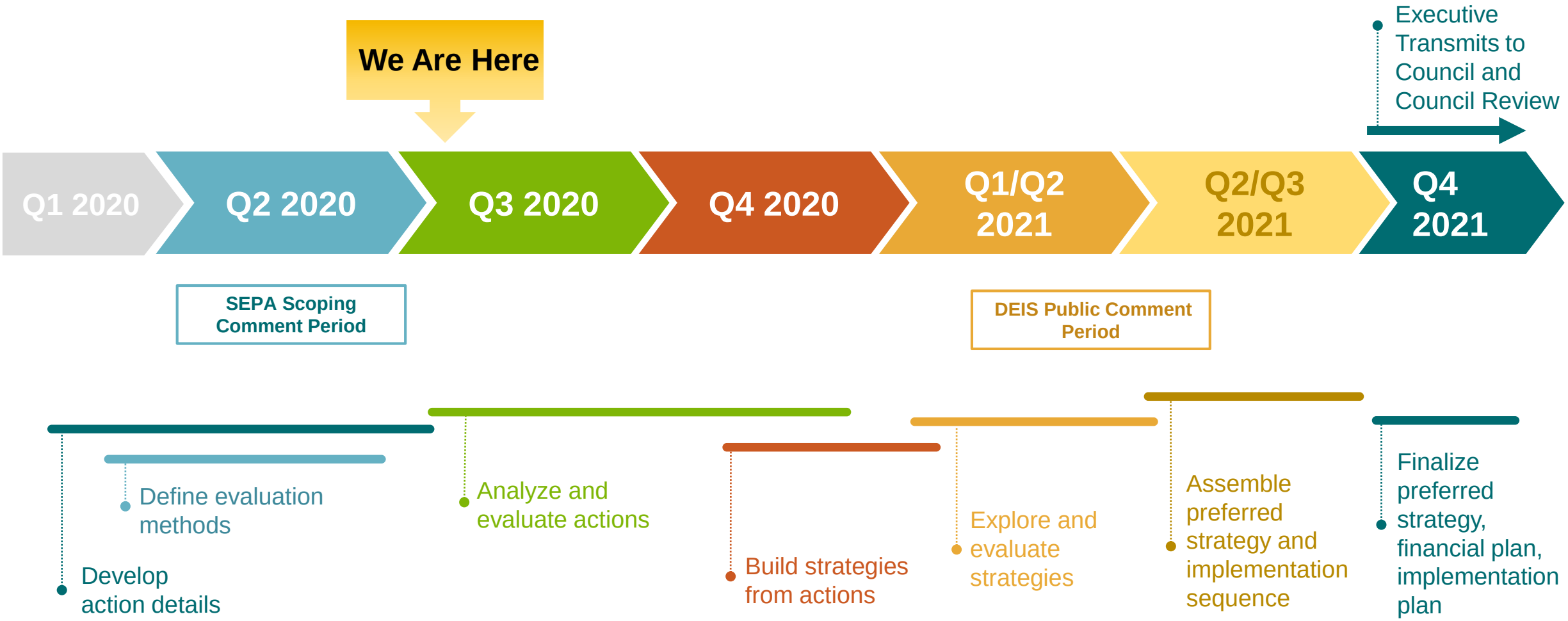
Resource Recovery

How should King County recover resources in wastewater?

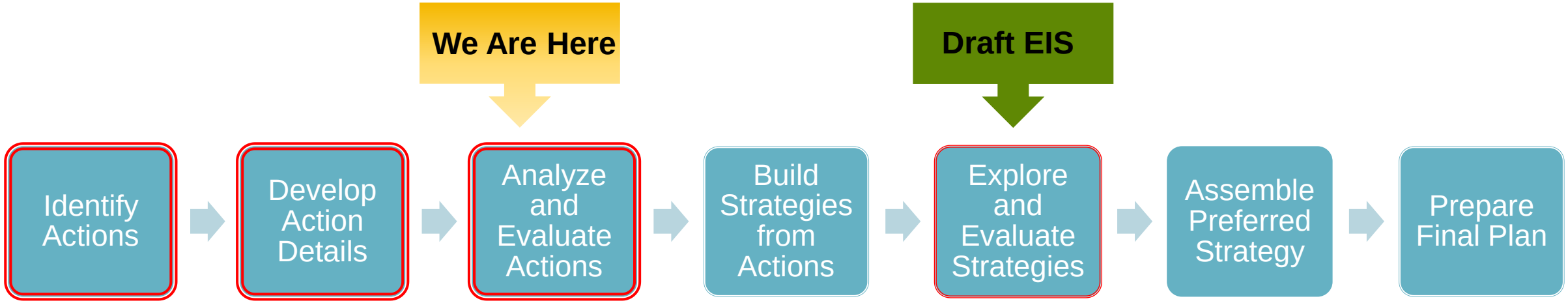
Finance

How will regional water quality investments be financed?

Clean Water Plan Planning Activities



Planning Process – Elements Discussed Today



Identify Actions

Scope of Actions Identified

Decision Area: Wastewater Treatment

Actions for Exploration:

- Status Quo Treatment
- Nutrients – Individual Discharge Permits
- Nutrients – Single Bubble Permit Across Discharges
- Nutrient Trading – Multiple Source Discharge Management
- Advanced Treatment for WTD Treatment Plants
- Decentralized Satellite Treatment Plants
- Building Scale Decentralized Treatment
- Decentralized Combined CSO/Wastewater Treatment
- Status Quo Onsite Septic System Program
- Expanded Onsite Septic System Program

Decision Area: Wet Weather Management

Actions for Exploration:

- Status Quo CSO Program
- Modified Approaches to CSO Control
- Expanded Stormwater Treatment at Existing Facilities
- Stormwater Treatment at New Facilities
- Stormwater Retrofit Fund – Regional Collaboration

Decision Area: Pollution Source Control/ Product Stewardship

Actions for Exploration:

- Status Quo Source Control Program
- Expanded Pollution Elimination and Control Focus
- State/Federal Requirements Source Control Approach

Decision Area: Asset Management, Resiliency, and Redundancy

Actions for Exploration:

- Run to Failure Asset Management
- Low Level Asset Management Investment
- Medium Level Asset Management Investment
- High Level Asset Management Investment
- Adaptive Sea Level Rise

Decision Area: Resource Recovery

Actions for Exploration:

- Status Quo Biosolids and Energy Program
- Enhanced Biosolids and Energy Program
- Advanced Biosolids and Energy Program

Decision Area: Wastewater Conveyance

Actions for Exploration:

- Status Quo Conveyance
- 5-year Conveyance Level of Service
- Inflow and Infiltration – Point of Sale Inspections
- Inflow and Infiltration – Peak Flow Standards
- Smart Utility – Data Driven, Real Time Control

Decision Area: Legacy Pollution

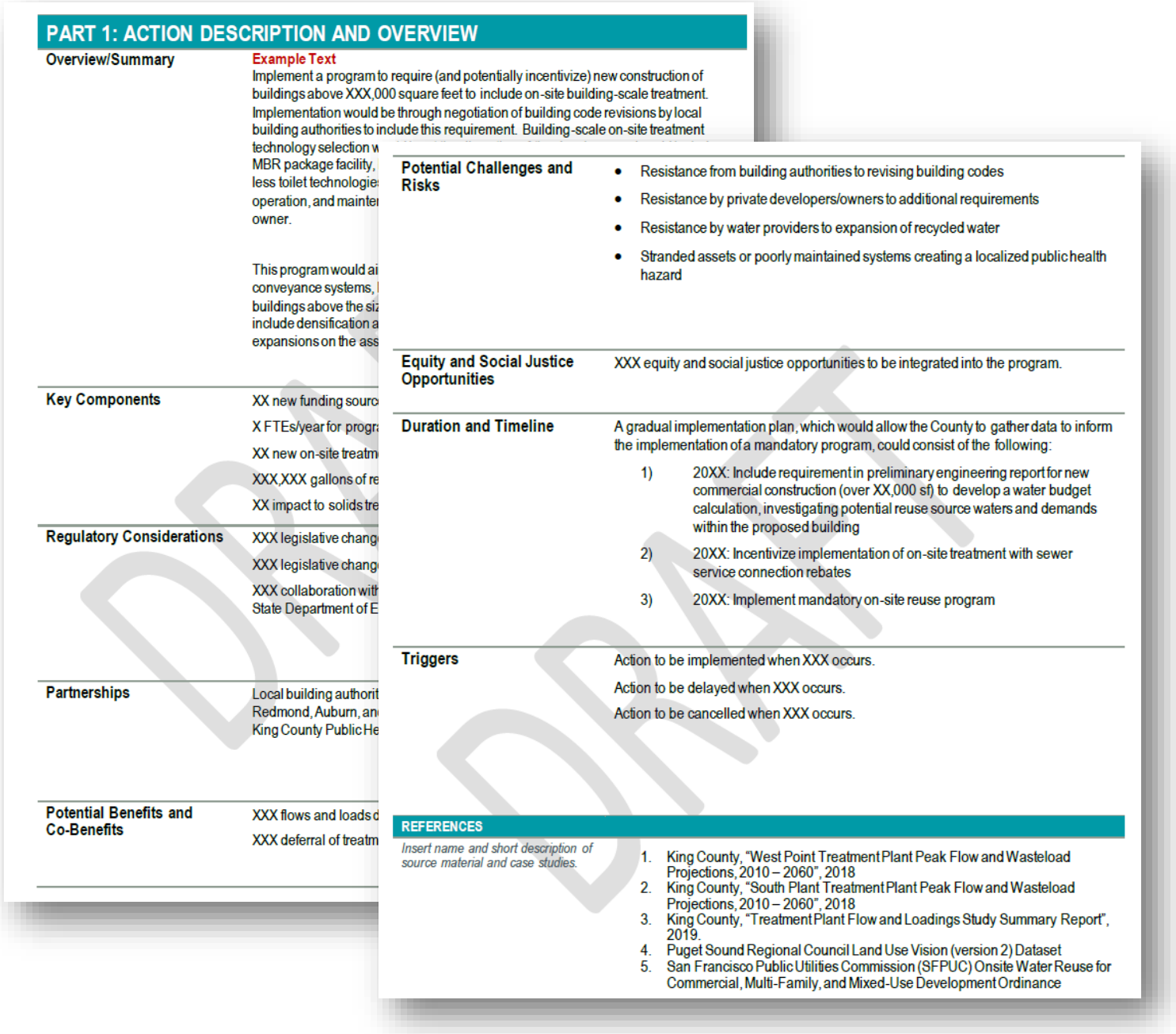
Actions for Exploration:

- Status Quo Sediment Management
- Far Reaching Legacy Pollution Program
- Accelerated Sediment Management

Develop Actions Details

Describe the details of the action

Each action is a concept for future water quality investment



PART 1: ACTION DESCRIPTION AND OVERVIEW

Overview/Summary	Example Text Implement a program to require (and potentially incentivize) new construction of buildings above XXX,000 square feet to include on-site building-scale treatment. Implementation would be through negotiation of building code revisions by local building authorities to include this requirement. Building-scale on-site treatment technology selection w MBR package facility, less toilet technologie operation, and mainte owner. This program would ai conveyance systems, buildings above the siz include densification a expansions on the ass
Key Components	XX new funding sourc X FTEs/year for progr XX new on-site treatm XXX,XXX gallons of re XX impact to solids tre
Regulatory Considerations	XXX legislative chang XXX legislative chang XXX collaboration with State Department of E
Partnerships	Local building authorit Redmond, Auburn, an King County Public He
Potential Benefits and Co-Benefits	XXX flows and loads d XXX deferral of treatm
Potential Challenges and Risks	• Resistance from building authorities to revising building codes • Resistance by private developers/owners to additional requirements • Resistance by water providers to expansion of recycled water • Stranded assets or poorly maintained systems creating a localized public health hazard
Equity and Social Justice Opportunities	XXX equity and social justice opportunities to be integrated into the program.
Duration and Timeline	A gradual implementation plan, which would allow the County to gather data to inform the implementation of a mandatory program, could consist of the following: 1) 20XX: Include requirement in preliminary engineering report for new commercial construction (over XX,000 sf) to develop a water budget calculation, investigating potential reuse source waters and demands within the proposed building 2) 20XX: Incentivize implementation of on-site treatment with sewer service connection rebates 3) 20XX: Implement mandatory on-site reuse program
Triggers	Action to be implemented when XXX occurs. Action to be delayed when XXX occurs. Action to be cancelled when XXX occurs.

REFERENCES

Insert name and short description of source material and case studies.

1. King County, "West Point Treatment Plant Peak Flow and Wasteload Projections, 2010 – 2060", 2018
2. King County, "South Plant Treatment Plant Peak Flow and Wasteload Projections, 2010 – 2060", 2018
3. King County, "Treatment Plant Flow and Loadings Study Summary Report", 2019.
4. Puget Sound Regional Council Land Use Vision (version 2) Dataset
5. San Francisco Public Utilities Commission (SFPUC) Onsite Water Reuse for Commercial, Multi-Family, and Mixed-Use Development Ordinance

Analyze and Evaluate Actions

Describe the outcome of the action analysis and evaluation

PART 2: ANALYSIS

WATER QUALITY

Pollutant load reductions relative to: *<insert baseline condition>* | Pollutant load reductions for full implementation: *<insert year>*

Parameter	Baseline pollutant load (for this system, drainage area, etc.)	Total pollutant load reduction	Receiving water body (may be more than one, insert a row for each pollutant/water body pairing)
Total nitrogen	XX lb/yr	XX lb/yr	*<Puget Sound, Elliott Bay, Duwamish Waterway, Lake Union/Ship Canal, Lake Washington, Lake Sammamish, Rivers and streams >*
Total phosphorus	XX lb/yr	XX lb/yr	*<Puget Sound, Elliott Bay, Duwamish Waterway, Lake Union/Ship Canal, Lake Washington, Lake Sammamish, Rivers and streams >*
Total/dissolved copper	XX lb/yr	XX lb/yr	*<Puget Sound, Elliott Bay, Duwamish Waterway, Lake Union/Ship Canal, Lake Washingtor*
Total/dissolved zinc	XX lb/yr	XX lb/yr	*<Puget Sound, E Lake Washingtor*
Total suspended solids (TSS)	XX lb/yr	XX lb/yr	*<Puget Sound, E Lake Washingtor*
Polychlorinated biphenyls (PCBs)	XX lb/yr	XX lb/yr	*<Puget Sound, E Lake Washingtor*
Polybrominated diphenyl ethers (PBDEs)	XX lb/yr	XX lb/yr	*<Puget Sound, E Lake Washingtor*
Polycyclic aromatic hydrocarbons (PAHs)	XX lb/yr	XX lb/yr	*<Puget Sound, E Lake Washingtor*
Fecal coliform	XX CFU/yr	XX CFU/yr	*<Puget Sound, E Lake Washingtor*
Flow reduction	*<Insert narrative to describe flow reduction>*		
CEC reduction	*<Insert narrative to describe CEC reduction>*		

COST

	2020s	2030s	20
Total direct construction cost Capital cost avoided for WTD	$XXX,XXX,XXX, +/- xx% $XXX,XXX,XXX, +/- xx%	$XXX,XXX,XXX, +/- xx% $XXX,XXX,XXX, +/- xx%	$X $X
Annual O&M and admin costs Avoided annual costs	$XXX,XXX, +/- xx% $XXX,XXX, +/- xx%	$XXX,XXX, +/- xx% $XXX,XXX, +/- xx%	$X $X
R&R cost Avoided R&R cost	$XXX,XXX, +/- xx% $XXX,XXX, +/- xx%	$XXX,XXX, +/- xx% $XXX,XXX, +/- xx%	$X $X
Annual revenues	$XXX,XXX, +/- xx%	$XXX,XXX, +/- xx%	$X
External costs to the region	$XXX,XXX, +/- xx%	$XXX,XXX, +/- xx%	$X
	<Insert narrative to describe external costs to the r		

SUSTAINABILITY

Annual operational energy use	XXX kWh
Annual greenhouse gas emissions	XXX MT CO2e
Annual electricity use	XXX kWh
Annual natural gas use	XXX Therms
Annual vehicle fuel use	XXX gallons

EQUITY AND SOCIAL JUSTICE

<Insert map(s), schematic(s), or infographic>(s) depending on the action.

PART 3: EVALUATION RESULTS

WATER QUALITY OUTCOMES

Narrative endpoint evaluation:	
Human health: Recreation	*<Insert narrative description of anticipated pollutant removals and corresponding li*
Human health: Edible fish and shellfish	*<Insert narrative corresponding li*
Aquatic health	*<Insert narrative corresponding li*
WQBE endpoint evaluation:	
Orca	*<WQBE outcon*
Chinook salmon	*< WQBE outcon*
Edible fish and shellfish	*< WQBE outcon*
Swimming beaches	*< WQBE outcon*

Water quality outcomes summary
<Insert narrative description of water quality outcomes and major bodies are impacted, how, and when, and put those impacts in co other stakeholder considerations).>

Water quality related equity outcomes	
Geographic distribution of services (e.g., location of infrastructure, target outreach locations)	*<Insert narrati*
Geographic impact of services (e.g. water bodies, neighborhoods)	*<Insert narrati*
Gaps of service and impact for communities of color, low-income populations, and limited English-speaking residents (e.g. greater rates of overflows in certain neighborhoods due to infrastructure age and rates of repair)	*<Insert narrati*
Indirect impact of WTD to priority populations (e.g. job opportunities, economic opportunities)	*<Insert narrati*
Interaction with WTD services in different ways (e.g. subsistence fishing vs. recreation; odor/noise control associated with different types of infrastructure)	*<Insert narrati*
Magnification of WTD impacts/choices (some communities are better equipped to absorb adversity; conversely benefits may accrue differently for communities of color, lower socio-economic communities)	*<Insert narrati*
Timing for water quality outcomes	*<near-term, mid-term, l*

COST ANALYSIS

Lifecycle Cost (2020 dollars):	*$XX,X00,000,000, +/-xx%*

Cost outcomes
<Insert narrative description of major cost assumptions/sensitivities>

Nitrogen benefit/cost ratio (lb removed/dollar spent)	*XXX*
<Insert other pollutant of focus> benefit/cost ratio (lb removed/dollar spent)	*XXX*
<Insert other pollutant of focus> benefit/cost ratio (lb removed/dollar spent)	*XXX*

CO-BENEFITS AND IMPACTS

Sustainability	Operational energy use	*<Insert narrative description, supported by metric evaluation>*
	Greenhouse gas emissions	*<Insert narrative description, supported by metric evaluation>*
	Resource consumption / recovery potential	*<Insert narrative description>*
	Ecosystem services	*<Insert narrative description>*
	Sustainability related equity outcomes	*<Insert narrative description>*
Management and operations	Public health exposure	*<Insert narrative description>*
	Resiliency / redundancy	*<Insert narrative description>*
	Legal / liability / regulatory	*<Insert narrative description>*
	Public confidence	*<Insert narrative description>*
	Risk related equity outcomes	*<Insert narrative description>*
Community	Impacts of construction	*<Insert narrative description>*
	Economic impacts	*<Insert narrative description>*
	Community vibrancy	*<Insert narrative description>*
	Community related equity outcomes	*<Insert narrative description>*

Analyze and Evaluate Actions

Explore and Evaluate Strategies

Evaluation Framework: Overview

- Explores alternative investments the County can make in support of wastewater treatment services and regional water quality improvements, seeking to inform decisions on the best investments for regional water quality.

- Evaluation conducted in two phases:
  - **Analyze and evaluate individual actions**
  - Use actions as building blocks to assemble strategies that reflect a complete water quality investment approach
  - **Explore and evaluate strategies**

Actions – specific program or project(s) within a certain decision area.

Strategy – a grouping of multiple actions that incorporates timing, sequencing, and inter-relationships, and reflects a complete water quality investment approach the County could take.

Analyze and Evaluate Actions

Action Analysis and Evaluation

- Develop understanding of the performance of each action relative to potential water quality outcomes and other impacts
- Compare actions against each other, both within and across decision areas
- Use this analysis to inform the grouping of actions into water quality investment strategies

Actions – specific program or project(s) within a certain decision area.

Strategy – a grouping of multiple actions that incorporates timing, sequencing, and inter-relationships, and reflects a complete water quality investment approach the County could take.

Explore and Evaluate Strategies

Strategy Exploration

- Explore the water quality outcomes, benefits, and impacts of comprehensive water quality investment approaches (strategies)
- Conduct a comparison and examine tradeoffs between water quality investment strategies
- Use this analysis to inform framing and assembling a preferred strategy

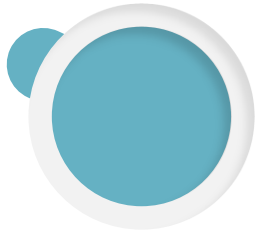
Strategy evaluation process will be similar to the action evaluation process, but not identical – evaluation of strategies allows for a more comprehensive understanding of systemwide outcomes

Actions – specific program or project(s) within a certain decision area.

Strategy – a grouping of multiple actions that incorporates timing, sequencing, and inter-relationships, and reflects a complete water quality investment approach the County could take.

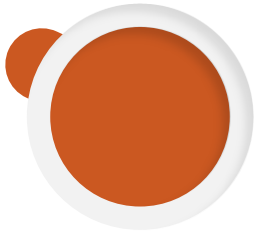
Analyze and Evaluate Actions

Action Evaluation Categories



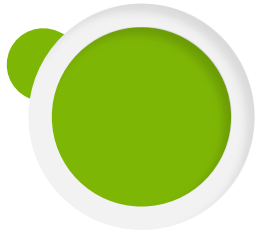
Water Quality

Address action performance relative to a specified set of **pollutant parameters** (e.g., bacteria, nitrogen, PCBs) **in regional waterbodies** (e.g., Puget Sound, Lake Washington) and associate pollutant reduction to **ecological** (e.g., Orca) and **public health endpoints** (e.g., contact recreation).



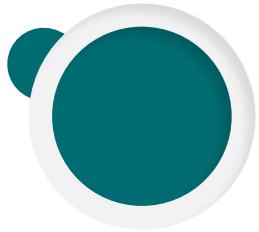
Management and Operations

Address action performance relative to **reliability and resilience**, **legal and regulatory obligations**, **and public confidence**.



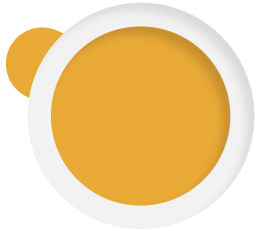
Sustainability

Address action performance relative to **energy use**, **carbon footprint**, **resource recovery**, and **ecosystem services**.



Cost

Address action performance relative to operations, maintenance, capital, and other costs on a full **life-cycle cost** basis.



Community

Address action performance relative to **construction impacts** in neighborhoods, **land use and economic development**, and **community livability**.

Conceptual Flow of Equity Action Evaluation

Review Equity Determinants	Apply Determinants to Evaluation Categories Equity Influences	Examples of Action Outcomes Expected to be Explored through the Criteria
Strong, Vibrant Neighborhoods	Geographic Distribution of Services	• Influences on land use and zoning and associated results on residents and/or business or gentrification
Safe, Affordable, High Quality and Healthy Housing	Geographic Impact of Services	• Cost of utility bills and relationship to housing affordability
Economic Development	Indirect Impact of Services	• Influence on maximizing the community and economic benefits
Parks and Natural Resources	Gaps in Services	• Amount and distribution of new outdoor spaces created • Changes in access to outdoor spaces
Equity in County Practices	Magnification of Impacts/Choices	• Investment of public dollars and distribution of the resulting services
Healthy Built and Natural Environments		• Changes in water quality including distribution of benefits • Changes in aquatic habitat including distribution of benefits • Siting and construction impacts of water pollution control facilities • Availability and safety of natural resources for cultural or subsistence harvest

Exploration of Community Priorities and Evaluation Categories

Community Priorities	Evaluation Categories				
	Water Quality	Cost	Management & Operations	Community	Sustainability
– Avoid sewer system failures			●		
– Ensure benefits and impacts are experienced equitably	●	●	●	●	●
– Increase collaboration between agencies	●			●	
– Keep rates affordable within the context of a growing region		●			
– Prepare for and fight climate change	●		●		●
– Protect and restore our rivers, lakes, and Puget Sound	●				●
– Protect public health	●		●		
– Support healthy habitats for fish and wildlife	●				●
– Communicate with the public about the plan	●	●	●	●	●
– Prioritize the best water quality investments	●	●	●	●	●
– Maintain an effective wastewater treatment workforce	●	●	●	●	●

● Evaluation category with affinity to priority ● Programmatic priority addressed across evaluation categories

Questions?

Regional Engagement Objectives

- **Advance Equity and Social Justice & Foster Relationships**
  - Engage long-term participants, new voices and those who are disproportionately impacted by water quality issues
  - Engage and amplify the voices of historically underrepresented populations
  - Develop and maintain positive relationships with community members

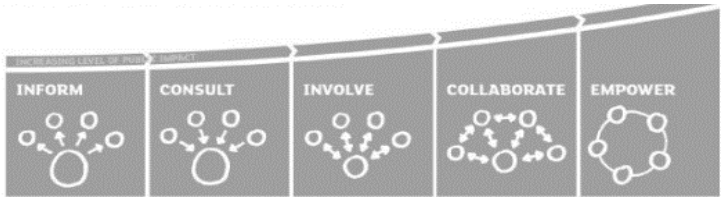
- **Gather Community Input to Inform the Process**
  - Create a plan that reflects regional priorities
  - Hear and consider the voices, concerns, ideas and creativity of the public. Adjust engagement efforts to reflect this feedback

- **Build Awareness & Understanding of the Clean Water Plan**
  - Build confidence in the public process, understanding and appreciation for key project decision
  - Start a dialogue with community members about potential tradeoffs between priorities as the plan develops

Regional Engagement Framework

IAP2 Spectrum of Public Participation

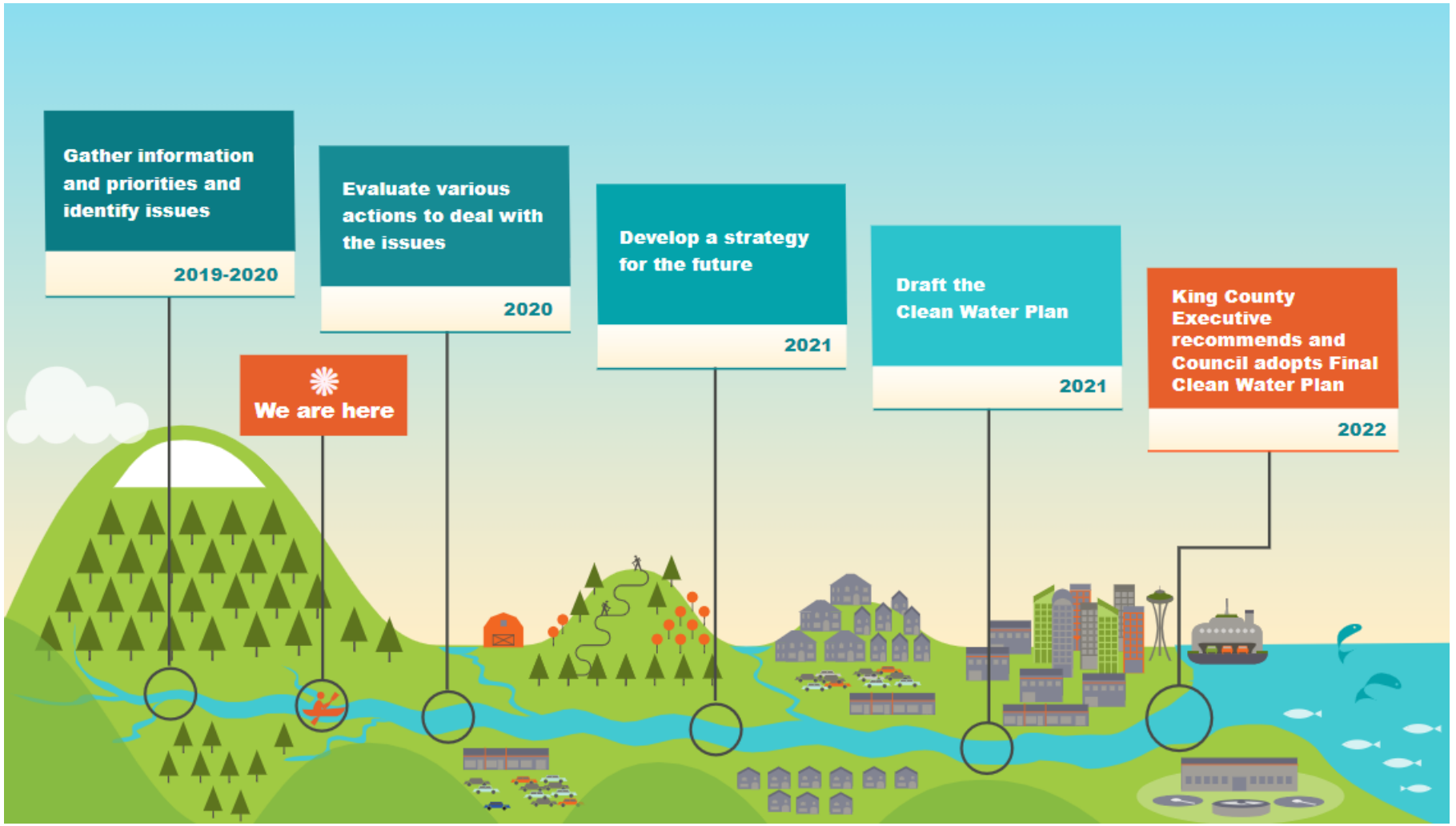
- Inform
- Consult
- Involve
- Collaborate
- Empower



County & Community Priorities

- Avoid sewer system failures
- Prepare and fight climate change
- Equity
- Increase collaboration
- Prioritize best water quality outcomes
- Healthy habitats for fish and wildlife
- Keep rates affordable
- Maintain effective wastewater workforce
- Protect and restore rivers, lakes, and Puget Sound
- Protect public health

Clean Water Plan Milestones



- Issue Determination of Significance and Scoping Notice
- ✓ Conduct SEPA Scoping
- Prepare Draft EIS
- Issue Draft EIS
- ★ Draft EIS Public Comment Period
- Prepare Final EIS

Regional Engagement Goals for Fall 2020

- Ask the community how they wish to engage at this time
- Demonstrate responsiveness to the input received from the community
- Provide a foundational understanding that prepares the community to effectively engage
- Consult early with community-based organizations on how the Clean Water Plan should reflect equitable outcomes for all
- Energize the community to engage during the Draft Environmental Impact Statement review period
- Reach new audiences addressing gaps that have occurred to this point and adapting outreach

Regional Engagement for Fall 2020

	Topic Area	Tool/Audience	Timeframe
1	Report back on SEPA Scoping process and summary	Focused Engagement • E-newsletter • Web update • Social media	August
2	Ask people how they want to engage	General public • Short questionnaire Key community groups and youth & student organizations • Interviews	August – November
3	Discuss and refine equity in the planning process	Community Based Organizations & Priority Populations • Listening Sessions • Focused Groups • Learning Circles	September
4	Communicate our decision-making process, evaluation framework, and categories and how we've incorporated community priorities	Focused Engagement • Graphical topic sheet handouts • E-newsletter • Web update • Social media • WTD Blog • Explanatory videos	September-October
5	Build understanding of the financial and affordability challenges		
6	Communicate and build awareness of what's coming next – DEIS primer	All Audiences	November-December

Questions?

The End. Thank you.

Steve Tolzman, Program Manager and Planning Project Manager
Tiffany Knapp, Planning Project Manager and Alt Program Manager
Sonia-Lynn Abenojar, Regional Engagement Project Manager

Project Number: 1134066, Combo Code: 004943781

Work order numbers: Brightwater: T901502, South Plant: C781402, West Point: C168427