



Regional District of Okanagan Similkameen  
Pre-Design  
Public Information Meeting  
Okanagan Falls Wastewater  
Treatment Plant

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Tim Forty, P.Eng.

# Pre-Design Public Information Meeting

## Agenda

- Why are we here?
- Advisory Design Committee Members
- Key Project Issues
  - Link to LWMP
  - BNR Process Selection
  - Cost Management
    - What will it cost you?
    - Postponed items
  - Plant Process and Location
  - Architectural Rendering, by Bevanda Architecture
  - Exit Survey

# Pre-Design Public Information Meeting Why are we here?



# Pre-Design Public Information Meeting

## *Why are we here?*

- Outline the results of the AECOM review of the Biological Nutrient Removal (BNR) process options considered and identify the selected process
- Outline pre-design cost estimates for the RDOS Okanagan Falls treatment plant which have been updated from the LWMP conceptual cost estimates
- Outline where cost savings have been achieved
- Outline the effluent management concept adopted by the Advisory Design Committee (ADC) to minimize project cost
- Show ADC selected plant architectural design concept
- Satisfy LWMP Approval requirements

# Advisory Design Committee Members



# Advisory Design Committee (ADC)

- The ADC met several times to review, discuss and provide input into the costs and architectural treatment planned for the new plant

ORGANIZATION	TITLE	FIRST NAME	LAST NAME
RDOS Director	Mr.	Bill	Schwarz
RDOS Alternate Director	Mr.	Tom	Styffe
RDOS	Mr.	Alf	Hartviksen
RDOS	Ms.	Liisa	Bloomfield
RDOS	Mr.	Andrew	Reeder
AECOM	Mr.	Piero	Galvagno
AECOM	Mr.	Tim	Forty
Local Citizen	Mr.	Ted	Lynch
Local Citizen	Mr.	Bryan	Telford
Local Citizen	Mr.	Gerry	Hughes
Local Citizen	Mr.	Marshal	Stinson
Bevanda Architecture Inc.	Mr.	Nick	Bevanda

# Key Project Issues: Link to LWMP



## Link to LWMP: Priorities

- Based on the public consultation, key objectives for the treatment plant upgrade include:
  - Eliminate odour and noise impacts on nearby residents
  - Minimize aesthetic impacts – integrate into landscape
  - Utilize effluent for wetland enhancement and irrigation
  - Affordable – balance cost and benefits
- Use the treatment plant expansion as an opportunity to benefit the community and natural surroundings
- Keep the community involved



# Key Project Issues: BNR Process Selection



# BNR Process Selection

- Three different Biological Nutrient Removal wastewater treatment options were short-listed and compared
  - Conventional Biological Nutrient Removal (BNR)
  - Membrane Biological Nutrient Removal (MBNR), and
  - Sequencing Batch Reactor (SBR)
- Conventional BNR was selected based on consideration of economic, social, environmental and technical criteria
- The selected option has the lowest life-cycle cost, is a proven, robust technology and provides flexibility in future staging of upgrades
  - Many other similar BNR plants are currently in service in the Okanagan so there is a pool of local expertise

# BNR Process Selection

- The new wastewater treatment plant (WWTP) will be designed to produce effluent with very low nutrient concentrations that will permit direct discharge to the Okanagan River
- Odour control and treatment will be incorporated in the design
- Architectural renderings have been used to ensure aesthetics issues are addressed
  - The proposed final appearance was selected by the Advisory Design Committee

# Key Project Issues: Cost Management



# Key Project Issues:

## Implications of Cost Estimates

- The predesign estimated costs were higher than anticipated and if the plant were to be built as originally conceived the per connection costs would have exceeded the maximum acceptable per connection costs
- The entire treatment process was carefully reviewed and unit processes that could be postponed were identified
- The cost of treatment and the desire to minimize the cost to area residents required that all effluent management options other than the absolutely necessary river outfall be delayed until a later phase
  - Wetlands enhancement, **delayed**
  - Irrigation, **delayed**

# Cost Overview: *What will it cost you?*

Estimated Capital Cost Breakdown	Total Cost	Estimated Annual Cost per connection AFTER all grants
Overall Pre-Design Capital Cost Estimate	\$11,033,000	\$210
Overall Operating and Maintenance (O&M) Cost each year	\$462,940	\$375
Total cost per connection per year	-	<div style="text-align: center;"> <span style="color: red; font-size: 2em;">★</span> <span style="font-size: 1.5em; margin: 0 10px;">\$585</span> <span style="color: red; font-size: 2em;">★</span> </div>

# Cost Saving from Postponed Items

- Some items have been deferred to minimize capital costs – these savings have been accounted for in the estimated \$585 per year connection
- Preferred items could be added back into this stage of the project if there is sufficient support from the ratepayers of Okanagan Falls
- Additional potential options could be incorporated into future upgrades to the WWTP, including when sewer service is extended to include Skaha Estates and the Kaleden Lakeshore area

# Cost Saving from Postponed Items

Additional Potential Options	Total Additional Estimated Capital Cost (Includes Contingency &	Estimated Sewer Tax	Comments
<b>1. Enhancement of Vaseux Lake Wetlands</b> Includes supply pipeline below river and development of head pond and treatment marsh	\$430,000	\$27	Would provide for reduced effluent volume discharge to Okanagan River
<b>2. Effluent Reuse</b> Includes pumps and piping to supply effluent for irrigation at Keogan Park and adjacement farm land	\$250,000	\$16	Would allow for beneficial reuse of effluent and reduce potable water demand
<b>3. Grit Removal</b>	\$500,000	\$32	Would reduce wear and increase life of process equipment
<b>4. Sludge Dewatering</b> Includes a centrifuge to achieve 20-25% solids content in the dewatered sludge	\$1,080,000	\$69	Would reduce transportation requirements for hauling thickened sludge to Penticton WWTP and allow for direct delivery of dewatered sludge the the compost facility

**Note:** If there is sufficient support for any or all of these items they COULD be added back in to this stage of the project for the additional costs shown. The choice is yours, please let us know by way of the exit survey.



# Cost Saving from Postponed Items

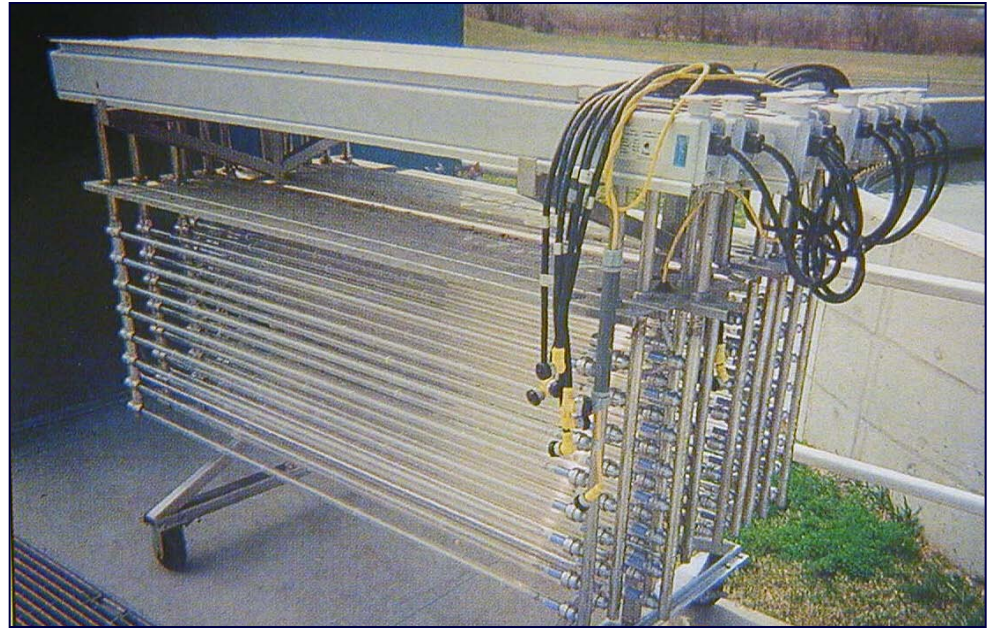
Additional Potential Options	Total Additional Estimated Capital Cost (Includes Contingency & Engineering)	Estimated Sewer Tax	Comments
<b>1. Upgrade Rail Road Between Highway 97 &amp; Rail Bed</b> - includes providing for highway connection and upgrade to rural road section	\$240,000	\$15	- RDOS staff investigating whether this feature is a requirement of the project

- The Rail Road upgrade was a requirement from the Ministry of Transportation and Highways and RDOS staff are determining whether it can be deferred
- The cost of upgrading Rail Road is included in the \$585 per year connection estimate

# Effluent Management

- As part of the current upgrades, all the treated effluent will be discharged to the Okanagan River using an outfall fitted with a diffuser
- In the future when funding becomes available a portion of the effluent could be conveyed to the Vaseux Lake wetlands on the opposite side of the river channel and used for habitat enhancement
- The option of enhancing the Vaseux Lake wetlands is currently being discussed with Environment Canada and Ministry of Environment staff to determine detailed requirements

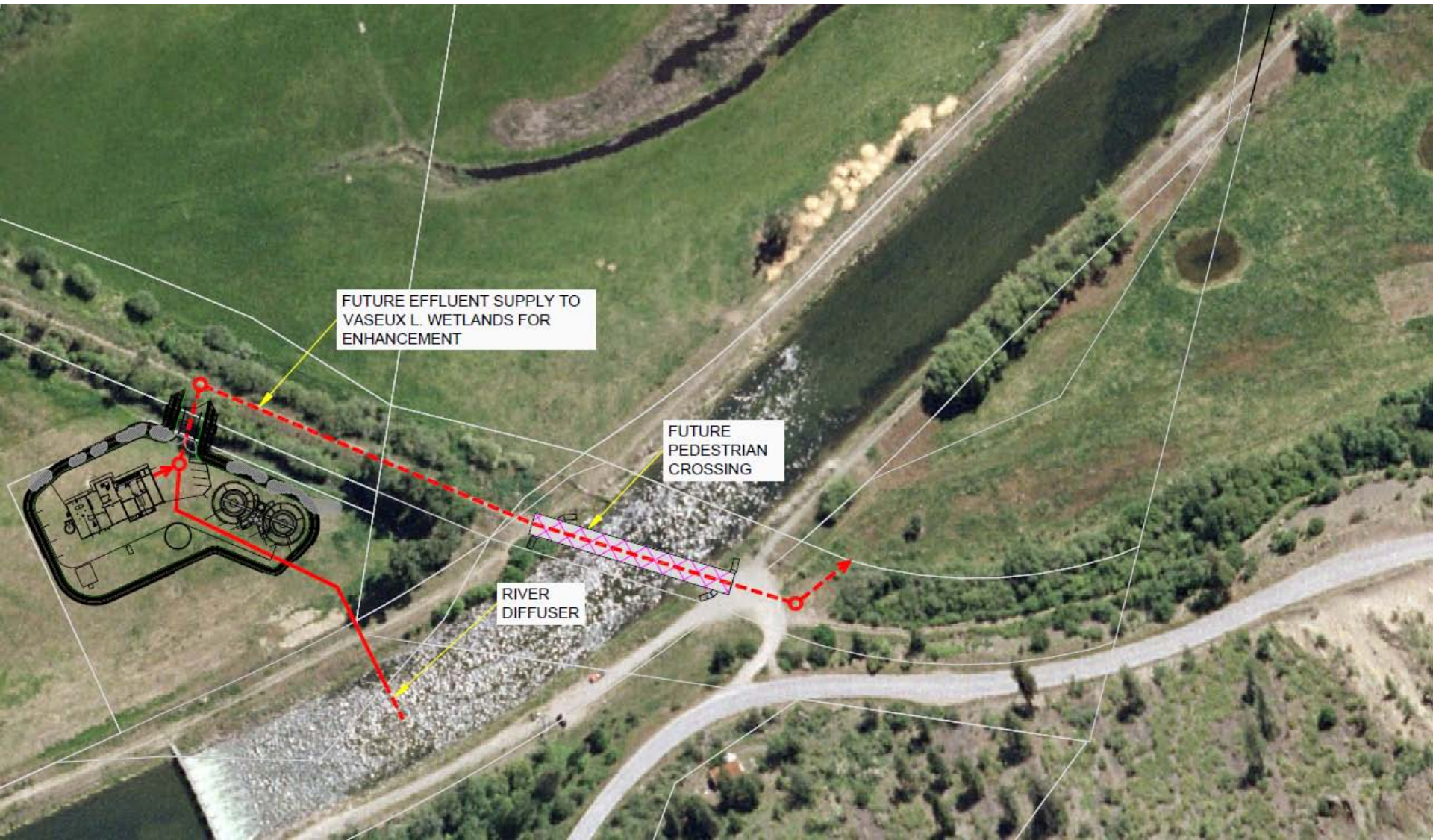
# UV LIGHT BANKS



# Effluent Management



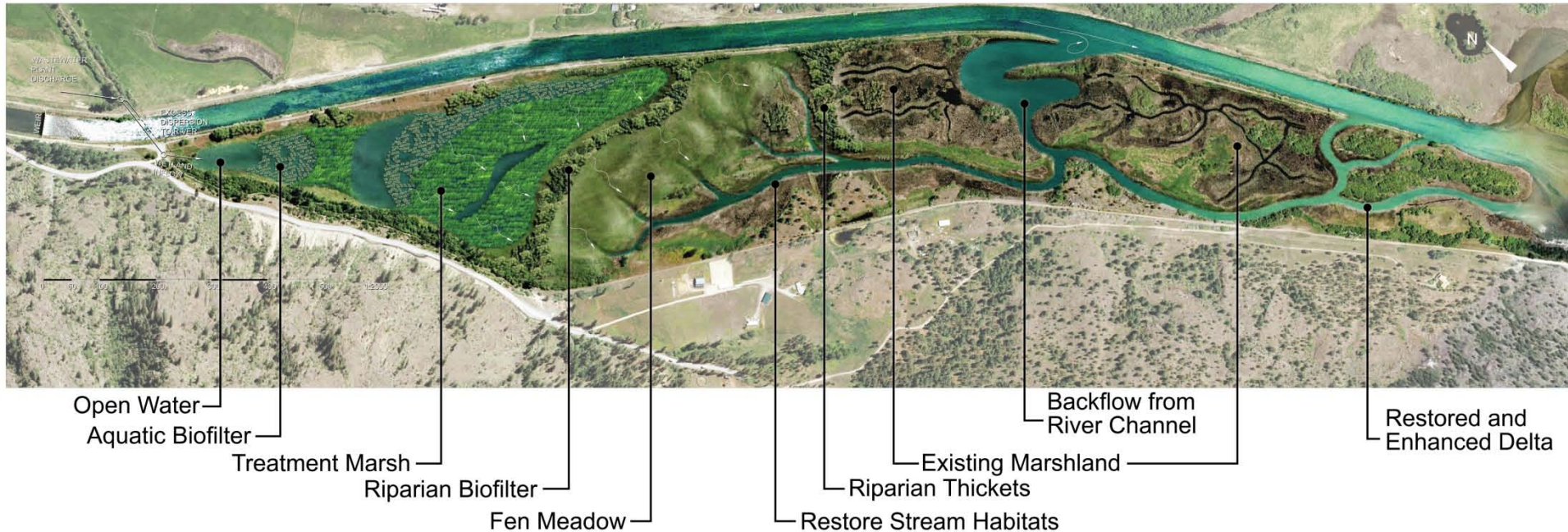
# Effluent Management



# Vaseux Lake Wetlands



# Wetland Ultimate Concept Plan



**Note:** The Wetlands Enhancement project will likely be considered outside the STP upgrade path and it is likely that separate funding for this project will be requested when grant programs are available

# Irrigation Concept Plan

- The effluent, known as “Reclaimed Water” will be used in the treatment process as process water and will be used for irrigation on the plant property
- The irrigation of Keogan Park and other properties is not affordable within the cost constraints but may be possible at some time in the future in a later phase

**Note:** The delayed process items and the use of reclaimed water off the plant site will be reconsidered when servicing monies become available for Skaha Estates and Kaleden



# Key Project Issues:

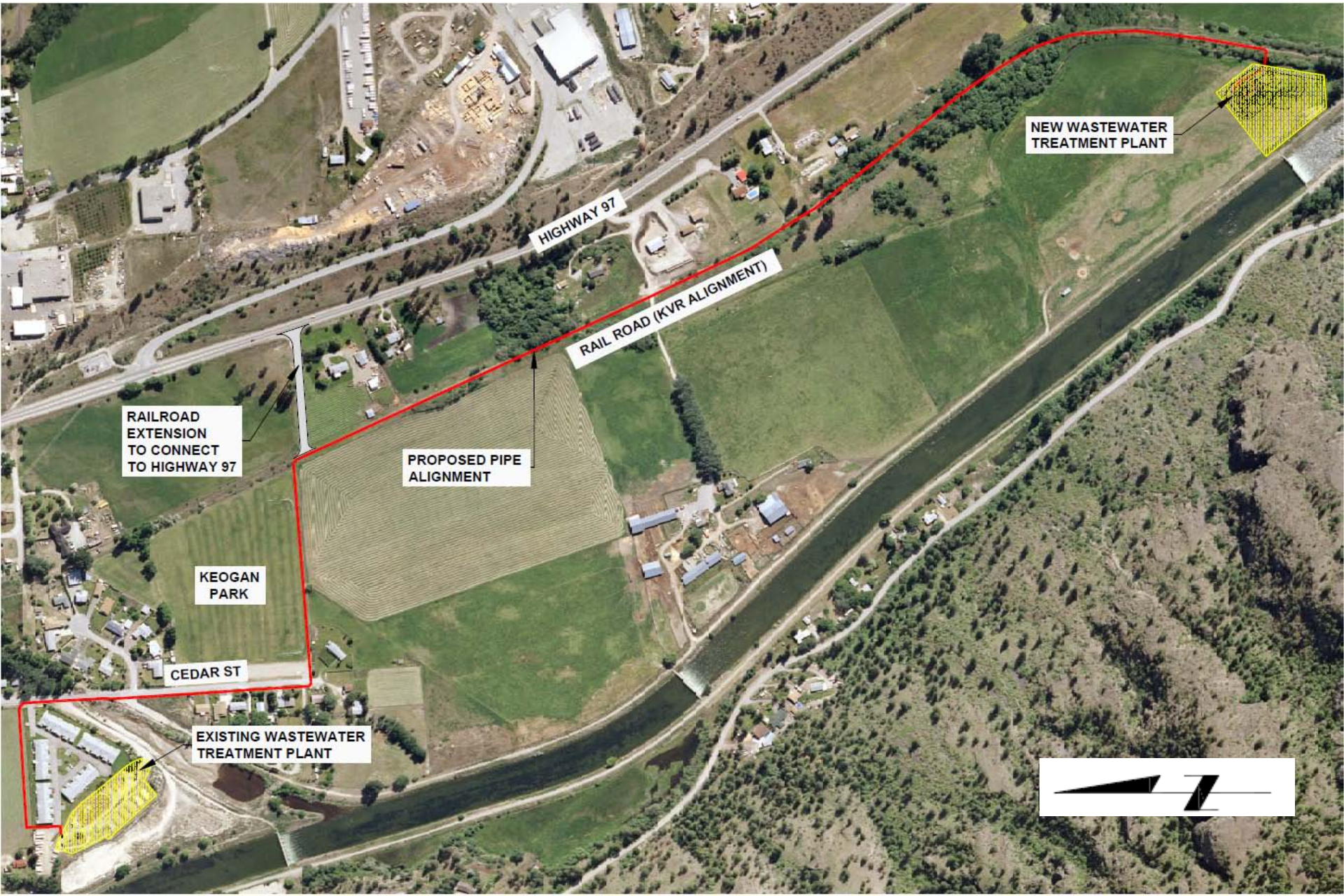
Treatment plant location, general layout and process



# Location of New Plant and Sewer Main

- A new pumped forcemain will be used to convey wastewater from the current plant site to the new wastewater treatment plant (WWTP)
- The existing KVR alignment will be used as an access road to the new WWTP
- A new extension to Rail Road will be constructed to allow connection to Highway 97

# Location of New Plant and Sewer Main

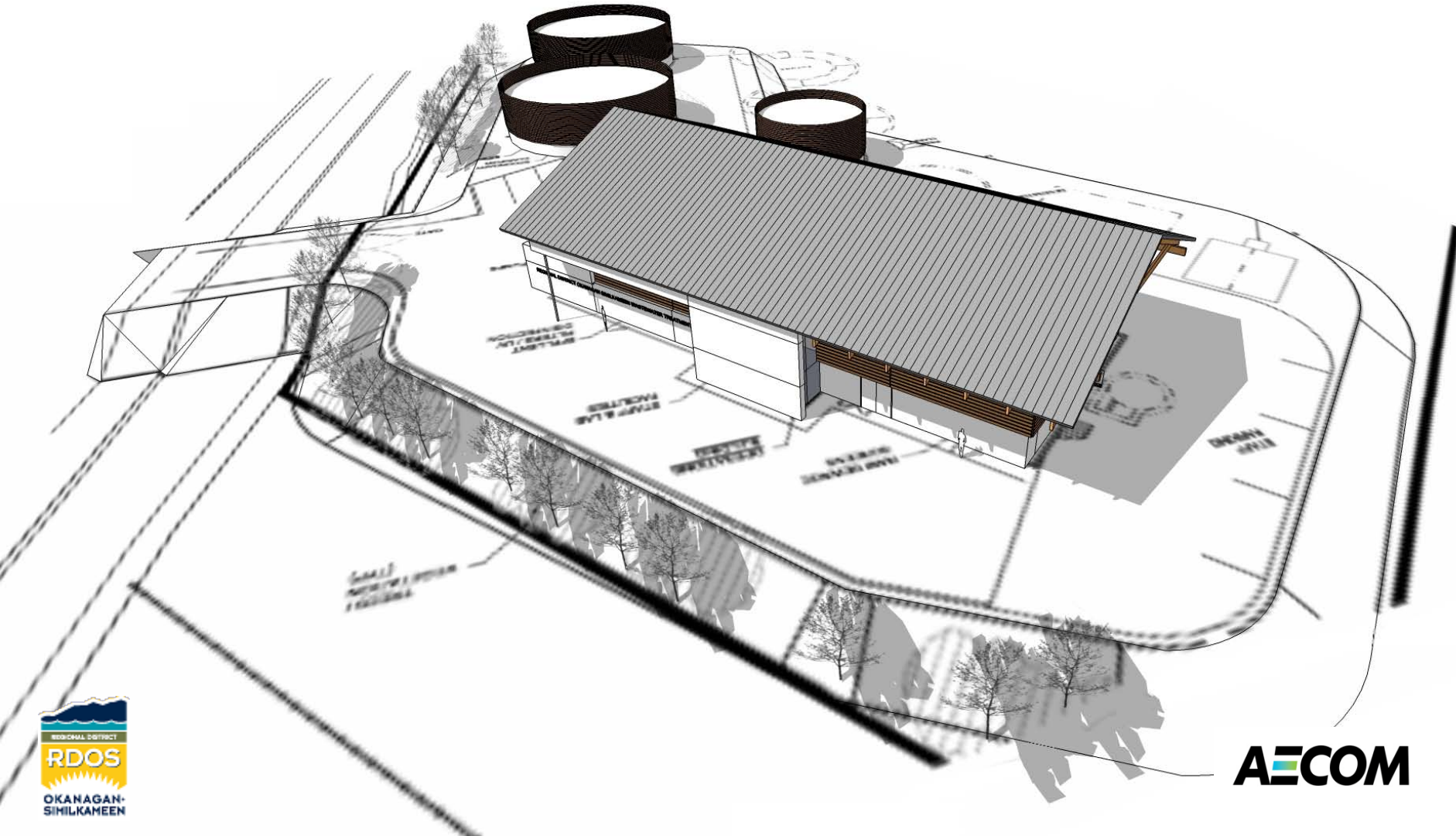


# Key Project Issues: Architectural Renderings by Bevanda Architecture



# Architectural Plant Rendering

By Bevanda Architecture



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# Architectural Plant Rendering

By Bevanda Architecture



**Aesthetic Mitigation Example  
(Vegetation Added)**



# Key Project Issues: Exit Survey



# Exit Survey

- Please complete the exit survey!
  - and drop it off at one of the following locations:
    - a) The box near the exit
    - b) The Economic Development Office at OK Corral
    - c) Drop it off or mail it to the RDOS in Penticton, or
    - d) Scan it and email it to the RDOS in Penticton at [info@rdos.bc.ca](mailto:info@rdos.bc.ca)
- We really do need and want **your** feedback!

Thank you!