LWMP
Public Open House

PREPARED BY: Paul Nash
DATE: 22 Sept 2016

Discharge Options

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Agenda

- 6-6:30 Posterboards, Government Approved Refreshments
- 6:30-7:15 Presentation – please hold questions
- 7:15 - 8:00 Q&A

Why are we here?

“to develop an environmentally sustainable method to treat the liquid waste that is produced by the Village”

Project Recap

Stage 1 - Identify

- Define the baseline – where are we now?
- Set the Goals, using the OCP for context – where do we want to be?
- **Develop the "long list" of options – how do we get there?**
- **Use the Goals to screen the options to the "short list" – the best ways to get there**
- Identify any knowledge gaps and further studies needed to fill them
- Identify Funding opportunities

Stage 1 Timeline

Meeting	Date	Task
1	28 May	Kick off
2 (all day)	16 June	Goal Setting, Evaluation system
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Open House	*14 July*	*Display goals and direction to Public*
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	30 Nov	Develop Stage 1 Report

Evaluation System for Stage 2

Category	Scores	Percentage (Original)	Rounded Percentage	WAC Ranking (Final)
Affordability	70	19%	20%	40%
Economic	91	25%	25%	20%
Environmental	112	31%	30%	20%
Social	89	25%	25%	20%
Total	362	100%	100%	100%

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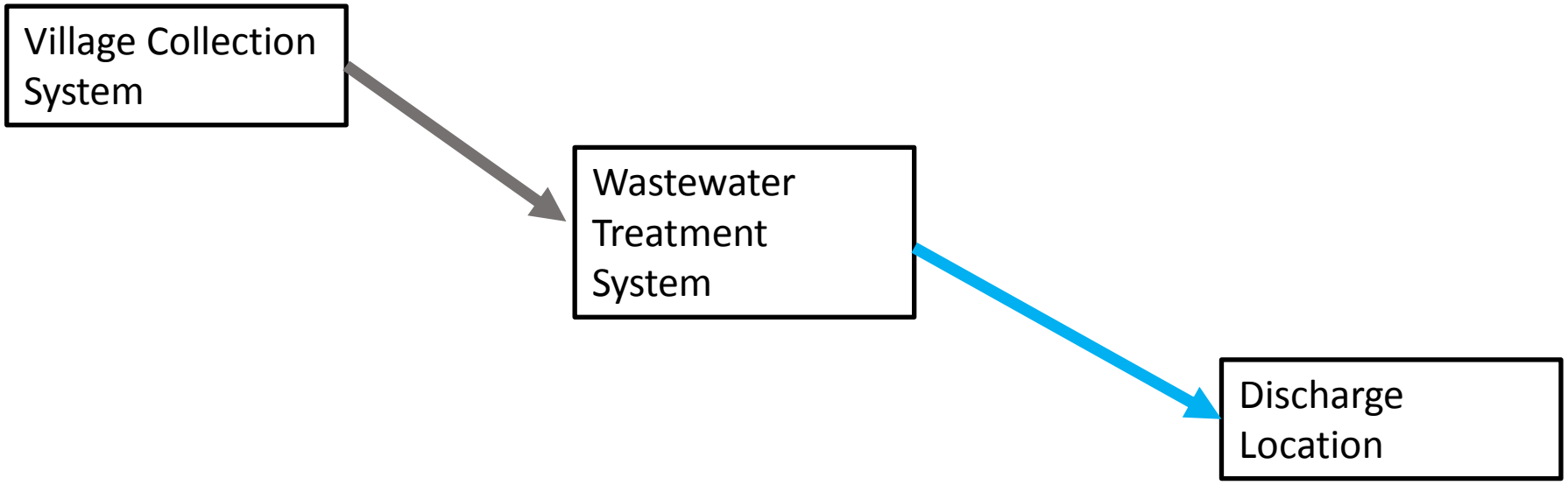
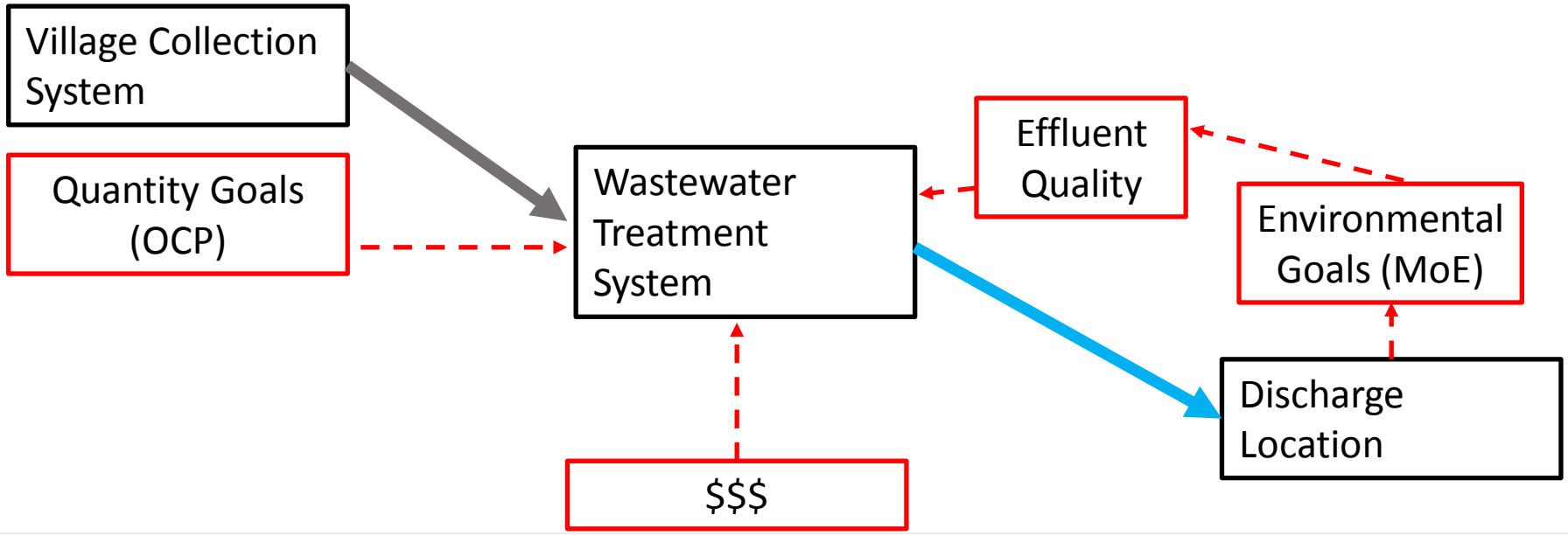
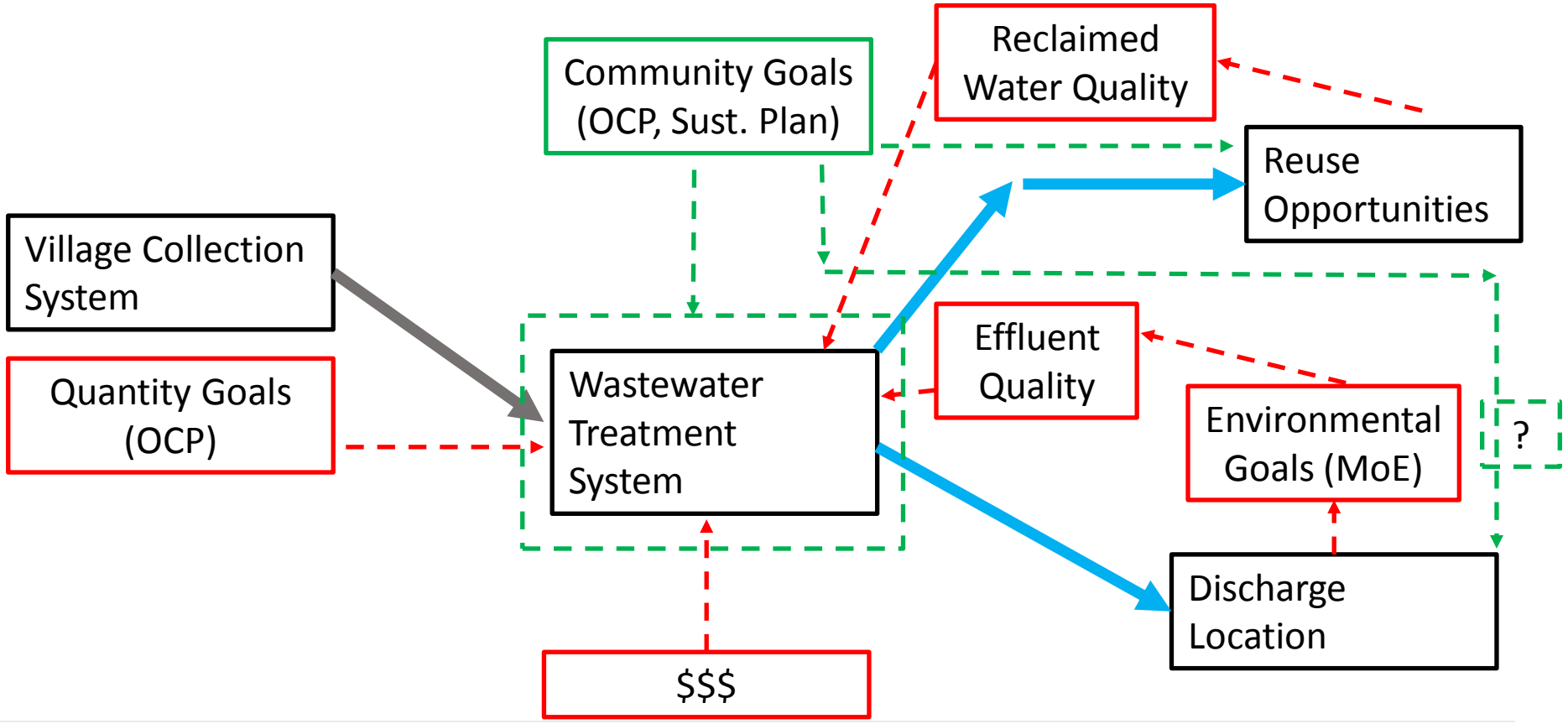
Simple view of Wastewater System



Engineer's view of Wastewater System Goals



WAC view of Wastewater System Goals



The Crux of the Cumberland Treatment Plant Upgrade

Where will the treated water go?

The Crux of the Cumberland Treatment Plant Upgrade

Where will the treated water go?

IN SUMMER

Why is summer different?

Strict Phosphorus criteria applies to Maple Lake Creek from May to September.

Maple Lake Creek will continue to be the location for winter discharge

Broad Categories of Discharge options

- Ocean
- Surface Water
- Ground
- Seasonal Storage

Ocean Discharge

Discharge Category	Ocean			
Location	**South Sewer Project**	**Connect to CVRD collection system, send untreated water**	**Connect to CVRD collection system, send fully treated water**	**Puntledge Estuary at Royston or CVRD Storm sewer**
Description	Referendum 19 June voted out	Treatment at Brent Road	Treatment at Cumberland, discharge fully treated effluent to CVRD collection system	Dedicated line to Royston or use a storm sewer line
Notes	No treatment required, except for storm flows	This Option has been rejected before	Effluent to meet ocean discharge criteria where CVRD need not treat further. Could be pulsed to be only at off peak times, in dry weather	This Option has been rejected before
Pipeline length	n/a	3 km	3km	6 km
EIS required?		N	N	Y
Effluent BOD-TSS	25-25	No Treatment	25-25	25-25
Phosphorus Removal?	N	N	N	N

Ground Discharge

Discharge Category	Ground		
Location	**Conventional Ground Disposal**	**Cooperative with the Landfill**	**Deep Ground Disposal**
Description	Recharge Basins	Recharge basins to be built as part of landfill leachate management	Inject into old coal mines beneath Cumberland
Notes	Location not determined at this stage and not preferred by MoE	Concept is to enlarge ground disposal system for Cumberland effluent	Seldom been done for municipal effluent and regulatory path uncertain.
Pipeline length	at least 3km	3km	Less than 2km
EIS required?	Y	?	Y
Effluent BOD-TSS	25-25	25-25	10-10?
Phosphorus Removal?	N	N	N

Surface Discharge

Discharge Category	Surface Water		
Location	**Maple Lake Creek, Summer**	**Morrison Creek**	**Puntledge River**
Description	From May to September	Alternate conveyance to Puntledge Estuary	Location to be below BC hydro CVRD intake
Notes	Not preferred by MoE, fisheries, nor Komoks First Nations. Phosphorus is challenge	Potential fishery enhancement	Long pipeline to get to discharge source. Minor fishery flow benefit
Pipeline)length	none	4 kms	7 kms
EIS required?	Y	Y	Y
Effluent BOD-TSS	10-10	10-10	25-25
Phosphorus Removal?	Y, <0.005	Y	Y

Seasonal Storage

Discharge Category	Storage of Summer Flows	
Location	**Reservoir**	**Storage Wetland**
Description	Manmade lake to store treated summer flows for discharge in fall winter	Manmade wetland with controllable volume to act as storage for discharge in fall/winter
Notes	Ideal location north of Teal Lake where natural depressions exist and minimal earthwork required. Concept used in Vernon, Cranbrook and Oliver and integrates with re-use water. Reservoir can be used as bird and fish habitat, also recreational waters and integrated into park like setting.	Construct a storage (not treatment) wetland adjacent to existing lagoons. Could designed to look like natural ponds. Good bird and even fish habitat potential, can be integrated into natural setting
Pipeline length	2 km	minimal /none
EIS required?	?	?
Effluent BOD-TSS	25-25	25-25
Phosphorus Removal?	N	N

Ocean Discharge Evaluation

Discharge Category	Ocean			
Location	**South Sewer Project**	**Connect to CVRD collection system, send untreated water**	**Connect to CVRD collection system, send fully treated water**	**Puntledge Estuary at Royston or CVRD Storm sewer**
Description	Referendum 19 June voted out	Treatment at Brent Road	Treatment at Cumberland, discharge fully treated effluent to CVRD collection	Dedicated line to Royston or use a storm sewer line
Decision Gates				
MoE regulations/ effluent quality	Y	Y	Y	Y
Technical feasibility	Y	Y	Y?	Y
Constructability	Y	Y	Y?	Y
2021 deadline?	?	?	Y?	Y
Community Acceptance to Cumberland	N	?N	Y?	Y?
Politically Acceptable Externally	N	N	Y?N	N?
Capital cost	?	CVRD price unknown	?? CVRD price unknown	Y
Grant probability	?	Y	Y?	Y
Overall Pass/Fail	FAIL	FAIL	PASS	FAIL
Comments	Rejected by Cumberland Council 2015	May not be acceptable to Cumberland as reclaimed water is lost. Rejected by CVRD since 2001, but would be acceptable to other external stakeholders	Not contemplated before. Worth asking the question of CVRD, especially as a backup disposal to reuse Addresses all environmental issue as as per S. Sewer.	Rejected as a South Sewer Option by SS committee, and likely would be by estuary communities

Ground Discharge Evaluation

Discharge Category	Ground		
Location	**Conventional Ground Disposal**	**Cooperative with the Landfill**	**Deep Ground Disposal**
Description	Recharge Basins	Recharge basins to be built as part of landfill leachate management	Inject into old coal mines beneath Cumberland
Decision Gates			
MoE regulations/ effluent quality	Y	Y	Y?
Technical feasibility	Y	Y	Y
Constructability	Y	Y	Y
2021 deadline?	Y	Y	?
Community Acceptance to Cumberland	Y	N	Y
Politically Acceptable Externally	Y	Not to CVRD Possibly yes for other communiities	Y
Capital cost	Y?	Y?	?
Grant probability	Y	Y	Y, not very replicable
Overall Pass/Fail	PASS	FAIL	PASS
Comments	Technical feasibility dependent on finding a suitable site, and acquiring ownership	CVRD have already said no to any changes to landfill project	Potentially easy to implement, commonly done for mine waters. This is not high pressure injection like fracking. Could also be considered a storage option?

Surface Discharge Evaluation

Discharge Category	Surface Water		
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Description	From May to September	Alternate conveyance to Puntledge Estuary	Location to be below BC hydro CVRD intake
Decision Gates			
MoE regulations/ effluent quality	N (for P<0.005)	N (for P<0.005)	Y
Technical feasibility	Y	Y	Y
Constructability	Y	Y	Y
2021 deadline?	Y	Y	Y
Community Acceptance to Cumberland	Y?	Y?	Y?
Politically Acceptable Externally	Y	N	N?
Capital cost	Y	Y	Y
Overall Pass/Fail	PASS (conditional)	FAIL	FAIL
Comments	An effluent P of 0.005 is considered not technically feasible. Conditional "pass" assumes that the P criteria is changed to <0.5 or similar	Assume MoE treats similar to MLC. Even if P criteria raised, why not just go to MLC?	assumes that the P criteria for receiving water can be met because of dilution.

Storage Evaluation

Discharge Category	Storage of Summer Flows	
Location	**Reservoir**	**Storage Wetland**
Description	Manmade lake to store treated summer flows for discharge in fall winter	Manmade wetland with controllable volume to act as storage for discharge in fall/winter
Decision Gates		
MoE regulations/ effluent quality	y	y
Technical feasibility	y	y
Constructability	y?	y?
2021 deadline?	Y	YY
Politically acceptable to Cumberland	Y	Y
Politically Acceptable Externally	Y?	Y?
Capital cost	Y	Y
Overall Pass/Fail	PASS	PASS
Comments	Availability/acquiring of the land is the key issue. Area has potential for expansion to large reservoir for storage of annual flow	Area next to existing lagoon is already owned by VoC, and this should meet the Eco-gift requirements

Option Ranking

			Community Acceptance to Cumberland		External Political Acceptance	
Option	**Category**	**Location**	Score 1 to 5	rank	Score 1 to 5	rank
6	**Storage**	**Wetland**	5.0	1	4.9	1
5	**Storage**	**Reservoir**	4.3	2	3.7	2
3	**Ground**	**Deep Ground Disposal**	3.0	3	2.9	3
2	**Ground**	**Conventional Ground Disposal**	2.6	4	2.3	4
4	**Surface Water**	**Maple Lake Creek, Summer**	2.3	5	1.8	6
1	**Ocean**	**Send fully treated water to CVRD**	1.4	6	1.9	5

This Short List is what goes for detailed study in Phase 2

- How can we make each option best achieve the goals?
- What treatment systems are suitable?
- What do they cost?

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Thank You !

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