CAPITAL PROFILE REPORT

PROFILE NAME:	**CENTRATE LINE REPLACEMENT - SAN**		**FUNDED**
PROFILE	**16-23-9804**	PROFILE STAGE:	**Approved**
DEPARTMENT:	**Financial Services & Utilities - Utilities**	PROFILE TYPE:	**Standalone**
BRANCH:	**Sanitary Utility**	PROFILE MANAGER:	**Chris Ward**
PROGRAM		LEAD BRANCH MANAGER:	
LEAD BRANCH:		ESTIMATED START:	**May, 2016**
BUDGET CYCLE:	**2015-2018**	ESTIMATED COMPLETION:	**December, 2016**

Service Category: Utilities **Major Initiative:**

GROWTH	RENEWAL
17	83

PREVIOUSLY APPROVED:	2,427
BUDGET REQUEST:	-
TOTAL PROFILE BUDGET:	2,427

PROFILE DESCRIPTION

The goal of the project is to replace the existing deteriorating centrate lines, projected to have less than a full year of useful service life remaining, and improve the valve chamber access for occupational health and safety purposes. The plan is for an open cut construction of two new 8 inch lines, running between the existing valve chambers on the Clover Bar site. The lines would follow the existing layout within the utility corridor and be approximately 365 meters in length. It would be necessary have the current lines in the corridor remain in service as much as possible. The current lines are installed at a depth of 6 meters. We also require rehabilitation (or replacement) of the valves and piping within the chamber. The materials in the chamber are similar to the corroded lines and are susceptible to corrosion. There is a need to improve the accessibility of the chamber to better facilitate maintenance activities. The design & construction is expected to be complete in 2016.

PROFILE BACKGROUND

In 2015, a break in the centrate lines stopped the biosolids dewatering operations for 2.5 months. The line break resulted in a biosolids spill that was contained at surface but required spill response and reporting to Alberta Environment and Parks. The line was repaired but an inspection of the 4 existing centrate lines showed significant deterioration. Decommissioning and replacement of the lines is required to ensure long term operation of the dewatering facility.
The centrate lines and valves are critical to the operation of the biosolids dewatering facility. The facility cannot run without the centrate return. They return water back to the biosolids lagoons after the dewatering process. Biosolids enter the dewatered facility as 5% solid material with the rest being liquid. The dewatering facility uses a centrifuge technology to increase the solids content to 25%. The liquid that is extracted is returned to the storage lagoons through the centrate lines.

PROFILE JUSTIFICATION

This project will ensure that the dewatered biosolids centrate is appropriately recycled back to the biosolids storage lagoon. The new lines are required to replace existing deteriorating centrate lines. The alternatives include pipe breaks, spills and unplanned interruptions in service. As the biosolids production grows it is important to have all available options for beneficial disposal.

STRATEGIC ALIGNMENT

The line replacement and valve improvement project supports the Drainage Master Plan and the Biosolids Long Term Strategy for environmental and financially responsible biosolids management.

ALTERNATIVES CONSIDERED

The option to "Do Nothing" is not considered acceptable due to the risk of line break, spill and interruption of the dewatering operation. There is the potential for regulatory fines and damage to the City's reputation as an environmental leader. There are no known alternatives to the line replacement unless the dewatering system is closed. The centrate lines are critical infrastructure.

COST BENEFITS

The benefits:
– Reduced risk of spill and environmental damage due to line break;
– Improved access to valve chamber for occupational health and safety purposes; and
– Improved operational reliability.
High level cost estimate: $2,555,000 for design and construction. This project is currently in concept planning stage, and is anticipated that the project be handed over to Integrated Infrastructure Services for implementation in Q3 2016.

KEY RISKS & MITIGATING STRATEGY

There are no known significant risks to implementing this project.

RESOURCES

This work will be performed by the Integrated Infrastructure Services department, or external resources depending on resource availability.

CONCLUSIONS AND RECOMMENDATIONS

The goal of the project is to replace the existing deteriorating centrate lines and improve the valve chamber access for occupational health and safety purposes. The centrate line replacement and valve chamber improvements are required to maintain the biosolids dewatering operations. Package the project as a design/build to ensure expertise is involved at all stages. The design should be completed by July 2016, and construction between August and November of 2016.

CHANGES TO APPROVED PROFILE

2016 Spring SCBA (CA#20): (2.1.18) This new profile is to replace the existing deteriorating centrate lines and improve the valve chamber access for occupational health and safety purposes. The centrate line replacement and valve chamber improvements are required to maintain the biosolids dewatering operations.

CAPITAL PROFILE REPORT

PROFILE NAME: **Centrate Line Replacement - SAN** **FUNDED**

PROFILE NUMBER: **16-23-9804** PROFILE TYPE: **Standalone**

BRANCH: **Sanitary Utility**

CAPITAL BUDGET AND FUNDING SOURCES (000's)

		PRIOR YEARS	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	TOTAL
APPROVED BUDGET	Approved Budget												
	Original Budget Approved	-	-	-	-	-	-	-	-	-	-	-	-
	2016 Cap Council	-	2,427	-	-	-	-	-	-	-	-	-	2,427
	Current Approved Budget	-	2,427	-	-	-	-	-	-	-	-	-	2,427
	Approved Funding Sources												
	Drainage Retained Earnings	-	971	-	-	-	-	-	-	-	-	-	971
	Self-Liquid. Debent.-Sanitary	-	1,456	-	-	-	-	-	-	-	-	-	1,456
	Current Approved Funding Sources	-	2,427	-	-	-	-	-	-	-	-	-	2,427
BUDGET REQUEST	Budget Request	-	-	-	-	-	-	-	-	-	-	-	-
REVISED BUDGET (IF APPROVED)	Revised Budget (if Approved)	-	2,427	-	-	-	-	-	-	-	-	-	2,427
	Requested Funding Source												
	Drainage Retained Earnings	-	971	-	-	-	-	-	-	-	-	-	971
	Self-Liquid. Debent.-Sanitary	-	1,456	-	-	-	-	-	-	-	-	-	1,456
	Requested Funding Source	-	2,427	-	-	-	-	-	-	-	-	-	2,427

CAPITAL BUDGET BY ACTIVITY TYPE (000's)

	Activity Type	PRIOR YEARS	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	TOTAL
REVISED BUDGET (IF APPROVED)	Design	-	2,427	-	-	-	-	-	-	-	-	-	2,427
	Total	-	2,427	-	-	-	-	-	-	-	-	-	2,427

OPERATING IMPACT OF CAPITAL

Type of Impact:

Branch:	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE
Total Operating Impact	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CAPITAL PROFILE REPORT

PROFILE NAME:	**SILVERBERRY 4 POND NATURALIZATION PILOT**
PROFILE	**16-31-9803**
DEPARTMENT:	**Financial Services & Utilities - Utilities**
BRANCH:	**Stormwater Utility**
PROGRAM	
LEAD BRANCH:	
BUDGET CYCLE:	**2015-2018**

FUNDED

PROFILE STAGE:	**Approved**
PROFILE TYPE:	**Standalone**
PROFILE MANAGER:	**Chris Ward**
LEAD BRANCH MANAGER:	
ESTIMATED START:	**May, 2016**
ESTIMATED COMPLETION:	**December, 2020**

Service Category: **Utilities** **Major Initiative:**

GROWTH	RENEWAL
	100

PREVIOUSLY APPROVED:	**1,518**
BUDGET REQUEST:	**-**
TOTAL PROFILE BUDGET:	**1,518**

PROFILE DESCRIPTION

The goal of this project is to eliminate algae blooms in the Silverberry 4 stormwater pond through naturalization as the traditional methods of dealing with nutrients are exhausted. Due to a lack of internal expertise, a design-build-operate model is warranted to assess the success of naturalization on Edmonton's most nuisance pond (Silverberry 4). The design would occur during the fall/winter of 2016/2017 with construction commencing in the fall of 2017. Pond commissioning and operation would extend through to the fall of 2021.

This project would be considered a pilot project as it is expected that both pond design standards and pond servicing standards will be amended if this project is a success."

PROFILE BACKGROUND

Silverberry 4 stormwater pond was built in 2001. It has experienced uncontrolled algae blooms for several years. During the past two years (2014-2015), Drainage Operations has applied a product called PhosLok to the pond at a total cost of over $80,000, with no appreciable improvement. All tools in Drainage Operations toolkit intended to manage algae blooms in stormwater ponds have now been exhausted. Councillor Sohi brought concerns from residents regarding the state of the pond forward in June 2015.

Naturalization of the pond was suggested by Drainage Operations following investigation into the methods the City of Winnipeg is using to control algae in their urban stormwater ponds.

PROFILE JUSTIFICATION

This project is a pilot to assess the impact of pond naturalization, and associated operations and maintenance activities, on algae control. If this pilot is a success both the pond design and servicing standards and criteria will be updated to reflect the lessons learned. Eliminating the algae problem through pond naturalization will also address the public complaints and reduce long term operational costs.

STRATEGIC ALIGNMENT

Naturalization of Silverberry 4 pond aligns with the Drainage Master Plan, Stormwater Quality Strategy and River for Life. It will be supported by the River for Life public education program intended for launch in 2016.

ALTERNATIVES CONSIDERED

The option to "Do Nothing" is not considered acceptable due to the public complaints and councillor attention focussed on this pond. For this reason, there are no known alternatives to naturalization that indicate successful management of algae in Silverberry 4 pond.

COST BENEFITS

The benefits include:
-reduced operational requirements to deal with algae blooms in Silverberry 4.
-improved design and servicing standards to ensure future ponds do not experience nuisance algae blooms.
-improved customer service and public satisfaction.

High level cost estimate: design $53,911, construction $1,268,372, maintenance $134,542. In total $1,456,825. (excluding inflation)

KEY RISKS & MITIGATING STRATEGY

Uncertainty of Concept: It is uncertain if naturalizing Silverberry 4 will solve the algae problem.
Mitigation: Manage the project as a pilot, and issue the project as a Design-Build-Operate to ensure experienced practitioners are responsible for performance for 5 years.

Mitigation: The consultant hired for the design-build-operate will be responsible for construction, either within their organization or by hiring and managing subcontractors.

RESOURCES

Need external resources (consultants) for design, construction and operation and DDC to manage design-build-operate contract.

CONCLUSIONS AND RECOMMENDATIONS

The goal of this project is to eliminate algae blooms in the Silverberry 4 stormwater pond through naturalization.

Consider naturalization of this pond as a pilot project intended to test locally, methods that are successful in similar climate conditions (Winnipeg).

Manage the project as a Design-Build-Operate in order to ensure the required expertise is involved at all stages. The selected consultant should complete the design in early 2017, starting construction in the fall of 2017 and continue operations activities until the fall of 2021. The consulant will provide operations and maintenance direction to Drainage Operations, for continued success of the facility, prior to completion in 2021.

CHANGES TO APPROVED PROFILE

2016 Spring SCBA (CA#20): (2.1.17)

This new profile is to eliminate algae blooms in the Silverberry 4 storm water pond through naturalization. The naturalization of this pond is a pilot project intended to test locally, methods that are successful in similar climate conditions (Winnipeg).

CAPITAL PROFILE REPORT

PROFILE NAME: **Silverberry 4 Pond Naturalization Pilot** **FUNDED**

PROFILE NUMBER: **16-31-9803** PROFILE TYPE: **Standalone**

BRANCH: **Stormwater Utility**

CAPITAL BUDGET AND FUNDING SOURCES (000's)

		PRIOR YEARS	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	TOTAL
APPROVED BUDGET	Approved Budget												
	Original Budget Approved	-	-	-	-	-	-	-	-	-	-	-	-
	2016 Cap Council	-	54	707	607	51	99	-	-	-	-	-	1,518
	Current Approved Budget	-	54	707	607	51	99	-	-	-	-	-	1,518
	Approved Funding Sources												
	Drainage Retained Earnings	-	22	283	243	20	40	-	-	-	-	-	607
	Self-Liquid. Debent.-Land Drg	-	32	424	364	31	59	-	-	-	-	-	911
	Current Approved Funding Sources	-	54	707	607	51	99	-	-	-	-	-	1,518
BUDGET REQUEST	Budget Request	-	-	-	-	-	-	-	-	-	-	-	-
REVISED BUDGET (IF APPROVED)	Revised Budget (if Approved)	-	54	707	607	51	99	-	-	-	-	-	1,518
	Requested Funding Source												
	Drainage Retained Earnings	-	22	283	243	20	40	-	-	-	-	-	607
	Self-Liquid. Debent.-Land Drg	-	32	424	364	31	59	-	-	-	-	-	911
	Requested Funding Source	-	54	707	607	51	99	-	-	-	-	-	1,518

CAPITAL BUDGET BY ACTIVITY TYPE (000's)

REVISED BUDGET (IF APPROVED)	Activity Type	PRIOR YEARS	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	TOTAL
	Design	-	54	707	607	51	99	-	-	-	-	-	1,518
	Total	-	54	707	607	51	99	-	-	-	-	-	1,518

OPERATING IMPACT OF CAPITAL

Type of Impact:

Branch:	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE
Total Operating Impact	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CAPITAL PROFILE REPORT

PROFILE NAME:	**CENTRATE LINE REPLACEMENT- STORM**
PROFILE	**16-31-9804**
DEPARTMENT:	**Financial Services & Utilities - Utilities**
BRANCH:	**Stormwater Utility**
PROGRAM	
LEAD BRANCH:	
BUDGET CYCLE:	**2015-2018**

FUNDED

PROFILE STAGE:	**Approved**
PROFILE TYPE:	**Standalone**
PROFILE MANAGER:	**Chris Ward**
LEAD BRANCH MANAGER:	
ESTIMATED START:	**May, 2016**
ESTIMATED COMPLETION:	**December, 2016**

Service Category: **Utilities** **Major Initiative:**

GROWTH	RENEWAL
24	76

PREVIOUSLY APPROVED:	**128**
BUDGET REQUEST:	**-**
TOTAL PROFILE BUDGET:	**128**

PROFILE DESCRIPTION

The goal of the project is to replace the existing deteriorating centrate lines, projected to have less than a full year of useful service life remaining, and improve the valve chamber access for occupational health and safety purposes. The plan is for an open cut construction of two new 8 inch lines, running between the existing valve chambers on the Clover Bar site. The lines would follow the existing layout within the utility corridor and be approximately 365 meters in length. It would be necessary have the current lines in the corridor remain in service as much as possible. The current lines are installed at a depth of 6 meters. We also require rehabilitation (or replacement) of the valves and piping within the chamber. The materials in the chamber are similar to the corroded lines and are susceptible to corrosion. There is a need to improve the accessibility of the chamber to better facilitate maintenance activities. To design & construction is expected to be complete in 2016.

PROFILE BACKGROUND

In 2015, a break in the centrate lines stopped the biosolids dewatering operations for 2.5 months. The line break resulted in a biosolids spill that was contained at surface but required spill response and reporting to Alberta Environment and Parks. The line was repaired but an inspection of the 4 existing centrate lines showed significant deterioration. Decommissioning and replacement of the lines is required to ensure long term operation of the dewatering facility.
The centrate lines and valves are critical to the operation of the biosolids dewatering facility. The facility cannot run without the centrate return. They return water back to the biosolids lagoons after the dewatering process. Biosolids enter the dewatered facility as 5% solid material with the rest being liquid. The dewatering facility uses a centrifuge technology to increase the solids content to 25%. The liquid that is extracted is returned to the storage lagoons through the centrate lines.

PROFILE JUSTIFICATION

This project will ensure that the dewatered biosolids centrate is appropriately recycled back to the biosolids storage lagoon. The new lines are required to replace existing deteriorating centrate lines. The alternatives include pipe breaks, spills and unplanned interruptions in service. As the biosolids production grows it is important to have all available options for beneficial disposal.

STRATEGIC ALIGNMENT

The line replacement and valve improvement project supports the Drainage Master Plan and the Biosolids Long Term Strategy for environmental and financially responsible biosolids management.

ALTERNATIVES CONSIDERED

The option to "Do Nothing" is not considered acceptable due to the risk of line break, spill and interruption of the dewatering operation. There is the potential for regulatory fines and damage to the City's reputation as an environmental leader. There are no known alternatives to the line replacement unless the dewatering system is closed. The centrate lines are critical infrastructure.

COST BENEFITS

The benefits:
– Reduced risk of spill and environmental damage due to line break;
– Improved access to valve chamber for occupational health and safety purposes; and
– Improved operational reliability.
High level cost estimate: $2,555,000 for design and construction. This project is currently in concept planning stage, and is anticipated that the project be handed over to Integrated Infrastructure Services for implementation in Q3 2016.

KEY RISKS & MITIGATING STRATEGY

There are no known significant risks to implementing this project.

RESOURCES

This work will be performed by the Integrated Infrastructure Services department, or external resources depending on resource availability.

CONCLUSIONS AND RECOMMENDATIONS

The goal of the project is to replace the existing deteriorating centrate lines and improve the valve chamber access for occupational health and safety purposes. The centrate line replacement and valve chamber improvements are required to maintain the biosolids dewatering operations. Package the project as a design/build to ensure expertise is involved at all stages. The design should be completed by July 2016, and construction between August and November of 2016.

CHANGES TO APPROVED PROFILE

2016 Spring SCBA (CA#20): (2.1.19) This new profile is to replace the existing deteriorating centrate lines and improve the valve chamber access for occupational health and safety purposes. The centrate line replacement and valve chamber improvements are required to maintain the biosolids dewatering operations.

CAPITAL PROFILE REPORT

PROFILE NAME: **Centrate Line Replacement- STORM** **FUNDED**

PROFILE NUMBER: **16-31-9804** PROFILE TYPE: **Standalone**

BRANCH: **Stormwater Utility**

CAPITAL BUDGET AND FUNDING SOURCES (000's)

		PRIOR YEARS	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	TOTAL
APPROVED BUDGET	Approved Budget												
	Original Budget Approved	-	-	-	-	-	-	-	-	-	-	-	-
	2016 Cap Council	-	128	-	-	-	-	-	-	-	-	-	128
	Current Approved Budget	-	128	-	-	-	-	-	-	-	-	-	128
	Approved Funding Sources												
	Drainage Retained Earnings	-	51	-	-	-	-	-	-	-	-	-	51
	Self-Liquid. Debent.-Land Drg	-	77	-	-	-	-	-	-	-	-	-	77
	Current Approved Funding Sources	-	128	-	-	-	-	-	-	-	-	-	128
BUDGET REQUEST	Budget Request	-	-	-	-	-	-	-	-	-	-	-	-
REVISED BUDGET (IF APPROVED)	Revised Budget (if Approved)	-	128	-	-	-	-	-	-	-	-	-	128
	Requested Funding Source												
	Drainage Retained Earnings	-	51	-	-	-	-	-	-	-	-	-	51
	Self-Liquid. Debent.-Land Drg	-	77	-	-	-	-	-	-	-	-	-	77
	Requested Funding Source	-	128	-	-	-	-	-	-	-	-	-	128

CAPITAL BUDGET BY ACTIVITY TYPE (000's)

REVISED BUDGET (IF APPROVED)	Activity Type	PRIOR YEARS	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	TOTAL
	Design	-	128	-	-	-	-	-	-	-	-	-	128
	Total	-	128	-	-	-	-	-	-	-	-	-	128

OPERATING IMPACT OF CAPITAL

Type of Impact:

Branch:	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE
Total Operating Impact	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-