



**REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY 22 JULY 2009**

**SUBJECT PROGRAM MANAGEMENT CONSULTING SERVICES WORK PROGRAM AND FEES
 – CORE AREA WASTEWATER TREATMENT PROGRAM**

PURPOSE

To request that the Core Area Liquid Waste Management Committee (CALWMC) approve the work program and fee estimate for the initial phase of the program management consulting services.

BACKGROUND

At its meeting of 10 June 2009, the CALWMC approved Stantec as the program management firm and authorized Capital Regional District (CRD) staff to enter into negotiations with Stantec to develop a consulting services agreement for approval by the CALWMC and the Board.

At its meeting of 02 June 2009, the CALWMC approved the following motion:

- 1) That the Capital Regional District (CRD) proceed with Option 1 with further investigation of variations on the strategy, including:
 - a) Continued analysis of Options 1a, 1b and 1c through the triple bottom line analysis, including an assessment of biosolids integration with solid waste activities and functions.
 - b) Investigation of a wastewater heat recovery system and delivery mechanism in James Bay.
 - c) Integration of inflow and infiltration management with appropriate phasing of the wet weather strategy at Clover Point.
 - d) Relocation of the solids processing from the liquid processing site to allow potential integration with solid waste activities and functions.
 - e) Further development of the biosolids management plan to reduce operational risks associated with biosolids end uses.
 - f) Complete siting investigations in Saanich East/North Oak Bay.
 - g) Investigation of opportunities for heat recovery and water reuse with the University of Victoria.
 - h) Research the possibility of a single larger site in the event that the McLoughlin Point site is not selected.
 - i) Evaluation of the financial and rate impacts of the costs and revenues, including revenues and/or carbon tax benefits of resource recovery and use for each option; and
- 2) That the CRD look at options for sewage treatment in the West Shore by working in cooperation with the Administrators and Engineers of Colwood and Langford.

All of these items except item i) form the basis of the work plan of activities for the initial phase of the program management assignment. This work plan of activities is predominantly additional engineering to complete the planning phase of the Core Area Wastewater Treatment Program (CAWTP). In addition to the planning engineering work tasks, the work program includes services related to the overall program management, business plan, public consultation and permitting support for the CAWTP.

Appendix A provides a description of each work task and the associated fee estimate. The total consulting fees for the work tasks included in the initial phase of the CAWTP management assignment is estimated at \$3,565,220.

ALTERNATIVES

1. That the CALWMC recommend to the Board that the CRD enter into a contract with Stantec Consulting Ltd. for program management consulting services in the amount of \$3,565,220 for the initial phase of work as outlined in Appendix A.
2. That the CALWMC add or delete work tasks prior to recommending approval of a contract with Stantec.

FINANCIAL IMPLICATIONS

Funding for this work is included in the budget in Bylaw No. 3615 "Liquid Waste Management Core Area and West Shore Service Loan Authorization Bylaw No.1 2009". This work is cost-shared under the program development and implementation phase of the Building Canada planning agreement. The planning agreement included an estimate of \$6,005,651 for program development and implementation for the fiscal year 2009-2010.

RECOMMENDATIONS

That the Core Area Liquid Waste Management Committee recommend to the Board that:

1. the Capital Regional District enter into a contract with Stantec Consulting Ltd. for program management consulting services in the amount of \$3,565,220 for the initial phase of work as outlined in Appendix A; and
2. the work be funded from the Core Area Wastewater Treatment capital fund, which is cost shared under the planning agreement.

Tony Brcic, PEng
Project Manager, Core Area Wastewater Treatment

Dwayne Kalynchuk, PEng
Project Director, Core Area Wastewater Treatment

Kelly Daniels
CAO Concurrence

COMMENTS

TB:hr:jta
Attachment: 1


Stantec

Stantec Consulting Ltd.
 10th Floor 13401 - 108th Avenue
 Surrey BC V3T 5T3
 Tel: (604) 587-8400
 Fax: (604) 587-8489

July 14, 2009
 File: 149009002

Capital Regional District, Environmental Services
 625 Fisgard Street
 Victoria, BC V8W 2S6

Attention: Mr. Tony Brcic, P.Eng.
CAWTP Project Manager

Dear Mr. Brcic:

**Reference: Program and Technical Management Services for the
 Core Area Wastewater Treatment Program**

Thank you for your Notice to Proceed letter of June 15, 2009. As requested, and in collaboration with CRD, we have developed our initial work plans outlining our scope of services and associated fee estimates to support the work plan activities requested by the CALWMC.

These plans are for work during this initial stage of the project while the project scope, plant locations, resource recovery opportunities and technologies are refined. It is envisioned that this stage will extend from June 15, 2009 to March 31, 2010 and our fees and work plans reflect this assumption. Some of the scope items are undefined at this time and will evolve as more detailed information becomes available and further work is completed. We have included a technical support task for this undefined work.

Our detailed work plans are attached. The following is a summary of the major work items and our estimated level of effort for each task.

Task Description	Task No.	Estimated Hours	Estimated Fee and Disbursement Budget
Program Management	201	3550	\$ 625,521
Business Plan Support	202	582	\$ 115,239
Public Consultation Support	203	734	\$ 163,862
LWMP Support	204	424	\$ 87,916
Technical Support	205	1645	\$ 304,429
Permitting Support	206	406	\$ 85,957
Option 1A, 1B, 1C Analysis and Refinement of Selected Option and Costs	207	6859	\$ 1,236,763
Investigation of Heat Recovery for James Bay	208	1226	\$ 233,415
Integration of I&I Management – Clover Point	209	517	\$ 97,728
Biosolids Management Plan	211	1890	\$ 363,796
Effluent Reuse and Heat Recovery for U Vic.	213	940	\$ 180,364
West Shore Plant Siting	216	387	\$ 70,230
Totals		19,160	\$ 3,565,220

July 14, 2009

Page 2 of 2

**Reference: Program and Technical Management Services for the
Core Area Wastewater Treatment Program**

The work will be completed on a time and disbursement basis in accordance with our April 29, 2009 Request for Qualifications submission.

It is our understanding that the work associated with the Biosolids Siting, Siting Investigations in Saanich East / North Oak Bay, the Larger Site in lieu of McLoughlin Point, and the Financial Rate Structure Evaluation is being performed by other consultants retained by the CRD. We have made a modest allowance for any support to these items in our Technical Support and Business Plan Support tasks.

As the project evolves there are likely to be special investigations that will have to be completed to provide additional information to regulatory agencies, provincial and federal governments and other agencies. We will provide work plans and estimates for these unforeseen tasks as required.

We request your approval to proceed with the work described in the enclosed work plans and fee estimates.

Yours truly,

STANTEC CONSULTING LTD.



Reno Fiorante, P.Eng.
Vice President, Environmental Infrastructure
Tel: (604) 587-8402
Fax: (604) 587-8489
reno.fiorante@stantec.com

Attachment: Detailed Work Plans

c. Dave Walker, Sam Ambrosio

WORK TASK ORDER

PROJECT NO. _____ AREA: _____ TASK NO. 201
 SUBJECT: Program Management Services REVISION NO. _____

DESCRIPTION:

Preliminary program management services are required to support the CAWTP to the end of March 2010. The services under this work task include :

- Establishment of project procedures
- Input into project governance and corporate organization and financial structure
- Assistance with grant and funding applications
- Technical assistance and overview for preparation of the Business Plan
- Development of Project Implementation Plan
- Establishment of Document Control System
- Budget monitoring and control
- Scheduling
- Reporting
- Attendance at meetings with Capital Regional District (CRD) and government authorities.

It is anticipated that a program management office will not be established until 2010.

Deliverables: Schedule Updates, Cost Updates, Reporting, Project Implementation Plan

CAPITAL COST CHANGE: (PREPARE SEPARATE ESTIMATE SHEET IF SPACE BELOW INSUFFICIENT)

DESCRIPTION	MATERIAL	LABOUR	INDIRECTS	TOTAL

CAPITAL DISPOSITION: Responsibility by Client Shift to/from Contingency
 Revise Estimate to Complete Increase Capital Cost (Out of Project Scope)

SERVICES COST CHANGE:

IF APPLICABLE, LIST DOCUMENTS IMPACTED ON SEPARATE SHEET

DESCRIPTION	DEPT.	AREA	ACT.	WORK HOURS	COST		
					SERVICES	EXPENSES	TOTAL
				3550	581,880	43,641	\$625, 521
TOTAL SERVICES COST ESTIMATE							

FEE TERMS: Lump Sum TM OTHER – Increase to contract value – same commercial terms

ENGINEERING COST DISPOSITION: Budget Shift Increase EPCM Budget

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

OVERALL TOTAL _____

SCHEDULE CHANGE (EXTENSION / CONTRACTION) _____

DESCRIPTION OF EFFECT ON:

- 1. ENGINEERING SCHEDULE _____
- 2. PROCUREMENT SCHEDULE _____
- 3. CONSTRUCTION SCHEDULE _____

ORIGINATOR

Dave Walker, Sam Ambrosio

DATE June 22, 2009

APPROVAL

PROJECT MANAGER



DATE July 15, 2009

CLIENT REPRESENTATIVE

DATE _____

WORK TASK ORDER

PROJECT NO. _____ AREA: _____ TASK NO. 202

SUBJECT: CAWTP BUSINESS CASE SUPPORT SERVICES REVISION NO. _____

DESCRIPTION:

Program management and technical services are required to support the business case and procurement strategy being prepared by Ernst and Young. Our services are expected to include :

- Meetings with Ernst and Young to support the business case evaluation
- Provision of technical information to support resource recovery
- Preparation of memoranda on suggested implementation and phasing of works
- Provision of cost data to support the business case including life cycle costing and triple bottom line evaluation
- Input into development of risk analysis and transfer
- Assistance in preparation and review of the procurement strategy
- Evaluation of contract packaging and implementation strategy
- Review of draft and final business case reports

Deliverables: Memoranda

CAPITAL COST CHANGE: (PREPARE SEPARATE ESTIMATE SHEET IF SPACE BELOW INSUFFICIENT)

DESCRIPTION	MATERIAL	LABOUR	INDIRECTS	TOTAL

CAPITAL DISPOSITION: Responsibility by Client Shift to/from Contingency
 Revise Estimate to Complete Increase Capital Cost (Out of Project Scope)

SERVICES COST CHANGE: IF APPLICABLE, LIST DOCUMENTS IMPACTED ON SEPARATE SHEET

DESCRIPTION	DEPT.	AREA	ACT.	WORK HOURS	COST		
					SERVICES	EXPENSES	TOTAL
				582	107,199	8040	\$115,239
TOTAL SERVICES COST ESTIMATE							

FEE TERMS: Lump Sum TM OTHER – Increase to contract value – same commercial terms

ENGINEERING COST DISPOSITION: Budget Shift Increase EPCM Budget

OVERALL TOTAL

SCHEDULE CHANGE (EXTENSION / CONTRACTION)

DESCRIPTION OF EFFECT ON:

1. ENGINEERING SCHEDULE _____
2. PROCUREMENT SCHEDULE _____
3. CONSTRUCTION SCHEDULE _____

ORIGINATOR Dave Walker DATE July 4, 2009

APPROVAL

PROJECT MANAGER  DATE July 15, 2009

CLIENT REPRESENTATIVE _____ DATE _____

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

PROJECT NO. _____ AREA: _____ TASK NO. 203

PCN SUBJECT: Community Consultation and Mitigation REVISION NO. _____

DESCRIPTION:

Community consultation and mitigation will be central to the success of any Liquid Waste Management Plan Amendment and major infrastructure project.

Community consultation will include:

1. Assistance and/or leadership with the development of the community consultation strategy and plan including documentation of plan linkage with community principles
2. Assistance with the development of community principles
3. Attendance and presentations to community stakeholders
4. Attendance and presentations at community consultation event
5. Assistance with the Business Case Evaluation, taking into account mitigation approaches
6. Development of materials for community consultations, including renderings, animations and other materials which may be required to help describe and define mitigation approaches

At this time it is unclear the level of involvement of the Stantec team, therefore this task has been developed as a Provisional Sum.

The basis of this Provisional Sum will be 1 day per week for a Senior Management Leader and 1 day per week (average) for design office support for presentation materials development. This level of effort has been carried to March 2010.

CAPITAL COST CHANGE: (PREPARE SEPARATE ESTIMATE SHEET IF SPACE BELOW INSUFFICIENT)

DESCRIPTION	MATERIAL	LABOUR	INDIRECTS	TOTAL

CAPITAL DISPOSITION: Responsibility by Client Shift to/from Contingency
 Revise Estimate to Complete Increase Capital Cost (Out of Project Scope)

STANTEC SERVICES COST CHANGE: (REFER TO SEPARATE PCN SUMMARY ESTIMATE SHEET ATTACHED)
 IF APPLICABLE, LIST DOCUMENTS IMPACTED ON SEPARATE SHEET

DESCRIPTION	DEPT.	AREA	ACT.	WORK HOURS	COST		
					SERVICES	EXPENSES	TOTAL
				734	152,430	11,433	\$163,862
TOTAL SERVICES COST							

FEE TERMS: Lump Sum TE/TM OTHER – Increase to contract value – same commercial terms

ENGINEERING COST DISPOSITION: Budget Shift Increase EPCM Budget

OVERALL TOTAL _____

SCHEDULE CHANGE (EXTENSION / CONTRACTION)

DESCRIPTION OF EFFECT ON: _____

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

1. ENGINEERING SCHEDULE _____
2. PROCUREMENT SCHEDULE _____
3. CONSTRUCTION SCHEDULE _____

ORIGINATOR

Steve Fleck

DATE June 25, 2009

APPROVAL

PROJECT MANAGER



DATE July 15, 2009

CLIENT REPRESENTATIVE

DATE _____

WORK TASK ORDER

PROJECT NO. _____ AREA: _____ TASK NO. 204

SUBJECT: LWMP Amendment Support Services REVISION NO. _____

DESCRIPTION:

The Liquid Waste Management Plan (LWMP) Amendment must be submitted to Ministry of Environment by December 15, 2009. The Capital Regional District (CRD) is taking the lead in drafting this amendment but technical support services are required to support this effort. Our services are anticipated to include :

- Review of LWMP Amendment Report Table of Contents
- Provision of technical information to be included in the LWMP Amendment. It is anticipated much of this information can be provided from supporting technical documents prepared by the consulting teams during this project as well as work prepared by the previous consulting team.
- Assistance in reviewing drafts and editing of the LWMP.
- Attendance at meetings to review the draft and final LWMP reports.
- Attendance at meetings with MOE regarding the LWMP.

Deliverables: Comments / Edits on LWMP.

CAPITAL COST CHANGE: (PREPARE SEPARATE ESTIMATE SHEET IF SPACE BELOW INSUFFICIENT)

DESCRIPTION	MATERIAL	LABOUR	INDIRECTS	TOTAL

CAPITAL DISPOSITION: Responsibility by Client Shift to/from Contingency
 Revise Estimate to Complete Increase Capital Cost (Out of Project Scope)

SERVICES COST CHANGE: IF APPLICABLE, LIST DOCUMENTS IMPACTED ON SEPARATE SHEET

DESCRIPTION	DEPT.	AREA	ACT.	WORK HOURS	COST		
					SERVICES	EXPENSES	TOTAL
				424	81,782	6134	\$ 87,916
TOTAL SERVICES COST ESTIMATE							

FEE TERMS: Lump Sum TM OTHER – Increase to contract value – same commercial terms

ENGINEERING COST DISPOSITION: Budget Shift Increase EPCM Budget

OVERALL TOTAL

SCHEDULE CHANGE (EXTENSION / CONTRACTION)

DESCRIPTION OF EFFECT ON:

1. ENGINEERING SCHEDULE _____
2. PROCUREMENT SCHEDULE _____
3. CONSTRUCTION SCHEDULE _____

ORIGINATOR Remo Fiorante DATE June 25, 2009

APPROVAL

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

PROJECT MANAGER

AS

DATE

July 15 / 2009

CLIENT REPRESENTATIVE

DATE

WORK TASK ORDER

PROJECT NO. _____ AREA: _____ TASK NO. 205
 SUBJECT: CAWTP TECHNICAL SUPPORT SERVICES REVISION NO. _____

DESCRIPTION:

Technical support services will be required throughout the first phase of this project to support on going Capital Regional District (CRD) activities associated with the program management role. This task supports work up to completion of the Liquid Waste Management Plan (LWMP) amendment and to the end of March 2010 to provide follow up technical support and studies. Services are expected to include such items as preparation of technical memoranda; assistance with research, calculation, or cost estimating of new technical approaches; assistance with descriptions or presentations of technical concepts to regulatory or public stakeholders; or other technical work as required by the CRD for the progress of the program. Presentations and meeting attendance may be required, including:

- Attendance at regular LWMP committee meetings
- Meetings with the technical and community advisory committee
- Meetings with CRD staff to review technical issues
- Meetings with regulatory and government personnel
- Support services for public and community relations
- Technical support to CRD staff and the CALWMC as required

It is expected that some or all of these services will be required. However, it is impossible to estimate the exact scope of these discrete technical tasks, as many of the scope items are undefined at this time. Therefore, the budget for this work is established as a provisional sum, with specific authorization of agreed upon scope items and budgets by CRD written project directive.

Deliverables: Miscellaneous memoranda and evaluations.

CAPITAL COST CHANGE: (PREPARE SEPARATE ESTIMATE SHEET IF SPACE BELOW INSUFFICIENT)

DESCRIPTION	MATERIAL	LABOUR	INDIRECTS	TOTAL

CAPITAL DISPOSITION: Responsibility by Client Shift to/from Contingency
 Revise Estimate to Complete Increase Capital Cost (Out of Project Scope)

SERVICES COST CHANGE: IF APPLICABLE, LIST DOCUMENTS IMPACTED ON SEPARATE SHEET

DESCRIPTION	DEPT.	AREA	ACT.	WORK HOURS	COST		
					SERVICES	EXPENSES	TOTAL
				1645	283,190	21,240	\$304,429
TOTAL SERVICES COST ESTIMATE							

FEE TERMS: Lump Sum TM OTHER – Increase to contract value – same commercial terms

ENGINEERING COST DISPOSITION: Budget Shift Increase EPCM Budget

OVERALL TOTAL _____

SCHEDULE CHANGE (EXTENSION / CONTRACTION)

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

DESCRIPTION OF EFFECT ON:

- 1. ENGINEERING SCHEDULE _____
- 2. PROCUREMENT SCHEDULE _____
- 3. CONSTRUCTION SCHEDULE _____

ORIGINATOR Reno Fiorante DATE June 25, 2009

APPROVAL

PROJECT MANAGER  DATE July 15, 2009

CLIENT REPRESENTATIVE _____ DATE _____

WORK TASK ORDER

PROJECT NO. _____ AREA: _____ TASK NO. 206
 SUBJECT: Permitting Support REVISION NO. _____

DESCRIPTION:

Permitting services are required to support the development of liquid train treatment and biosolids treatment facilities. It is anticipated permitting services would include the following work :

- Meetings with Ministry of Environment to discuss discharge criteria for dry and wet weather flows and future effluent quality requirements
- Meetings with Environment Canada to discuss discharge criteria for dry and wet weather flows and future effluent quality requirements
- Meetings with regulators to determine the requirement for CEAA and EIS for particular sites
- Coordination of any special environmental studies and assessments with respect to wildlife and fisheries
- Review of receiving stream and sampling information with respect to location of outfalls
- Provision of permitting support for marine pipelines and outfalls
- Provision of permitting services for Transport Canada, Navigable Waters, Railways, Highways and utility crossings
- Review of technical proposals with regulators
- Review of Liquid Waste Management Plan Amendment with regulators
- Review of business case strategy with regulators

It is noted that the cost of any special studies such as environmental impact statements, outfall modeling, air emission modeling , etc. would be in addition to the permitting support services. Once the studies are identified Stantec will provide a separate fee estimate for each study.

Deliverables: Technical Memorandum.

CAPITAL COST CHANGE: (PREPARE SEPARATE ESTIMATE SHEET IF SPACE BELOW INSUFFICIENT)

DESCRIPTION	MATERIAL	LABOUR	INDIRECTS	TOTAL

CAPITAL DISPOSITION: Responsibility by Client Shift to/from Contingency
 Revise Estimate to Complete Increase Capital Cost (Out of Project Scope)

SERVICES COST CHANGE: (REFER TO SEPARATE PCN SUMMARY ESTIMATE SHEET ATTACHED)
 IF APPLICABLE, LIST DOCUMENTS IMPACTED ON SEPARATE SHEET

DESCRIPTION	DEPT.	AREA	ACT.	WORK HOURS	COST		
					SERVICES	EXPENSES	TOTAL
				406	79,960	5997	\$ 85,957
TOTAL SERVICES COST ESTIMATE							

FEE TERMS: Lump Sum TM OTHER – Increase to contract value – same

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

ENGINEERING COST DISPOSITION: Budget Shift Increase EPCM Budget commercial terms

OVERALL TOTAL _____

SCHEDULE CHANGE (EXTENSION / CONTRACTION)

DESCRIPTION OF EFFECT ON:

- 1. ENGINEERING SCHEDULE _____
 - 2. PROCUREMENT SCHEDULE _____
 - 3. CONSTRUCTION SCHEDULE _____
-

ORIGINATOR Reno Fiorante DATE July 8, 2009

APPROVAL

PROJECT MANAGER  DATE July 15, 2009

CLIENT REPRESENTATIVE _____ DATE _____

WORK TASK ORDER

PROJECT NO. _____ AREA: _____ TASK NO. 207
SUBJECT: Analysis of Options 1A, 1B, 1C REVISION NO. _____

DESCRIPTION:

The Peer Review Team identified modifications of the base case Option1 and suggested three modifications to this option be considered including Option 1A, 1B and 1C. The preliminary work will focus on evaluation of the three options to enable selection of a preferred option by the CALWMC by August 26, 2009. Following selection of the preferred option detailed work will concentrate on refinement of the selected option with the activities generally as outlined under the work plan. Up to end of 2009 this work will also include the development of the detailed technical information that is necessary to support the the LWMP Amendment.

For reference purposes the following works are included under each options to be evaluated :

Option 1 A - 4 Plant Option – Saanich East-North Oak Bay, Clover Point WW, Macaulay / McLoughlin and South Colwood

- 4 plant option with plants located in Saanich East-North Oak Bay, Clover Point, Mc Loughlin / Macaulay and South Colwood
- Conveyance facilities to transfer flows to each plant site
- Saanich East-North Oak Bay would be a wet weather / secondary treatment (MBR under current configuration), dilute biosolids disposed to sewer for ultimate processing at McLoughlin / Macaulay
- Clover Point will have a wet weather treatment facility and a pumping station to transfer up to 2 ADWF to Macaulay/McLoughlin
- Macaulay/Mc Loughlin would be a secondary treatment plant with capability to treat wet weather flows up to 4 ADWF
- South Colwood would be a secondary treatment plant with wet weather treatment
- Biosolids would be discharged to the East Coast Interceptor trunk sewer
- Anaerobic digestion would serve the Macaulay/Mc Loughlin and South Colwood plants
- It will be assumed digested biosolids will be dewatered and trucked to another site for disposal and or further processing
- 90% of biosolids trucked and dried at Harland Landfill with haulage and sale to cement kilns
- 10% of biosolids applied to willow coppice

Option 1 B – Large Westshore Secondary Plant , Wetweather treatment at Clover and Macaulay , East Saanich Plant

- Under this option a large regional secondary plant is located on the West Shore to accept up to 2 times ADWF
- Wet weather treatment for flows between 2 times and 4 times ADWF is located at Clover and Macaulay/McLoughlin
- Conveyance facilities are constructed to transfer flows from Clover to Macaulay/McLoughlin and Macaulay/McLoughlin to Westshore for both 2 times ADWF
- Saanich East-North Oak Bay has its own plant as per option 1A
- Biosolids are handled by a central anaerobic digestion / dewatering facility at the regional West Shore plant
- Dewatered biosolids will be trucked to another site for disposal and or further processing

Option 1C – Large Westshore Plant to handle 4 times ADWF and East Saanich Plant

- Under this option a single large regional plant is located on the West Shore and sized for up to 4 times ADWF
- Clover will have a 4 times ADWF pump station to convey flows to Macaulay/McLoughlin
- Conveyance facilities are sized to transfer up to 4 times ADWF to Westshore

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

- Macaulay/McLoughlin will have a pump station to convey 4 times ADWF to the Westshore
- Saanich East-North Oak Bay plant as per option 1A
- Biosolids are handled by central anaerobic digestion/dewatering facility at Westshore and dewatered cake hauled off site
- Biosolids can be further processed at Harland landfill

Work Plan

The work plan for the refinement of the selected options 1A, 1B and 1C includes the following major work activities :

- Review background reports
- Review design flows and loads for 2030 and 2065 populations
- Work with CRD to estimate appropriate Ultimate flows based on higher long term development densities
- Select appropriate design flows for dry weather and wet weather treatment facilities
- Review wastewater characterization data collected to date and confirm initial selection of design loadings
- Meet with MOE and Environment Canada to discuss effluent discharge criteria and deferral of wet weather treatment
- Identify social, economic and environmental issues with each option and conduct triple bottom line life cycle assessment using a quantitative value based approach.
- Workshop with CRD technical staff to brainstorm ideas and obtain input on critical technical and social issues for particular options
- Review options to divert sewage flows from Marigold pump station to the Westshore to determine impact to plant footprint at Macaulay/McLoughlin
- Develop options for the liquid train treatment which satisfy the site limitations of each of the candidate site locations. These options will evaluate other low footprint technologies including IFAS, BAF and high rate primary clarification using lamella plates, ballasted flocculation and other high rate technologies. Assess conventional activated sludge and other secondary treatment technologies for sites which have additional space for construction such as the West Shore option.
- Develop hybrid plant options for Saanich East-North Oak Bay plant sized to meet the demands for water reuse and using alternate technologies to MBR. Compare treatment option versus on site flow attenuation and transfer to Macaulay/McLoughlin or West Shore for treatment.
- Optimize the selected secondary and split stream treatment capacity at each site. Assess alternate sites in the event sites such as Macaulay/McLoughlin cannot be obtained or are inadequate.
- Review practical staging options for each treatment process
- Review option of other scalping plant locations
- Develop the concepts proposed by the peer review team further for options 1B and 1C. Assume digestion and dewatering for initial analysis.
- Incorporate the initial findings of biosolids management plan into analysis of options 1A,1B,1C. Assume digestion and dewatering for initial analysis.
- Incorporate the Findings of the Biosolids Management Plan into the preferred option
 - Evaluate option of biosolids treatment on McLoughlin site and another close by site
 - Assess incineration and emerging technologies such as plasma arc
 - Assess the option of anaerobic digestion combined with sludge drying at a central Victoria site and or the Harland landfill site
 - Assess waste to energy facilities for raw dewatered sludge and municipal solid waste options
 - Assess integration of municipal solid waste and biosolids.
- Major conveyance and pumping assessment

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

- Evaluate major conveyance sizing and routes for 2 times ADWF and 4 times ADWF options for conveyance between Clover to Macaulay/McLoughlin and Macaulay/McLoughlin to Westshore
- Estimate pumping station sizes
- Evaluate marine and tunnel options for conveyance of flows to Westshore
- Assess land route and marine option across upper Esquimalt Harbour
- Evaluate tunnel options across Esquimalt Harbour and Victoria Harbour Entrance
- Incorporate the initial findings of Heat Recovery Evaluation at James Bay and Saanich East (UVIC)
 - Evaluate opportunities for heat recovery and identify uses and markets including :
 1. In plant building and process heat (digester heating and biosolids drying)
 2. External district heating
 3. Residential heating
 4. Industrial heat
- Biogas
Cleaning, compression, connect to existing natural gas distribution system
- Effluent Reuse
 - Establish current and future market potential for effluent and identify opportunities for reuse under each options 1A,1B,1C
 - Evaluate reuse opportunities for golf courses, park land, agriculture, residential irrigation, industrial water, and residential/ institutional plumbing.
- Facility Layouts
 - Prepare preliminary facility layouts for all facilities for initial and ultimate design flows
 - Develop optimized layouts for constrained sites such as Mc Loughlin and include all major buildings, site access and parking.
- Carbon Footprint Analysis
 - Prepare carbon footprint analysis for each process option outlining green house gas emissions and power consumption with each option under consideration for liquid and base digestion biosolids treatment trains
- Evaluations to help determine potential costs and revenues from resource recovery alternatives
- Technical information to support contaminant discharge evaluation, including evaluations to help determine potential costs of impacts to factor into analysis
- Evaluations to help determine potential costs for mitigation measures
- Financial Evaluation
 - Prepare capital cost estimates for all facilities under option 1A, 1B, 1C using recent unit costs for labour , material and equipment and use similar basis for indirect costs for comparison with previous estimates.
 - Prepare operations estimates for facilities for each option.
 - Calculate potential revenue offsets from resources such as P recovery , biosolids amendments
 - Conduct life cycle evaluation of costs.
 - Work with business case consultant to develop business plan and procurement strategy
- Compile information in a summary technical memorandum

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

CAPITAL COST CHANGE: (PREPARE SEPARATE ESTIMATE SHEET IF SPACE BELOW INSUFFICIENT)

DESCRIPTION	MATERIAL	LABOUR	INDIRECTS	TOTAL

CAPITAL DISPOSITION: Responsibility by Client Shift to/from Contingency
 Revise Estimate to Complete Increase Capital Cost (Out of Project Scope)

SERVICES COST CHANGE: IF APPLICABLE, LIST DOCUMENTS IMPACTED ON SEPARATE SHEET
 IF APPLICABLE, LIST DOCUMENTS IMPACTED ON SEPARATE SHEET

DESCRIPTION	DEPT.	AREA	ACT.	WORK HOURS	COST		
					SERVICES	EXPENSES	TOTAL
Work for selection of preferred option to August 26, 2009				2000	335,464	25,160	\$ 360,624
Work Following August 26, 2009 to support LWMP Amendment and Refinement of Selected Option to Year End				4000	670,930	50,319	\$ 721,249
Work from January 1 to March 31, 2010				859	144,083	10,807	\$ 154,890
TOTAL SERVICES COST ESTIMATE							\$ 1,236,763

FEE TERMS: Lump Sum TM OTHER – Increase to contract value – same commercial terms

ENGINEERING COST DISPOSITION: Budget Shift Increase EPCM Budget

OVERALL TOTAL

SCHEDULE CHANGE (EXTENSION / CONTRACTION)

DESCRIPTION OF EFFECT ON:

1. ENGINEERING SCHEDULE _____
2. PROCUREMENT SCHEDULE _____
3. CONSTRUCTION SCHEDULE _____

ORIGINATOR Bob Dawson, Reno Fiorante DATE June 25, 2009

APPROVAL

PROJECT MANAGER  DATE July 15, 2009

CLIENT REPRESENTATIVE _____ DATE _____

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

PROJECT NO. _____ AREA: _____ TASK NO. 208

SUBJECT: Investigation of Heat Recovery for James Bay REVISION NO. _____

DESCRIPTION:

The potential for heat recovery from treated effluent and raw wastewater for James Bay will be investigated. Potential buildings to be heated include the Parliament Buildings, government buildings, apartment complexes and hotels. The work plan includes the following activities

- Identify potential buildings and facilities to be served by the system and assess the market for use of such heat. Review previous work completed by KWL. Identify potential major users. Estimate the heat demand from buildings in the proximity of James Bay on a unit size basis or on available records of gas consumption and using the information developed by the previous consulting team.
- Conceptualize opportunities for heat recovery from trunk sewer lines upstream of Macaulay/McLoughlin and from secondary effluent from a plant at Macaulay/McLoughlin. Also conceptualize the available heat from a scalping plant located at Ogden Point.
- Develop concepts for a district heat distribution system to transfer heat or hot water to potential market buildings
- Estimate the cost for retrofitting buildings such as Parliament building and a major building such as a hotel to enable use of recovered heat. Use the Parliament and other selected as a case study for the assessment. Prepare life cycle costs for construction of a district energy system from raw and treated wastewater.
- Estimate revenue generation potential.
- Calculate greenhouse gas offsets.
- Conduct a triple bottom line analysis of options.
- Evaluate project delivery mechanisms and potential for development of a separate utility.
- Prepare a technical memorandum.

CAPITAL COST CHANGE: (PREPARE SEPARATE ESTIMATE SHEET IF SPACE BELOW INSUFFICIENT)

DESCRIPTION	MATERIAL	LABOUR	INDIRECTS	TOTAL

CAPITAL DISPOSITION: Responsibility by Client Shift to/from Contingency
 Revise Estimate to Complete Increase Capital Cost (Out of Project Scope)

SERVICES COST CHANGE: IF APPLICABLE, LIST DOCUMENTS IMPACTED ON SEPARATE SHEET

DESCRIPTION	DEPT.	AREA	ACT.	WORK HOURS	COST		
					SERVICES	EXPENSES	TOTAL
				1226	217,130	16,285	\$ 233,415
TOTAL SERVICES COST ESTIMATE							

FEE TERMS: Lump Sum TM OTHER – Increase to contract value – same commercial terms

ENGINEERING COST DISPOSITION: Budget Shift Increase EPCM Budget

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

OVERALL TOTAL _____

SCHEDULE CHANGE (EXTENSION / CONTRACTION)

DESCRIPTION OF EFFECT ON:

- 1. ENGINEERING SCHEDULE _____
- 2. PROCUREMENT SCHEDULE _____
- 3. CONSTRUCTION SCHEDULE _____

ORIGINATOR

Bob Dawson , Reno Fiorante

DATE June 25, 2009

APPROVAL

PROJECT MANAGER



DATE July 15, 2009

CLIENT REPRESENTATIVE

DATE _____

WORK TASK ORDER

PROJECT NO. _____ AREA: _____ TASK NO. 209

SUBJECT: Integration of I&I Management REVISION NO. _____

DESCRIPTION:

1c) Integration of inflow and infiltration(I/I) management with appropriate phasing of the wet weather strategy at Clover Point.

A significant amount of the information may be available from previous studies completed by the Capital Regional District (CRD) and their consultants. However for completeness we have provided the following list of activities that are required to support this activity.

The approach to accomplishing the CALWMC objectives identified above is presented below:

1.0 Identification of contributory drainage sub-basins/municipalities to Clover Point – for Options 1a, 1b and 1c - this will identify the wastewater drainage sub-basins that will be subjected to the following I/I evaluation.

2.0 Establishment of current I/I baseline –average, peaks, volumes and return intervals. Existing CRD I/I data of sub-basins tributary to Clover Point will be reviewed and the following I/I baseline information will be summarized. Sub basin characteristics including:

- Sewered area
- Collection system inventory (pipe material, length, diameter and age)
- Number of service connections
- Availability of separate storm water system
- Base wastewater flow
- Seasonal I/I including wet season peak/hour I/I values and their relationship to precipitation return frequency characteristics
- For existing conditions identification of I/I influenced flow frequency of exceedance of 2x ADWF and 4xADWF

The sub basin data will be sorted by order of peak I/I values per unit of sewered area to identify the sub basins with the highest I/I magnitude. It is anticipated that most of the above information is already available from previous CRD reports and data.

3.0 Documentation of current I/I policies –Current I/I policies for each of the impacted local municipal agencies and CRD will be reviewed and summarized. The focus of the review is to identify customer and local municipal agencies responsibilities for managing their I/I contribution, I/I allowances, method of enforcement and the consequences of non compliance.

4.0 Linkage of peaking Frequency of 2x and 4x to flow ‘return interval’ The wastewater treatment alternatives considered to date have wastewater conveyance and treatment facilities hydraulically sized to convey and treat flows of 2x and 4x average dry weather flow. I/I reduction will have the effect of reducing the frequency of flows exceeding the two thresholds. The extent of I/I reduction as required to reduce exceedance of the two thresholds from current levels to once per year and once in 5-years will be identified.

5.0 Estimate I/I sources – from review of existing data and interviews with knowledgeable individual allocate infiltration sources to private service connections, local agency sewers and CRD facilities. A similar allocation will be undertaken for inflow including consideration of foundation and basement drains, roof leaders, area drains and connected storm sewers. It is anticipated most of this information can be obtained from CRD engineering staff.

6.0 Establish I/I reduction boundary conditions for reducing wet season Clover Point discharges. Based on the relationship of I/I reduction and the impact on the frequency of exceedance of the 2x ADWF and 4x ADWF potential reduction boundary I/I reduction levels will be established. The boundary conditions will provide the basis for costing I/I control options for comparison with staging option for the wet weather facilities.

7.0 Identify potential I/I reduction strategies effectiveness and costs. I/I reduction strategies include sewer separation, targeted disconnect programs, bylaw enforcement, green infrastructure solutions, and infrastructure leakage reduction strategies such as sealing, lining and replacement. For each I/I strategy peak flow reduction

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

potential and unit costs will be identified.

8.0 Identify the capital and ongoing O&M costs to achieve the I/I reduction boundary conditions. Based on the boundary conditions identified above and implementation of the I/I reduction strategies capital and ongoing O&M costs will be identified. Conduct a cost benefit analysis of I/I reduction strategies versus provision of additional treatment capacity.

9.0 Determine I/I reduction cost effective control level. Compare the costs and timing of implementing wet weather treatment at Clover Point with I/I reduction to establish the lowest cost combination I/I reduction and phasing of wet weather treatment at Clover Point

10.0 Recommendations Summarize findings in a Technical Memorandum including I/I control recommendations and potential policy changes as input to the recommended LWMP.

Deliverables: Technical Memorandum

CAPITAL COST CHANGE: (PREPARE SEPARATE ESTIMATE SHEET IF SPACE BELOW INSUFFICIENT)

DESCRIPTION	MATERIAL	LABOUR	INDIRECTS	TOTAL

CAPITAL DISPOSITION: Responsibility by Client Shift to/from Contingency
 Revise Estimate to Complete Increase Capital Cost (Out of Project Scope)

SERVICES COST CHANGE: IF APPLICABLE, LIST DOCUMENTS IMPACTED ON SEPARATE SHEET

DESCRIPTION	DEPT.	AREA	ACT.	WORK HOURS	COST		
					SERVICES	EXPENSES	TOTAL
				517	90,919	6819	\$ 97,728
TOTAL SERVICES COST ESTIMATE							

FEE TERMS: Lump Sum TM OTHER – Increase to contract value – same commercial terms

ENGINEERING COST DISPOSITION: Budget Shift Increase EPCM Budget

OVERALL TOTAL

SCHEDULE CHANGE (EXTENSION / CONTRACTION)

DESCRIPTION OF EFFECT ON:

1. ENGINEERING SCHEDULE _____
2. PROCUREMENT SCHEDULE _____
3. CONSTRUCTION SCHEDULE _____

ORIGINATOR Jack Warburton DATE June 22, 2009

APPROVAL

PROJECT MANAGER  DATE July 15, 2009

CLIENT REPRESENTATIVE _____ DATE _____

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

PROJECT NO. _____ AREA: _____ TASK NO. 211
SUBJECT: **BIOSOLIDS MANAGEMENT AND SOLID WASTE INTEGRATION PLAN** REVISION NO. _____

DESCRIPTION: Biosolids Management and Solid Waste Integration Plan

This work task covers the engineering study for development of a Biosolids Management Plan beginning with previous conceptual work considering Biosolids Management Strategies and Solid Waste Integration opportunities. It is anticipated that quantities developed for biosolids from previous studies will be reviewed in the context of this study and used where appropriate. Quantities for solid wastes will be obtained from the Capital Regional District (CRD) for use in this study. This scope encompasses the work required to undertake the following directives related to biosolids management and adopted by the Core Area Liquid Waste Management Committee (CALWMC) on June 2, 2009:

Task 1a) – Assessment of Biosolids Integration with Solid Waste Activities

Task 1d) – Assessment of Co-Location of Biosolids Processing Facilities with Solid Waste Activities

Task 1e) – Develop Biosolids Management Plan to Reduce Risk of End Use

Subtask 1 – Develop base (backup) alternatives for biosolids with end uses under control of CRD. To reduce risk of end use disruption, this subtask develops alternatives that do not depend on a private market to accept biosolids product. These base alternatives may never be actually utilized if markets are developed for biosolids reuse. However, the required facilities, land and operational control by the CRD may need to be in place in the event a market fails or is insufficient. This task includes a description of the alternative and development of rough biosolids facility sizing sufficient to apply pass/fail criteria to determine feasibility. Alternatives that will be discussed include:

1. Landfill sludge at CRD's Hartland landfill site (existing) including consideration of use of biocells
2. Waste-to-energy facility owned by or contracted by CRD and/or Cowichan Valley Regional District (CVRD) and Regional District of Nanaimo (RDN). (Note: Layouts and costs of a waste-to-energy facility will not be developed, but will be assessed based on typical unit cost basis.)
3. Incineration
4. Gasification or other thermal treatment to produce fuel
5. Dedicated land utilization
6. Dedicated disposal site separate from Hartland

Subtask 2 – Develop beneficial use options for biosolids. These options should have the potential for taking all of the biosolids produced and may require market development. Define product marketing feasibility. Evaluate land application alternatives identified in the conceptual discussion paper including a willow coppice demonstration, "green fuel" for industry, and other options including reclamation or beneficial use as a soil amendment. This task includes a description of the alternative and development of rough biosolids facility sizing sufficient to apply pass/fail criteria to determine feasibility. Alternatives that will be discussed include:

1. Dried product for use in cement kiln, power plant, pulp mill thermal plant or other alternative offsetting fossil fuel for energy production. This alternative can be configured to use dried raw sludge or anaerobically digested biosolids.
2. Dried anaerobically digested product for sale as fertilizer.
3. Class A anaerobically digested and dewatered biosolids topsoil product, mixed with sand and wood waste.
4. Class B anaerobically digested and dewatered product for agricultural use and land reclamation.
5. Class A lime stabilized dewatered product for agricultural use.
6. Biosolids gasification or other thermal processing to produce marketable fuel.

Subtask 3 – Develop integration alternatives for biosolids and solid wastes. This task includes development of a sizing and conceptual plan sufficient to determine feasibility and cost of integration. Alternatives that will be developed include:

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

1. Co-landfilling with organic solid waste in Biocell(s) to enhance gas production and integration with solid waste activities.
2. Co-digestion with FOG, source separated food waste, or other food production waste products
3. Co-composting with yard and food waste to produce soil amendment product for distribution
4. Waste-to-energy facility with biosolids and solid waste
5. Consideration of a separate site for digestion of biosolids and appropriate organic solid waste

Subtask 4 – Develop digester gas and heat utilization alternatives. Digester gas is typically used to heat anaerobic digesters that produce the gas. Gas can also be utilized to generate electricity in a cogeneration system. This task will describe alternatives for using heat from cogeneration in lieu of gas-generated heat for plant heating and process needs. Heat extraction for district heating will be evaluated under a separate Tasks 208 and 213. This task will assume that gas is scrubbed for direct sale and that digesters are heated using extracted effluent heat. For this alternative, facility sizing and conceptual plans will be developed sufficient to determine feasibility and cost.

Subtask 5 – Screen alternatives based on using pass/fail criteria. Pass/fail criteria will be developed based on overall anticipated cost, achievement of any resource recovery goals adopted by CRD, proven technology, and other CRD essential pass/fail criteria. Alternatives developed in subtasks 1 through 4 will be screened using the pass/fail criteria assessment.

Subtask 6 – Develop comprehensive and integrated biosolids/solid waste (or solids) processing, utilization/disposal, and siting alternatives. Based on remaining alternatives developed and screened in subtasks 1 through 5, develop comprehensive solids management alternatives that include at least one base (backup) option and one or more beneficial use options including alternatives for integration with solid waste activities. Prepare a generic layout that can be applied to any one of three alternative locations, including:

1. Located with single regional liquid wastewater treatment plant
2. Located at the Hartland regional CRD landfill
3. Located at a third alternative regional processing facility

Discuss process facility modifications that would be required for each location. It is assumed that two comprehensive alternatives will be developed for further evaluation.

Subtask 7 - Evaluate solids processing technologies and base alternatives considering cost, non-cost factors, and Life Cycle Analysis (triple bottom line). This task includes preparation of cost estimates, greenhouse gas inventories, recovered resource value, etc.

Subtask 8 – Prepare a Draft and Final Biosolids Management Plan. Provide findings and recommendations. Describe recommended alternatives including sizing criteria, preliminary layout drawings of the two comprehensive alternatives on a generic site, costs, and practical staging alternatives.

Subtask 9 – Public Consultation for all Biosolids Disposal Options. Provide engineering support and prepare presentation materials to show advantages and disadvantages for all biosolids disposal options under consideration. (Note: budget for this subtask is included under Task 203, Public Consultation Support.)

CAPITAL COST CHANGE: (PREPARE SEPARATE ESTIMATE SHEET IF SPACE BELOW INSUFFICIENT)

DESCRIPTION	MATERIAL	LABOUR	INDIRECTS	TOTAL

CAPITAL DISPOSITION: Responsibility by Client Shift to/from Contingency
 Revise Estimate to Complete Increase Capital Cost (Out of Project Scope)

WORK TASK ORDER

SERVICES COST CHANGE:

IF APPLICABLE, LIST DOCUMENTS IMPACTED ON SEPARATE SHEET

DESCRIPTION	DEPT.	AREA	ACT.	WORK HOURS	COST		
					SERVICES	EXPENSES	TOTAL
				1890	338,415	25,381	\$ 363,796
TOTAL SERVICES COST ESTIMATE							

FEE TERMS: Lump Sum TM OTHER – Increase to contract value – same commercial terms

ENGINEERING COST DISPOSITION: Budget Shift Increase EPCM Budget

OVERALL TOTAL _____

SCHEDULE CHANGE (EXTENSION / CONTRACTION) _____

DESCRIPTION OF EFFECT ON:

1. ENGINEERING SCHEDULE _____
2. PROCUREMENT SCHEDULE _____
3. CONSTRUCTION SCHEDULE _____

ORIGINATOR Steve Krugel DATE July 13, 2009

APPROVAL _____

PROJECT MANAGER  DATE July 15, 2009

CLIENT REPRESENTATIVE _____ DATE _____

WORK TASK ORDER

PROJECT NO. _____ AREA: _____ TASK NO. 213
SUBJECT: Effluent Reuse and Heat Recovery for University of Victoria REVISION NO. _____

DESCRIPTION:

The proximity of the proposed Saanich East-North Oak Bay plant to the UVIC campus provides an opportunity for recovery of heat and effluent reuse for University grounds and facilities. Stantec will complete a feasibility assessment of this opportunity. The main work tasks include :

Task 1 – Meet with CRD and UVIC Facilities Staff

An initial meeting will be held with Capital Regional District (CRD) and University of Victoria (UVIC) Facilities staff to discuss opportunities for effluent reuse and use of heat at UVIC facilities. An inventory of major mechanical systems at the UVIC will be completed to determine if there is a feasible opportunity to utilize the heat. It is assumed drawings of mechanical systems and gas consumption records will be provided by UVIC.

Task 2 – Review Current Water Usage Patterns within CRD Communities

Review existing per capita water usage for communities within the Capital Regional District (CRD) and estimate water usage for various non-potable uses including landscape irrigation and grey water plumbing systems. The water usage by category will be prepared using readily available information and/or estimates prepared for similar communities. Water usage information from the CRD Water Department will be reviewed along with any information on major industrial and commercial consumers. Water consumption data from UVIC will be reviewed and an estimate of non potable irrigation demands will be completed. Existing and potential irrigatable lands will be reviewed.

Task 3 – Review Gas Consumption and Power Consumption Records from UVIC

A review of gas and power consumption records from UVIC will be completed. This information will be used to establish a baseline for existing gas consumption and CO2 emissions.

Task 4- Review Existing Mechanical and Heating Systems at UVic

An assessment of existing mechanical and heating systems will be completed. This assessment will include an inventory of major heating systems and high level overview of opportunity for use of recovered heat from effluent for heating UVIC buildings.

Task 5 – Summary of Treatment Requirements by Water Use Category

The level of treatment required for water reuse is dependant upon both the use category and opportunity for public contact. For instance, reuse water used for irrigation areas with unrestricted public access must be treated to a higher quality than reuse water used for areas with restricted access. The project team will identify the treatment requirements, by potential reuse category, based upon published reuse quality standards. The BC MSR requirements for water reclamation will be utilized. In areas where these standards are insufficient, the standards for California and/or Arizona, considered to be some of the most progressive in North America, will be used for cases where there are no comparable British Columbia Guidelines. The project team will contact the appropriate MOE staff to identify current regulatory constraints, and logistics of, constructing a reuse facility for uses not currently covered by the current BC regulations. Some reuse categories may not be supported by current BC regulations and this needs to be confirmed.

Task 6 – Assessment of Local Water Reuse Market

The estimates prepared in Task 2 will be used to determine an upper bound on water reuse potential for UVIC and other facilities such as golf courses in the vicinity of the Saanich East-North Oak Bay SENOB plant. The investigation will focus on large discrete water users. These will be benchmarked against reuse volumes from other communities where reuse is practiced extensively (eg. Vernon, BC and Washington State). The preliminary estimated cost per litre for reuse water by reuse category, exclusive of delivery, will be developed and compared against the existing and projected cost of treated municipal water. The project team will meet with CRD staff to confirm both initial and future water reuse markets for CRD as well as a preliminary list of reuse customers. Some obvious customers include University of Victoria and local golf courses.

Task 7 – Assessment of Local Reuse Standards and Identifications of Required Standards Development

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

Reuse water conveyance has some relatively unique considerations such as algae and biofilm control. The project team will review current CRD and BC MSR engineering standards on water reuse and provide comment on standards development required to support identified reuse categories as well as the institutional framework required to support reuse in CRD.

Task 8 – Preliminary Cost Estimates

Preliminary capital and O&M costs will be prepared to service the preliminary list of reuse customers identified in Task 6. The capital costs will include additional treatment to produce reuse quality water, storage, and water conveyance to the reuse site. Order of magnitude costs for building retrofits to enable use of reclaimed water will be provided. The O&M costs will include labour, chemicals, and power. This information will be used in a triple bottom line evaluation of options.

Task 9 – Development of Draft Water Reuse Plan

The project team will develop a draft water reuse plan in technical memorandum format for CRD staff review. The plan will summarize the results of tasks 1 through 6 in a technical memorandum.

Task 10 – Develop Final Water Reuse Plan

A final reuse plan will be developed based upon comments received.

CAPITAL COST CHANGE: (PREPARE SEPARATE ESTIMATE SHEET IF SPACE BELOW INSUFFICIENT)

DESCRIPTION	MATERIAL	LABOUR	INDIRECTS	TOTAL

CAPITAL DISPOSITION: Responsibility by Client Shift to/from Contingency
 Revise Estimate to Complete Increase Capital Cost (Out of Project Scope)

SERVICES COST CHANGE: IF APPLICABLE, LIST DOCUMENTS IMPACTED ON SEPARATE SHEET

DESCRIPTION	DEPT.	AREA	ACT.	WORK HOURS	COST		
					SERVICES	EXPENSES	TOTAL
				940	167,780	12,584	\$180,364
TOTAL SERVICES COST ESTIMATE							

FEE TERMS: Lump Sum TM OTHER – Increase to contract value – same commercial terms

ENGINEERING COST DISPOSITION: Budget Shift Increase EPCM Budget

OVERALL TOTAL _____

SCHEDULE CHANGE (EXTENSION / CONTRACTION)

DESCRIPTION OF EFFECT ON:

1. ENGINEERING SCHEDULE _____
2. PROCUREMENT SCHEDULE _____
3. CONSTRUCTION SCHEDULE _____

ORIGINATOR Rob Simm / Reno Fiorante DATE _____

APPROVAL _____

All staff members are responsible for ensuring that they are using the correct revision of this document.

WORK TASK ORDER

PROJECT MANAGER



DATE July 15, 2005

CLIENT REPRESENTATIVE

DATE _____

WORK TASK ORDER

PROJECT NO. _____ AREA: _____ TASK NO. 216

SUBJECT: Completion of West Shore Plant Siting REVISION NO. _____

DESCRIPTION:

This task involves completion of siting assessments for a wastewater treatment plant on the West Shore. The work plan includes defining space requirements, layouts and capital cost estimates for the plant and conveyance options. A triple bottom line evaluation of this option would also be completed.

It is anticipated that this task would draw upon the work completed under task 207 and would involve refinement and modification of this work for a plant location on the west shore.

Deliverables: Technical Memorandum.

CAPITAL COST CHANGE: (PREPARE SEPARATE ESTIMATE SHEET IF SPACE BELOW INSUFFICIENT)

DESCRIPTION	MATERIAL	LABOUR	INDIRECTS	TOTAL

CAPITAL DISPOSITION: Responsibility by Client Shift to/from Contingency
 Revise Estimate to Complete Increase Capital Cost (Out of Project Scope)

SERVICES COST CHANGE:

IF APPLICABLE, LIST DOCUMENTS IMPACTED ON SEPARATE SHEET

DESCRIPTION	DEPT.	AREA	ACT.	WORK HOURS	COST		
					SERVICES	EXPENSES	TOTAL
				387	65,330	4900	\$ 70,230
TOTAL SERVICES COST ESTIMATE							

FEE TERMS: Lump Sum TM OTHER – Increase to contract value – same commercial terms

ENGINEERING COST DISPOSITION: Budget Shift Increase EPCM Budget

OVERALL TOTAL

SCHEDULE CHANGE (EXTENSION / CONTRACTION)

DESCRIPTION OF EFFECT ON:

1. ENGINEERING SCHEDULE _____
2. PROCUREMENT SCHEDULE _____
3. CONSTRUCTION SCHEDULE _____

ORIGINATOR Reno Fiorante DATE July 8, 2009

APPROVAL

PROJECT MANAGER  DATE July 15, 2009

CLIENT REPRESENTATIVE _____ DATE _____

All staff members are responsible for ensuring that they are using the correct revision of this document.