

Table LL Implementation Plan

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Implementation Plan - Advocacy Coordination and Education								
Item	Recommendations	Details	Benefits	Timing	Priority	Resources Required / Cost	Staff Required	Funding Opportunities
1	Establish a "Healthy Watersheds" Committee (HWC)	<ul style="list-style-type: none"> - Create committee with members from first nations, government, local ngos, farmers, stakeholders - 12-16 members ideal - Tracks progress on rainwater initiatives - Assist with funding applications - Champion progressive rainwater management in the district - Assist with public outreach and field work 	<ul style="list-style-type: none"> - Ensures stakeholders have a key role in ISMP implementation - Provide leverage for a variety of Initiatives 	Immediate	Very High - Tremendous potential benefit for minimal cost	<ul style="list-style-type: none"> - Advertising cost (if required to find members) - Use of District Meeting Facilities 	<ul style="list-style-type: none"> - Setup by stormwater management group (SMG) - SMG representative time for meetings - Time to book and arrange for meeting facility - Staff time to coordinate and oversee committee activities - Staff time for HWC related activities: <ul style="list-style-type: none"> - 0.25 fte stormwater coordinator - 0.5 fte co-op student * see District Resources and Practices #1 (DRP1) for aggregate staff requirements 	<ul style="list-style-type: none"> - EcoAction community funding program
2	Proclaim District intention to develop cooperative relationships in rainwater management	<ul style="list-style-type: none"> - Place statement of intention on District Website - Continued Public education and outreach program will emphasize intentions 	<ul style="list-style-type: none"> - Sends message that District: <ul style="list-style-type: none"> - recognizes importance of rainwater management and flooding issues - is committed to resolve issues through collaboration 	Immediate	High - Readily accomplished - Sets the context for implementation	<ul style="list-style-type: none"> - Virtually no cost - District website 	<ul style="list-style-type: none"> - Staff time to develop and post intention statement on website - Staff hours minor 	
3	Develop Community Stormwater Education Program	<ul style="list-style-type: none"> - Development of a comprehensive outreach program - Website Development - HWC participation at events - HWC sponsored events (ie stream cleanup) - Yellow Fish Road Stormwater marking program - May be dovetailed with CRD efforts 	<ul style="list-style-type: none"> - Demonstrates importance of stormwater management to District - Informs public about: <ul style="list-style-type: none"> - rainwater management in general - the connection between certain activities and creek health - builds public support for ISMP recommendations - Demonstrates creek health is everyone's responsibility 	Immediate	Moderate to High - Long term effort required before results likely - Can be implemented gradually	<ul style="list-style-type: none"> - HWC to help identify outreach goals and schedule - HWC to help organize outreach programs - staff time to collaborate with CRD stormwater outreach programs/material - staff time to organize and attend events - Creation of a stormwater Page on district Website 	<ul style="list-style-type: none"> - Facilitate Yellow Fish Road Project (setup, process applications, provide equipment) - Programming of Stormwater Page on District Website - Staff and program hours included in HWC 	<ul style="list-style-type: none"> - EcoAction Community Funding Program - British Columbia Transmission Corporation

Note: Quoted costs are order of magnitude only



Implementation Plan - Best Management Practices

Item	Recommendations	Details	Benefits	Timing	Priority	Resources Required / Cost	Staff Required	Funding Opportunities
1	Provide a BMP summary and relevant links on the District website	- Makes Information on BMPs readily available to residents	- Passive public outreach and education - Low cost - Emphasizes District's intention to address stormwater issues - Sets the context for implementation	Short Term	High - Readily accomplished	- Low cost - Information is provided digitally as part of this ISMP - Staff time to organize and code the webpage	- Staff time to organize Stormwater Page on District website (minor)	
2	Support a voluntary "downspout disconnection" program	- Voluntary adoption at residential, commercial, institutional, and industrial sites - Disconnection of downspouts from storm sewer system - discharge to ground, rock pit, rainbarrel - Development of guidelines with consulting engineer - District and HWC to provide guidance material - District subsidy or incentive (optional) - Could be HWC initiative supervised and directed by Staff	- Can have a significant positive impact on peak flows and groundwater recharge - Reductions in peak flow and runoff volume are nearly proportional to the rate of adoption	Short Term	High	- Assistance of geotechnical engineer to write suitability guidelines (~\$15,000) - HWC to develop guidelines and outreach materials - HWC to implement Public outreach program and hold workshops - Advertising costs (optional)	- Engineering staff to retain professional services - Development of downspout disconnection website - Facility space for workshops (optional) - Co-op students to assist in public outreach - Staff time: See DRP #1	- Building Canada Fund - EcoAction Community Funding Program - British Columbia Transmission Corporation
3	Encourage implementation of biofiltration treatment BMPs (Private Land)	- Treat runoff from parking lots, private roads and industrial areas - Infiltrate through raingardens and bioretention areas - Public property BMPs detailed below - Could be HWC initiative supervised and directed by staff - Demonstration projects are key	- Provides bioinfiltration treatment - Can dramatically improve quality of runoff entering creeks - Provides some flow attenuation	Short Term	Moderate - Implementation by HWC - Improved response expected after demonstration projects in place	- Minimal direct costs - HWC to provide educational materials and promotion - HWC to provide guidance and advice	- Staff time: See DRP #1	- Building Canada Fund - EcoAction community funding program - British Columbia Transmission Corporation
4	Encourage adoption of agricultural BMPs	- HWC outreach to farming interests to develop strategies - Publish agricultural BMPs on website - Identify potential for farm pond demonstration projects	- District is about 70% agricultural - Farmers actively interested in stormwater management issues - Issues with erosion and sediment load due to lack of BMP adoption - Results in improved Creek health and water quality	Short Term	Moderate	- HWC meeting time to consult with farmers - HWC/District time to produce outreach materials - Possibly HWC time to knock on doors (optional) - HWC outreach at fairs incl. materials and space (optional)	- Staff time to add agricultural BMP to District website (minor)	- Agriculture Environmental Initiatives Funds - Greencover Canada - EcoAction Community Funding Program - British Columbia Transmission Corporation
4a	Encourage the use of filter strips along the edges of agricultural fields	- Encourage farmers to add a buffer zone to areas around Creeks and ditches - May create a loss of productive land - Compensation may be required - To be implemented by farmers on an individual basis	- Same as agricultural BMPs above - Creates an "expanded riparian area" - Increased water retention - Enhanced habitat and bio-diversity	Medium Term	Moderate - Implementation will be gradual due to voluntary participation - Requires education on the benefits	- District/HWC might supply vegetation - HWC to assist with planning and field work	- Staff HWC time - Possible staff consultation with ALC	- Agriculture Environmental Initiatives Funds - Ducks Unlimited - National farm Stewardship program - Greencover Canada
5	Implement rainfall capture program (in concert with Demonstration Projects)	- Encourage implementation of rainfall capture throughout District - A primary focus of the HWC - Requires policy changes for greatest implementation - Includes encouraging absorbent landscaping	- Increasing Rainfall capture can be implemented on a) District property including roads and right of ways b) residential properties c) commercial and industrial properties d) agricultural properties. - Provides "at source" reduction in peak flows and runoff volumes - Increases groundwater recharge and stream baseflow	Short Term	High - Reductions in peak flow and runoff volume are nearly proportional to the rate of adoption	- Principal costs would be for demonstration projects (detailed below)	- Staff time to support HWC	- Building Canada Fund
6	Encourage Tree Planting and Tree Retention	- Develop program to increase urban tree canopy - Tree planting program on public property - Develop/enforce policies protecting existing trees	- Tree canopy interception can significantly reduce runoff - Reduces urban heat island effect - Increased aesthetic value in neighborhoods	Long Term	Moderate to low - Increase in urban forest has multiple benefits - May be long time before full impact seen	- Costs to subsidize/purchase trees (optional) - Staff time to develop and administer program - HWC to do community tree planting	- Staff time to support HWC	- Greencover Canada - EcoAction Community Funding Program - British Columbia Transmission Corporation

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Implementation Plan - Specific Rainwater Management Projects									
Item	Recommendations		Details	Benefits	Timing	Priority	Resources Required / Cost	Staff Required	Funding Opportunities
1	Keating industrial Area: Source Control	Demonstration Project Infiltration Swale	<ul style="list-style-type: none"> - Potential Parking Lot candidates (private property): <ul style="list-style-type: none"> - School District offices - Corner of Butler Crescent and Keating - Northwest corner of Oldfield and Keating - Parking lot at 2220 Keating - Retrofit conventional curb and gutter with an infiltration swale or raingarden 	<ul style="list-style-type: none"> - Provide a practical example of a retrofit within district - Demonstrate the swale/garden's aesthetic appeal - Demonstrate the swale/garden's performance during storms - Reduce volume of runoff - Improve runoff water quality 	Short Term	Moderate -Important to establish a catalyst for changes in the industrial areas	<ul style="list-style-type: none"> - Approx \$2,500 - \$15,000 depending on the scope - Property owner(s) may contribute portion of the cost - Possible landscape architect/ecologist and geotechnical fees - Contractor and material fees - HWC time to assist with plantings and promotion/tours - Staff time & resources to assist with plantings and construction - May require incentive from District to find volunteer property 	<ul style="list-style-type: none"> - Staff time to coordinate design and construction (1 week) 	<ul style="list-style-type: none"> - Building Canada Fund
2	Keating Industrial Area West: Infiltration Retention BMP	Feasibility and Preliminary Design	<ul style="list-style-type: none"> - Identify location, configuration, design, and cost - Likely in or near the Hydro ROW adjacent to Kirkpatrick Crescent - Approximately 0.5 ha - Combination infiltration and detention facility - Stream restoration should be considered with the BMP to control erosion 	<ul style="list-style-type: none"> - Provides flow attenuation - Allows for infiltration of smaller storms - Water quality improvement upstream of Maber Flats - Possible mitigation of erosion and sediment load problems at Stephens Brook 	Short Term	High - Priority would be reduced by high uptake of source BMP's in the Keating area - protects Maber Flats from water quality impacts	<ul style="list-style-type: none"> - Approx \$30,000 - \$50,000 in professional fees, depending on the scope. 	<ul style="list-style-type: none"> - Staff time to retain consultants/contractors 	<ul style="list-style-type: none"> - Building Canada Fund - Infrastructure Planning Grant Program - Green Municipal Fund
		Implementation	<ul style="list-style-type: none"> - Stream restoration should be considered with the BMP to control erosion 				<ul style="list-style-type: none"> - Approx \$250,000 - 750,000 depending on specific site circumstances - Excludes the cost of land 	<ul style="list-style-type: none"> - Staff time to supervise (1 week) 	<ul style="list-style-type: none"> - Building Canada Fund
3	Community Demonstration Projects: Rain gardens and Infiltration Swales	Feasibility and Preliminary Design	<ul style="list-style-type: none"> - Stelly's School and Municipal Precinct ideal locations - Identify location, configuration, design, and cost 	<ul style="list-style-type: none"> - Provides working demonstration of techniques that can work in the District; works through typical challenges and issues - Reduces heat island effect - Replaces heavily paved and bare areas with vegetation - Educational value - Creates socially inviting areas 	Short Term	Moderate - Important to establish visible examples in the community	<ul style="list-style-type: none"> - Could be accomplished by the HWC largely with volunteer support and a small amount of professional assistance 	<ul style="list-style-type: none"> - Staff time on HWC - Staff time to retain consultants/contractors 	<ul style="list-style-type: none"> - Building Canada Fund - Evergreen Foundation - Green Municipal Fund
		Implementation					<ul style="list-style-type: none"> - Physical costs will vary with each application - Costs may be largely covered by in-kind contributions - Rain Garden Project at Municipal Building could cost \$15,000 	<ul style="list-style-type: none"> - Staff time to supervise (1 week) 	<ul style="list-style-type: none"> - Building Canada Fund - Evergreen Foundation - Green Municipal Fund



Implementation Plan - Specific Rainwater Management Projects continued									
4	Maber Flats: Integrated Drainage and Watercourse Improvement	Graham Ck at Stelly's - Channel Improvements - Hydraulic and Ecological Design	<ul style="list-style-type: none"> - appropriate depth and profile of channel - culvert modifications - control structure - streambed/revegetation design and implementation plan - estimate of costs 	<ul style="list-style-type: none"> - Significantly improves drainage capability for Maber Flats area - Provides potential to meet modified ARDSA criteria - Full benefit constrained until detention facility constructed - Demonstrates District is taking physical action to address drainage concerns of Maber Flats 	Immediate	<ul style="list-style-type: none"> - Very High - Maber Flats is a critical agricultural area - An important, concrete step of resolving the complex set of issues related to seasonal inundation 	<ul style="list-style-type: none"> - Approx \$65,000 in engineering services - Sufficient survey and hydrology work must be done in the Graham Creek / Maber Flats area to ensure that the channel improvements will be compatible with the extended detention facility (to be built later) 	<ul style="list-style-type: none"> - Staff time to retain consultants/contractors 	<ul style="list-style-type: none"> - Building Canada Fund - Green Municipal Fund
		Graham Ck at Stelly's - Channel Improvements - Implementation			Short Term		<ul style="list-style-type: none"> - Cost depends on findings of design study (above) - Very roughly \$200,000 in excavation services and materials - Very roughly \$40,000 in structures - Very roughly \$15,000 for plantings - Assume volunteer labour available for planting, monitoring and hand labour 	<ul style="list-style-type: none"> - Staff time to supervise (6 weeks) 	<ul style="list-style-type: none"> - Building Canada Fund - Green Municipal Fund
		Constructed Wetland / Extended detention facility - Feasibility assessment and conceptual design	<ul style="list-style-type: none"> - 5 ha or more ideal - Consultation in ALC to select appropriate location - Consultation with affected landowner - Survey of elevation, soils, and drainage systems - Determine consolidated calendar of operation - Design of wetland size, general configuration, and costs - Determine financial feasibility 	<ul style="list-style-type: none"> - Fully alleviates spring and fall inundation of Maber Flats farm land 	Short Term	<ul style="list-style-type: none"> - High - exploits the full benefits of the hydraulic improvements (elimination of shoulder season flooding) without adversely impacting Graham Creek through excessive peak flows 	<ul style="list-style-type: none"> - Workplan defined in Section 9.4.2. - Approx \$135,000 in professional services 	<ul style="list-style-type: none"> - Staff time to enter into discussion with ALC - Staff/HWC time to find volunteer land owner - Staff time to enter into discussion on concessions with volunteer land owner - Staff time to retain engineering consultant - Approximately 8 weeks staff time 	<ul style="list-style-type: none"> - Agriculture Environmental Initiatives Funds - Greencover Canada - Building Canada Fund - Infrastructure Planning Grant Program - Green Municipal Fund
		Constructed Wetland / Extended detention facility - Preliminary and Detailed Design	<ul style="list-style-type: none"> - Completion of hydraulic modelling - Detailed layout and cross-sections - Refined cost estimate - Detailed civil, mechanical, and hydraulic design - Preparation of bid package 	<ul style="list-style-type: none"> - reduces peak flows on Graham / Hagan Creek - provides ecological and recreational benefits - surrounding farmland could come closer to meeting ARDSA drainage guidelines 	Medium Term		<ul style="list-style-type: none"> - Approx \$300,000 in professional services 	<ul style="list-style-type: none"> - Approximately 8 weeks staff time 	<ul style="list-style-type: none"> - Agriculture Environmental Initiatives Funds - Greencover Canada - Building Canada Fund - Green Municipal Fund
		Constructed Wetland / Extended detention facility - Implementation	<ul style="list-style-type: none"> - Construction by selected contractor 		Medium Term		<ul style="list-style-type: none"> - Approx \$2 - 5 million for 5 - 10 ha wetland, excluding the cost of land and construction supervision - HWC time to plan public event to celebrate completion 	<ul style="list-style-type: none"> - Staff time to retain contractor (12 weeks) 	<ul style="list-style-type: none"> - Agriculture Environmental Initiatives Funds - Ducks Unlimited - Greencover Canada - Building Canada Fund - Green Municipal Fund

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Implementation Plan - Specific Rainwater Management Projects continued									
Item	Recommendations	Details	Benefits	Timing	Priority	Resources Required / Cost	Staff Required	Funding Opportunities	
5	Martindale Valley: Integrated Drainage and Watercourse Improvement	Community Rainfall Capture Program	<ul style="list-style-type: none"> - Tanner and Keating Ridge Areas - Encourage use of rainbarrels and downspout disconnection - Potential subsidy of rainbarrels - Groundwork completed in conjunction with public education program (see above) 	<ul style="list-style-type: none"> - Provides "at source" reduction in peak flows and runoff volumes - Lower cost/impact means of rainwater management in built up areas - Increases groundwater recharge and stream baseflow - Reductions in peak flow and runoff volume are nearly proportional to the rate of adoption - Most soils in area are highly pervious 	Short Term	High - May be implemented gradually - HWC would be a main vehicle for implementation	<ul style="list-style-type: none"> - Costs largely borne by participants in this voluntary program - Some direct costs would be borne by the District to retrofit existing catch basins as infiltration swales. District costs approx \$7000 per instance and 10 - 20 instances. 	<ul style="list-style-type: none"> - Staff time to provide consultation and support to HWC (see DRP #1) 	- Building Canada Fund
		Hydraulic Improvements - Dooley Road area	<ul style="list-style-type: none"> - Clean out section of McHugh Ditch between Martindale Road and Dooley Road - Modest stream restoration - Deepen and widen culvert at Dooley Road - Consultation with Saanich necessary - Install control structure to regulate flows 	<ul style="list-style-type: none"> - Significantly improves drainage capability for Low-lying portions of Martindale Valley - Provides potential to meet modified ARDSA criteria - Full benefit May be constrained until extended detention facility (below) is operational due to downstream erosion concerns - Demonstrates that the District is taking physical action to address concerns of Martindale property owners 	Immediate	Very High - Martindale Valley is a critical agricultural area - this would be an important, concrete step to resolving the complex set of issues related to seasonal inundation	<ul style="list-style-type: none"> - Estimated cost of \$80,000 to replace culvert with an arched CMP one - Additional excavation / stream restoration work north of Dooley and south (in Saanich) will be required 	<ul style="list-style-type: none"> - Staff time to organize and retain contractors - Staff time to enter into discussions with Saanich - Staff time to manage traffic rerouting during construction - Approximately 4 weeks of staff time 	- Green Municipal Fund
		Detention Pond / Constructed Wetland: Feasibility and Design	<ul style="list-style-type: none"> - Consultation in ALC to select appropriate location - Consultation with affected landowner - Survey of elevation, soils, and drainage systems - Determine consolidated calendar of operation - Design of wetland size, general configuration, and costs - Determine financial feasibility 	<ul style="list-style-type: none"> - Reduces peak flow from Tanner / Keating Ridge to Martindale ditch by approx 35% - Combined with hydraulic improvements (see above) will largely eliminate spring and fall inundation of farm land - Reduces peak flows in McHugh ditch and Noble Creek - Improve water quality - Provide ecological and recreational benefits 	Medium Term	Moderate - Benefits from the hydraulic improvements will be available without the pond(s), however, pond is required to extract the full benefit - High uptake of rainfall capture will reduce required size of pond	<ul style="list-style-type: none"> - Approx \$100,000 in professional services 	<ul style="list-style-type: none"> - Staff time to enter into discussion with ALC - Staff/HWC time to find volunteer land owner - Staff time to enter into discussion on concessions with volunteer land owner - Staff time to retain engineering consultant - Approximately 2 weeks of staff time 	<ul style="list-style-type: none"> - Agriculture Environmental Initiatives Funds - Greencover Canada - Building Canada Fund - Infrastructure Planning Grant Program - Green Municipal Fund
		Detention Pond/ Constructed Wetland: Implementation	<ul style="list-style-type: none"> - Construction by selected contractor 		Long Term		<ul style="list-style-type: none"> - \$0.5 - 2.0 million (0.75 to 1.4 ha facility) - cost depends on the site and scope - Excludes cost of land 	<ul style="list-style-type: none"> - Staff time to retain contractor - Staff time for supervision - Approximately 4 weeks of staff time 	<ul style="list-style-type: none"> - Agriculture Environmental Initiatives Funds - Ducks Unlimited - Greencover Canada - Building Canada Fund - Green Municipal Fund

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Implementation Plan - Specific Rainwater Management Projects continued									
6	Encourage the development of multi-purpose ponds	Provide guidelines	<ul style="list-style-type: none"> - Gather modern pond design and construction guidelines - Post information on the District Stormwater Website 	<ul style="list-style-type: none"> - Provides readily usable guidelines and information - Most existing pond capacity is not exploited for rainwater management due to the "fill and overflow" design. - Increases the likelihood of well designed ponds being constructed - Low cost for implementation - Enables stormwater management through use of existing ponds with slight change in management - Allows property owners interested in establishing a pond to design one to aid in rainwater management and ecological objectives while maintaining aesthetics 	Immediate	High. <ul style="list-style-type: none"> - District needs more retention - Pond design is critical to maximize rainwater management, agricultural and ecological benefits 	<ul style="list-style-type: none"> - Minimal cost - provide links on the website - material provided in the ISMP report 	<ul style="list-style-type: none"> - Staff time to post materials on website 	<ul style="list-style-type: none"> - Agriculture Environmental Initiatives Funds - National Farm Stewardship Program
		Develop Incentive Program for Farm Ponds	<ul style="list-style-type: none"> - For new and existing farm ponds - Change of discharge practice to allow for detention in the early winter months - Requires education and incentives 				<ul style="list-style-type: none"> - Develop program, possibly with Ministry of Agriculture - Promote program - Verify and award incentives 	<ul style="list-style-type: none"> - Staff time to consult with Ministry of Agriculture for assistance - May require staff time to provide one-on-one design and funding application assistance - Staff time to develop incentive plan - Staff time to administer incentive plan 	
		Develop a program to encourage the establishment of new facilities	<ul style="list-style-type: none"> - Encourage new ponds, wetlands, detention facilities 				<ul style="list-style-type: none"> - Develop and implement program 	<ul style="list-style-type: none"> - HWC to plan and promote program 	
7	Manage water quality Impacts from Pat Bay Highway runoff with MOT	Highway Runoff Quality Improvements	<ul style="list-style-type: none"> - Valuable farm land in Martindale Valley affected by Pat Bay Highway runoff at and south of Island View Road - Salt for ice control a particular concern - Met with the MOT to discuss on May 4, 2009 - Reconfigure drainage to avoiding inundation of farmland (such as Mitchell Farms) with highway runoff 	<ul style="list-style-type: none"> - Improved control of runoff quality will protect farm yields and crop quality - Improves Creek health 	Immediate	High <ul style="list-style-type: none"> - Serious concern for agriculture in Martindale Valley 	<ul style="list-style-type: none"> - Solutions are complicated - Working with MOTI to establish costs 	<ul style="list-style-type: none"> - Staff time to meet with MOTI - Staff time to implement solutions (unclear at the moment) 	<ul style="list-style-type: none"> - Ministry of Transportation and Infrastructure

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Implementation Plan - Ecological Restoration								
Item	Recommendations	Details	Benefits	Timing	Priority	Resources Required / Cost	Staff Required	Funding Opportunities
1	Develop Creek Restoration Plan	- Develop multi-decade plan for restoring PFC to Creeks	See Section 9.5 in ISMP report for details	Immediate		Costs for stream restoration range from approximately \$100/m to \$700/m depending on the scope of work required (less with volunteer labour from HWC).		- Building Canada Fund - Green Municipal Fund
2	Implementation of PFC restoration plan (in order of priority)	- See Section 9.5 in ISMP report for details	<ul style="list-style-type: none"> Stop headcutting route trail away from creek - repair degradation from trail - remove invasive ivy Stop erosion due to blocked culvert Stop trampling and erosion Stop trampling, restore creek profile and flora Halt bank erosion, protect young riparian plants Stop trampling and erosion Halt scour from debris jam, restore flora Halt bank erosion and invasive species Halt invasive species Halt upslope erosion Correct excessive scour due to velocity Stop compost leaching, creek contaminantion Control upslope erosion, reduce sediment load Correct channelization in high flow, sediment suspension Reduce erosion and sediment transfer Halt invasive species 	<ul style="list-style-type: none"> Short Term Short Term Short Term Short Term Short Term Short Term Short Term Short Term Short Term Medium Term Medium Term Medium Term Medium Term Medium Term Long Term Long Term Long Term Long Term 	These reaches are ranked in order of priority. See Section 9.5 in ISMP report for details. The top listed ones would be in the "very high" category.	<ul style="list-style-type: none"> Reach length ~ 131 m, see above Reach length ~ 100 m, see above Reach length ~ 220 m, see above Reach length ~ 150 m, see above Reach length ~ 115 m, see above Reach length ~ 600 m, see above Reach length ~ 450 m, see above Reach length ~ 150 m, see above Reach length ~ 100 m, see above Reach length ~ 100 m, see above Reach length ~ 290 m, see above Reach length ~ 280 m, see above Reach length ~ 895 m, see above Reach length ~ 800 m, see above Reach length ~ 70 m, see above Reach length ~ 130 m, see above Reach length ~ 200 m, see above 	- Staff to supervise	- Building Canada Fund - EcoAction Community Funding Program - British Columbia Transmission Corporation - Green Municipal Fund
3	Plant riparian vegetation	- Plant riparian vegetation - Creeks, ditches, throughout municipality	<ul style="list-style-type: none"> - Reduces erosion - Counters invasive species - Improves water quality - Potential significant impact over 10 year period 	Short Term	Moderate - more general program than reach restorations	<ul style="list-style-type: none"> - A seasonal program of \$10,000/yr would be significant - Cost mostly associated with plantings - Use of volunteer labour. - HWC and District may wish to look at aquatic plant nursery options 	- See HWC details	- Building Canada Fund - EcoAction Community Funding Program - British Columbia Transmission Corporation - Green Municipal Fund

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Implementation Plan - District Resources and Practices									
Item	Recommendations		Details	Benefits	Timing	Priority	Resources Required / Cost	Staff Required	Funding Opportunities
1	Establish a District Stormwater Management Group		<ul style="list-style-type: none"> - Comprised of District Staff from various departments - Oversees District responsibilities for stormwater management - Ensures viability and relevance of ISMP - Champions implementation of the ISMP - representative Oversees the Healthy Watersheds committee - Maintains stormwater Pages on the District website - Applies for funding Grants - Includes professional Development training for group 	<ul style="list-style-type: none"> - Ensures viability and relevance of ISMP - Ensures representation of District staff from various departments 	Immediate	Very High - formalizes District intention to implement recommendations - should be among the first implementation steps	<ul style="list-style-type: none"> - Weekly to monthly group meetings - Staff representatives from Planning, Public Works, Engineering - Additional staff from Co-op students - Membership could also be subset of HWC - \$2500/yr training costs 	<ul style="list-style-type: none"> - Setup of Healthy Watershed Committee - Representative to Healthy Watershed Committee - One full time equivalent co-op student - Staff time for stormwater management/ISMP activities (including HWC support): <ul style="list-style-type: none"> - Stormwater Management Coordinator (0.5 fte) - Co-op student (1 fte) - Total Incremental District Cost (2010) for added manpower, training, software and incidentals of \$85,000 	
2	Train District staff on ISMP recommendations		<ul style="list-style-type: none"> - Educates staff on: <ul style="list-style-type: none"> - Direction District is taking - Why stormwater management is important - Relevance to their departments/jobs 	<ul style="list-style-type: none"> - Support by District Staff essential to accomplishing most of the recommendations - allows for exchange of ideas 	Immediate	High - ensures staff co-operation with stormwater initiatives	<ul style="list-style-type: none"> - Use of District meeting facilities 	<ul style="list-style-type: none"> - Staff time to attend training - Staff time to arrange for training - Approximately 1 week staff time per year 	
3	Revise Ditch Maintenance Practice		<ul style="list-style-type: none"> - Re-examine timing and method of ditch maintenance - Provide staff education - Refer to Appendix 2 of ISMP - Review existing program in the context of the new BMP's - Develop prioritized implementation plan - This program has already commenced 	<ul style="list-style-type: none"> - Prevents fish kills - Reduces sediment loads - Current ditch maintenance practices a factor in affecting: <ul style="list-style-type: none"> - sediment load - fish kills due to oxygen depletion - fish kills due to high temperature from sun exposure 	Immediate	High	<ul style="list-style-type: none"> - Current annual budget for ditch maintenance ~ \$70,000 - BMP will increase cost in short term, but moderate in long term as ditches are modified 	<ul style="list-style-type: none"> - Staff time to learn new ditch maintenance practices - Staff time to review existing program - Staff time to develop prioritized implementation program 	
4	Implement BMP's during infrastructure renewal	Develop Prioritized Plan	<ul style="list-style-type: none"> - Identifies for viable retrofits and installations: <ul style="list-style-type: none"> - Location - Configuration - Design - Cost 	<ul style="list-style-type: none"> - District has responsibility for a large proportion of the impervious surface - Includes most of the (contaminated) trafficked surface - District is in a powerful position to improve rainfall capture and water quality. - Benefits are detailed in Appendix 3, Table 1 of the ISMP report 	Short Term	Moderate - High - Implementation will be gradual	<ul style="list-style-type: none"> - Approx. \$45,000 of professional services - Staff time for coordination 	<ul style="list-style-type: none"> - Staff time for coordination and information transfer (see DRP #1) 	<ul style="list-style-type: none"> - Infrastructure Planning Grant Program
		Implementation	<ul style="list-style-type: none"> - Retrofit District drainage systems - Convert ditches and catch basins to infiltration swales 		Medium Term		<ul style="list-style-type: none"> - Average cost of ~ \$5000 - \$15,000 per instance - About 30 conversions providing a majority of benefits 	<ul style="list-style-type: none"> - Staff time to implement changes 	
5	Retain services of consulting engineering firm for periodic consultation on SWM issues as required		<ul style="list-style-type: none"> - Professional advice on an as needed basis - Compliment to Staff resources 	<ul style="list-style-type: none"> - Rainwater management practices are in a state of rapid evolution and the subject is often a contentious issue with respect to development and land use. 	Immediate	Moderate - Very High - very high in cases where these are legal issues at stake	<ul style="list-style-type: none"> - \$35,000/yr may be adequate - Excludes work related to specific projects or developments - Costs can be minimized by increasing staff resources and training and resorting to professional services only for complex issues 	<ul style="list-style-type: none"> - Staff resources to retain consultant 	

Note: Quoted costs are order of magnitude only

Implementation Plan - Knowledge Development and Monitoring								
Item	Recommendations	Details	Benefits	Timing	Priority	Resources Required / Cost	Staff Required	Funding Opportunities
1	Continue water information collection	<ul style="list-style-type: none"> - Support continued measurement of streamflow and level by non governmental organizations - Ensure data is collected on schedule and archived 	<ul style="list-style-type: none"> - Ensures continued rainwater management data collection - Minimal direct cost to the District - Improves accuracy of the stormwater model - Provides baseline data - Allows assessment of the impacts of climate change, development, and changes in rainwater management 	Immediate	High - loggers in place have finite capacity - implementation already in progress - training provided previously - data gathering is critical to any rainwater management program	<ul style="list-style-type: none"> - District staff to ensure scheduling, data processing, and archiving - Volunteer time to complete monitoring - Rental/purchase of flow measurement device - Minor field supplies (weatherproof note book, first aid kit, etc) 	<ul style="list-style-type: none"> -Coordinate monitoring schedule and data archiving -Coordinate use and maintenance of equipment 	
2	Expand water quality monitoring program	<ul style="list-style-type: none"> - Coordinate with CRD - Support continued and enhanced measurement of stream water quality by NGEO's - Measure temperature, pH, conductance, TDS, specific conductance - Minimum of 4 samples a year - Ensure data is collected on schedule and archived 	<ul style="list-style-type: none"> - Significant water quality issues identified - Help delineate water quality issues - Aid in determining success of improvement initiatives/activities 	Immediate	High - Data gathering is critical to any rainwater management program	<ul style="list-style-type: none"> - District staff to ensure scheduling, data processing, and archiving - Volunteer time to complete monitoring - rental/purchase of Water quality measurement devices - Minor field supplies (weatherproof note book, first aid kit, etc) 	<ul style="list-style-type: none"> -Coordinate monitoring scheduling and data entry - Coordinate use and maintenance of equipment (rental or owned) 	
3	Continue incremental development of stormwater base maps and models	<ul style="list-style-type: none"> - Implement GIS system at the district (optional) - District staff education to pass along knowledge of changes to stormwater system - District staff training on PCSWMM.net - Continued collection of stormwater rainfall data - Modification of Model based on changes in impervious area, or record of changes since model completion 	<ul style="list-style-type: none"> - Makes maps and models more relevant - useful for local area and single Development area planning 	Immediate	Moderate - Incremental changes to a current model simpler than making changes to an outdated model - Eliminates need to recall historical changes during model update	<ul style="list-style-type: none"> -Staff will need to have means for regularly entering all new data - Best accomplished through implementation of GIS system at the district - Staff training on PCSWMM.net - Stormwater Model liscensing costs (~\$2500) 	<ul style="list-style-type: none"> - Staff time to learn to use stormwater model - Staff time to implement GIS - Staff time to make minor changes to stormwater model 	
4	Commission a hydrogeological study of aquifers and ground water use in Central Saanich	<ul style="list-style-type: none"> - Groundwork laid by recent CRD aquifer study (Kenny, 2008) - Determine usage patterns and recharge relationships - Identify how to achieve long term sustainability wrt groundwater supplies 	<ul style="list-style-type: none"> - Protection of groundwater critical to agriculture - Identify ways to reverse declining groundwater levels 	Medium Term	Moderate	<ul style="list-style-type: none"> - Hydrogeologist fees - approx \$75,000 - \$125,000 in professional services. 	<ul style="list-style-type: none"> - Staff time to develop terms of reference and retain Hydrogeologist 	

Note: Quoted costs are order of magnitude only



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