CEP Technical Report: 98

HOT SPOT ASSESSMENT DIAGNOSTIC TOOL FOR SIDS GEF IWCAM/CEHI

UN environment
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CARIBBEAN ENVIRONMENT PROGRAMME

Rapid Watershed Hot-Spot Risk Assessment Tool

North western Coastal Water Quality Demonstration Project for St. Lucia

Introduction and Instructions for Use

The purpose of this assessment tool is to capture information on the pollution risk associated with hotspots **Hotspots are sites which are likely to be sources of physical, chemical and biological pollutants which can enter drains and rivers, to be ultimately discharged to coastal waters along the northwest coast of the island.** The scores from this risk assessment tool will prioritize sites for further detailed investigation and intervention towards better coastal water quality and overall environmental protection.

This is a rapid assessment tool, to capture maximum information within minimum time, and simple enough that the field personnel will not require extensive training on its use. It is also designed to minimize subjectivity, hence is structured on the basis of presence/absence of specific pollution criteria rather than surveyor judgment.

Section 1 is to be completed for all sites, Section 2 only if the site is industrial/commercial, and complete Section 3 for residential, commercial and industrial sites. Section 4 is to be completed for agricultural sites. If there is mixed landuse at the site e.g. both agriculture and housing, all applicable sections must be filled out.

Key variables that relate to pollution potential are weighted and ranked to produce a hotspot assessment score. The higher the likelihood the variable will contribute to freshwater and coastal pollution the higher the weighting. For example soil/land degradation is considered to be a greater water pollution risk factor than solid waste hence the former has a weighting of 9 and the latter only 6. The level of magnitude of each variable in turn is ranked from 1-15, so for example for solid waste pollution if the site has "No trash or very little trash present (i.e. less than one bucketful)" the rank is only **1 but if the site has "**A large amount of trash or debris scattered over a large area" the solid waste ranking is 10. Thus a site with no trash, will have a solid waste risk score of 1X6=6. Weighting, rank and final score columns have already been provided in the table below. This is the field version of the form for manual entry of the scores, there is also a Microsoft Excel version of the form which can be used in the field on a laptop for example or into which the scores can be entered after the field assessment.

Organization name: _____Interviewee name: _____

Interviewer name: _____ Date: _____Start time:_____

SECTION 1: GENERAL DESCRIPTION					**WEIGH-TING**	**RANK**	**SCORE**
1.1 WATERSHED NAME	**1.2 MAIN DISCHARGE POINTS**				**N/A FOR REFERENCE ONLY**		
	(A) LOCATIONAL (GPS) COORDINATES			**(B) DESCRIPTION (provide for each discharge outfall)**			
	#	**EASTINGS**	**NORTHINGS**				
	1						
	2						
	3						
	4						

1.3 PHOTO ID (Camera-Pic #*s*)			**1.4 SITE IDENTIFYING CHARACTERISTICS (**e.g. address, major landmarks, light pole number)	**N/A FOR REFERENCE ONLY**
#	**PHOTO #**	**DESCRIPTION**		
1				
2				

1.5 MAJOR LAND USE/LAND COVER (Adapted from Cooper 1996) ☐ Residential ☐ Industrial ☐ Commercial ☐ Agricultural ☐ Natural vegetation (e.g. forest, savannah) ☐ Vacant lot/abandoned area/open space	**N/A FOR REFERENCE ONLY**

1.6 TOPOGRAPHY ☐ Gradient flat to gentle sloping (0-10 degrees) **(2)** ☐ Gradient gentle to moderate sloping (10-20 degrees) **(5)** ☐ Gradient moderate to steeply sloping (20+ degrees) **(8)**	**WEIGH-TING**	**RANK**	**SCORE**
	6		

1.7 PROXIMITY TO WATERCOURSES ☐ Manmade drain or stream (<3m in width) on property or within 10m of property boundary **(5)** ☐ Channelized water course, river or dry riverbed (>3m in width) on property or within 10m of property boundary **(8)** ☐ Property on coastline, on beach or within 10m of coastline or beach **(8)** ☐ Property is adjacent to multiple water courses e.g. both on the coastline and next to a river **(15)**	**WEIGH-TING**	**RANK**	**SCORE**
	10		

1.8 WATERCOURSE VEGETATION BUFFERS (if edge of property is within 10m of the coastline or within 10m of river, dry riverbed or concrete drain >3m in width)	**WEIGH-TING**	**RANK**	**SCORE**
☐ Adjacent or onsite river or drain has a continuous vegetation strip (trees and/or ground vegetation) >20m wide extending from bank towards hotspot **(0)** ☐ Adjacent or onsite river or drain has a continuous or patchy vegetation strip (trees and/or ground vegetation) < 20m wide extending from bank towards hotspot **(5)** ☐ Adjacent or onsite river or drain does not have a continuous vegetation strip (trees and/or ground vegetation) the bank of the watercourse towards hotspot **(10)**	**6**		
1.9 SITE ACTIVITIES (if edge of property is within 10m of coastline, beach, river, dry riverbed or concrete drain>3m in width) ☐ Mining/quarrying (sand mining, rock quarry, etc) **(15)** ☐ Laundry **(6)** ☐ Grazing animals **(3)** ☐ Material stockpiling e.g. for roadworks **(4)** ☐ Warehousing **(2)** ☐ Car washing/vehicle maintenance **(7)** ☐ Recreational e.g. bathing camping hiking **(3)** ☐ Forestry e.g. logging **(2)** ☐ Land shaping/reclamation/soil movement **(17)** ☐ Treatment and disposal **(15)** ☐ **OTHER PLEASE SPECIFY:**	**WEIGH-TING**	**RANK**	**SCORE**
	10		
1.10 EVIDENCE OF SOIL/LAND DEGRADATION (Adapted from Ontario Ministry of Environment 2010) ☐ No evidence of soil degradation (no or little exposed soil) **(1)** ☐ Exposed soil visible, no rills or gullies evident **(3)** ☐ Exposed soil visible. Rills evident (small erosion channels in the soil running downslope) **(7)** ☐ Exposed soil visible with marked signs of erosion that may include gullies, exposed plant roots, exposed bases of fences, poles and other structures. If the site is at riverbank, stream bank failure may be evident **(10)**	**WEIGH-TING**	**RANK**	**SCORE**
	9		
1.9 EVIDENCE OF SOLID WASTE POLLUTION (Adapted from Kitchell and Schueler 2004) ☐ No trash or very little trash present (i.e. less than one bucketful) **(1)** ☐ Small amount of trash (i.e., less than one pickup truck load) **(3)** ☐ Large amount of trash, or bulk items, in clustered dumping pattern. Trash may have been dumped over a long period of time but it could be cleaned up in a few days, possibly with a small backhoe. **(7)** ☐ A large amount of trash or debris scattered over a large area **(10)**	**WEIGH-TING**	**RANK**	**SCORE**
	6		
SECTION 1 SUBTOTAL SCORE (SUM OF SCORES FROM 1.6-1.9):			

SECTION 2: COMPLETE FOR INDUSTRIAL AND COMMERCIAL SITES	WEIGH-TING	RANK	SCORE
2.1 ECONOMIC SECTOR (Adapted from Trinidad and Tobago Standard Industrial Classification) ☐ Construction ☐ Electricity and water ☐ Manufacturing ☐ Mining/quarrying ☐ Transport, storage and communications ☐ Agroprocessing ☐ Fish processing ☐ Industrial washing/cleaning ☐ Retail and wholesale trade, hotel and restaurants ☐ Financing, insurance real estate and business service ☐ Recreational and cultural services ☐ Community, social and personal services ☐ **OTHER PLEASE SPECIFY :**	**N/A FOR GENERAL INFORMATION ONLY**		
2.2 SITE SECURITY Is there a fence or security measures which limits access and therefore reduces the chance of tampering/vandalism that may lead to chemical spillages or other forms of pollution? ☐ Yes **(1)** ☐ No **(8)**	**WEIGHTING** **2**	**RANK**	**SCORE**
2.3 CHEMICAL PRODUCTION Are the following substances produced at the site? ☐ Compressed gas cylinders, industrial gases **(4)** ☐ Paint, pigments, inks, glues, resins **(2)** ☐ Agricultural chemicals (pesticides and fertilizers **(4)** ☐ Petrochemical products (e.g. oils, gasoline **(8)** ☐ Acid, solvents **(3)** ☐ Soaps, detergents **(1)** If other materials manufactured please specify below:	**WEIGHING** **8**	**RANK** SUMMED RANK OF ALL SUBSTANCES PRODUCED	**SCORE**

2.4 CHEMICAL STORAGE Are the following substances stored at the site? ☐ Compressed gas cylinders, industrial gases **(2)** ☐ Petrochemical products (e.g. oils, gasoline **(8)** ☐ Paint, pigments, inks, glues, resins **(2)** ☐ Acid, solvents **(3)** ☐ Agricultural chemicals (pesticides and fertilizers **(4)** ☐ Soaps, detergents **(1)** If other materials are stored please specify below:	**WEIGHTING** **1**	**RANK** SUMMED RANK OF ALL SUBSTANCES PRODUCED	**SCORE**
2.5. SITE ENVIRONMENTAL MANAGEMENT PRACTICES a) Is there a documented Environmental Management System or Plan or policy in place ☐Yes **(0)** ☐No **(5)**	**WEIGHTING** **2**	**RANK**	**SCORE**
2.5. SITE ENVIRONMENTAL MANAGEMENT PRACTICES b)Is there a documented Waste Management System or Plan or Policy in place ☐Yes **(0)** ☐No **(5)**	**WEIGHTING** **2**	**RANK**	**SCORE**
2.5. SITE ENVIRONMENTAL MANAGEMENT PRACTICES c)Are there measures in place to reduce chemical contamination risk or control surface, ground, and runoff water impacts e.g. special storage arrangements (does not have to be documented) ☐Yes **(0)** ☐No **(5)**	**WEIGHTING** **2**	**RANK**	**SCORE**
SECTION 1 SUBTOTAL SCORE (SUM OF SCORES FROM 2.2-2.5):			

SECTION 3 : COMPLETE FOR RESIDENTIAL, INSTITUTIONAL, COMMERCIAL AND INDUSTRIAL SITES			
3.1 SEWAGE a) If sewage is generated- please indicate the type of collection or treatment ☐ Package Sewage Treatment Facility or other on-site treatment facility **(3)** ☐ Connected to municipal sewage treatment facility **(4)** ☐ Septic Tank **(6)** ☐ Pit latrine **(8)** ☐ Open defecation/septage **(15)** ☐ Other please specify:	**WEIGHTING**	**RANK**	**SCORE**
	8		
3.1 SEWAGE b) Is the facility occupied on a daily basis by) ☐< 50 persons **(4)** ☐> 50 persons **(9)**	**WEIGHTING**	**RANK**	**SCORE**
	2		
3.1 SEWAGE c**)** If there is outfall or discharge to drain or watercourse from the sewage treatment facility please describe the discharge characteristics below: ☐ Outfall does not have dry weather discharge; staining; or appearance of causing any erosion problems at the point of discharge **(1)** ☐ Relatively small volume discharge; flow mostly clear and odorless. If the discharge has a color and/or odor, the amount of discharge appears small compared to the stream's/drain's baseflow **(5)** ☐ Relatively large volume discharge having a distinct color and/or a strong odor. The amount of discharge is significant compared to the amount of normal flow in receiving stream/drain **(9)**	**WEIGHTING**	**RANK**	**SCORE**
	9		
3.2 GREYWATER **a)** If greywater is generated, please indicate the type of collection or treatment ☐ Package Sewage Treatment Facility or other on-site treatment facility **(3)** ☐ Connected to municipal sewage treatment facility **(4)** ☐ Preliminary/partial waste treatment then discharged to drain or water course **(6)** ☐ Waste discharged to drain or watercourse without treatment or disposal **(9)** ☐ Other, please specify	**WEIGHTING**	**RANK**	**SCORE**
	6		
3.2 GREYWATER b) Is the facility occupied on a daily basis by ☐< 50 persons **(4)** ☐> 50 persons **(9)**	**WEIGHTING**	**RANK**	**SCORE**
	4		

3.2 GREYWATER c)If the greywater is discharged to drain or watercourse please describe the discharge characteristics below ☐ Outfall does not have dry weather discharge; staining; or appearance of causing any erosion problems at the point of discharge **(1)** ☐ Relatively small volume discharge; flow mostly clear and odorless. If the discharge has a color and/or odor, the amount of discharge appears small compared to the stream's/drain's baseflow **(5)** ☐ Relatively large volume discharge having a distinct color and/or a strong odor. The amount of discharge is significant compared to the amount of normal flow in receiving stream/drain **(9)**	**WEIGHTING** **8**	**RANK**	**SCORE**
3.3 CHEMICAL WASTEWATER a) If chemical wastewater is generated, please indicate type of collection or treatment ☐ Package Sewage Treatment Facility or other on-site treatment facility **(3)** ☐ Connected to municipal sewage treatment facility **(4)** ☐ Preliminary/partial waste treatment then discharged to drain or water course **(6)** ☐ Waste discharged to drain or watercourse without treatment or disposal **(9)** ☐ Other, please specify	**WEIGHTING** **8**	**RANK**	**SCORE**
3.3 CHEMICAL WASTEWATER b)If the chemical wastewater is discharged to drain or watercourse please describe the discharge characteristics below ☐ Outfall does not have dry weather discharge; staining; or appearance of causing any erosion problems at the point of discharge **(1)** ☐ Relatively small volume discharge; flow mostly clear and odorless. If the discharge has a color and/or odor, the amount of discharge appears small compared to the stream's/drain's baseflow **(5)** ☐ Relatively large volume discharge having a distinct color and/or a strong odor. The amount of discharge is significant compared to the amount of normal flow in receiving stream/drain **(9)**	**WEIGHTING** **8**	**RANK**	**SCORE**
3.3 CHEMICAL WASTEWATER c)Is the chemical wastewater generated ☐ occasionally **(4)** ☐ daily **(9)**	**WEIGHTING** **2**	**RANK**	**SCORE**
3.3 CHEMICAL WASTEWATER d)Is the facility ☐< 3000 sq ft **(4)** ☐> 3000sq ft **(9)**	**WEIGHTING** 2	**RANK**	**SCORE**
SECTION 3 SUBTOTAL SCORE (SUM OF SCORES FROM 3.1-3.3):			

SECTION 4 : COMPLETE FOR AGRICULTURAL SITES **(NOTE:** use this section only if there is active agriculture; abandoned estates and fallow land are not applicable)	**WEIGHTING**	**RANK**	**SCORE**
4.1 GENERAL AGRICULTURAL ACTIVITY DESCRIPTION **a)** Type of agriculture ☐ Livestock ☐ Crops ☐ Mixed ☐ Aquaculture Please elaborate below:	**N/A DESCRIPTION ONLY**		
4.1 GENERAL AGRICULTURAL ACTIVITY DESCRIPTION **b)** For sites with crops please indicate the scale of operations (Adapted from St. Lucia Ministry of Agriculture Land holding designations) ☐ Small subsistence <1 acre ☐ Large subsistence >1 acre ☐ Small commercial < 5 acres ☐ Large commercial > 5 acres e.g. plantation/estate	**N/A DESCRIPTION ONLY**		
4.1 GENERAL AGRICULTURAL ACTIVITY DESCRIPTION For livestock operations please describe type below ☐ Free range animals **(2)** ☐ Animals in pens/cages (intensive rearing) **(10)**	**WEIGHTING** **5**	**RANK**	**SCORE**
4.2. LIVESTOCK REARING INTENSITY (WHERE HAVE INTENSIVE REARING: ANIMALS IN PENS/CAGES) **a)** Pigs: number of sows in unit:_____	**WEIGHTING** **15**	**RANK**	**SCORE**
4.2. LIVESTOCK REARING INTENSITY **b)** Poultry: number broilers/layers in unit:_____	**WEIGHTING** **0.03**	**RANK**	**SCORE**
4.2. LIVESTOCK REARING INTENSITY **c)** Rabbits: number animals in unit:_____	**WEIGHTING** **2**	**RANK**	**SCORE**
4.2. LIVESTOCK REARING INTENSITY	**WEIGHTING**	**RANK**	**SCORE**

d) Goats: number animals in unit:_____	**3**		
4.2. LIVESTOCK REARING INTENSITY **e)** Sheep: number animals in unit:_____	**WEIGHTING** **3**	**RANK**	**SCORE**
4.2. LIVESTOCK REARING INTENSITY **f)** Horses: number animals in stable:_____	**WEIGHTING** **5**	**RANK**	**SCORE**
4.2. LIVESTOCK REARING INTENSITY **g) Other please specify**	**N/A REFERENCE ONLY**		
4.3 CHEMICAL USAGE AND DISPOSAL **a)** Fertilizers/pesticides/animal hormones/antibiotics stored and/or used on site ☐ No **(0)** ☐ Yes **(9)**	**WEIGHTING** **4**	**RANK**	**SCORE**
4.3 CHEMICAL USAGE AND DISPOSAL **b)** Leakage of aforementioned chemicals observed ☐ No **(0)** ☐ Yes **(10)**	**WEIGHTING** **7**	**RANK**	**SCORE**
4.3 CHEMICAL USAGE AND DISPOSAL **c)** Evidence of dedicated storage vessel/pit for used chemical containers ☐ No **(0)** ☐ Yes **(8)**	**WEIGHTING** **8**	**RANK**	**SCORE**
4.4 ANIMAL WASTE MANAGEMENT ☐Waste treated on-site and removed for off-site disposal (2) ☐Waste used as fertilizer on site **(2)** ☐Waste composting – unsheltered (note this is better practice **(3)** ☐Waste composting – sheltered (4) ☐ Waste treated on-site and then discharged into environment **(4)** ☐Waste washed directly into watercourse or drain **(15)**	**WEIGHTING** **15**	**RANK**	**SCORE**
SECTION 3 SUBTOTAL SCORE (SUM OF SCORES FROM 3.1-3.3):			
TOTAL SCORE SECTIONS 1, 2, 3, 4 =			

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