

APPENDIX A: INVENTORIES OF GEOGRAPHIC DATA COMPLETED BY SURVEY RESPONDENTS AND INTERVIEWED PERSONNEL

Appendix A1: Inventory of Spatial Data Available for Antigua & Barbuda

	NODS			DCA			Surveys			APUA		
	Required	Available		Required	Available		Required	Available		Required	Available	
		D	H		D	H		D	H		D	H
PHYSICAL FEATURES												
Coastlines	X	X		X	X	X	X	X		X	X	
Beaches	X	X		X	X	X						
Watersheds	X			X	X	X				X	X	
Watercourses: rivers, streams	X	X		X	X	X	X	X		X		X
Water bodies:	X	X		X	X	X	X	X		X		X
Hydrogeology	X			X	X	X				X		X
Aquifers	X									X		
Geology	X			X	X	X				X	X	
Soils	X			X	X	X				X	X	
Roads – Major and minor	X	X		X	X	X	X	X		X		
Elevation contours	X			X	X	X	X			X		X
Vegetation	X			X	X					X		
Rainfall	X			X						X	X	
Environmentally Sensitive Areas	X			X						X		
HAZARD-RELATED DATA												
Flood Hazard zones	X	X								X	X	
Landslide hazard zones	X	X		X	X	X				X		
Landslide inventory	X			X								
Erosion	X	X		X						X		
ANTHROPOGENIC FEATURES												
Administrative/Political boundaries	X	X			X	X	X		X	X	X	
Census Districts	X				X					X		
Geographic Place Names	X	X		X			X		X	X	X	
Government Buildings	X	X		X			X		X	X		
Recreational Parks	X				X		X			X		
National Parks	X				X		X			X		
Schools	X	X			X		X		X	X	X	
Land Use Units	X			X			X			X	X	

	NODS			DCA			Surveys			APUA		
	Required	Available		Required	Available		Required	Available		Required	Available	
		D	H		D	H		D	H		D	H
Airports/Heliports	X	X			X		X					
Seaports	X	X			X		X			X		
Waste management sites	X			X			X			X		
Electricity generation plants	X	X			X					X	X	
Electricity supply lines	X				X		X	X		X	X	
Health care facilities	X	X			X					X		
Water tanks / reservoirs	X			X						X	X	
Water supply lines	X				X					X	X	
Water production wells	X									X	X	
Settlements	X	X			X	X	X	X		X		
Shelters	X	X			X					X	X	
Place of worship	X	X		X			X		X	X		
Markets	X	X		X								
Fishing Centres	X			X								
Historic /Archaeological sites	X	X			X		X			X		
Meteorological Stations	X			X						X		
Other: Oil Supply lines							X					

Appendix A2: Inventory of Spatial Data Available for the Bahamas

	Required	Available	
		D	H
PHYSICAL FEATURES			
Coastlines			
Beaches			
Watersheds			
Watercourses: rivers, streams			
Water bodies:	X		
Hydrogeology			
Aquifers			
Geology			
Soils			
Roads – Major and minor			
Elevation contours	X		
Vegetation			
Rainfall	X	X	X
Environmentally Sensitive Areas			
HAZARD-RELATED DATA			
Flood Hazard zones	X		
Landslide hazard zones			
Landslide inventory			
Erosion			
ANTHROPOGENIC FEATURES			
Administrative/Political boundaries			
Census Districts			
Geographic Place Names			X
Government Buildings			
Recreational Parks			
National Parks			
Schools			X
Land Use Units			
Airports/Heliports			X
Seaports			
Waste management sites			
Electricity generation plants			
Electricity supply lines			
Health care facilities			
Water tanks / reservoirs			
Water supply lines			
Water production wells	X		
Settlements			X

	Required	Available	
		D	H
Shelters			X
Place of worship			
Markets			
Fishing Centres			
Historic /Archaeological sites			
Meteorological Stations		X	
Other: Oil Supply lines			
Pump houses for flooded areas	X		
Gullies	X		
Storm water wells	X		

Appendix A3: Inventory of Spatial Data Available for Barbados

	Required	Available	
		Digital	Hardcopy
PHYSICAL FEATURES			
Coastlines		X	X
Beaches		X	
Watersheds	X		
Watercourses: rivers, streams		X	
Water bodies: Dams, lakes, ponds, lagoons, swamps		X	
Hydrogeology	X		
Aquifers	X		
Geology		X	
Soils		X	
Roads – Major and minor		X	
Elevation contours	X ¹	X	
Vegetation		X	
Rainfall	X		
Environmentally Sensitive Areas	X ¹	X	
HAZARD-RELATED DATA			
Flood Hazard zones	X		
Landslide hazard zones	X		
Landslide inventory	X		
Erosion	X		
ANTHROPOGENIC FEATURES			
Administrative/Political boundaries	X		
Census Districts	X		
Geographic Place Names		X	
Government Buildings	X		
Recreational Parks		X	
National Parks		X	
Schools	X		
Land Use Units		X	
Airports/Heliports		X	
Seaports		X	
Waste management sites	X		
Electricity generation plants		X	
Electricity supply lines	X		

¹ While these data were also listed to exist in digital format, they are required in greater spatial detail.

	Required	Available	
		Digital	Hardcopy
Health care facilities	X		
Water tanks / reservoirs	X		
Water supply lines	X		
Water production wells	X		
Settlements	X		
Shelters	X		
Place of worship	X		
Markets	X		
Fishing Centres		X	
Historic /Archaeological sites	X		
Meteorological Stations	X	X	

Appendix A4: Inventory of Spatial Data Available for Cuba

	Agua s Habanas			Plan Maestro				
	Required	Available		NA	Required	Available		NA
		D	H			D	H	
PHYSICAL FEATURES								
Coastlines		X			X			
Beaches		X					X	
Watersheds							X	
Watercourses: rivers, streams		X			X			
Water bodies: Dams, lakes, ponds, lagoons, swamps		X					X	
Hydrogeology							X	X
Aquifers							X	X
Geology							X	X
Soils							X	X
Roads – Major and minor		X			X			
Elevation contours		X			X			
Vegetation					X			X
Rainfall							X	X
Environmentally Sensitive Areas							X	X
HAZARD-RELATED DATA								
Flood Hazard zones		X					X	
Landslide hazard zones							X	X
Landslide inventory							X	X
Erosion							X	X
ANTHROPOGENIC FEATURES								
Administrative/Political boundaries		X			X			
Census Districts		X			X			
Geographic Place Names		X			X			
Government Buildings					X			X
Recreational Parks					X			X
National Parks							X	X
Schools	X				X			
Land Use Units	X				X			
Airports/Heliports							X	X
Seaports					X			X
Waste management sites	X						X	
Electricity generation plants					X			X

	Aguas Habanas				Plan Maestro			
	Required	Available		NA	Required	Available		NA
		D	H			D	H	
Electricity supply lines				X			X	X
Health care facilities	X				X			
Water tanks / reservoirs		X		X			X	
Water supply lines		X				X		
Water production wells		X					X	
Settlements		X			X			
Shelters							X	X
Place of worship					X			X
Markets	X				X			
Fishing Centres	X						X	
Historic /Archaeological sites					X			X
Meteorological Stations							X	X

Appendix A5: Inventory of Spatial Data Available for Dominica

	Physical Planning Division			Lands and Surveys Division			
	Required	Available		Required	Available		NA
		D	H		D	H	
PHYSICAL FEATURES							
Coastlines	√	√	√		√		
Beaches	√	√	√		√		
Watersheds	√	√	√		√		
Watercourses: rivers, streams	√				√		
Water bodies: Dams, lakes, ponds, lagoons, swamps	√			√	√		
Hydrogeology	√			√	√		√
Aquifers	√			√			√
Geology	√			√	√		
Soils	√	√	√		√		
Roads – Major and minor	√	√	√		√		
Elevation contours	√	√	√	√	√		
Vegetation	√	√	√		√		
Rainfall	√	√	√		√		
Environmentally Sensitive Areas	√			√	√		√
HAZARD-RELATED DATA							
Flood Hazard zones	√			√			√
Landslide hazard zones	√	√	√				√
Landslide inventory	√			√			√
Erosion	√			√			√
ANTHROPOGENIC FEATURES							
Administrative/Political boundaries	√				√		
Census Districts	√			√			√
Geographic Place Names	√			√	√		
Government Buildings	√			√			√
Recreational Parks	√			√	√		
National Parks	√	√	√		√		
Schools	√			√	√		
Land Use Units	√			√			√
Airports/Heliports	√			√	√		
Seaports	√	√	√		√		
Waste management sites	√				√		
Electricity generation plants	√			√			√
Electricity supply lines	√			√			√
Health care facilities	√	√	√		√		
Reservoirs	√			√			√
Water supply lines				√			√

	Physical Planning Division			Lands and Surveys Division			
	Required	Available		Required	Available		NA
		D	H		D	H	
Water production wells				√			√
Settlements	√			√			√
Shelters		√	√				√
Place of worship		√	√				√
Markets							√
Fishing Centres	√	√	√				√
Historic /Archaeological sites	√	√	√				√
Meteorological Stations	√	√	√				√

Appendix A6: Inventory of Spatial Data Available for the Dominican Republic

	Required	Available		NA
		D	H	
PHYSICAL FEATURES				
Coastlines		X		
Beaches		X		
Watersheds		X		
Watercourses: rivers, streams		X		
Water bodies: Dams, lakes, ponds, lagoons, swamps		X		
Hydrogeology		X		
Aquifers		X		
Geology		X		
Soils		X		
Roads – Major and minor		X		
Elevation contours		X		
Vegetation		X		
Rainfall		X		
Environmentally Sensitive Areas		X		
HAZARD-RELATED DATA				
Flood Hazard zones		X		
Landslide hazard zones				X
Landslide inventory				
Erosion				
ANTHROPOGENIC FEATURES				
Administrative/Political boundaries		X		
Census Districts		X		
Geographic Place Names		X		
Government Buildings				X
Recreational Parks				X
National Parks		X		
Schools				X
Land Use Units		X		
Airports/Heliports		X		
Seaports		X		
Waste management sites				X
Electricity generation plants		X		
Electricity supply lines		X		
Health care facilities		X		

	Required	Available		NA
		D	H	
Reservoirs				X
Water supply lines				X
Water production wells				X
Settlements				X
Shelters			X	
Place of worship				X
Markets				X
Fishing Centres				X
Historic /Archaeological sites				X
Meteorological Stations		X		

Appendix A7: Inventory of Spatial Data Available for Grenada

	Land Use Division			GRENLEC			
	Required	Available		Required	Available		NA
		D	H		D	H	
PHYSICAL FEATURES							
Coastlines		√			√		
Beaches		√			√		
Watersheds		√					
Watercourses: rivers, streams		√			√		
Water bodies: Dams, lakes, ponds, lagoons, swamps		√					
Hydrogeology							
Aquifers							
Geology		√					
Soils		√			√		
Roads – Major and minor		√			√		
Elevation contours		√			√		
Vegetation		√			√		
Rainfall		√					
Environmentally Sensitive Areas							
HAZARD-RELATED DATA							
Flood Hazard zones							
Landslide hazard zones						√	
Landslide inventory							
Erosion							
ANTHROPOGENIC FEATURES							
Administrative/Political boundaries		√		√			
Census Districts		√		√			
Geographic Place Names		√			√		
Government Buildings		√					
Recreational Parks		√					
National Parks		√					
Schools		√					
Land Use Units		√					
Airports/Heliports		√			√		
Seaports							
Waste management sites							
Electricity generation plants					√		
Electricity supply lines					√		
Health care facilities							
Water tanks / reservoirs		√					

	Land Use Division			GRENLEC			
	Required	Available		Required	Available		NA
		D	H		D	H	
Water supply lines		√					
Water production wells		√					
Settlements							
Shelters							
Place of worship		√					
Markets		√					
Fishing Centres							
Historic /Archaeological sites							
Meteorological Stations		√					

Appendix A8: Inventory of Spatial Data Available for Haiti

	Required	Available	
		Digital	Hardcopy
PHYSICAL FEATURES			
Coastlines		X	
Beaches			
Watersheds	X	X	
Watercourses: rivers, streams		X	
Water bodies: Dams, lakes, ponds, lagoons, swamps		X	
Hydrogeology			
Aquifers		X	
Geology			
Soils	X		
Roads – Major and minor			
Elevation contours			
Vegetation			
Rainfall	X	X	
Environmentally Sensitive Areas			
HAZARD-RELATED DATA			
Flood Hazard zones			
Landslide hazard zones	X		
Landslide inventory			
Erosion (risk)		X	
ANTHROPOGENIC FEATURES			
Administrative/Political boundaries		X	
Census Districts		X	
Geographic Place Names	X	X	
Government Buildings			
Recreational Parks			
National Parks		X	
Schools			
Land Use Units		X	
Airports/Heliports		X	
Seaports		X	
Waste management sites	X		
Electricity generation plants	X	X	
Electricity supply lines		X	
Health care facilities		X	

	Required	Available	
		Digital	Hardcopy
Water tanks / reservoirs			
Water supply lines			
Water production wells		X	
Settlements		X	
Shelters	X	X	
Place of worship		X	
Markets		X	
Fishing Centres		X	
Historic /Archaeological sites	X	X	
Meteorological Stations	X	X	

Appendix A9: Inventory of Spatial Data Available for Jamaica

	Required	Available	
		D	H
PHYSICAL FEATURES			
Coastlines		X	
Beaches			
Watersheds		X	
Watercourses: rivers, streams		X	
Water bodies:		X	
Hydrogeology			
Aquifers			
Geology		X	
Soils		X	
Roads – Major and minor		X	
Elevation contours		X	
Vegetation			
Rainfall		X	
Environmentally Sensitive Areas		X	
HAZARD-RELATED DATA			
Flood Hazard zones		X	
Landslide hazard zones		X	
Landslide inventory		X	
Erosion			
ANTHROPOGENIC FEATURES			
Administrative/Political boundaries		X	
Census Districts		X	
Geographic Place Names		X	
Government Buildings		X	
Recreational Parks		X	
National Parks		X	
Schools		X	
Land Use Units		X	
Airports/Heliports		X	
Seaports		X	
Waste management sites		X	
Electricity generation plants			
Electricity supply lines			
Health care facilities		X	
Water tanks / reservoirs		X	
Water supply lines		X	
Water production wells		X	
Settlements		X	

	Required	Available	
		D	H
Shelters		X	
Place of worship		X	
Markets		X	
Fishing Centres			
Historic /Archaeological sites			
Meteorological Stations		X	

Appendix A10: Inventory of Spatial Data Available for St. Kitts & Nevis

	Physical Planning and Environment			Water Services Department			Physical Planning, Natural Resources and Environment, Nevis		
	Required	Available		Required	Available		Required	Available	
		D	H		D	H		D	H
PHTSICAL FEATURES									
Coastlines	X	X		X			X	X	X
Beaches							X	X	X
Watersheds	X	X		X		X	X		
Watercourses: rivers, streams	X	X		X	X	X	X	X	X
Water bodies:	X	X		X		X	X	X	X
Hydrogeology	X	X		X		X	X		
Aquifers	X	X		X		X	X		
Geology	X	X		X		X	X	X	X
Soils	X	X		X		X	X	X	X
Roads – Major and minor	X	X		X	X	X	X	X	X
Elevation contours	X	X		X	X	X	X	X	X
Vegetation	X	X		X		X	X		
Rainfall	X	X		X		X	X		
Environmentally Sensitive Areas	X	X		X			X		
HAZARD-RELATED DATA									
Flood Hazard zones	X	X		X			X	X	X
Landslide hazard zones	X	X		X			X		
Landslide inventory	X		X	X			X		
Erosion	X		X	X			X		
ANTHROPOGENIC FEATURES									
Administrative/Political boundaries	X	X		X		X	X	X	X
Census Districts	X	X		X	X	X	X	X	X
Geographic Place Names	X	X		X		X	X	X	X
Government Buildings	X	X		X		X	X	X	X
Recreational Parks	X	X		X		X	X		
National Parks	X	X		X		X	X		
Schools	X	X		X		X	X	X	X
Land Use Units	X	X		X	X		X		
Airports/Heliports	X	X		X	X	X	X	X	X
Seaports	X	X					X	X	X
Waste management sites	X	X		X	X		X	X	X
Electricity generation plants	X	X		X	X		X	X	X
Electricity supply lines	X	X		X			X		
Health care facilities	X	X		X	X		X	X	X
Water tanks / reservoirs	X	X		X		X	X	X	X
Water supply lines	X	X		X		X	X		

	Physical Planning and Environment			Water Services Department			Physical Planning, Natural Resources and Environment, Nevis		
	Required	Available		Required	Available		Required	Available	
		D	H		D	H		D	H
Water production wells	X	X		X		X	X	X	X
Settlements	X	X		X	X		X	X	
Shelters	X	X					X	X	
Place of worship	X	X					X	X	X
Markets	X	X		X		X	X		
Fishing Centres	X	X					X	X	X
Historic /Archaeological sites	X	X	X	X		X	X		
Meteorological Stations	X	X		X	X		X		

Appendix A11: Inventory of Spatial Data Available for St. Lucia

	Mapping Section			Forestry Department			LUCELEC					
	Required	Available		NA	Required	Available		NA	Required	Available		NA
		D	H			D	H			D	H	
PHYSICAL FEATURES												
Coastlines					√	√				√	√	
Beaches		√	√			√						
Watersheds					√	√						
Watercourses: rivers, streams		√	√		√	√				√	√	
Water bodies: Dams, lakes, ponds, lagoons, swamps				√			√					
Hydrogeology				√			√					
Aquifers				√			√					
Geology				√	√							
Soils					√	√						
Roads – Major and minor		√	√		√	√				√	√	
Elevation contours		√	√		√					√	√	
Vegetation					√							
Rainfall				√			√					
Environmentally Sensitive Areas					√							
HAZARD-RELATED DATA												
Flood Hazard zones				√			√		√			√
Landslide hazard zones					√				√			√
Landslide inventory		√	√		√				√			√
Erosion				√			√		√			√
ANTHROPOGENIC FEATURES												
Administrative/Political boundaries			√		√				√			√
Census Districts					√							
Geographic Place Names					√				√			√
Government Buildings		√	√				√			√	√	
Recreational Parks				√			√					
National Parks		√	√	√								
Schools					√					√	√	
Land Use Units					√				√			√
Airports/Heliports					√					√	√	
Seaports					√							
Waste management sites		√	√	√			√					
Electricity generation plants	√	√	√				√			√	√	
Electricity supply lines							√			√	√	
Health care facilities					√					√	√	

	Mapping Section			Forestry Department			LUCELEC					
	Required	Available		NA	Required	Available		NA	Required	Available		NA
		D	H			D	H			D	H	
Water tanks / reservoirs		√						√				
Water supply lines		√						√	√			√
Water production wells								√				
Settlements					√				√			√
Shelters		√						√				
Place of worship		√						√				
Markets		√						√				
Fishing Centres								√				
Historic /Archaeological sites		√			√							
Meteorological Stations		√			√							

Appendix A12: Inventory of Spatial Data Available for St. Vincent & the Grenadines

	Physical Planning Unit			Fisheries Division			VINLEC					
	Required	Available		NA	Required	Available		NA	Required	Available		NA
		D	H			D	H			D	H	
PHYSICAL FEATURES												
Coastlines		√			√							
Beaches		√			√							
Watersheds		√			√							
Watercourses: rivers, streams		√			√							
Water bodies: Dams, lakes, ponds, lagoons, swamps			√		√							
Hydrogeology			√		√							
Aquifers				√	√							
Geology		√			√							
Soils			√									
Roads – Major and minor		√			√				√			√
Elevation contours		√			√							
Vegetation			√		√							
Rainfall	√				√							
Environmentally Sensitive Areas				√	√							
HAZARD-RELATED DATA												
Flood Hazard zones		√			√							
Landslide hazard zones		√										
Landslide inventory			√									
Erosion				√	√							
ANTHROPOGENIC FEATURES												
Administrative/Political boundaries				√	√							
Census Districts			√		√				√			√
Geographic Place Names				√	√				√			√
Government Buildings				√								√
Recreational Parks				√	√							
National Parks				√	√							
Schools			√		√							
Land Use Units		√	√						√			√
Airports/Heliports			√		√							
Seaports			√		√							
Waste management sites			√		√							
Electricity generation plants		√							√		√	
Electricity supply lines		√							√	√		

	Physical Planning Unit			Fisheries Division			VINLEC					
	Required	Available		NA	Required	Available		NA	Required	Available		NA
		D	H			D	H			D	H	
Health care facilities		√	√									
Water tanks / reservoirs			√									
Water supply lines				√					√			
Water production wells			√									
Settlements		√			√							
Shelters		√										
Place of worship		√	√									
Markets			√		√							
Fishing Centres			√		√							
Historic /Archaeological sites			√		√							
Meteorological Stations			√		√							

Appendix A13: Inventory of Spatial Data Available for Trinidad & Tobago

	EPOS Development			EMA			TCPD		
	Required	Available		Required	Available		Required	Available	
		D	H		D	H		D	H
PHYSICAL FEATURES				X					
Coastlines				X			X	X	
Beaches				X			X		
Watersheds	X			X		X	X	X	
Watercourses: rivers, streams	X			X			X	X	
Water bodies:				X			X	X	
Hydrogeology				X		X	X	X	
Aquifers				X			X	X	
Geology				X			X	X	
Soils	X	X	X	X			X	X	
Roads – Major and minor	X	X	X	X		X	X	X	
Elevation contours	X	X		X		X	X		X
Vegetation				X			X		
Rainfall				X			X		
Environmentally Sensitive Areas				X		X	X	X	
HAZARD-RELATED DATA									
Flood Hazard zones	X			X			X	X	
Landslide hazard zones	X			X			X	X	
Landslide inventory	X			X			X		
Erosion				X			X	X	
ANTHROPOGENIC FEATURES									
Administrative/Political boundaries	X	X	X	X		X	X	X	
Census Districts	X	X	X	X			X	X	
Geographic Place Names	X	X	X	X			X		
Government Buildings	X			X			X		
Recreational Parks	X	X	X	X			X	X	
National Parks				X			X	X	
Schools	X	X		X			X	X	
Land Use Units	X			X			X		
Airports/Heliports				X			X		
Seaports	X	X		X			X		
Waste management sites	X	X		X			X		
Electricity generation plants				X			X		
Electricity supply lines	X			X			X		
Health care facilities	X	X		X			X	X	
Water tanks / reservoirs	X	X		X			X		
Water supply lines	X			X			X		
Water production wells	X			X		X	X		

	EPOS Development			EMA			TCPD		
	Required	Available		Required	Available		Required	Available	
		D	H		D	H		D	H
Settlements	X	X		X			X	X	
Shelters	X			X			X		
Place of worship	X	X		X			X		
Markets	X	X		X			X		
Fishing Centres				X			X		
Historic /Archaeological sites	X			X			X	X	
Meteorological Stations				X			X		

APPENDIX B: LIST OF INSTITUTIONS CONSULTED

ANTIGUA & BARBUDA

Agency	Respondent	Post	Contact Information
Fisheries Department, Ministry of Agriculture, Lands and Fisheries	Cheryl Appleton Philmore James	Chief Fisheries Officer Senior Fisheries Officer	Tel: (268)-462-1372 Fax: (268)-462-6104 Email: fisheries@antigua.gov.ag
National Office of Disaster Services	Philmore Mullins	Deputy Director	Tel: (268)-460-7075 Email: nods@antigua.gov.ag
Development Control Authority	Denzil Solomon	Acting Town and Country Planner	Tel: (268)-462-6427 Fax: (268)-462-6427 Email: igal@candw.ag
Survey Division, Ministry of Agriculture, Lands and Fisheries	Calvin Greenaway	Director	Tel: (268)-462-4969 Fax: (268)-462-6104 Email: calvin21@hotmail.com
Antigua Public Utilities Authority	Hastin Barnes Sean Peters	Manager GIS Manager	Tel: (268)-480-7505 Fax: (268)-462-6427 Email: dawn@apua.ag
Economic Policy and Planning Unit, Ministry of Finance and the Economy	Sean Cenac	Senior Development Planner	Tel: (268)-462-5935 Fax: (268)-462-9338 Email: sean.cenac@antigua.gov.ag planning@antigua.gov.ag

THE BAHAMAS

Agency	Respondent	Post	Contact Information
Department of Meteorology, Ministry of Aviation and Tourism, Bahamas	Jeffrey W. Simmons	Deputy Director	Tel: (242)-377-7040 (242)377-3303 Fax: (242)377-5175 Email: jws.met@batelnet.bs
Department of Statistics, Ministry of Finance, Bahamas	Kelsie Dorset	Senior Development Planner	Tel: (242) 302-2400 (242) 325-5606 Fax: (242-325-5149 Email: : KELSIEDORSETT@BAHAMAS.GOV.BS
	Insa Frith		Tel: (242) 302 2468 (242) 322-8896 Email: INSAFRITH@BAHAMAS.GOV.BS

BARBADOS

Agency	Respondent	Post	Contact Information
Drainage Unit, Ministry of Public Works, Barbados	Charles Yearwood,	Senior Technical Officer	Tel: (246)-228-9695 or 9697 Email: charles.yearwood@publicworks.gov.bb
Coastal Zone Management Unit, Barbados	Leo Brewster	Director	Tel: (246)-228-5950 /1 /2 Fax: (246)-228-5956 Email: lbrewster@coastal.gov.bb
Statistic Department, Barbados	Victor Brown	Director	Tel: (246)-427-396 Email: barstats@caribsurf.com
Barbados Water Authority	Alex Ifill	Water Quality Technologist	Tel: (246)-425-9110 Fax: (246) 425-9121 Email: alexifil@caribsurf.com

CUBA

Agency	Respondent	Post	Contact Information
Plan Maestro de la Oficina del Historiador de la Habana	Pablo Fornet	Especialista en Sistema de Información Territorial	
	Erick Guerra	Director de Informática	
	Vivian Fernández	Especialista en Cooperación Internacional	
CIMAB	Liuba Chabalina	Directora Adjunta	
	Jean Nicolás Poussart	Consultor de Naciones Unidas	
	Marlene Pérez	Especialista del Proyecto CIMAB - RAC	
Aguas de la Habana	Jorge Alfonso Ordás	Subdirector de Sistemas de Planeación	
	Carlos Pérez Venegas	Jefe del Departamento de SIG	
CIGEO	Joaquín Gutiérrez Díaz	Punto Focal del Proyecto IWCAM	
	Lorenzo Brito	Especialista en Sistema de Información Geográfica	
	Idekisch García Cerda	Especialista en Gestión Ambiental	

DOMINICA

Agency	Respondent	Post	Contact Information
Physical Planning Division	Annie Edwards Keith Stephen	Physical Planner, Land Use Section, Physical Planning Division	Tel No. 1-767-266-3741 Email: annierose63@hotmail.com
Lands and Surveys Division	Brian Bynoe	Director of Surveys and Commissioner of Lands	Tel: 1-767-448-2401. Ext. 3435 Fax: 1-767-449-9869 Email: bynoeb@hotmail.com

DOMINICAN REPUBLIC

Agency	Respondent	Post	Contact Information
Dirección de Información Ambiental, SEMARN	Mariana Pérez	Directora de Información Ambiental	
	Patricia Sánchez	Jefa del Departamento de Geomática	
	Santiago Hernández	Jefe de Sistema de Información Geográfica	
Dirección de Calidad Ambiental, SEMARN	Lourdes de Pérez	Coordinadora de Gestión Ambiental	
	Miguel Espinoza	Encargado del Departamento de Control y Auditoría	
	Nancy Valdez	Encargada de Departamento	
Proyecto de Cambio Climático, SEMARN	Edgard Mattues		

GRENADA

Agency	Respondent	Post	Contact Information
Physical Planning Unit	Fabian Purcell	Planning Technologist	Tel: (473)-440-1524 Fax: (473)-460-4115 Email: ppu@spiceisle.com
Land Use Division	Michael Mason	Acting Chief Land Use Officer	Tel: (473)-440-3083/2708 Fax: (473)-440-4191 Email: elvmason@yahoo.com
GRENLEC	Shawn Charles	Engineering Assistant	Tel: (473)-440-2650 Fax: (473)-440-6673 Email: scharles@grenlec.com

HAITI

Agency	Respondents	Post	Contact Information
Gina Porcena Meneus	Centre National de Systeme d'Information Geographique (CNIGS)	General Director	Tel: (509) 244-9980 Fax: (509) 245-5072 Email: gporcena@yahoo.com
Joseph Ronald Toussaint	Ministry of the Environment	IWCAM Focal Point / Convention on Biological Diversity Focal Point	Tel: (509) 403-8465 Email: Josephronaltdt@yahoo.fr

JAMAICA

Agency	Respondents	Post	Contact Information
Office of Disaster Preparedness and Emergency Management	Nikolai Thomas		Tel: (876) 844-4546 Email: nthomas@odpem.org.jm
	Michelle Edwards		Tel: (876) 360-7431 Email: medwards@odpem.org.jm
National Irrigation Commission	Kirk Freckleton		Tel: (876) 469-3926 Email: kirkf@nicjamaica.com
Water Resources Authority	Bernard Williams		Tel: (876) 927-0077 Email: bernie1@cwjamaica.com
	Ted Smith		Tel: (876) 927-0077 Email: wrajm@colis.com
Planning Institute of Jamaica	Nadine Jones		Tel: (876) 906-4463-4 ext 2225 Email: njones@pioj.gov.jm
National Land Agency	Milton Saunders		Tel: (876) 750-4006 Email: milton.saunders@nla.gov.jm
Ministry of Agriculture and Land	Cecille Blake		Tel: (876) 970-0953 Email: csblake@moa.gov.jm
Mines and Geology Division, Ministry of Agriculture & Lands	Craig Foreman		Tel: (876) 927-1936 Email: cforeman@mqd.gov.jm
University of The West Indies	John Preston		Tel: (876) 927-1777 Email: john.preston@uwimona.edu.jm

ST. KITTS & NEVIS

Agency	Respondents	Post	Contact Information
Department of Physical Planning and the Environment	Ellis Hazel	Director	Tel: (869)-465-2277 Fax: (869)-465-5842 Email: phyplskb@sisterisles.com ehazel55@hotmail.com
Water Services Department	Cromwell Williams	Water Manager	Tel: (869)-466-3070 Fax: (869)-466-7901 Email: wdskn@caribsurf.com
Department of Physical Planning, Natural Resources and Environment, Nevis Island Administration	Lillith Richards Eduardo Mannette	Director GIS Consultant	Tel: (869)-469-5521 Ext. 2040 / 2106 Email: nevplan@yahoo.com

ST. LUCIA

Agency	Respondents	Post	Contact
Mapping Section, Ministry of Physical Planning, Environment & Housing	Suzanna Aurelien	Cartographer V	Tel. No. 1-758-468-5021 Fax No. 1-758-451-6958 Email: suziermine@hotmail.com
	Vincent Jean-Baptiste	Deputy Chief Surveyor	Tel. No. 1-758-468-4492 Fax No. 1-758-451-6958 Email: italmatic@hotmail.com
	Gregory Clairmont	Cartographer III/ Network Administrator	Tel. No. 1-758-468-5021 Fax No. 1-758-451-6958
	Claudia Winnette	Cartographer III	"
	Michael Meda	Cartographer II	"
Forestry Department, Ministry of Agriculture, Forestry and Fisheries	Rebecca Rock	Draughtsman II	Tel No: 1-758-468-5656 Email: rrock@candw.lc
St. Lucia Electricity Services Ltd. (LUCELEC)	Cornelius Edmund	System Planning Engineer	Tel No: 1-758-457-4618 Fax No. 1-758-453-6520 Email: cedmund@lucelec.com
	Alanna Francois	GIS Supervisor	

ST. VINCENT AND THE GRENADINES

Agency	Respondents	Post	Contact
Physical Planning Unit	Kathleen Jack	Not given	Tel. No: (784)-450-0329
Fisheries Division, Min of Agriculture, Forestry & Fisheries	Fisheries Division Staff	Fisheries Officers	Tel: (784)-456-2738 Fax: (784)-457-2112 Email: fishdiv@caribsurf.com
St. Vincent Electricity Services Ltd	Vaughn Lewis	Senior Planning Engineer	Tel: (784)-456-1701 Ext. 311 Fax: (784)-456-2436 Email: vlewis@vinlec.com Website: www.vinlec.com

TRINIDAD & TOBAGO

Agency	Respondents	Post	Contact
East Port of Spain Development Company	Dr. Deborah Thomas	Managing Director	Tel: (868)-623-6007 Fax: (868)-627-6076 Email: thomasd@tstt.net.tt
Environmental Management Authority	Sean Garcia	Compliance Officer I	Tel: (868)-628-8042 Fax: (868)-628-9122 Email: seangarcia@ema.co.tt Website: www.ema.co.tt
Town and Country Planning Division	Kamal Maharaj	Acting Town Planner II	Tel: (868)-627-9700 Email: Kamal.Maharaj@pd.gov.tt

APPENDIX C: SURVEY QUESTIONNAIRE



Integrating Watershed & Coastal Areas Management in the Caribbean Small Island Developing States [IWCAM]

Capacity Assessment of Geographic Information
Systems Capabilities of the Caribbean:

Assessment Questionnaire

Prepared by

The Water Center for the Humid Tropics of
Latin America & the Caribbean (CATHALAC)

January 2007



IWCAM Project Coordination Unit

C/O Caribbean Environmental Health Institute, The Morne, P.O. Box 1111, Castries, St. Lucia
Tel: 1 – (758) – 452 – 2501, 1412; Fax: 1 – (758) – 453 – 2721

URL: www.iwcam.org

January 2007

Dear Respondent,

The Caribbean Environmental Health Institute (CEHI) and the Regional Coordination Unit of the Caribbean Environment Programme of the United Nations Environment Programme (UNEP-CAR/RCU) are co-executing a regional initiative known as the Project on Integrating Watershed and Coastal Areas Management in Caribbean Small Island Developing States (IWCAM). The overall objective of the project is to strengthen the commitment and capacity of the participating countries to implement an integrated approach to the management of watersheds and coastal areas.

The project recognises the important role of Geographic Information Systems (GIS) technology as a tool for integrated data analysis and management and is seeking to incorporate the use of GIS in various components of the project. It aims also to expand and improve GIS capacity and use in participating countries. Mindful of the complexity and cost associated with effective and efficient use of GIS, the project has commissioned the conduct of a detailed capacity needs assessment which will inform the process. The Water Center for the Humid Tropics of Latin America and the Caribbean (CATHALAC) has been contracted to undertake this assessment.

The capacity needs assessment will examine the functions, procedures, products, data, tools and human resources available in each agency and use this information to determine GIS and Information and Communications Technology (ICT) requirements in relation to the performance of the functions of the agency. The assessment will provide the basis for the conceptual design of a road map to guide the effective development and use of GIS in the wider Caribbean.

The study is being conducted in four phases. In Phase I, the questionnaire attached is being used to gather information on the status of the use of spatial data and the potential for spatial analysis and modelling. In Phase II, interviews and site visits will be conducted with key personnel of agencies with mandates that have an impact upon watershed and coastal area management as well as with external agencies whose activities have an impact on Information Technology (IT) operations of the key agencies. In Phase III, a draft report of the study will be presented for feedback. Phase IV will entail the preparation and submission of the final assessment report.

We hereby request your cooperation with CATHALAC in completing the attached questionnaire to the best of your ability. It is divided into five (5) sections based upon the following themes necessary for evaluating existing IT and data models: A. General Information; B. Functional Information; C. Data and Information Products; D. Human Capacity; E. Tools and Procedures

We are mindful of your busy schedule but hope that you will take the time to complete this questionnaire with due diligence and urgency. It will help us to better understand what is necessary to better enable development of this useful decision-making tool in our countries. CATHALAC will be contacting you to follow-up.

Thanking you in advance for your kind co-operation.

Yours sincerely,

Vincent Sweeney
Regional Project Coordinator, IWCAM Project

Section A: General Information

1. Name of person completing the questionnaire: _____

2. Your Official Title: _____ Date: _____

3. Name of your agency: _____

4. Location of your office: _____

5. Telephone: _____ Fax: _____ Email: _____ Website: _____

=====

Section B: Functional Information

6. List below the primary functions performed by your agency:

6a. Primary Activities [PA]:

PA1: _____

PA2: _____

PA3: _____

PA4: _____

PA5: _____

PA6: _____

7. For each of the activities listed above, kindly provide an indication of the number of persons, time, and cost required for the performance of the activities in the table below. **Please state time unit in days.**

Activity Number	Number of Persons Required	Typical Time Required to complete the activity	Estimated Annual Personnel Cost Associated (in Local Currency)
PA1			
PA2			
PA3			
PA4			
PA5			
PA6			

8. For each of the activities listed above, kindly provide an indication of the frequency of the performance of the activities and the problems or challenges associated in the table below. **Please state frequency unit in times per year.**

Activity Number	Frequency of performance	Problems or challenges in the performance of this activity
PA1		
PA2		
PA3		
PA4		
PA5		

9. For each of the activities listed above, kindly identify the ones in which GIS **is used** or **can be used** as a management tool and indicate the problems or challenges associated in the table below.

Activity Number	GIS is used as management tool	GIS can be used as management tool	Indicate the problems or challenges faced in the use of GIS to support this activity
PA1			
PA2			
PA3			
PA4			
PA5			
PA6			

10. Using the table below, please provide a list of suggested improvements that can be made to the performance of the activities listed above.

Activity Number	Suggested improvements to the performance of this activity.
PA1	
PA2	
PA3	
PA4	
PA5	
PA6	

11. Do you have a document that illustrates the procedure associated with each of the functions listed in Section B? **Yes:** _____ **No:** _____

- If yes, please attach a copy of this document and indicate the associated procedures.
- If no, use a separate sheet of paper to provide a typical workflow/procedure for each of the activities listed above.

12. How often are these procedures reviewed? _____

13. Respond to the following sets of questions which are designed to evaluate the current level of awareness, use and plan for GIS in your agency.

Evaluation questions	Yes	No
Have senior executives in your agency been introduced to GIS technologies?		
Do Senior Executives rely on GIS in support of some of their decisions?		
Does your agency have plans to mainstream GIS into your operations?		
Do you have budget line item for GIS software acquisition?		
Do you have budget line item for GIS hardware acquisition?		
Do you have budget line item for GIS staff training?		
Have you developed GIS-based application?		
Do you use GIS to produce maps/		

Section C: Data and Information Products

14. Indicate which of the following data is required and/or available in your agency. Where the data is available, indicate whether it is available in digital or hardcopy formats

	Required	Available		Not available
		Digital	Hardcopy	
PHYSICAL FEATURES				
Coastlines				
Beaches				
Watersheds				
Watercourses: rivers, streams				
Water bodies: Dams, lakes, ponds, lagoons, swamps				
Hydrogeology				
Aquifers				
Geology				
Soils				
Roads – Major and minor				
Elevation contours				
Vegetation				
Rainfall				
Environmentally Sensitive Areas				
HAZARD-RELATED DATA				
Flood Hazard zones				
Landslide hazard zones				
Landslide inventory				
Erosion				
ANTHROPOGENIC FEATURES				
Administrative/Political boundaries				
Census Districts				
Geographic Place Names				
Government Buildings				
Recreational Parks				
National Parks				
Schools				
Land Use Units				
Airports/Heliports				
Seaports				
Waste management sites				

	Required	Available		Not available
		Digital	Hardcopy	
Electricity generation plants				
Electricity supply lines				
Health care facilities				
Water tanks / reservoirs				
Water supply lines				
Water production wells				
Settlements				
Shelters				
Place of worship				
Markets				
Fishing Centres				
Historic /Archaeological sites				
Meteorological Stations				

15. If any of the following remote sensing imageries are available in your agency, kindly indicate the scale, year, area covered and the sources of the imageries.

IMAGERY	Scale	Year	Area covered	Source
Aerial Photography				
IKONOS satellite imageries				
Landsat satellite imageries				

16. If your agency uses spatial data such as aerial photographs, topographic maps, thematic maps, survey plans, and drawings in the performance of its activities, using the table below, kindly list the following specifics in respect of each spatial data:

Type of spatial data	Scale of map	Format Analogue or Digital?	Sources of map	Year of production	Year of last update

17. Please tick “yes” or “No” to any of the following issues that are applicable when evaluating the quality of the data used in the performance of your functions.

Problems with data	Yes	No	Problems with data	Yes	No
Not up-to-date			Not easily accessible		
Inaccurate			Lacks historical records		
Lacks spatial dimension			Lacks metadata		
Inaccessible			Lacks data dictionary		
Costly to collect and manage			In appropriate scale		
Duplications			Incomplete coverage		
Not shared with other agencies			Not officially sanctioned		
Not in digital format			Inconsistent		
Lacks standards			Costly to acquire from third party		
Too large to manage			State other problems below		
Inadequate storage device					
Expensive to manage					
Fragmented					

18. With respect of the information products (e.g. maps, reports etc) generated by your Agency respond to the following information.

Information Product	Frequency of generation	Method of access	Dissemination fee or charges	Format of the Product	Current and Potential Users

19. In the table below, kindly indicate the availability or otherwise of the following policies and standards in your agency.

Policy/Standards	Yes	No
a. Metadata standards		
b. Data sales agreement		
c. Data pricing policy		
d. Data access and confidentiality policies		
e. Data backup policy		
f. Data sharing policy		
g. Cartographic standards		
h. Data flow diagrams of activities		
i. Data dictionaries		
j. Data maintenance policy		

20. Provide a listing of other policies or standards currently instituted by your agency that guide or support the performance of your activities.

Section D: Human Resource Capacity

21. Please indicate the percentage of your staff possessing various levels of computer literacy:

Skill level	Percentage of Staff
Basic	
Intermediate	
Advanced	

22. What is the number of staff in your Unit who are:

Capacity	# of staff
a. computer literate?	
b. trained in the use of CAD software?	
c. trained in the use of GIS software?	
d. trained in the use of database software?	
e. trained in the use of GPS?	

23. What is your Agency's annual budget for training in Information Technology?
\$ _____

24. How many of your staff have received some level of information technology training in the last 2 years? _____

25. How many of your staff have received some level of GIS training in the last 5 years? _____

26. Indicate how many of your staff have received training in the following GIS special topics.

Special topics in GIS	# of staff
Database design and management	
Systems administration	
Global Position Systems	
Remote Sensing Systems	
Digital Cartography	
GIS application development	
GIS software user training	
GIS software customization	
Spatial analysis and modelling	
Metadata standards	
Needs assessment / requirements analysis	
Internet map server	
Database integration	
GIS application development	

Section E: Applications, Tools, and Procedures

27. What computer operating systems do you use?

28. What computer network protocols do you use?

29. Do you have a dedicated computer room / facility?

30. Does your agency have regular IT technical personnel? **Y:** **N:**

31. If yes please describe type of technical support provided.....

.....

32. Do you have a budget for IT technical support? **Y:** **N:**

33. If yes, what is your current annual budget? \$.....

34. What are the current IT technical support needs of your agency?

35. Are your needs part of a project or regular programme of your agency? Project/Programme
 If project, please provide details

36. What are your most urgent technical support needs?

37. Using the table below, kindly list the information technology hardware used by your agency in the performance of its activities.

Hardware	Version and year of acquisition	Number of units	Associated activity [PA#]
Personal computers			
PDA Phones			
Palm computers			
Digitizers			
Scanners			
Printers			
Plotters			
GPS			
Data loggers			

38. Using the table below, kindly list the information technology software used by your agency in the performance of its activities.

Name of software	Version and year of acquisition	Number of trained users	Associated activity [PA# or SA#]

39. What is your primary database management software (DBMS)?

40. Do you have multi-department, multi-location or interagency database related problems or issues? **Y:** **N:** If yes, please list the problems/issues.

41. Do you have documented procedure for database management? **Y:** **N:** If yes, please provide copies.

42. Do you have any problems or issues related to the following areas of your database procedures? If yes please provide details.

	Yes	No
a. Maintaining the database system and its datasets		
b. Inputting data and updating the database		
c. Browsing and querying the database		
d. Obtaining reports from the database		
e. Importing or exporting data to or from the database		

43. Does your staff find it difficult to use the database? **Y:** **N:** If yes, please list the difficulties.

44. In the table below, please list the types of data in the database and issues related to the data. Also indicate if data meets current and future requirements.

Types of Data in the database	Issues	Does the database meet Current Requirements?	Does the database meet Future Requirements?

45. In the table below, please list the standard reports or analysis that are produced by the database system and any issues or problems related to these options. Please indicate if the current requirements are being met and any future requirements.

Standard Report/Analysis	Issues and Problems	Does the Report meet Current Requirements?	Does the Report meet Future Requirements?

46. Which of the following GIS applications do you consider would efficiently support the activities performed by your Unit/Department?

GIS applications	Yes/No
Noise Pollution tracking and modeling	
Water Pollution tracking and modeling	
Air Pollution tracking and modeling	
Soil Pollution tracking and modeling	
Solid Waste management	
Flood Management	
Environmental Impact assessment	
Monitoring landslide occurrence	
Hazard Risk analysis	
Non-point pollution analysis	
Hydrological modeling	
Sediment flow analysis	

47. What are the **strengths** of your current GIS/ICT Plan?

48. What are the **weaknesses** of your GIS/ICT Plan?

49. What **opportunities** are inherent in your current GIS/ICT Plan?

50. What are the **threats** to your current GIS/ICT Plan?

51. Kindly suggest actions that should be taken toward the mainstreaming of GIS into the roles and responsibilities of your Department.

Once again thank you for your input and time.

=====

Please send comments, queries, and completed questionnaire to:

Jacob Opadeyi, PhD
Centre for GeoSpatial Studies
Faculty of Engineering
The University of the West Indies
St. Augustine, Trinidad
Tel: 1-868-777-7233
Email: jopadeyi@hotmail.com