Appendix K — Terrestrial Ecology

Environmental Statement East-West Arterial Extension:

Section 2 (Woodland Drive — Lookout Road)
Section 3 (Lookout Road — Frank Sound Road)

Appendix K.1 - UMAM Mapping and Sheets

Field Verification Points Map (UMAM Locations)



Field Verification Figure 1 of 2





2024



do not represent required area



Figure 2 of 2

2024

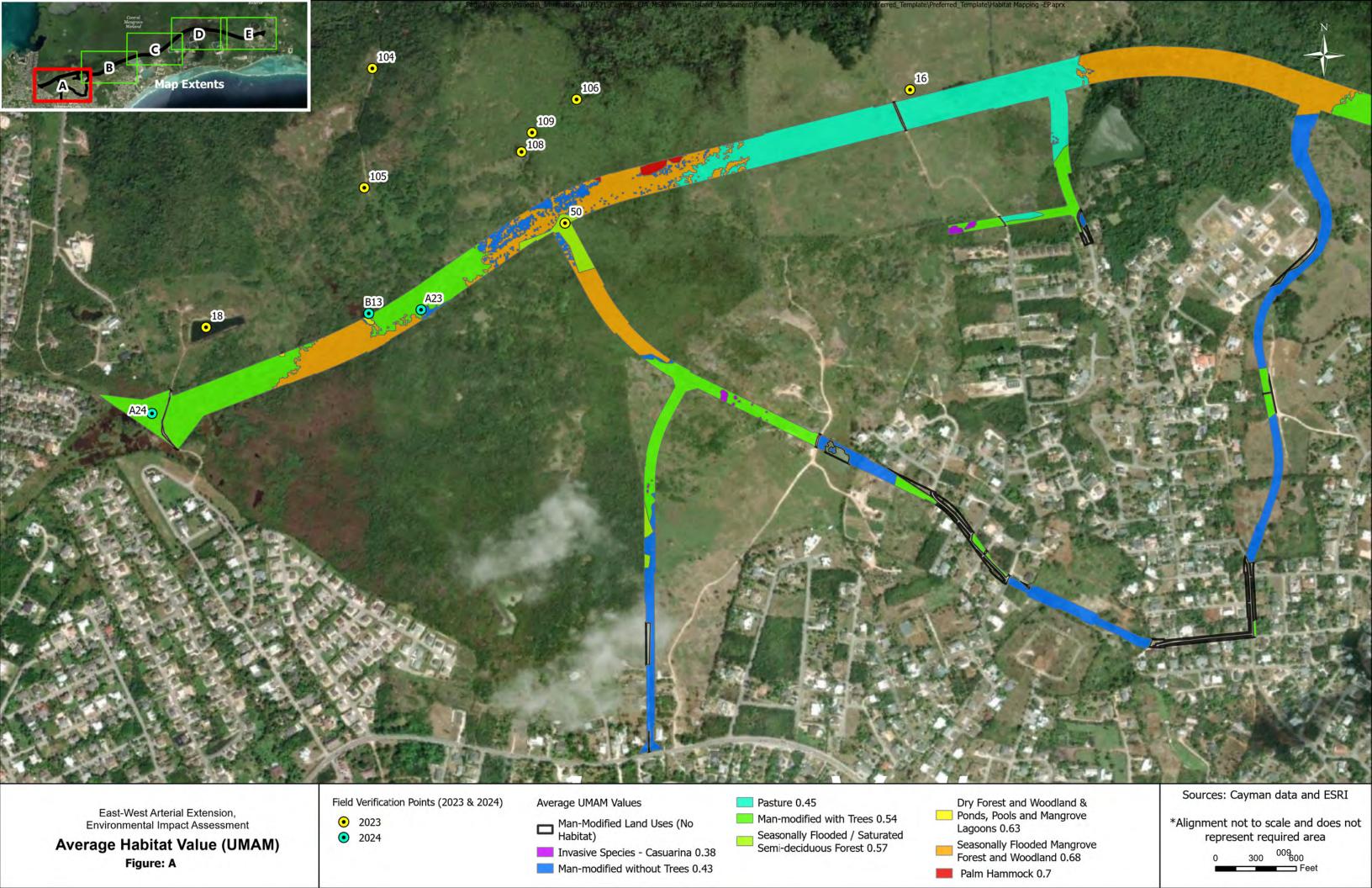
Mile

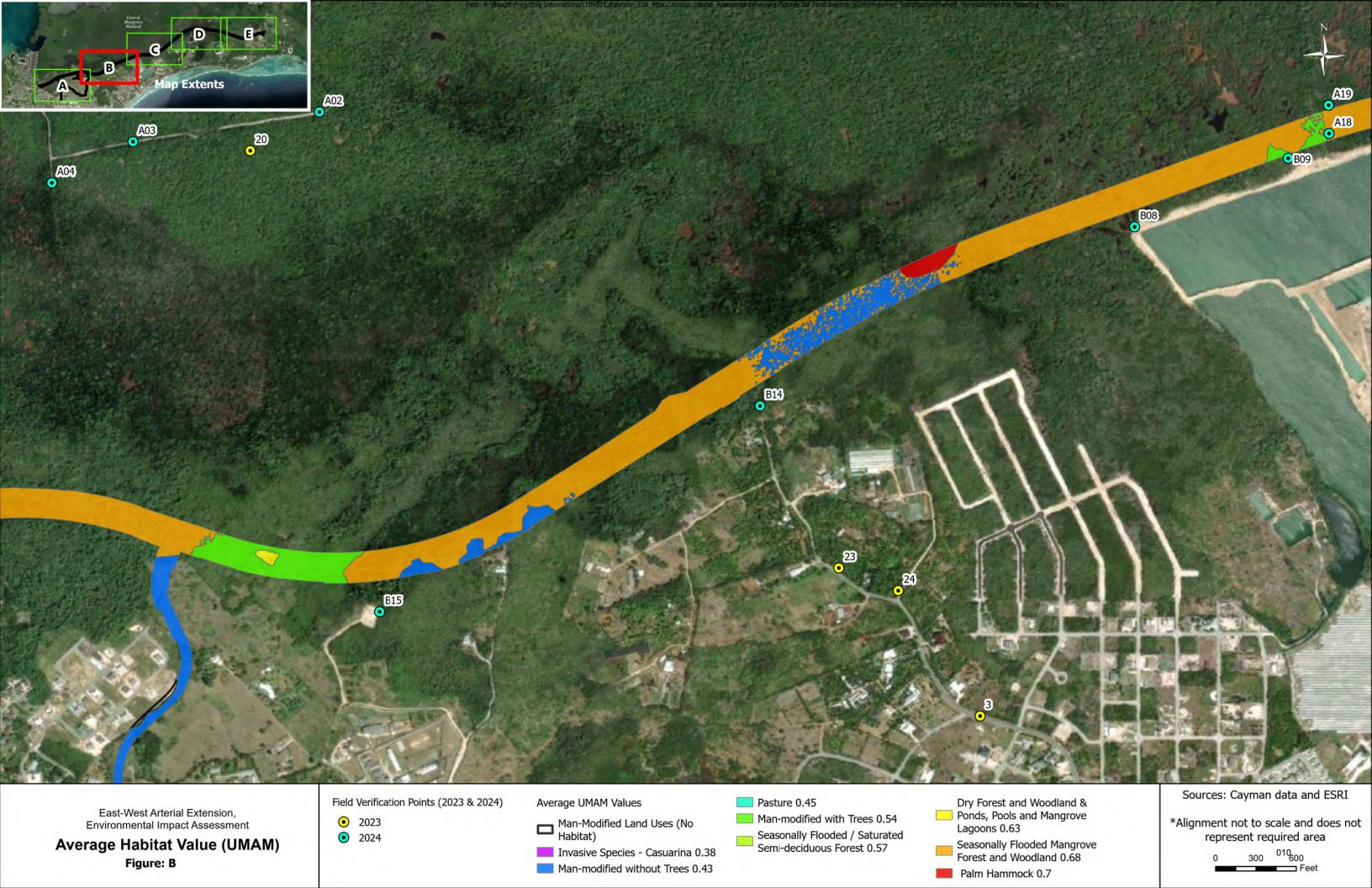
Table of UMAM Scores

	2023 Field Data Points	
Name	Habitat Type	UMAM
115	Man-Modified Without Trees	0.4
111	Semi-Deciduous Forest	0.65
10	Invasive Species - Casuarina	0.3
105	Man-Modified With Trees	0.5
102	Man-Modified Without Trees	0.4
103	Seasonally Flooded Mangrove Forest	0.6
100	Seasonally Flooded Mangrove Forest	0.43
2	Man-Modified Without Trees	0.35
3	Man-Modified Without Trees	0.35
6	Seasonally Flooded Mangrove Forest	0.63
7	Seasonally Flooded Mangrove Forest	0.77
8	Dry Shrubland	0.75
9	Dry Shrubland	0.85
11	Mangrove Lagoon	0.87
16	Man-Modified Without Trees - Pasture	0.45
18	Ponds, Pools and Mangrove Lagoons	0.63
19	Ponds, Pools and Mangrove Lagoons	0.67
20	Seasonally Flooded Mangrove Forest	0.7
22	Man-Modified Without Trees	0.2
23	Man-Modified Without Trees	0.4
24	Man-Modified Without Trees	0.35
26	Man-Modified Without Trees	0.5
29	Seasonally Flooded Mangrove Forest and Woodland	0.5
30	Seasonally Flooded Mangrove Forest	0.55
32	Mangrove Lagoon	0.6
34	Invasive Species - Casuarina	0.45
36	Dry Shrubland	0.5
37	Dry Shrubland	0.45
38	Coastal Shrubland	0.35
39	Dry Shrubland	0.7
41	Coastal Shrubland	0.35
42	Coastal Shrubland	0.6
45	Dry Forest Woodland	0.6
46	Dry Forest Woodland	0.55
47	Dry Forest Woodland	0.55
49	Semi-Deciduous Forest	0.6
50	Seasonally Flooded/Saturated Seim-Deciduous Forest	0.57
53	Seasonally Flooded Mangrove Shrubland	0.6
54	Semi-permanently Flooded Grasslands	0.83
55	Semi-permanently Flooded Grasslands	0.3
104	Salt Tolerant Succulents	0.55
101	Ponds, Pools and Mangrove Lagoons	0.67
106	Palm Hammock	0.7
108	Palustrine Emergent Marsh/Wetland	0.6
109	Palustrine Emergent Marsh/Wetland	0.63
114	Semi-Deciduous Forest	0.5
112	Semi-Deciduous Forest	0.7
113	Semi-Deciduous Forest	0.6
33	Ponds, Pools and Mangrove Lagoons	0.63
44	Invasive Species - Casuarina	0.4
27	Salt Tolerant Succulents	0.4
12	Ponds, Pools and Mangrove Lagoons	0.53
40	Coastal Shrubland	0.5

	2024 Field Data Points							
Name	Habitat Type	UMAM						
A01	Seasonally Flooded Mangrove Forest	0.73						
A02	Seasonally Flooded Mangrove Forest	0.77						
A03	Seasonally Flooded Mangrove Forest	0.77						
A04	Seasonally Flooded Mangrove Forest	0.53						
A05	Seasonally Flooded Mangrove Forest	0.73						
B01	Seasonally Flooded Mangrove Forest	0.5						
A06	Man-Modified With Trees	0.35						
B02	Seasonally Flooded Mangrove Forest	0.57						
A07	Seasonally Flooded Mangrove Shrubland	0.53						
B03	Seasonally Flooded Mangrove Forest	0.6						
A08	Seasonally Flooded Mangrove Forest	0.67						
A09	Seasonally Flooded Mangrove Forest	0.7						
A10	Seasonally Flooded Mangrove Forest	0.7						
A11	Seasonally Flooded Mangrove Forest	0.63						
A12	Seasonally Flooded Mangrove Forest	0.77						
B04	Man-Modified Without Trees	0.65						
A13	Dry Forest Woodland	0.75						
B05	Man-Modified Without Trees	0.65						
A14	Dry Forest Woodland	0.7						
A15	Dry Forest Woodland	0.6						
B06	Seasonally Flooded Mangrove Forest	0.9						
A16	Seasonally Flooded Mangrove Forest	0.67						
B07	Seasonally Flooded Mangrove Forest	0.8						
A17	Ponds, Pools and Mangrove Lagoons	0.63						
B08	Seasonally Flooded Mangrove Forest	0.8						
A18	Seasonally Flooded Mangrove Forest	0.63						
B09	Man-Modified With Trees	0.6						
A19	Seasonally Flooded Mangrove Forest	0.63						
A20	Seasonally Flooded Mangrove Forest	0.77						
B10	Seasonally Flooded Mangrove Forest	0.73						
A21	Seasonally Flooded Mangrove Forest	0.67						
B11	Seasonally Flooded Mangrove Forest	0.77						
B12	Seasonally Flooded Mangrove Forest	0.7						
B13	Seasonally Flooded Mangrove Forest	0.77						
A23	Man-Modified With Trees	0.65						
A24	Man-Modified With Trees	0.6						
B14	ponds, pools and mangrove lagoons	0.73						
B15	Dry Shrubland	0.55						
A22	Seasonally Flooded Mangrove Forest	0.67						

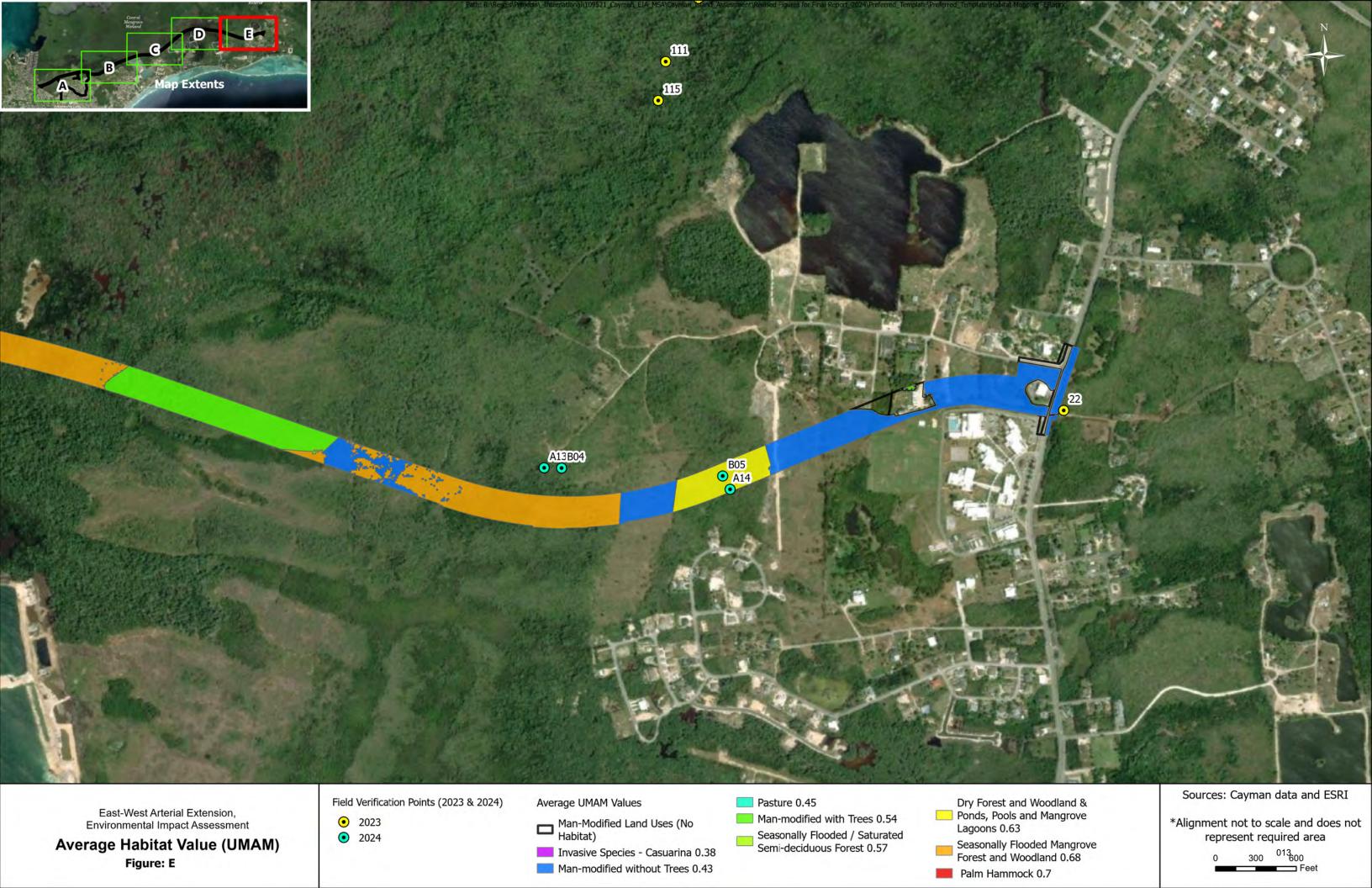
Map of Average UMAM Scores











2023 UMAM Sheets

Site/Project Name Ap		Application Number			Assessment Area Name or Number		
					4	5	
FLUCCs code	Further classifica	tion (optional)		Impact	Туре	Assessment Area Size	
1100 - Dry forest and woodlan	d					Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	on (i.e.O	FW, AP, other local/state/federal	designation of importance)	
Geographic relationship to and hydr	ologic connection with	wetlands, other s	<u>l</u> urface water, uplai	nds			
Dry forest and woodland located	north of Bodden Tow	n Rd.	·				
Assessment area description							
To the south there is Boddentowi small pond.	n Road. East and Wes	st is residential/c	ommercial. Sout	h side	of Boddentown Rd co	oastal shrubland with	
Significant nearby features			Uniqueness (co landscape.)	nsideri	ng the relative rarity in	relation to the regional	
			None				
Functions		Mitigation for previous permit/other historic use					
Anticipated Wildlife Utilization Bases that are representative of the assesbe found)			•	T, SSC	y Listed Species (List s C), type of use, and inte	. •	
Observed Evidence of Wildlife Utiliz Minimal insect life observed. 1-2 s			-		s, droppings, casings,	nests, etc.):	
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
JS and MM		07/25/23					

					FIGATION ASSESSMENT Work (See Sections 62-3			IPACT	
Site/Project Na	ame:	<u>-</u>			Application Number:			Assessment Area	a Name or Number:
Impact or Mitig	gation:	Impact			Assessment Conducted by: Assessment Date: 07/25/23				
	Scoring Guidar	nce	Ор	timal (10)	Moderate(7)		Min	imal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed Condition is optimal and fully supports wetland/surface water functions					Condition is less than optimal, b maintain most wetland/surface v		wetland/s	el of support of surface water actions	Condition is insufficient to provide wetland/surface water functions
							Enter Notes b	pelow (do NOT sc	ore each subcategory individually)
			a. Quality and		t support outside of AA.				3 5
.500(6)(a) Lo	ocation and Lan	dscape Support	d. Downstre a	am benefits provide	A (proximity and barriers). ed to fish and wildlife. AA from land uses outside of AA.			J	7 N/A 7
				<u> </u>	ediments and flow restrictions).			l	N/A
Current		With Impact	g. Dependen	cy of downstream h	nabitats on quantity or quality of dis	charges.			N/A
		•	h. Protection Additional	of wetland functions	s provided by uplands (upland AAs	s only).			3
6		0	Notes:						
b. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge. e. Fire frequency/severity. f. Type of vegetation. g. Hydrologic stress on vegetation. h. Use by animals with hydrologic requirements. i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). j. Water quality of standing water by observation (I.e., discoloration, turbidity). Current With Impact With Impact With Impact L. Water depth, wave energy, and currents. Additional N/A									
0		0	Notes:	/desirable species					6
.500(6	6)(c) Community	Structure		cotic plant species				5	
	V Voc	votation	III. Regenera	tion/recruitment					7
	X Veg	getation		ens, cavity, etc.			6		
	Ber	nthic	VI. Plants' co						7
	Bot	h		nagement practices ohic features (refugi	ia, channels, hummocks).				4
			IX. Submerg	ed vegetation (only					N/A
Current 6		With Impact	Additional Notes:	daphnoides). Invasi	(Cocothrinax proctorii), west indian ive - tan-tan (Leucaena leucocepha hespesia populnea), Australian pin	ala), asain leath	erleaf (Colubrina	•	sera simaruba), wild olive (Bontia fly orchid tree (Bauhinia divaricata),
		•			Trospesia populitea), Australian pin	c (Oastanna co			
	re = Sum of about				Impact Acres =	0.00			
Current		With Impact			Functional Loss (FL) [For Impact Assessment Areas]:		7		
0.60		0.00			. = ID x Impact Acres =	0.000	1		
	Impact Delta (I	ID)		was assessed using	proposed to be mitigated at a mitiguity gumam, then the credits required	for mitigation i	S		
Current -	- w/Impact	0.600		mitigation bank that	Il Loss (FL). If impact mitigation is at was not assessed using UMA assess impacts; use the assessme	M, then UMAN	М		

Site/Project Name	Application Number	ber Assessment Area Name			or Number	
					46	
FLUCCs code	Further classifica	rther classification (optional)		Impact	Туре	Assessment Area Size
1100	Dry	forest and wood	lland			Acres
Basin/Watershed Name/Number	Affected Waterbody (Clas	s)	Special Classification	on (i.e.OF	FW, AP, other local/state/federal	designation of importance)
Geographic relationship to and hydr	ologic connection with	wetlands, other s	urface water, upla	nds		
Dry forest and woodland located	north of Bodden Tow	n Rd. AA is loca	ted on a slope.			
Assessment area description						
To the south there is Boddentow	n Road and a beach/c	oastal shrub. To	the east and we	st is re	sidental, the north is	a contiguous forest.
Significant nearby features		Uniqueness (co landscape.)	nsiderir	ng the relative rarity in	relation to the regional	
			None			
Functions		Mitigation for previous permit/other historic use				
Anticipated Wildlife Utilization Based that are representative of the asses be found)				T, SSC	Listed Species (List s), type of use, and inte	
Observed Evidence of Wildlife Utiliz	ation (List species dire	ctly observed, or	other signs such a	s tracks	s, droppings, casings,	nests, etc.):
Insects, honeybees and pollinato	rs					
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
JS and MM		07/25/23				

te/Project Na	ame:			Application Number:		Assessment Area	Assessment Area Name or Number:		
pact or Mitig	nation:	-		Assessment Conducted by:		Assessment Date	46		
pact of willig	Impact JS and MN					07/25/23			
	Scoring Guida	ance	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)		
would be su		r is based on what /pe of wetland or sessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but suf maintain most wetland/surface waterf		Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions		
						Enter Notes below (do NOT sc	ore each subcategory individually)		
			a. Quality and quantity of habita	t support outside of AA.			7		
			b. Invasive plant species.				7		
500(6)(a) L	ocation and La	ndscape Support	c. Wildlife access to and from A	A (proximity and barriers).			7		
.000(0)(a) L	oodion and La	пазваре варроп	d. Downstream benefits provide	ed to fish and wildlife.			2		
			e. Adverse impacts to wildlife in A	AA from land uses outside of AA.			4		
	_		f. Hydrologic connectivity (imp	ediments and flow restrictions).			7		
Command		\A/ith lunnant	g. Dependency of downstream h	nabitats on quantity or quality of discharg	es.		3		
Current		With Impact	h. Protection of wetland functions	s provided by uplands (upland AAs only)			3		
			Additional						
5		0	Notes:						
•									
			a. Appropriateness of water leve	uls and flows					
			b. Reliability of water level indic						
			c. Appropriateness of soil moist						
			d. Flow rates /points of discharg						
.500((6)(b) Water En (n/a for uplan		e. Fire frequency/severity.						
	(II/a IOI upiaii	ius)	f. Type of vegetation.						
			g. Hydrologic stress on vegetat	ion.					
			h. Use by animal s with hydrolog	jic requirements.					
			i. Plant community composition	associated with water quality (i.e., plan	ts tolerant o	of poor WQ).			
	7			ter by observation (I.e., discoloration, to	ırbidity).				
Current		With Impact	k. Water quality data for the type	e of community.					
	1		l. Water depth, wave energy, ar	nd currents.					
			Additional N/A Notes:						
0		0	ivolos.						
			I. Appropriate/desirable species				7		
.500(6	6)(c) Communit	ty Structure	II. Invasive/exotic plant species				7		
			III. Regeneration/recruitment				5		
	X Ve	egetation	IV. Age, size distribution.				7		
	_		V. Snags, dens, cavity, etc.				4		
	Ве	enthic	VI. Plants' condition.				8		
	r.	ath	VIII. Land management practices				4		
	Bo) (I	VIII. Topographic features (refug IX. Submerged vegetation (only	<u> </u>			6 N/A		
	7		X. Upland assessment area	233.3 p. 330y.			6		
Current		With Impact	Additional	d/Tamainalia asterna) /	wie -! ') accepts that (D			
	1		ทางเธอ.	d (Terminalia catappa), frangipani (Plume ch naupaka (Scaevola taccada), Asian la					
6		0	(Guilandina bonduc		arionoar (Oc	ina dolation, i ritar marioo (Theopeoia populition, grey moner		
		<u> </u>							
Raw Sco	re = Sum of ah	pove scores/30		Impact Acres =	0.00				
	uplands, divide								
0	7	ARCO I							
Current		With Impact		Functional Loss (FL)					
				[For Impact Assessment Areas]:					
0.55		0.00		Т					
			FL	. = ID x Impact Acres =	0.000				
	1	1	ı <u> </u>	L					
			NOTE: If impact is	proposed to be mitigated at a mitigation	hank that				
			INOTE. II IIIIpaci IS						
	Impact Delta	(ID)	was assessed usin	g UMAM, then the credits required for m	nitigation is				
	Impact Delta	(ID)	equal to Functiona	Loss (FL). If impact mitigation is prop	osed at a				
Current	- w/Impact	(ID) 0.550	equal to Functiona mitigation bank th		oosed at a en UMAM				

Site/Project Name Application N			mber Assessment Area Name or Number			or Number	
					4	10	
FLUCCs code	Further classifica	ation (optional)		Impact Type		Assessment Area Size	
1214		Coastal Shrub				Acres	
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classification	ON (i.e.OFW, AP, othe	er local/state/federal	designation of importance)	
Geographic relationship to and hyd	Irologic connection with	wetlands others	urface water unla	nds			
Uplands adjacent to beach/Carib		wonanas, sanor s	unace nater, apia.				
Assessment area description							
Coastal shrub between Boddon	Town Rd and beach.						
Significant nearby features		Uniqueness (co landscape.)	nsidering the re	lative rarity in	relation to the regional		
Boddon Town Road north of AA pine to the east of AA. Residenti	None						
Functions			Mitigation for prev	vious permit/oth	er historic use	9	
Wildlife habitat, erosion stabiliza	ntion, weather event b	uffer	N/A				
Anticipated Wildlife Utilization Base that are representative of the asset be found)		•	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)				
Various avian and insect species	5						
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppi	ings, casings,	nests, etc.):	
Birds, woodpeckers, termite nes	ts, pollinators, butterf	ilies, geckos.					
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
JS and MM			07/26/23				

				TIGATION ASSESSMENT WORKSH 2), F.A.C. (See Sections 62-345.500				
Site/Project Na	ame:	-		Application Number:		Assessment Area	Name or Number:	
mpact or Mitiga	jation:	Impact		Assessment Conducted by: JS and MM		Assessment Date	07/26/23	
	Scoring Guidar	nce	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)	
						Condition is insufficient to provide wetland/surface water functions		
					Enter Not	tes below (do NOT sco	ore each subcategory individually)	
			a. Quality and quantity of habitatb. Invasive plant species.c. Wildlife access to and from A				6 4 6	
.500(6)(a) Location and Landscape Support			d. Downstream benefits provide e. Adverse impacts to wildlife in A	ed to fish and wildlife. AA from land uses outside of AA.			3	
Current]	With Impact		pediments and flow restrictions). habitats on quantity or quality of discharges. s provided by uplands (upland AAs only).			4 4 3	
5		0	Additional Invasives on fringe, Notes:	, birds, insects able to access. Erosion stabi	ilization seaward.			
.500(6	(6)(b) Water Env (n/a for upland	ds)		tion. gic requirements. n associated with water quality (i.e., plants taken by observation (l.e., discoloration, turbine of community.	·	Σ).		
			Notes: I. Appropriate/desirable species				6	
.500(6		getation	II. Invasive/exotic plant species III. Regeneration/recruitment IV. Age, size distribution. V. Snags, dens, cavity, etc. VI. Plants' condition.			4 8 6 3		
	Bot	th	VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only	jia, channels, hummocks).			6 4 3 N/A	
Current 5		With Impact	Notes: proctorii), gumbo lin naupaka (Scavola ta	(Coccoloba uvifera), cayman agave (Agave ombo (Bursera simaruba), cocoplum (Chrysobtaccada), grey nicker (Guilandina bonduc), ave species. minimal topo features. Adjacent I	balanus icaco). Inva australian pine (Cas	asive- Egyptian crowfo suarina equisetifolia). I	oot (Dactyloctenium aegyptium), beach Minimal invasive species. Good	
	re = Sum of about				0.00		•	
Current		With Impact		Functional Loss (FL) [For Impact Assessment Areas]:				
0.50		0.00		<u> </u>	0.000			
	Impact Delta (I	ID)	was assessed using	proposed to be mitigated at a mitigation bang UMAM, then the credits required for mitigal Loss (FL). If impact mitigation is propos	gation is			
Current -	- w/Impact	0.500	mitigation bank that	at was not assessed using UMAM, then assess impacts; use the assessment metho	n UMAM			

Site/Project Name	olication Number	mber Assessment Area Name or Number			or Number		
					4	12	
FLUCCs code	Further classification	Further classification (optional)		Impact Type		Assessment Area Size	
1214	Co	oastal Shrub				Acres	
Basin/Watershed Name/Number		Special Classification	On (i.e.OFW, AP, other local/st	tate/federal	designation of importance)		
Geographic relationship to and hyd	rologic connection with wetl	lands, other su	ı ırface water, uplaı	nds			
Half Moon Bay south of AA							
Assessment area description							
Coastal shrub south of Boddon 1	「own Road.						
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative	rarity in	relation to the regional	
Boddon Town Road north of AA. Moon Bay to the south of AA.	Residential east and wes	st of AA. Half	. ,				
Functions			Mitigation for previous permit/other historic use				
Anticipated Wildlife Utilization Base that are representative of the asses be found)		y expected to	•	ation by Listed Specie T, SSC), type of use,)	•		
Observed Evidence of Wildlife Utiliz	zation (List species directly	observed, or o	other signs such a	s tracks, droppings, c	asings,	nests, etc.):	
Parrot (Amazona leucocephala ca	aymanensis), butterflies, (grackel, geck	os				
Additional relevant factors:							
Assessment conducted by:			Assessment date	(s):			
JS, RH, TS and MM			07/25/23				

				MITIGATION ASSESSMENT WOR 00(2), F.A.C. (See Sections 62-345	_		ACT		
Site/Project Na	ame:	<u>-</u>		Application Number:		As	ssessment Area	Name or Number:	
Impact or Mitig	gation:			Assessment Conducted by:		As	ssessment Date):	
		Impact		JS, RH, TS ar	nd MM			07/25/23	
	Scoring Guidar	nce	Optimal (10)	Moderate(7)		Minima	al (4)	Not Present (0)	
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed Condition is optimal and fully supports wetland/surface water functions						Minimal level o wetland/suri functi	of support of face water	Condition is insufficient to provide wetland/surface water functions	
						Enter Notes bel	ow (do NOT sc	ore each subcategory individually)	
b. Invasive c. Wildlife a d. Downstre e. Adverse i			b. Invasive plant species. c. Wildlife access to and fro d. Downstream benefits pro e. Adverse impacts to wildlife	plant species. access to and from AA (proximity and barriers). ream benefits provided to fish and wildlife. impacts to wildlife in AA from land uses outside of AA.				5 5 5 5 5	
]			(impediments and flow restrictions). am habitats on quantity or quality of discha	arges			5 7	
Current		With Impact		etions provided by uplands (upland AAs on				7	
6		0	Additional Coastal shrub f	ragrmented by road. Invasives on fringe, be erosion into half moon bay. Invasives on	irds able to a	access, but road s	plits shrub habit		
.500(c. Ap d. Flo e. Fire f. Typ g. Hyo h. Us j. Wa			2. Reliability of water level indicators. 2. Appropriateness of soil moisture. 3. Flow rates/points of discharge. 3. Fire frequency/severity. 4. Type of vegetation. 5. Hydrologic stress on vegetation. 6. Use by animals with hydrologic requirements. 6. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 6. Water quality data for the type of community.					
Current		With Impact	I. Water depth, wave energy Additional N/A Notes:	···					
			I. Appropriate/desirable spec	cies				6	
.500(6	6)(c) Community	Structure	II. Invasive/exotic plant speci					5	
	X Vec	jetation	III. Regeneration/recruitmentIV. Age, size distribution.					8	
		jotation	V. Snags, dens, cavity, etc.					6	
	Ber	nthic	VI. Plants' condition.					6	
	Bot	h	VII. Land management prac	efugia, channels, hummocks).				<u>6</u> 8	
			IX. Submerged vegetation (N/A	
Current		With Impact	X. Upland assessment area Additional Notes: Native - seagra	ipe, cocoplum, royal poiciana, gumbo limbo	n Invasives: A	Asutralian pine, tar	n-tan. Sooty mo	6 old, dieback, snags, Seagrape dense and	
6		0	mature with rec			, ,	,		
	r e = Sum of abouplands, divide			Impact Acres =	0.00				
Current		With Impact		Functional Loss (FL) [For Impact Assessment Areas]:					
0.60		0.00		FL = ID x Impact Acres =	0.000				
	Impact Delta (I	D)	was assessed	ct is proposed to be mitigated at a mitigat using UMAM, then the credits required for ional Loss (FL). If impact mitigation is p	mitigation is	3			
Current -	· w/Impact	0.600	mitigation bank	k that was not assessed using UMAM, d to assess impacts; use the assessment r	then UMAM	1			

Site/Project Name	Application Number	ımber Assessment Area Name or Number			or Number	
					;	8
FLUCCs code	Further classifica	urther classification (optional)		Impact Type		Assessment Area Size
1500		Dry Shrubland				Acres
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	On (i.e.OFW, AP, oth	ner local/state/federal	designation of importance)
Geographic relationship to and hyd	rologic connection with	wetlands, other s	<u>l</u> urface water, upla	nds		
Assessment area description						
Dry shrubland						
Significant nearby features			Uniqueness (co landscape.)	nsidering the re	elative rarity in	relation to the regional
National Trust Property, lagoon,	None					
Functions		Mitigation for previous permit/other historic use				
Anticipated Wildlife Utilization Base that are representative of the assesbe found)				T, SSC), type o		species, their legal ensity of use of the
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	other signs such a	s tracks, dropp	oings, casings,	nests, etc.):
Birds, rat holes						
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
JS and MM		07/26/23				

	lame:	-		Application Number:	Assessment Area	a Name or Number:
npact or Mitig	gation:	Impact		Assessment Conducted by: JS and MM	Assessment Date	e: 07/26/23
	Scoring Guida	nce	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
would be su	of each indicator	r is based on what pe of wetland or	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunction		Condition is insufficient to provide wetland/surface water functions
				L	Enter Notes below (do NOT so	ore each subcategory individually)
			a. Quality and quantity of habita	t support outside of AA.		9
			b. Invasive plant species.			9
500(6)(a) L	ocation and Lar	ndscape Support	c. Wildlife access to and from A	A (proximity and barriers).		9
.000(0)(a) L	LOGGRIOTI GITG LGI	idocape Capport	d. Downstream benefits provide	d to fish and wildlife.		6
			e. Adverse impacts to wildlife in A	AA from land uses outside of AA.		9
	_		f. Hydrologic connectivity (imp	ediments and flow restrictions).		6
0		VAPOL Locus and	g. Dependency of downstream h	nabitats on quantity or quality of discharges.		6
Current		With Impact	h. Protection of wetland functions	s provided by uplands (upland AAs only).		N/A
	7		Additional	,		
8		0	Notes:			
			a. Appropriateness of water leve	Is and flows.		
			b. Reliability of water level indic			
			c. Appropriateness of soil moist	ure.		
500/	(6)(b) Water Env	vironment	d. Flow rates/points of discharg	9.		
.500(non(b) water Em n/a for uplan		e. Fire frequency/severity.			
		,	f. Type of vegetation.			
			g. Hydrologic stress on vegetat			
			h. Use by animal s with hydrolog	•	ant of a con MO	
			· · · · · · · · · · · · · · · · · · ·	n associated with water quality (i.e., plants toler ter by observation (l.e., discoloration, turbidity)	·	
			k. Water quality data for the type		•	
Current		With Impact	I. Water depth, wave energy, ar	<u> </u>		
			Additional N/A	d currents.		
0		0	Notes:			
•						
			I. Appropriate/desirable species			9
.500((6)(c) Community	y Structure	II. Invasive/exotic plant species			9
`	. , , ,		III. Regeneration/recruitment			7
	X Ve	getation	IV. Age, size distribution.			7
			V. Snags, dens, cavity, etc.			6
	Be	nthic	VI. Plants' condition.			7
		THITIC				
			VII. Land management practices			7
	Во		VIII. Topographic features (refug	a, channels, hummocks).		8
	Bo		VIII. Topographic features (refug IX. Submerged vegetation (only	a, channels, hummocks).		8 N/A
Current	Bo		VIII. Topographic features (refug	a, channels, hummocks).		8
Current	Bo	th	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm	a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H	• • • • • • • • • • • • • • • • • • • •	8 N/A 7 is' airplant (Tillandsia baldbisiana),
Current 7	Bo	th	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm	a, channels, hummocks). score if present).	• • • • • • • • • • • • • • • • • • • •	8 N/A 7 is' airplant (Tillandsia baldbisiana),
	Bo	th With Impact	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm	a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H	• • • • • • • • • • • • • • • • • • • •	8 N/A 7 is' airplant (Tillandsia baldbisiana),
	Bo	th With Impact	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm	a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H	• • • • • • • • • • • • • • • • • • • •	8 N/A 7 is' airplant (Tillandsia baldbisiana),
7	Bo Bo Bore = Sum of ab	With Impact	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm	a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H	maruba), strangler fig (Ficus aurea).	8 N/A 7 is' airplant (Tillandsia baldbisiana),
7 Raw Sco		With Impact 0 ove scores/30	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm	a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H Myrcianthes fragrans), gumbo limbo (Bursera si	maruba), strangler fig (Ficus aurea).	8 N/A 7 is' airplant (Tillandsia baldbisiana),
7 Raw Sco	ore = Sum of ab	With Impact 0 ove scores/30	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm	a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H Myrcianthes fragrans), gumbo limbo (Bursera si	maruba), strangler fig (Ficus aurea).	8 N/A 7 is' airplant (Tillandsia baldbisiana),
Raw Sco	ore = Sum of ab	With Impact 0 ove scores/30 by 20)	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm	a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H Myrcianthes fragrans), gumbo limbo (Bursera si	maruba), strangler fig (Ficus aurea).	8 N/A 7 is' airplant (Tillandsia baldbisiana),
7 Raw Sco	ore = Sum of ab	With Impact 0 ove scores/30	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm simpson's stopper (a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H Myrcianthes fragrans), gumbo limbo (Bursera si	maruba), strangler fig (Ficus aurea).	8 N/A 7 is' airplant (Tillandsia baldbisiana),
Raw Scor (if	ore = Sum of ab	With Impact O ove scores/30 by 20) With Impact	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm simpson's stopper (a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H Myrcianthes fragrans), gumbo limbo (Bursera si	maruba), strangler fig (Ficus aurea).	8 N/A 7 is' airplant (Tillandsia baldbisiana),
Raw Sco	ore = Sum of ab	With Impact 0 ove scores/30 by 20)	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm simpson's stopper (a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H Myrcianthes fragrans), gumbo limbo (Bursera si Impact Acres = 0.00 Functional Loss (FL) [For Impact Assessment Areas]:	maruba), strangler fig (Ficus aurea).	8 N/A 7 is' airplant (Tillandsia baldbisiana),
Raw Sco (if	ore = Sum of ab	With Impact O ove scores/30 by 20) With Impact	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm simpson's stopper (a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H Myrcianthes fragrans), gumbo limbo (Bursera si	maruba), strangler fig (Ficus aurea).	8 N/A 7 is' airplant (Tillandsia baldbisiana),
Raw Scor (if	ore = Sum of ab	With Impact O ove scores/30 by 20) With Impact	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm simpson's stopper (a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H Myrcianthes fragrans), gumbo limbo (Bursera si Impact Acres = 0.00 Functional Loss (FL) [For Impact Assessment Areas]:	maruba), strangler fig (Ficus aurea).	8 N/A 7 is' airplant (Tillandsia baldbisiana),
Raw Scor (if	ore = Sum of ab f uplands, divide	With Impact O ove scores/30 by 20) With Impact 0.00	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm simpson's stopper (a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H Myrcianthes fragrans), gumbo limbo (Bursera si Impact Acres = 0.00 Functional Loss (FL) [For Impact Assessment Areas]: = ID x Impact Acres = 0.00 proposed to be mitigated at a mitigation bank	maruba), strangler fig (Ficus aurea).	8 N/A 7 is' airplant (Tillandsia baldbisiana),
Raw Sco	ore = Sum of ab	With Impact O ove scores/30 by 20) With Impact 0.00	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm simpson's stopper (FL NOTE: If impact is was assessed usin	a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (HMyrcianthes fragrans), gumbo limbo (Bursera si Impact Acres = 0.00 Functional Loss (FL) [For Impact Assessment Areas]: = ID x Impact Acres = 0.00 proposed to be mitigated at a mitigation bank g UMAM, then the credits required for mitigation	maruba), strangler fig (Ficus aurea).	8 N/A 7 is' airplant (Tillandsia baldbisiana),
Raw Scor (if	ore = Sum of ab f uplands, divide	With Impact O ove scores/30 by 20) With Impact 0.00	VIII. Topographic features (refug IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - silver palm simpson's stopper (a, channels, hummocks). score if present). (Cocothrinax proctorii), Logwood/bloodwood (H Myrcianthes fragrans), gumbo limbo (Bursera si Impact Acres = 0.00 Functional Loss (FL) [For Impact Assessment Areas]: = ID x Impact Acres = 0.00 proposed to be mitigated at a mitigation bank	maruba), strangler fig (Ficus aurea).	8 N/A 7 is' airplant (Tillandsia baldbisiana),

Site/Project Name	Application Numb	er	Assessment A	Area Name	or Number	
					9	
FLUCCs code	Further classification (optional)		Impact Type		Assessment Area Size	
1500	Dry Shrubland	i			Acres	
Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classificati	On (i.e.OFW, AP, other loc	al/state/federa	I designation of importance)	
Geographic relationship to and hyd	rologic connection with wetlands, other	<u> </u>	nds			
Assessment area description						
AA appears to be seasonally floo	ded semi-deciduous forest and shru	bland				
Significant nearby features		Uniqueness (considering the relative rarity in relation to the regional landscape.)				
National Trust Property, mastic t	rail	None				
Functions	Mitigation for pre	vious permit/other h	nistoric use	е		
Anticipated Wildlife Utilization Base that are representative of the asses be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)					
Observed Evidence of Wildlife Utiliz	zation (List species directly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):	
Parrots, small yellow and gray bi	rds, butterflies, rat holes.					
Additional relevant factors:						
East a little more shrubland. Coc	onut palms, agave cayman.					
Assessment conducted by:		Assessment date	e(s):			
JS and MM 07/25/23						

te/Project Na	ame.			Application Number:		Assassment Area	Name or Number:
e/Project Na	ame.	-		Application Number.		Assessment Area	9
pact or Mitig	gation:			Assessment Conducted by:		Assessment Date	:
		Impact		JS and MM			07/25/23
	Scoring Guida	ance	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)
he scoring o	of each indicato	or is based on what	Condition is optimal and fully			Minimal level of support of	
would be su		pe of wetland or	supports wetland/surface water functions	Condition is less than optimal, but su maintain most wetland/surface water		wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions
						Enter Notes below (do NOT sc	ore each subcategory individually)
			a. Quality and quantity of habitate	t support outside of AA.			9
			b. Invasive plant species.				9
- 00(0)()			c. Wildlife access to and from A	A (proximity and barriers).			9
500(6)(a) Lo	ocation and La	ndscape Support	d. Downstream benefits provide				N/A
			<u> </u>	AA from land uses outside of AA.			9
			f. Hydrologic connectivity (imp	ediments and flow restrictions).			9
			g. Dependency of downstream h	nabitats on quantity or quality of discharg	ges.		9
Current		With Impact	h. Protection of wetland functions	s provided by uplands (upland AAs only).		9
			Additional		,		
9		0	Notes:				
J							
			a. Appropriateness of water leve	le and flowe			
			b. Reliability of water level indic				
			c. Appropriateness of soil moist				
500/	(O) (b) \\\ - (\)		d. Flow rates/points of discharge				
.500((6)(b) Water En n/a for uplan)		e. Fire frequency/severity.				
	(.,, ., ., ., ., .,	,	f. Type of vegetation.				
			g. Hydrologic stress on vegetati				
			h. Use by animal s with hydrolog		ata talarant	of near WO	
				n associated with water quality (i.e., planeter by observation (l.e., discoloration, to		oi pooi w <i>Q</i> j.	
			k. Water quality data for the type				
Current		With Impact	I. Water depth, wave energy, ar	<u> </u>			
			Additional N/A				
		0	Notes:				
	-		I. Appropriate/desirable species				9
.500(6	6)(c) Communi	ty Structure	II. Invasive/exotic plant species				9
			III. Regeneration/recruitment				7
	X Ve	egetation	IV. Age, size distribution.				7
	_		V. Snags, dens, cavity, etc.				7
	Be	enthic	VI. Plants' condition.				<u>8</u> 8
	Во	oth	VII. Land management practicesVIII. Topographic features (refugi				7
		: •	IX. Submerged vegetation (only	<u> </u>			N/A
			X. Upland assessment area	<u> </u>			7
Current		With Impact	Additional	(D		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
	†	_		oo (Bursera simaruba), mangrove fern (A yylla), Cayman agave (Agave caymanen			nax proctorii), pink trumpet tree
8		0	(. a.z 38 a.a. notoropr	, ,,, , again (igain daymanon	-,,	(
						l	
Daw Caa	C of all			Impact Acres =	0.00		
	re = Sum of all uplands, divide	oove scores/30 e by 20)					
(apiariao, arriac	5 Sy 23)					
	7	1					
Current		With Impact		Functional Loss (FL)			
				[For Impact Assessment Areas]:			
0.85		0.00		- ID v Impact Acros -	0.000		
				= ID x Impact Acres =	0.000		
			NOTE: If imment !-	proposed to be mitigated at a mitigation	n hank that		
	Impact Delta	(ID)	•	proposed to be mitigated at a mitigatio g UMAM, then the credits required for r			
			equal to Functiona	Loss (FL). If impact mitigation is pro	posed at a		
			121 11 11 11 11 11				
Current -	- w/Impact	0.850		at was not assessed using UMAM, thassess impacts; use the assessment me			

Site/Project Name	F	Application Numbe	r	Assessment A	rea Name	or Number
					3	38
FLUCCs code	Further classificati	ion (optional)		Impact Type		Assessment Area Size
1500		Dry Shrubland	d			Acres
Basin/Watershed Name/Number	Affected Waterbody (Class	s)	Special Classificati	ON (i.e.OFW, AP, other loca	l/state/federa	designation of importance)
Geographic relationship to and hyd	rologic connection with w	vetlands, other su	ı ırface water, upla	nds		
Assessment area description						
Dry shrubland north of Boddento	own Road.					
Significant nearby features			Uniqueness (co landscape.)	nsidering the relativ	e rarity in	relation to the regional
Boddentown Rd to the south. Re Continious shrubland to the nort		d west.	None			
Functions			Mitigation for pre	vious permit/other h	istoric use	9
Anticipated Wildlife Utilization Base that are representative of the asses be found)				ation by Listed Spec T, SSC), type of use)		
Observed Evidence of Wildlife Utilize	zation (List species direc	tly observed, or o	other signs such a	s tracks, droppings,	casings,	nests, etc.):
Birds Butterflies						
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
JS and MM			07/26/23			

Site/Project Na	ame:	-		Application Number:		Assessment Area	Name or Number:
npact or Mitig	gation:	Impact		Assessment Conducted by: JS and MM		Assessment Date	07/26/23
	Scoring Guida	nce	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)
would be su	of each indicato	r is based on what pe of wetland or	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but suf maintain most wetland/surface waterf		Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions
						Enter Notes below (do NOT sco	ore each subcategory individually)
			a. Quality and quantity of habita	t support outside of AA.			4
			b. Invasive plant species.				5
500(6)(a) L	ocation and La	ndscape Support	c. Wildlife access to and from A	A (proximity and barriers).			5
.000(0)(4) L	oodion and Lai	idocape Capport	d. Downstream benefits provide	ed to fish and wildlife.			4
			e. Adverse impacts to wildlife in /	AA from land uses outside of AA.			5
	_		f. Hydrologic connectivity (imp	ediments and flow restrictions).		1	N/A
•		Marca I	g. Dependency of downstream h	nabitats on quantity or quality of discharg	es.		2
Current		With Impact	h. Protection of wetland functions	s provided by uplands (upland AAs only)			3
	1		Additional				
3		0	Notes:				
J							
			a. Appropriateness of water leve	ale and flowe			
			b. Reliability of water level indic				
			c. Appropriateness of soil moist				
			d. Flow rates /points of discharg				
.500((6)(b) Water En (n/a for uplan		e. Fire frequency/severity.				
	(II/a IOI upiaii	us)	f. Type of vegetation.				
			g. Hydrologic stress on vegetat	ion.			
			h. Use by animal s with hydrolog	jic requirements.			
			• •	associated with water quality (i.e., plan		f poor WQ).	
	7			ter by observation (I.e., discoloration, to	rbidity).		
Current		With Impact	k. Water quality data for the type	e of community.			
	↓		l. Water depth, wave energy, ar	nd currents.			N/A
			Additional N/A Notes:				
		0	110100.				
		_	I. Appropriate/desirable species				6
.500((6)(c) Communit	y Structure	II. Invasive/exotic plant species				6
			III. Regeneration/recruitment				3
	X Ve	getation	IV. Age, size distribution.				5
	Do	nthic	V. Snags, dens, cavity, etc. VI. Plants' condition.				7
		THITIC	VII. Land management practices				4
	Во	th	VIII. Topographic features (refug				4
			IX. Submerged vegetation (only				N/A
			X. Upland assessment area	•			5
Current		With Impact	Additional				
	1			oo (Bursera simaruba), black mastic (Ter e flower (Phyllanthus angustifolius), Inva			nax protorii), wild olive (Bontia
5		0	aapiiilolues), lullay	ooo. (i riynaninas angusinonus), inva	oivo iaii-idi	. (Euguania iuguudepilala).	
			<u> </u>				
	re = Sum of ab			Impact Acres =	0.00		
(if	uplands, divide	by 20)		I			
	7						
Current		With Impact			<u> </u>		
	4			Functional Loss (FL)			
				[For Impact Assessment Areas]:			
0.40		0.00		. = ID x Impact Acres =	0.000		
	1		<u> </u>	ID A IIIIPAUL AUIGO -	0.000		
	Impact Dalta	(ID)	•	proposed to be mitigated at a mitigation			
	Impact Delta	(טוי)		g UMAM, then the credits required for m I Loss (FL). If impact mitigation is prop			
			L AUDIT OF LINCTIONS	i loss (FL). It impact mitigation is prot	osed at a		
Current -	- w/Impact	0.400	mitigation bank the	at was not assessed using UMAM, thassess impacts; use the assessment me	en UMAM		

Site/Project Name		Application Number	ber Assessment Area Name or N			or Number	
					4	19	
FLUCCs code	Further classifica	tion (optional)		Impact Type		Assessment Area Size	
2230	Ser	ni-Deciduous Fo	rest			Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)				
Geographic relationship to and hyd	I Irologic connection with	wetlands, other s	<u>l</u> urface water, upla	nds			
Rocky wooded area north of Boo	ddenton Rd. Adjacent	to construction s	site. Uplands to v	vest.			
Assessment area description							
Rocky wooded area north of Boo	ddenton Rd. Adjacent	to construction s	site.				
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)				
SW- residential. Construction sit	e to east. West contin	uous forest	None				
Functions			Mitigation for pre	vious permit/other	historic use	9	
Anticipated Wildlife Utilization Base that are representative of the assembe found)		•		ation by Listed Spe T, SSC), type of us)	,		
Observed Evidence of Wildlife Utili	zation (List species dire	ctly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):	
birds, Cayman racer (Cubophis o	caymanus)						
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):	_		
JS and MM		07/25/23					

					TIGATION ASSESSMENT WO 2), F.A.C. (See Sections 62-34			PACT	
Site/Project Na	ame:	-			Application Number:			Assessment Area	a Name or Number:
Impact or Mitig	gation:	Impact			Assessment Conducted by: JS and	ΜМ		Assessment Date	07/25/23
	Scoring Guidar	nce	Ор	timal (10)	Moderate(7)		Mini	mal (4)	Not Present (0)
would be su		is based on what be of wetland or essed	supports we	s optimal and fully tland/surface water unctions	Condition is less than optimal, bu maintain most wetland/surface was		wetland/s	el of support of urface water ctions	Condition is insufficient to provide wetland/surface water functions
							Enter Notes b	pelow (do NOT sc	ore each subcategory individually)
				d quantity of habitatel	t support outside of AA.				5 8
.500(6)(a) Lo	ocation and Lan	dscape Support	c. Wildlife access to and from AA (proximity and barriers).						
					ed to fish and wildlife. AA from land uses outside of AA.			1	N/A 2
				·	ediments and flow restrictions).				N/A
]				nabitats on quantity or quality of disc	narges.			N/A
Current		With Impact	h. Protection	of wetland functions	s provided by uplands (upland AAs o	only).			2
5			Additional Notes:	Additional Adjacent to construction site to east and development to south. Minimal invasives.					
			a. Appropriat	eness of water leve	els and flows.				
				of water level indic					
				teness of soil moist					
.500(6)(b) Water Env			s /points of discharge ency /severity.	е.				
	(n/a for upland	is)	f. Type of v	<u> </u>					
			• •	c stress on vegetati					
				nimals with hydrolog	gic requirements. n associated with water quality (i.e.,	plants tolerant	of poor WQ).		
					ter by observation (I.e., discoloration	•	. o. pool 11 q).		
Current		With Impact	k. Water qua	lity data for the type	e of community.				
Ourient	1	With impact		th, wave energy, ar	nd currents.				
			Additional Notes:	N/A					
			I. Appropriate	e/desirable species					9
.500(6	6)(c) Community	Structure		xotic plant species					9
				tion/recruitment					4
	X Veg	getation	IV. Age, size						5
	Ber	nthic	V. Snags, de	ens, cavity, etc.					7
			VII. Land ma	anagement practices	S.				2
	Bot	h			ia, channels, hummocks).				7
	1			ed vegetation (only sessment area	score if present).				N/A 5
Current		With Impact	Additional Notes:	Native - black mast	tic (Terminalla eriostachya), gumbo l rosea), Thomson's dwarf schomburg	,			hnoides), frangipani (Plumeria obtusa),
7					andsia balbisiana), butterfly ordchid t			ia), iaigo nonoro	a sastas (esistinos sas granamoras),
			1				1		-
Raw Scor	re = Sum of abo	ove scores/30			Impact Acres =	0.00			
	uplands, divide						_		
	_								
Current		With Impact					7		
	1				Functional Loss (FL) [For Impact Assessment Areas]:				
0.60		0.00			_ = ID x Impact Acres =	0.000	1		
]	<u> </u>			J		
	Impact Delta (ID)			proposed to be mitigated at a mitiga				
	past Bolla (· ·		equal to Functiona	g UMAM, then the credits required f Il Loss (FL). If impact mitigation is	proposed at a	a		
Current -	- w/Impact	0.600		mitigation bank that	at was not assessed using UMAN assess impacts; use the assessment	, then UMAN	1		
			4						

Site/Project Name	Application Number	umber Assessment Area Name or Number			or Number		
					1	11	
FLUCCs code	Further classifica	Lation (optional)		Impact	Туре	Assessment Area Size	
2230	Sei	mi-Deciduous Fo	rest			Acres	
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)				
Geographic relationship to and hy	drologic connection with	wetlands, other s	urface water, upla	nds			
Seasonally flooded deciduous f	orest. Surrounded by I	Mastic Forest and	d trail. Mangrove	s to the	e west.		
Assessment area description							
Seasonally flooded deciduous t	forest. Surrounded by I	Mastic Forest and	d trail. Mangrove	s to the	e west.		
Significant nearby features		Uniqueness (considering the relative rarity in relation to the regional landscape.)					
Mastic Forest- National Trust. C	entral Mangrove Wetla	ind	None				
Functions			Mitigation for previous permit/other historic use				
Anticipated Wildlife Utilization Bas		•	· ·		y Listed Species (List s		
that are representative of the asso be found)	essment area and reasor	nably expected to	classification (E, assessment area		C), type of use, and inte	ensity of use of the	
Observed Evidence of Wildlife Uti	lization (List species dire	ectly observed, or	other signs such a	s track	s, droppings, casings,	nests, etc.):	
Caribean dove, parrot, west ind	ian woodpecker, banar	naquit (Coereba t	flaveola)				
A LPC and also and fortune							
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
JS, RH, TS and MM		07/27/23					

ite/Project N	ame.			Application Number:		Assessment Area	Name or Number:
te/i Toject iv	ame.	-		-		Assessment Alee	111
pact or Mitig	gation:			Assessment Conducted by:		Assessment Date):
		Impact		JS, RH, TS and I	ММ		07/27/23
	Scoring Guida	nce	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)
he scoring o	of each indicato	r is based on what	Condition is optimal and fully			Minimal level of support of	
would be su		pe of wetland or	supports wetland/surface water functions	Condition is less than optimal, but suffi maintain most wetland/surface waterfu		wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions
						Enter Notes below (do NOT sc	ore each subcategory individually)
,			a. Quality and quantity of habita	t support outside of AA.			8
			b. Invasive plant species.				8
E00(6)(a) I	agation and La	ndaaana Sunnart	c. Wildlife access to and from A	A (proximity and barriers).			9
.500(6)(a) L	ocation and Lai	ndscape Support	d. Downstream benefits provide	ed to fish and wildlife.			4
			<u> </u>	AA from land uses outside of AA.			2
			f. Hydrologic connectivity (imp				1
	7			nabitats on quantity or quality of discharge	S.		4
Current		With Impact		s provided by uplands (upland AAs only).			4
	1		Additional	5 provided by uplands (upland AAS ONIY).			т
			Notes:				
5							
		<u></u>					
			a. Appropriateness of water leve	els and flows.			
			b. Reliability of water level indic	cators.			
			c. Appropriateness of soil moist	ure.			
500	(6)(b) Water En	vironmont	d. Flow rates/points of discharg	e.			
.500	(n/a for uplan		e. Fire frequency/severity.				
	` '	,	f. Type of vegetation.				
			g. Hydrologic stress on vegetat				
			h. Use by animal s with hydrolog				
				n associated with water quality (i.e., plants		poor WQ).	
	7			ter by observation (l.e., discoloration, tur	bidity).		
Current		With Impact	k. Water quality data for the type				
	_		Water depth, wave energy, ar	nd currents.			
			Additional N/A Notes:				
			Notes.				
			I. Appropriate/desirable species				9
.500((6)(c) Communit	y Structure	II. Invasive/exotic plant species				8
			III. Regeneration/recruitment				6
	XVe	getation	IV. Age, size distribution.				9
			V. Snags, dens, cavity, etc.				6
	Be	nthic	VI. Plants' condition.				7
			VII. Land management practices				8
	Bo	th	VIII. Topographic features (refug	· · · · · · · · · · · · · · · · · · ·			8
	7		IX. Submerged vegetation (only	score if present).			N/A
Current		With Impact	X. Upland assessment area Additional				8
				mangrove fern, strangler fig, bastard maho	ogany rova	palm, bahinia calahash DRH	- 16" - strangler fig Mahogany - 0"
0	1		rianto capoama,	Older more mature forest.	ogany, roya	paini, banima, balabasii. DDN	To stranger rig, Managarry 5
8							
Raw Sco	ore = Sum of ab	ove scores/30		Impact Acres =	0.00		
(if	uplands, divide	by 20)					
Current]	With Impact					
Current		with impact]	Functional Loss (FL)			
	1			[For Impact Assessment Areas]:			
0.65		0.00					
0.00	1		FL	. = ID x Impact Acres =	0.000		
0.00	<u>I</u>	1	J				
			1		hank #= -		
			K 17 3-1-1- ** * * * * * * * * * * * * * * * *	musmassas	nank that		
	Impact Delta	(ID)	•	proposed to be mitigated at a mitigation a LIMAM, then the credits required for mit			
	Impact Delta	(ID)	was assessed usin	g UMAM, then the credits required for mi	tigation is		
	Impact Delta		was assessed usin equal to Functiona		tigation is osed at a		
	Impact Delta - w/Impact	(ID) 0.650	was assessed usin equal to Functiona mitigation bank th	g UMAM, then the credits required for mill Loss (FL). If impact mitigation is propo	tigation is osed at a en UMAM		

Site/Project Name Application			mber Assessment Area Name o			or Number	
					1	12	
FLUCCs code	Further classifica	tion (optional)		Impact Type		Assessment Area Size	
2230	Ser	ni-Deciduous Fo	s Forest			Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)				
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds			
Seasonally flooded deciduous fo			·				
Assessment area description							
Seasonally flooded deciduous fo	prest. Surrounded by M	Mastic Forest and	d trail. Mangrove	s to the west.			
Significant nearby features			Uniqueness (co landscape.)	nsidering the relati	ve rarity in	relation to the regional	
Mastic Forest- National Trust. Co	entral Mangrove Wetla	nd	None				
Functions			Mitigation for previous permit/other historic use				
Anticipated Wildlife Utilization Base that are representative of the asset be found)				,	•	species, their legal ensity of use of the	
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	ther signs such a	s tracks, dropping	s, casings,	nests, etc.):	
Birds/nests, geckos, woodpecke	r, warbler spp., thrush	n, parrot, wasps					
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
JS, RH, TS and MM			07/27/23				

e/Project Na	ame:			Application Number:	T _A	ccocoment A	Name or Number:
	ame:	-		Application Number:	A	ssessment Area	112
pact or Mitig	gation:			Assessment Conducted by:	A	ssessment Date	·
		Impact		JS, RH, TS and MM	Λ		07/27/23
	Scoring Guidan	ce	Optimal (10)	Moderate(7)	Minim	al (4)	Not Present (0)
he scorina o	of each indicator	is based on what	Condition is optimal and fully		Minimal level	of support of	
would be su	uitable for the typurface water asse	e of wetland or	supports wetland/surface water functions	Condition is less than optimal, but sufficie maintain most wetland/surface waterfunct	III IU wetland/sur	face water	Condition is insufficient to provide wetland/surface water functions
					Enter Notes be	low (do NOT sco	ore each subcategory individually)
			a. Quality and quantity of habitat	support outside of AA.			8
			b. Invasive plant species.				9
500(6)(a) L	ocation and Lan	dscane Sunnort	c. Wildlife access to and from A	A (proximity and barriers).			8
500(0)(a) E	tocation and Lan	ascape Cupport	d. Downstream benefits provide	d to fish and wildlife.			6
			e. Adverse impacts to wildlife in A	A from land uses outside of AA.			2
	-		f. Hydrologic connectivity (imp	ediments and flow restrictions).			2
Current		With Impact	g. Dependency of downstream h	abitats on quantity or quality of discharges.			2
Current		with impact	h. Protection of wetland functions	provided by uplands (upland AAs only).			3
	1 1		Additional				
6			Notes:				
			a. Appropriateness of water leve	Is and flows.			
			b. Reliability of water level indic				
			c. Appropriateness of soil moist	ure.			
.500((6)(b) Water Env	ronment	d. Flow rates/points of discharge	e.			
.000((n/a for upland		e. Fire frequency/severity.				
			f. Type of vegetation.				
			g. Hydrologic stress on vegetatinh. Use by animals with hydrolog				
			· · · · · · · · · · · · · · · · · · ·	associated with water quality (i.e., plants to	plerant of poor WQ).		
			•	er by observation (I.e., discoloration, turbid			
	7	1000	k. Water quality data for the type	e of community.			
Current		With Impact	l. Water depth, wave energy, ar	d currents.			
	1		Additional N/A				
			Notes:				
			I. Appropriate/desirable species				9
.500(6	(6)(c) Community	Structure	II. Invasive/exotic plant species				9
			III. Regeneration/recruitment				9
	X Veg	etation	IV. Age, size distribution.				4
	Ber	thic	V. Snags, dens, cavity, etc. VI. Plants' condition.				8
		ano	VII. Land management practices				7
			VIII. Topographic features (refugi				6
	Bot	ו		<u> </u>			N/A
	Botl	1	IX. Submerged vegetation (only	score if present).			•
	Both		X. Upland assessment area	score if present).			6
Current	Both	With Impact	X. Upland assessment area Additional				
	Both		X. Upland assessment area Additional Notes: Yellow mastic, pitch	apple, silver thatch, simpson's stopper, gum		ewood. No invas	
Current 8	Bot		X. Upland assessment area Additional Notes: Yellow mastic, pitch	apple, silver thatch, simpson's stopper, gum		ewood. No invas	
Current 8	Bot		X. Upland assessment area Additional Notes: Yellow mastic, pitch	apple, silver thatch, simpson's stopper, gum		ewood. No invas	
8		With Impact	X. Upland assessment area Additional Notes: Yellow mastic, pitch	apple, silver thatch, simpson's stopper, gum inger plant age - gumbo - 5"DBH, hieght - 27	<u>'</u>	ewood. No invas	
8 Raw Scor	ore = Sum of abo	With Impact	X. Upland assessment area Additional Notes: Yellow mastic, pitch	apple, silver thatch, simpson's stopper, gum inger plant age - gumbo - 5"DBH, hieght - 27		ewood. No invas	
8 Raw Scor		With Impact	X. Upland assessment area Additional Notes: Yellow mastic, pitch	apple, silver thatch, simpson's stopper, gum inger plant age - gumbo - 5"DBH, hieght - 27	<u>'</u>	ewood. No invas	
8 Raw Scor	ore = Sum of abo	With Impact ove scores/30 oy 20)	X. Upland assessment area Additional Notes: Yellow mastic, pitch	apple, silver thatch, simpson's stopper, gum inger plant age - gumbo - 5"DBH, hieght - 27	<u>'</u>	ewood. No invas	
8 Raw Scor	ore = Sum of abo	With Impact	X. Upland assessment area Additional Notes: Yellow mastic, pitch	apple, silver thatch, simpson's stopper, guminger plant age - gumbo - 5"DBH, hieght - 27 Impact Acres = 0	<u>'</u>	ewood. No invas	
8 Raw Scor	ore = Sum of abo	With Impact ove scores/30 oy 20)	X. Upland assessment area Additional Notes: Yellow mastic, pitch good condition. You	apple, silver thatch, simpson's stopper, gum inger plant age - gumbo - 5"DBH, hieght - 27	<u>'</u>	ewood. No invas	
Raw Scor (if	ore = Sum of abo	With Impact ove scores/30 oy 20) With Impact	X. Upland assessment area Additional Notes: Yellow mastic, pitch good condition. You	apple, silver thatch, simpson's stopper, guminger plant age - gumbo - 5"DBH, hieght - 27 Impact Acres = 0 Functional Loss (FL)	<u>'</u>	ewood. No invas	
8 Raw Scor	ore = Sum of abo	With Impact ove scores/30 oy 20)	X. Upland assessment area Additional Notes: Yellow mastic, pitch good condition. You	apple, silver thatch, simpson's stopper, guminger plant age - gumbo - 5"DBH, hieght - 27 Impact Acres = 0 Functional Loss (FL) For Impact Assessment Areas]:	<u>'</u>	ewood. No invas	
8 Raw Scor (if Current	ore = Sum of abo	With Impact ove scores/30 oy 20) With Impact	X. Upland assessment area Additional Notes: Yellow mastic, pitch good condition. You	apple, silver thatch, simpson's stopper, guminger plant age - gumbo - 5"DBH, hieght - 27 Impact Acres = 0 Functional Loss (FL) For Impact Assessment Areas]:	.00	ewood. No invas	
8 Raw Scor (if Current	ore = Sum of about the suplands, divide I	With Impact ove scores/30 oy 20) With Impact 0.00	X. Upland assessment area Additional Notes: Yellow mastic, pitch good condition. You FL NOTE: If impact is	apple, silver thatch, simpson's stopper, guminger plant age - gumbo - 5"DBH, hieght - 27 Impact Acres = 0 Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = 0.	.00 .00 .000 nk that	ewood. No invas	
8 Raw Scor (if Current	ore = Sum of abo	With Impact ove scores/30 oy 20) With Impact 0.00	X. Upland assessment area Additional Notes: Yellow mastic, pitch good condition. You FL NOTE: If impact is was assessed using	apple, silver thatch, simpson's stopper, guminger plant age - gumbo - 5"DBH, hieght - 27 Impact Acres = 0 Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = 0. proposed to be mitigated at a mitigation band UMAM, then the credits required for mitigated at a mitigation band UMAM, then the credits required for mitigated at a mitigation band UMAM, then the credits required for mitigated at a mitigation band UMAM, then the credits required for mitigated at a mitigation band UMAM, then the credits required for mitigated at a mitigation band UMAM, then the credits required for mitigated at a mitigation band UMAM, then the credits required for mitigated at a mitigation band UMAM, then the credits required for mitigated at a mitigation band UMAM, then the credits required for mitigated at a mitigation band UMAM, then the credits required for mitigated at a mitigation band UMAM, then the credits required for mitigated at a mitigation band UMAM, then the credits required for mitigated at a mitigation band UMAM.	.00 000 nk that ation is	ewood. No invas	
Raw Scor (if Current	ore = Sum of about the suplands, divide I	With Impact ove scores/30 oy 20) With Impact 0.00	X. Upland assessment area Additional Notes: Yellow mastic, pitch good condition. You FL NOTE: If impact is was assessed using equal to Functional mitigation bank that	apple, silver thatch, simpson's stopper, guminger plant age - gumbo - 5"DBH, hieght - 27 Impact Acres = 0 Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = 0.	.00 nk that ation is ed at a UMAM	ewood. No invas	

Site/Project Name Application			mber Assessment Area Name or			or Number	
					1	13	
FLUCCs code	Further classifica	tion (optional)		Impact Type		Assessment Area Size	
2230	Ser	ni-Deciduous Fo	Forest				
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)				
Geographic relationship to and hyd	 rologic connection with	wetlands, other s	l urface water. upla	nds			
Mastic Forest (Semi-deciduous f	-						
Assessment area description							
Semi-deciduous forest							
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)				
Mastic Forest- National Trust			None				
Functions		Mitigation for previous permit/other historic use					
Anticipated Wildlife Utilization Base that are representative of the asse be found)						species, their legal ensity of use of the	
Observed Evidence of Wildlife Utili	zation (List species dire	ctly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):	
Rat holes, west Indian woodpec	ker, warbler, cuban fro	o g					
Additional relevant factors:							
Assessment conducted by:			Assessment date(s):				
JS, RH, TS and MM			07/27/23				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)										
Site/Project Na	ame:	-	Application Number:				Assessment Area Name or Number: 113			
Impact or Mitigation:				Assessment Conducted by: JS, RH, TS and MM				Assessment Date: 07/27/23		
	Scoring Guidar	nce	Ор	timal (10) Moderate(7)			Mini	Minimal (4) Not Present (0)		
would be su	f each indicator litable for the typ Irface water ass		supports we	retland/surface water functions Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions			wetland/s	Minimal level of support of wetland/surface water functions Condition is insufficient to p wetland/surface water functions		
							Enter Notes b	elow (do NOT sc	ore each subcategory individually)	
			a. Quality and quantity of habitat support outside of AA. b. Invasive plant species.					9		
.500(6)(a) Location and Landscape Support			c. Wildlife access to and from AA (proximity and barriers). d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA.						9 6 3	
					ediments and flow restrictions).				5	
Current		With Impact	g. Depender	cy of downstream h	nabitats on quantity or quality of d	ischarges.			3	
				of wetland functions	s provided by uplands (upland AA	As only).			8	
5			Additional Notes:							
.500(d	6)(b) Water Env (n/a for upland		b. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge. e. Fire frequency/severity. f. Type of vegetation. g. Hydrologic stress on vegetation. h. Use by animals with hydrologic requirements. i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). j. Water quality of standing water by observation (l.e., discoloration, turbidity). k. Water quality data for the type of community. l. Water depth, wave energy, and currents.							
			Additional Notes:	N/A					9	
.500(6	6)(c) Community	Structure	I. Appropriate/desirable species II. Invasive/exotic plant species						9	
	.,		III. Regeneration/recruitment						6	
	XVeg	getation	IV. Age, size distribution. V. Snags, dens, cavity, etc.						7 6	
	Ber	nthic	VI. Plants' condition.						6	
			VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks).						7	
			IX. Submerged vegetation (only score if present).						N/A	
Current	With Impact With Impact X. Upland assessment area Additional Notes: Native - Gumbo limbo, ficus bejamina, silver palm, royal palm, bastard mahogany, fiddlewood, pecil catcus, palmetto, mangrove fern, lancewood,								· · · · · · · · · · · · · · · · · · ·	
	re = Sum of about				Impact Acres =	0.00				
Current		With Impact		Functional Loss (FL)						
0.60		0.00			[For Impact Assessment Areas]: = ID x Impact Acres =	0.000	1			
	Impact Delta (ID)]	was assessed usin	proposed to be mitigated at a m	ed for mitigation is	3			
Current -	· w/Impact	0.600		equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigaiton bank.						

Site/Project Name		Application Number	er	Assessment /	Area Name	or Number
					1	11
FLUCCs code	Further classifica	ation (optional)		Impact Type		Assessment Area Size
3112	1	Mangrove Lagoo	n			Acres
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	on (i.e.OFW, AP, other loo	cal/state/federa	designation of importance)
Geographic relationship to and hyd	rologic connection with	wetlands, other s	<u>I</u> urface water, upla	nds		
Assessment area description						
mangrove lagoon						
Significant nearby features		Uniqueness (considering the relative rarity in relation to the regional landscape.)				
Mangroves adjacent, continuous			None			
Functions			Mitigation for pre	vious permit/other	historic use)
Anticipated Wildlife Utilization Base that are representative of the assesbe found)				ation by Listed Spe T, SSC), type of us	•	
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):
honeybees, mosquitos, butterfly	, birds, small mud cra	bs				
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
JS and MM			07/26/23			

	ame:			Application Number:		Assessment Area	Name or Number:
		-		-			11
pact or Mitig	gation:	Impact		Assessment Conducted by: JS and MM		Assessment Date	07/26/23
	Scoring Guidar	nce	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)
				moderate(r)			Hot Prosent (b)
would be su		is based on what be of wetland or essed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but suf maintain most wetland/surface waterf		Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions
						Enter Notes below (do NOT sc	ore each subcategory individually)
			a. Quality and quantity of habitat	support outside of AA.			9
			b. Invasive plant species.				9
500(6)(a) Lo	ocation and I an	dscape Support	c. Wildlife access to and from A	A (proximity and barriers).			9
.500(0)(a) LC	ocation and Lan	uscape Support	d. Downstream benefits provide	d to fish and wildlife.			N/A
			e. Adverse impacts to wildlife in A	AA from land uses outside of AA.			9
			f. Hydrologic connectivity (impe	ediments and flow restrictions).			9
0		MP41. Income and	g. Dependency of downstream h	abitats on quantity or quality of discharg	es.		8
Current		With Impact	h. Protection of wetland functions	s provided by uplands (upland AAs only)).		N/A
	1		Additional No invasives. Optim	nal widlife access.			
9			Notes:				
			a. Appropriateness of water leve	ls and flows			9
			b. Reliability of water level indic				9
			c. Appropriateness of soil moist				9
E00/	(C)(b) Water En	iranmant	d. Flow rates/points of discharge				8
.5000	6)(b) Water Env) n/a for upland)		e. Fire frequency/severity.				9
	` '	,	f. Type of vegetation.				9
			g. Hydrologic stress on vegetati				9
			h. Use by animal s with hydrolog	•	1-1-11-6	(a	9
				associated with water quality (i.e., plan ter by observation (I.e., discoloration, tu		poor wQ).	<u>8</u> 8
	7		k. Water quality data for the type		indicity).		N/A
Current		With Impact	I. Water depth, wave energy, an	•			8
	1			Approriate water levels and flows.			<u> </u>
9			Notes:				
· ·							
	<u> </u>		I. Appropriate/desirable species				9
.500(6	6)(c) Community	Structure	II. Invasive/exotic plant species				9
,	, , ,		III. Regeneration/recruitment				8
	X Veç	getation	IV. Age, size distribution.				7
			V. Snags, dens, cavity, etc.				6
	Ber	nthic	VI. Plants' condition.				8
			VII. Land management practices				9
	Bot	h	VIII. Topographic features (refugi				5 N/A
	1		IX. Submerged vegetation (only X. Upland assessment area	score ii preserii).			N/A N/A
		With Impact	Additional				TMEN
Current			Notes:	grove (Avicennia germinans), buttonwoo	d (Conocare	us erectus) manarove forn (Ao	rostichum aureum)
Current			Native black many	g. 5. 5 (, thousand golimilalis), buttonwoo	(Sonocarpi	J.	. 25.00.16.11 adiodilij.
Current 8]		<u> </u>				
			1 -	T			
8	re = Sum of abo	ove scores/30		Impact Acres =	0.00		
8 Raw Scor	re = Sum of abouplands, divide			Impact Acres =	0.00		
8 Raw Scor				Impact Acres =	0.00		
Raw Scor		by 20)		Impact Acres =	0.00		
8 Raw Scor				Functional Loss (FL)	0.00		
Raw Scor		by 20)			0.00		
Raw Scor		by 20)		Functional Loss (FL)	0.00		
Raw Scor (if		by 20) With Impact		Functional Loss (FL) [For Impact Assessment Areas]:			
Raw Scor (if	uplands, divide	With Impact 0.00	NOTE: If impact is	Functional Loss (FL) [For Impact Assessment Areas]: = ID x Impact Acres = proposed to be mitigated at a mitigation	0.000		
Raw Scor (if		With Impact 0.00	NOTE: If impact is was assessed using	Functional Loss (FL) [For Impact Assessment Areas]: = ID x Impact Acres = proposed to be mitigated at a mitigation of UMAM, then the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigation of the credits required for mitigated at a mitigated at	0.000		
Raw Scor (if	uplands, divide	With Impact 0.00	NOTE: If impact is was assessed using equal to Functional	Functional Loss (FL) [For Impact Assessment Areas]: = ID x Impact Acres = proposed to be mitigated at a mitigation	0.000 In bank that initigation is boosed at a		

Site/Project Name	Application N	Application Number Assessment Area Name or Number		or Number		
				3	32	
FLUCCs code	Further classification (optional	al)	Impact Type		Assessment Area Size	
3112	Mangrove L	agoon			Acres	
Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classificati	On (i.e.OFW, AP, other loca	al/state/federal	designation of importance)	
Geographic relationship to and hyd	I rologic connection with wetlands, ot	I ther surface water, upla	nds			
Assessment area description						
mangrove lagoon						
Significant nearby features		Uniqueness (co landscape.)	Uniqueness (considering the relative rarity in relation to the regional landscape.)			
Quarry, residential, continuous r	mangrove shrubland	None				
Functions		Mitigation for pre	vious permit/other h	istoric use		
Anticipated Wildlife Utilization Base that are representative of the assesbe found)	ed on Literature Review (List of spec ssment area and reasonably expect		ation by Listed Spec T, SSC), type of us)			
Observed Evidence of Wildlife Utili	zation (List species directly observe	ed, or other signs such a	s tracks, droppings	, casings,	nests, etc.):	
Insect life, birds, fish						
Additional relevant factors:						
Assessment conducted by:		Assessment date	e(s):			
JS and MM		07/26/23				

te/Project Na	ame:			Application Number:		Assessment Area	a Name or Number:
		-		-			32
pact or Mitig	gation:	Impact		Assessment Conducted by: JS and MM		Assessment Date	e: 07/26/23
	Scoring Guida	ance	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)
h a a a a si a a a				inederate(r)			net room (o)
would be su		or is based on what type of wetland or sessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but suf maintain most wetland/surface waterf		Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions
						Enter Notes below (do NOT so	ore each subcategory individually)
			a. Quality and quantity of habitat	t support outside of AA.			7
			b. Invasive plant species.				6
.500(6)(a) Lo	ocation and La	ndscape Support	c. Wildlife access to and from A	A (proximity and barriers).			7
			d. Downstream benefits provide	d to fish and wildlife.			N/A
			e. Adverse impacts to wildlife in A	AA from land uses outside of AA.			3
	7		f. Hydrologic connectivity (imp	ediments and flow restrictions).			4
Current		With Impact	g. Dependency of downstream h	abitats on quantity or quality of discharg	es.		N/A
	_			s provided by uplands (upland AAs only)			N/A
			Additional Sourrounded by res	sidential, quarry and mangrove shrubland	d		
5			Notes.				
			a. Appropriateness of water leve	ls and flows.			8
			b. Reliability of water level indic	ators.			8
			c. Appropriateness of soil moist				7
.500((6)(b) Water En		d. Flow rates/points of dischargee. Fire frequency/severity.	9.			9
	(n/a for uplan	nds)	f. Type of vegetation.				9 7
			g. Hydrologic stress on vegetati	on.			8
			h. Use by animal s with hydrolog				6
				associated with water quality (i.e., plan		of poor WQ).	4
	٦			ter by observation (I.e., discoloration, tu	irbidity).		6
Current		With Impact	k. Water quality data for the type				N/A
	1	•	l. Water depth, wave energy, ar				4
_			Additional Deep. No currents, Notes:	but flow observed. Fish activity			
7							
	<u> </u>		I. Appropriate/desirable species				7
.500(6	6)(c) Communit	ty Structure	II. Invasive/exotic plant species				7
`	, , ,	•	III. Regeneration/recruitment				6
	X Ve	egetation	IV. Age, size distribution.				6
			V. Snags, dens, cavity, etc.				N/A
	Be	enthic	VI. Plants' condition.				7
	-	24h	VII. Land management practices				2
	Bo	טוו	VIII. Topographic features (refugilist) IX. Submerged vegetation (only	<u> </u>			4 N/A
	7		X. Upland assessment area				N/A
Current		With Impact	Additional				
	1	1		grove (Laguncularia racemosa), black ma ea), Australian pine (Casuarina equisetifo		icennia germinans), buttonwood	I (Conocarpus erectus), seaside mah
6	L	<u></u>	(τπουρουία ρυμαίπο				
				Immost Associ	0.00		
		oove scores/30		Impact Acres =	0.00		
(IŤ	uplands, divide	e by 20)					
	7						
Current		With Impact		Functional Loss (FL)			
	1			Functional Loss (FL) [For Impact Assessment Areas]:			
0.60		0.00		· · · · · · · · · · · · · · · · · · ·			
5.50			FL FL	= ID x Impact Acres =	0.000		
	<u> </u>	1	l				
			NOTE: If impact is	proposed to be mitigated at a mitigation	bank that		
	Impact Delta	(ID)	was assessed using	g UMAM, then the credits required for m	nitigation is		
		1	equal to Functiona	Loss (FL). If impact mitigation is prop	osed at a		
		_	بطلا بالمنصما لمنصنف مستحد سنحد	3. WOO DO:			
Current -	- w/Impact	0.600	S .	at was not assessed using UMAM, the assess impacts; use the assessment met			

Site/Project Name		Application Number	er	Asse	ssment Area Name o	or Number
					5	i4
FLUCCs code	Further classifica	ation (optional)		Impact Type		Assessment Area Size
5240 - semi-permanently flooded grasslands	d Not gra	ss. Acrostichum	wetland			Acres
Basin/Watershed Name/Number A	ffected Waterbody (Clas	ss)	Special Classificati	On (i.e.OFW, Al	P, other local/state/federal	designation of importance)
Geographic relationship to and hydro	logic connection with	wetlands, other s	I urface water, upla	nds		
			•			
Assessment area description						
Open, oval shaped, Acrostichum a	ureum wetland. Sur	rounded by 2230) (seasonally floo	ded/ satura	ated semi-decidu	ous forest)
Significant nearby features		Uniqueness (collandscape.)	nsidering th	ne relative rarity in	relation to the regional	
Surrounded by seasonally flooded tower to the south.	forest. Hurricane s	helter and call	None			
Functions			Mitigation for previous permit/other historic use			
Anticipated Wildlife Utilization Based that are representative of the assess be found)		•	· ·	T, SSC), ty	ted Species (List s pe of use, and inte	
Observed Evidence of Wildlife Utiliza	tion (List species dire	ectly observed, or	other signs such a	s tracks, dr	oppings, casings,	nests, etc.):
3 species of lizards, abundant land	l crabs, birds, butte	rflies, expected i	nsect life			
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
JS and MM			07/25/23			

te/Project Na	ame:			Application Number:		Assessment Area	Name or Number:
		-		-			54
pact or Mitig	gation:	Impact		Assessment Conducted by: JS and MN	Л	Assessment Date	07/25/23
	Scoring Guida	nce	Optimal (10)	Moderate(7)	1	Minimal (4)	Not Present (0)
				moderate(r)			Hot i resent (0)
would be su		r is based on what pe of wetland or sessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but somaintain most wetland/surface wate		Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions
						Enter Notes below (do NOT sc	ore each subcategory individually)
			a. Quality and quantity of habitat	support outside of AA.			9
			b. Invasive plant species.				9
F00(C)(a) I	anation and La	adaaana Cunnant	c. Wildlife access to and from A	A (proximity and barriers).			9
500(6)(a) L	ocation and La	ndscape Support	d. Downstream benefits provide	d to fish and wildlife.			N/A
			•	AA from land uses outside of AA.			9
			f. Hydrologic connectivity (impe	ediments and flow restrictions).			9
			g. Dependency of downstream h	abitats on quantity or quality of dischar	ges.		N/A
Current		With Impact	, ,	s provided by uplands (upland AAs only			N/A
	┪		Additional	provided by apianae (apiana / ///e em	<i>y</i> /·		
			Notes:				
9		0					
			a. Appropriateness of water leve	ls and flows.			8
			b. Reliability of water level indic				6
			c. Appropriateness of soil moist				N/A
.500((6)(b) Water En	vironment	d. Flow rates/points of discharge	9.			9
·	(n/a for uplan		e. Fire frequency/severity.				9
			f. Type of vegetation.				9
			g. Hydrologic stress on vegetati				9 N/A
			h. Use by animal s with hydrolog	associated with water quality (i.e., pla	ints tolerant o	of noor WO	8
				ter by observation (I.e., discoloration,) poor ww.	N/A
	7		k. Water quality data for the type		tarbiaity).		N/A
Current		With Impact	I. Water depth, wave energy, an				N/A
	┪		Additional No standing water p				1471
8		0	Notes:				
0		0					
= 00/	(2) () 2	.	I. Appropriate/desirable species				9
.500(6	(6)(c) Communit	y Structure	II. Invasive/exotic plant species				9
			III. Regeneration/recruitment				7
	XVe	getation	IV. Age, size distribution.				8
	Da	nthia	V. Snags, dens, cavity, etc. VI. Plants' condition.				N/A 9
		enthic	VII. Land management practices				9 N/A
	Вс	th	VIII. Topographic features (refugi				8
		w I	IX. Submerged vegetation (only	<u> </u>			N/A
			X. Upland assessment area	- 1			N/A
Current		With Impact	Additional				
	4		Notes: Native - Mangrove f	ern/ golden leather fern (Acrostichum a	aureum) mar	ngrove rubbervine (Rhabdadenia	biflora)
8		0	Traute mangrever	on goldon lodinor rom (riolodionam c	taroam, mar	grovo rabborvino (ranabadacino	J. 1.0.1.0.1
	<u> </u>		<u> </u>				
			1				
	ma Cumantah		1	Impact Acres =	0.00		
Daw Saa	uplands, divide		l				
Raw Sco	apianao, annao	2, 20,					
	7	With Impact		Functional Loss (FL)			
(if			1	Functional Loss (FL) [For Impact Assessment Areas]:			
			l l				
(if		0.00	l		<u> </u>		
(if		0.00		= ID x Impact Acres =	0.000		
(if		0.00		· · · · · · · · · · · · · · · · · · ·	0.000		
(if		0.00	FL	= ID x Impact Acres =			
(if	Impact Delta		NOTE: If impact is	= ID x Impact Acres = proposed to be mitigated at a mitigation	on bank that		
(if	Impact Delta		NOTE: If impact is was assessed using equal to Functional	= ID x Impact Acres = proposed to be mitigated at a mitigation g UMAM, then the credits required for I Loss (FL). If impact mitigation is pro	on bank that mitigation is oposed at a		
Current 0.83	Impact Delta		NOTE: If impact is was assessed using equal to Functional mitigation bank that	= ID x Impact Acres = proposed to be mitigated at a mitigation g UMAM, then the credits required for	on bank that mitigation is oposed at a then UMAM		

Site/Project Name		Application Number	er	A	Assessment Area Name	or Number
					5	55
FLUCCs code	Further classifica	ation (optional)		Impact	Туре	Assessment Area Size
5240 - semi-permanently floode grasslands	ed				•	Acres
Basin/Watershed Name/Number A	Affected Waterbody (Clas	ss)	Special Classificati	on (i.e.OF	FW, AP, other local/state/federal	designation of importance)
Geographic relationship to and hydro	ologic connection with	wetlands, other s	urface water, upla	nds		
Assessment area description						
Semi-permiantly flooded grasslan	ds adjacent to road.					
Significant nearby features				nsiderir	ng the relative rarity in	relation to the regional
Residential, roads, commercial pr	onorty (mostly dovol	lanad laggan ta	landscape.)			
northeast.	operty (mostry dever	lopeu, lagoon to	None			
Functions			Mitigation for pre	vious p	ermit/other historic use)
Anticipated Wildlife Utilization Based	l on Literature Review	(List of species	Anticipated Utiliza	ation by	/ Listed Species (List s	necies their legal
that are representative of the assess		•	classification (E,	T, SSC	c), type of use, and inte	
be found)			assessment area	1)		
Observed Evidence of Wildlife Utiliza	ation (List species dire	ectly observed, or	other signs such a	s track	s, droppings, casings,	nests, etc.):
Pollinators, birds						
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
JS and MM			07/26/23			

-,	lame:			Application Number:	Assessment Area	Name or Number:
	tarrio.	-		-	, toodanioni , ii oo	55
pact or Mitig	igation:			Assessment Conducted by:	Assessment Date	:
		Impact		JS and MM		07/26/23
	Scoring Guida	nce	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
would be su		r is based on what ope of wetland or sessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions
			T a 12 12 12 12 12 12 12 12 12 12 12 12 12		Enter Notes below (do NOT sc	ore each subcategory individually)
			a. Quality and quantity of habitatb. Invasive plant species.	support outside of AA.		3
			c. Wildlife access to and from A	A (proximity and barriers)		5
.500(6)(a) L	Location and Lar	ndscape Support	d. Downstream benefits provide	,		1
			e. Adverse impacts to wildlife in A			3
			•			
	٦		f. Hydrologic connectivity (impe	'		3
Current		With Impact	g. Dependency of downstream h	abitats on quantity or quality of discharges.		2
				provided by uplands (upland AAs only).		2
			Additional			
3		0	Notes:			
	1	ı	a. Appropriateness of water leve	Is and flows		
			b. Reliability of water level indic			
			c. Appropriateness of soil moist			
			d. Flow rates /points of discharge			
.500	0(6)(b) Water En		e. Fire frequency/severity.	·		
	(n/a for uplan	ds)	f. Type of vegetation.			
			g. Hydrologic stress on vegetati	on		
			h. Use by animal s with hydrolog			
			<u> </u>	associated with water quality (i.e., plants toleran	t of poor WO)	
				er by observation (I.e., discoloration, turbidity).	(or poor vv \(\varphi \).	
	٦		k. Water quality data for the type			
Current		With Impact		•		
			I. Water depth, wave energy, an Additional N/A	a currents.		
_			Notes:			
0		0				
			I. Appropriate/desirable species			5
.500((6)(c) Communit	y Structure	II. Invasive/exotic plant species			5
			III. Regeneration/recruitment			3
	X Ve	getation	IV. Age, size distribution.			3
	XVe	getation	IV. Age, size distribution.V. Snags, dens, cavity, etc.			3 1
		egetation				3 1 6
			V. Snags, dens, cavity, etc.			1
		enthic	V. Snags, dens, cavity, etc. VI. Plants' condition.			1 6
	Be	enthic	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugility) IX. Submerged vegetation (only	a, channels, hummocks).		1 6 3
	Be	enthic	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only and assessment area	a, channels, hummocks).		1 6 3 1
Current	Be	enthic	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only to the condition). X. Upland assessment area Additional	a, channels, hummocks). score if present).		1 6 3 1 N/A 3
Current	Be	enthic oth with Impact	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb	a, channels, hummocks). score if present). so (Bursera simaruba), orange geiger (Cordia sebe		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
Current	Be	enthic	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb	a, channels, hummocks). score if present).		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
	Be	enthic oth with Impact	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb	a, channels, hummocks). score if present). so (Bursera simaruba), orange geiger (Cordia sebe		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
	Be	enthic oth with Impact	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb	a, channels, hummocks). score if present). so (Bursera simaruba), orange geiger (Cordia sebe		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
3	Be	with Impact	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb	a, channels, hummocks). score if present). so (Bursera simaruba), orange geiger (Cordia sebe		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
3 Raw Sco	Be Bo	with Impact O oove scores/30	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb	a, channels, hummocks). score if present). so (Bursera simaruba), orange geiger (Cordia sebeenium aegyptium), silky sesban (Sesbiana sericea		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
3 Raw Sco	Be	with Impact O oove scores/30	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb	a, channels, hummocks). score if present). so (Bursera simaruba), orange geiger (Cordia sebeenium aegyptium), silky sesban (Sesbiana sericea		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
3 Raw Sco	Be Bo	with Impact O oove scores/30	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb	a, channels, hummocks). score if present). so (Bursera simaruba), orange geiger (Cordia sebeenium aegyptium), silky sesban (Sesbiana sericea		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
3 Raw Sco	Be Bo	with Impact O oove scores/30	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb	a, channels, hummocks). score if present). o (Bursera simaruba), orange geiger (Cordia sebenium aegyptium), silky sesban (Sesbiana sericea Impact Acres = 0.00		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
Raw Sco	Be Bo	with Impact O ove scores/30 by 20)	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb crowfoot (Dactlyloct	a, channels, hummocks). score if present). o (Bursera simaruba), orange geiger (Cordia sebenium aegyptium), silky sesban (Sesbiana sericea Impact Acres = 0.00 Functional Loss (FL)		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
Raw Sco	Be Bo	with Impact over scores/30 by 20) With Impact	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb crowfoot (Dactlyloct	a, channels, hummocks). score if present). o (Bursera simaruba), orange geiger (Cordia sebenium aegyptium), silky sesban (Sesbiana sericea Impact Acres = 0.00		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
Raw Sco	Be Bo	with Impact O ove scores/30 by 20)	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb crowfoot (Dactlyloct	a, channels, hummocks). score if present). o (Bursera simaruba), orange geiger (Cordia sebenium aegyptium), silky sesban (Sesbiana sericea Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]:		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
Raw Sco	Be Bo	with Impact over scores/30 by 20) With Impact	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb crowfoot (Dactlyloct	a, channels, hummocks). score if present). o (Bursera simaruba), orange geiger (Cordia sebenium aegyptium), silky sesban (Sesbiana sericea Impact Acres = 0.00 Functional Loss (FL)		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
Raw Sco	Be Bo	with Impact over scores/30 by 20) With Impact	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb crowfoot (Dactlyloct	a, channels, hummocks). score if present). o (Bursera simaruba), orange geiger (Cordia sebenium aegyptium), silky sesban (Sesbiana sericea Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]:		1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
Raw Sco (if	Be Bo Bo Bo Bre = Sum of ab f uplands, divide	with Impact ove scores/30 by 20) With Impact 0.00	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only) X. Upland assessment area Additional Notes: Native - gumbo limb crowfoot (Dactlyloct	a, channels, hummocks). score if present). to (Bursera simaruba), orange geiger (Cordia sebelenium aegyptium), silky sesban (Sesbiana sericea Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = 0.000	a), tan-tan (Leucaena leucocephal	1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
Raw Sco (if	Be Bo	with Impact ove scores/30 by 20) With Impact 0.00	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Native - gumbo limb crowfoot (Dactlyloct	a, channels, hummocks). score if present). so (Bursera simaruba), orange geiger (Cordia sebelenium aegyptium), silky sesban (Sesbiana sericea Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = 0.000 proposed to be mitigated at a mitigation bank that a UMAM, then the credits required for mitigation is	a), tan-tan (Leucaena leucocephala	1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
Raw Sco	Be Bo Bo Bo Bre = Sum of ab f uplands, divide	with Impact ove scores/30 by 20) With Impact 0.00	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only) X. Upland assessment area Additional Notes: Native - gumbo limb crowfoot (Dactlyloct) FL NOTE: If impact is was assessed using equal to Functional	a, channels, hummocks). score if present). so (Bursera simaruba), orange geiger (Cordia sebelenium aegyptium), silky sesban (Sesbiana sericea Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = 0.000 proposed to be mitigated at a mitigation bank that g UMAM, then the credits required for mitigation is Loss (FL). If impact mitigation is proposed at	a), tan-tan (Leucaena leucocephala	1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian
Raw Sco (if Current	Be Bo Bo Bo Bre = Sum of ab f uplands, divide	with Impact ove scores/30 by 20) With Impact 0.00	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only) X. Upland assessment area Additional Notes: Native - gumbo limb crowfoot (Dactlyloct) FL NOTE: If impact is was assessed using equal to Functional mitigation bank tha	a, channels, hummocks). score if present). so (Bursera simaruba), orange geiger (Cordia sebelenium aegyptium), silky sesban (Sesbiana sericea Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = 0.000 proposed to be mitigated at a mitigation bank that a UMAM, then the credits required for mitigation is	at sa a M	1 6 3 1 N/A 3 taria geniculata/ parviflora), egyptian

Site/Project Name Application Number Assessment Area Name or Number		or Number				
		, ,				30
FLUCCs code	Further classifica	tion (ontional)		Impact		I
1 E0003 code		Flooded Mangro	o Forest and	Impact	туре	Assessment Area Size
5250	Seasonally F	woodland	ve Forest and			Acres
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificat	ion (i.e.O	FW, AP, other local/state/federal	designation of importance)
Geographic relationship to and hy	drologic connection with	wetlands, other s	urface water, upla	ınds		
south of mangrove lagoon.						
Assessment area description						
Coastal shrub habitat with seag	rape and coconut palm	ıs				
Significant nearby features			Uniqueness (co	onsideri	ng the relative rarity in	relation to the regional
To the south - Boddonton Road	, residential and beach	. To the east	lanuscape.)			
and west - residential. To the no	orth continous shrub th	en mangroves	None			
and lagoon. Functions			Mitigation for pre	wioue n	permit/other historic use	<u> </u>
Tunctions			ivilingation for pre	, vious p	erringother historic use	•
Anticipated Wildlife Utilization Bas	ed on Literature Review	(List of species	Anticipated Utiliz	ation by	y Listed Species (List s	pecies, their legal
that are representative of the asse be found)	essment area and reasor	nably expected to	classification (E, assessment area		C), type of use, and inte	ensity of use of the
Observed Fridense et Wildlife His	li-sking (1 int an anima dina	-4hahaa	ath an airma anab	+1	- duamina a casina	
Observed Evidence of Wildlife Uti	lization (List species dire	ctly observed, or	otner signs such a	as track	s, droppings, casings,	nests, etc.):
Rat holes, mosquitos, termites,	ants.					
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
JS and MM			07/25/23			

				TIGATION ASSESSMENT WORK 2), F.A.C. (See Sections 62-345.			PACT	
Site/Project Na	ame:			Application Number:		<i> </i>	Assessment Area	Name or Number:
Impact or Mitig	ation:	Impact		Assessment Conducted by: JS and MN	l	F	Assessment Date	07/25/23
	Scoring Guidar	ice	Optimal (10)	Moderate(7)		Minir	nal (4)	Not Present (0)
The scoring of would be su		is based on what be of wetland or	Condition is optimal and fully supports wetland/surface water functions	Condition is loss than antimal but su		Minimal leve wetland/su	of support of order orde	Condition is insufficient to provide wetland/surface water functions
						Enter Notes be	elow (do NOT sc	ore each subcategory individually)
.500(6)(a) Lo	ocation and Lan	dscape Support	•	AA (proximity and barriers). ed to fish and wildlife. AA from land uses outside of AA.				3 6 5 4 6
]			pediments and flow restrictions). habitats on quantity or quality of discharg	201			7 5
Current		With Impact		is provided by uplands (upland AAs only				5
5		0	Additional Surrounded by dev	velopment to the south, east and west. N m the north, road to south impacts acces	orth continu		-	agoon. Invasive species present.
.500(6	6)(b) Water Env (n/a for upland		j. Water quality of standing wa k. Water quality data for the typ	tion. gic requirements. n associated with water quality (i.e., planeter by observation (l.e., discoloration, tope of community.		of poor WQ).		
		·	I. Water depth, wave energy, a Additional N/A Notes:	nd currents.				
500/6	6)(c) Community	Structure	I. Appropriate/desirable species					7
.000(0	o)(o) Community	Ciraciare	II. Invasive/exotic plant species III. Regeneration/recruitment					7 5
	X Veg	etation	IV. Age, size distribution.					7
	Ber	ıthic	V. Snags, dens, cavity, etc. VI. Plants' condition.					6
			VII. Land management practice	S.				4
	Bot	h	VIII. Topographic features (refug					4 N/A
Current		With Impact	_ ·	(Coccoloba uvifera), coconut palm (Coccea), grey nicker (Guilandina bonduc), Au	,		•	•
6		0	(Leucaena leucoce	ephala). Majority of AA native (seagrape) uth. Topographic features present.				
	re = Sum of about the leading of t			Impact Acres =	0.00			
Current		With Impact		Functional Loss (FL) [For Impact Assessment Areas]:				
0.55		0.00		L = ID x Impact Acres =	0.000			
	Impact Delta (I	D)	was assessed usir	proposed to be mitigated at a mitigation ng UMAM, then the credits required for real Loss (FL). If impact mitigation is pro	nitigation is			
Current -	· w/Impact	0.550	mitigation bank th	at was not assessed using UMAM, the assess impacts; use the assessment me	nen UMAM			

Site/Project Name		Application Number	r	P	Assessment Area Name o	or Number	
					10	00	
FLUCCs code	Further classifica	ation (optional)		Impact	Type	Assessment Area Size	
5250		Flooded Mangrov woodland	e Forest and		777	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	ion (i.e.OF	W, AP, other local/state/federal	designation of importance)	
Geographic relationship to and hyd	drologic connection with	wetlands, other s	urface water, upla	nds			
Part of central mangrove wetlan	d. Mosquito ditches.						
Assessment area description							
Raised access road with adjace	nt mosquito ditches w	ith culverts.					
Significant nearby features		Uniqueness (co landscape.)	nsiderir	ng the relative rarity in	relation to the regional		
West - urban/ residential, N, S, E	E - undevelped mangro	ve habitat.	Central mangrove wetland				
Functions			Mitigation for pre	vious pe	ermit/other historic use	;	
Avian habitat, nursery, mosquite erosion control	o control, severe weatl	ner buffer,	N/A				
Anticipated Wildlife Utilization Bas that are representative of the assebe found)		·	· ·	T, SSC	Listed Species (List s), type of use, and inte		
Various avian, amphibian and re	eptile species		Grand Cayman	Parrot			
Observed Evidence of Wildlife Util	lization (List species dire	ectly observed, or	other signs such a	as tracks	s, droppings, casings,	nests, etc.):	
Moorehen, yellow warbler, dams	sel fly, gecko, rats						
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
JS, RH, TS and MM 07/25/23							
			i contract of the contract of				

Site/Project Name:						
	-		Application Number:		Assessment Ar	ea Name or Number:
Impact or Mitigation:	Impact		Assessment Conducted by: JS, RH, TS and	ММ	Assessment Da	ote: 07/25/23
Scoring Guid	lance	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)
The scoring of each indicate would be suitable for the surface water a	type of wetland or	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but suff maintain most wetland/surface waterfollows		Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions
			•	<u>'</u>	Enter Notes below (do NOT s	score each subcategory individually)
		a. Quality and quantity of habitateb. Invasive plant species.	t support outside of AA.			7 10
.500(6)(a) Location and L	andscape Support	c. Wildlife access to and from A. d. Downstream benefits provide Adverse impacts to wildlife in A.	· · · · · · · · · · · · · · · · · · ·			10 7 7
		f. Hydrologic connectivity (imp				5
Current	With Impact	g. Dependency of downstream h	nabitats on quantity or quality of discharge	es.		8
Current	with impact		s provided by uplands (upland AAs only)			N/A
	0	•	dential and development. Access road - on the connectivity, high dependency of d		_	vildlife habitat, moderate down stream
	•	a. Appropriateness of water leve				8
		b. Reliability of water level indicc. Appropriateness of soil moist				9 8
500/0\/h\\Matan 5	·	d. Flow rates /points of discharge				5
.500(6)(b) Water E (n/a for upla		Fire frequency/severity. 9				
		f. Type of vegetation. 9 g. Hydrologic stress on vegetation. 8				
		h. Use by animal s with hydrolog				6
			associated with water quality (i.e., plan	s tolerant of	f poor WQ).	8
			ter by observation (l.e., discoloration, tu		. ,	5
Current	With Impact	k. Water quality data for the type	e of community.			8
Odirent	With impact	l. Water depth, wave energy, ar				5
7			. Red mangroves and wrack line present. depth - ~3.5 ft, no currents. Salinity - 30p			w fire frequency. Dense mangroves in
	•	I. Appropriate/desirable species				9
.500(6)(c) Commur	nity Structure	II. Invasive/exotic plant species				9
		III. Regeneration/recruitment				5
X\	egetation/	IV. Age, size distribution. V. Snags, dens, cavity, etc.				7
F.	Benthic	VI. Plants' condition.				7
		VII. Land management practices	S.			5
F	Both	VIII. Topographic features (refugi				7
		IX. Submerged vegetation (only	score if present).			N/A N/A
Current	With Impact	X. Upland assessment area Additional				IVA
6	0		mangroves, mangrove fern. No invasives culverts. Possible historic use/empoundm			15'. One dead mangrove. Black sooty
		1				
Raw Score = Sum of a			Impact Acres =	0.00		
Current	With Impact					
			Functional Loss (FL) [For Impact Assessment Areas]:			
0.43	0.00	FL	. = ID x Impact Acres =	0.000		
Impact Delt	a (ID)	was assessed using	proposed to be mitigated at a mitigation g UMAM, then the credits required for m I Loss (FL). If impact mitigation is prop	itigation is		
Current - w/Impact	0.430	mitigation bank that	at was not assessed using UMAM, the assess impacts; use the assessment met	en UMAM		

Site/Project Name		Application Number	Number Assessment Area Name			or Number	
						6	
FLUCCs code	Further classifica	ation (optional)		Impact Type		Assessment Area Size	
5252		Flooded Mangrov woodland	e Forest and	7 71		Acres	
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)				
Geographic relationship to and hy-	drologic connection with	wetlands, other s	urface water, upla	nds			
Adajacent to Central mangrove	wetland and Mastic Tr	ail.					
Assessment area description							
Seasonally flooded mangrove fo	orest/ very shrubby ve	getation with a fe	w taller trees.				
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative	ve rarity in	relation to the regional	
Central mangrove wetland and	Mastic Trail		None				
Functions			Mitigation for pre	vious permit/other I	historic use	9	
Anticipated Wildlife Utilization Bas		•	•	ation by Listed Spe	•		
that are representative of the asse be found)	essment area and reasor	nably expected to	classification (E, assessment area	T, SSC), type of us	se, and inte	ensity of use of the	
Observed Evidence of Wildlife Uti	lization (List species dire	ectly observed, or	other signs such a	as tracks, droppings	s, casings,	nests, etc.):	
Duttelline agent							
Butteflies, egret							
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
JS and MM			07/25/23				

			Form 62-345.900(2	2), F.A.C. (See Sections 62-345.5	500 and .600,	, F.A.C.)	
Site/Project Na	ame:	-		Application Number:		Assessment Area	Name or Number:
mpact or Mitiga	ation:	Impact		Assessment Conducted by: JS and MM		Assessment Date	07/25/23
	Cooring Cuidon		Ontimal (40)	Madagata/7\		Minimal (4)	Not Procent (0)
The scoring of would be su	Scoring Guidan f each indicator iitable for the typ irface water asse	is based on what be of wetland or	Optimal (10) Condition is optimal and fully supports wetland/surface water functions	Moderate(7) Condition is less than optimal, but suf maintain most wetland/surface waterf	ficient to	Minimal (4) Minimal level of support of wetland/surface water functions	Not Present (0) Condition is insufficient to provide wetland/surface water functions
	illace water asse	esseu	Turictions		En		ore each subcategory individually)
			- Ovelity and avantity of habite	4 a art ataida af A A		itel Notes below (do NOT Sci	.,
			a. Quality and quantity of habitab. Invasive plant species.	t support outside of AA.			9
			c. Wildlife access to and from A	A (proximity and harriers)			8
.500(6)(a) Lo	ocation and Land	dscape Support	d. Downstream benefits provide	,			7
			·	AA from land uses outside of AA.			8
			f. Hydrologic connectivity (imp				8
]		, , ,	habitats on quantity or quality of discharg	ies		7
Current		With Impact		s provided by uplands (upland AAs only)			N/A
				mangrove and woodlands. Minimal invasion			
8		0	Notes: weltand.			·	
			a. Appropriateness of water leve	els and flows.			8
			b. Reliability of water level indic	cators.			7
			c. Appropriateness of soil moist				9
.500(6	6)(b) Water Env	ironment	d. Flow rates/points of discharge	e.			6
	(n/a for upland	s)	e. Fire frequency/severity. f. Type of vegetation.				6
			g. Hydrologic stress on vegetati	ion.			9
			h. Use by animal s with hydrolog				8
			i. Plant community composition	n associated with water quality (i.e., plan	nts tolerant of po	oor WQ).	4
	-		j. Water quality of standing wa	ter by observation (l.e., discoloration, tu	urbidity).		N/A
Current		With Impact	k. Water quality data for the type	e of community.			N/A
			I. Water depth, wave energy, ar				N/A
6			Additional Seasonally flooded Notes:	I. Mucky soil. Desirable species.			
-	-		I. Appropriate/desirable species				8
.500(6	6)(c) Community	Structure	II. Invasive/exotic plant species				8
			III. Regeneration/recruitment				4
	X Veg	getation	IV. Age, size distribution.				6
	Dam		V. Snags, dens, cavity, etc. VI. Plants' condition.				7
•		nthic	VII. Land management practices	S.			4
	Bot	h	VIII. Topographic features (refug				3
·			IX. Submerged vegetation (only				N/A
Current		With Impact	X. Upland assessment area Additional Notes: Native - black mang	grove (Avicennia germinans), mangrove f	fern (Acrostichu	um aureum), buttonwood (cor	N/A nocarpus erectus), flat-leaf flat sedge
5		0	(Cyperus planifolius	s), pine fern (Amenia adiantifolia), bermu nruby with a few tall trees. DBH - 2-3" He			
	r e = Sum of abo uplands, divide l			Impact Acres =	0.00		
Current]	With Impact					
		·		Functional Loss (FL) [For Impact Assessment Areas]:			
0.63		0.00	FL	= ID x Impact Acres =	0.000		
	Impact Delta (I	D)	was assessed usin	proposed to be mitigated at a mitigation g UMAM, then the credits required for mal Loss (FL). If impact mitigation is prop	nitigation is		
Current -	· w/Impact	0.630	mitigation bank the	at was not assessed using UMAM, the assess impacts; use the assessment me	nen UMAM		

Site/Project Name	e/Project Name Application			Assessment A	Assessment Area Name or Number	
						7
FLUCCs code	Further classifica	ation (optional)		Impact Type		Assessment Area Size
5282	Seasonally I	Flooded Mangrov woodland	ve Forest and			Acres
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	On (i.e.OFW, AP, other loc	al/state/federa	I designation of importance)
	Central Mangro	ove System				
Geographic relationship to and hy	drologic connection with	wetlands, other s	urface water, upla	nds		
Adjacent to Mastic Trail and wit	hin the Mastic Reserve	e. Ultimately conr	nects to the centi	al mangrove syste	em.	
Assessment area description						
Seasonally flooded mangrove fo	orest and woodland on	south side of ac	cess road (not p	aved).		
Significant nearby features			Uniqueness (co landscape.)	nsidering the relativ	e rarity in	relation to the regional
National Trust Land, Mastic Tra	il, Central Mangrove Sy	ystem	Habitat is locate	ed within the Mast	ic Reserv	e
Functions			Mitigation for pre	vious permit/other h	nistoric use	Э
Wildlife Habitat, Reduce Erosion Weather Events,	n, Buffer Upland Areas	from Extreme	N/A			
Anticipated Wildlife Utilization Bas that are representative of the asse be found)		•		ation by Listed Spe T, SSC), type of us a)	•	
Various Avian, Amphibian and F	Reptile Species		Grand Cayman	Parrot		
Observed Evidence of Wildlife Uti	lization (List species dire	ectly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):
Insects, birds, sapsucker (red h	ead)					
Additional relevant factors:						
National Trust Land, Mastic Tra	il and Mastic Reserve					
Assessment conducted by:			Assessment date	e(s):		
JS and MM			07/26/23			

				TIGATION ASSESSMENT WORKSH 2), F.A.C. (See Sections 62-345.500				
Site/Project Na	ame:	<u> </u>		Application Number:		Assessment Area	Name or Number:	
mpact or Mitiga	jation:	Impact		Assessment Conducted by: JS and MM		Assessment Date	07/26/23	
	Scoring Guidar	nce	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)	
would be sui	of each indicator uitable for the typ urface water asso		Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but suffice maintain most wetland/surface waterfun	cient to	linimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions	
					Ent	ter Notes below (do NOT sco	ore each subcategory individually)	
			a. Quality and quantity of habitatb. Invasive plant species.c. Wildlife access to and from AA				9 9 9	
d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of A f. Hydrologic connectivity (impediments and flow restrictions).			ed to fish and wildlife. AA from land uses outside of AA.			9 8		
Current]	With Impact	g. Dependency of downstream h	rediments and flow restrictions). The provided by uplands (upland AAs only).	j.	7 8 N/A		
8		0						
.500(6	(6)(b) Water Env (n/a for upland	vironment ds)	a. Appropriateness of water leve b. Reliability of water level indic c. Appropriateness of soil moist d. Flow rates/points of discharge e. Fire frequency/severity. f. Type of vegetation. g. Hydrologic stress on vegetati	cators. ture. e. ion.			9 8 8 2 9 9	
	1			n associated with water quality (i.e., plants ter by observation (l.e., discoloration, turb		or WQ).	N/A 8 N/A N/A	
Current 7		With Impact	l. Water depth, wave energy, an	<u> </u>	etation type. N	No standing water available t	N/A	
.500(6	6)(c) Community		I. Appropriate/desirable species II. Invasive/exotic plant species III. Regeneration/recruitment				9 9 7	
		nthic	IV. Age, size distribution.V. Snags, dens, cavity, etc.VI. Plants' condition.VII. Land management practicesVIII. Topographic features (refugi				8 3 8 9 5	
Current	<u> </u>	With Impact	IX. Submerged vegetation (only strength of the	score if present). plant (Tillandsia balbisian), Simpson's stoppe	er (Mvrcianthe	es fragrans), coconut palm (N/A N/A Cocos nucifera), lancewood (Ocotea	
8		0		angrove (Avicennia germinans), mangrove f				
	re = Sum of about			Impact Acres =	0.00			
Current]]	With Impact		Functional Loss (FL) [For Impact Assessment Areas]:				
0.77		0.00			0.000			
	Impact Delta (I	ID)	was assessed using	proposed to be mitigated at a mitigation big UMAM, then the credits required for mitigal Loss (FL). If impact mitigation is proposed	igation is			
Current -	- w/Impact	0.770	=	at was not assessed using UMAM, then assess impacts; use the assessment methor				

Site/Project Name		Application Number	ation Number Assessme			ment Area Name or Number	
					3	34	
FLUCCs code	Further classifica	tion (optional)		Impact	Туре	Assessment Area Size	
7000	Invasi	ve Species - Cas	suarina			Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	on (i.e.Ol	FW, AP, other local/state/federal	designation of importance)	
N/A	Meagre Bay	Pond			Invasive		
Geographic relationship to and hydr	ologic connection with	wetlands, other s	urface water, upla	nds			
Uplands area located on the sout	hern boundary of Mea	agre Bay Pond					
Assessment area description							
Thick vegetation dominated by in	vasive trees and shru	ıbs.					
Significant nearby features			Uniqueness (co landscape.)	nsiderii	ng the relative rarity in	relation to the regional	
South of Bodden Town Road and resdiental. North Meagre Pond	residential. East and	west -	None				
Functions			Mitigation for pre	vious p	ermit/other historic use)	
Barrier/protection/stabilization, W	/ildlife habitat		N/A				
Anticipated Wildlife Utilization Base that are representative of the asses be found)			· ·	T, SSC	y Listed Species (List s c), type of use, and inte		
Various Avian Species			N/A				
Observed Evidence of Wildlife Utiliz	ation (List species dire	ctly observed, or	other signs such a	s track	s, droppings, casings,	nests, etc.):	
None							
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
JS and MM			07/25/23				

	lame:	-		Application Number:	Assessment Area	Name or Number:	
pact or Mitig	gation:			Assessment Conducted by:	Assessment Date		
pact of white	ganori.	Impact		JS and MM	A COSCOMON DAKE	07/25/23	
	Scoring Guida	nce	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)	
he scoring o	of each indicator	r is based on what	Condition is optimal and fully	One divine in least the entire of host coefficient to	Minimal level of support of	Condition is insufficient to provide	
	uitable for the ty urface water ass	pe of wetland or sessed	supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	unicient to wetland/surface water Condition is i		
					Enter Notes below (do NOT sc	ore each subcategory individually)	
			a. Quality and quantity of habitat	support outside of AA.		6	
			b. Invasive plant species.			2	
E00(6)(a) I	costion and Lor	daaana Cunnart	c. Wildlife access to and from A	A (proximity and barriers).		7	
.500(6)(a) L	Location and Lar	ndscape Support	d. Downstream benefits provide	d to fish and wildlife.		5	
			e. Adverse impacts to wildlife in A	A from land uses outside of AA.		4	
			f. Hydrologic connectivity (impe	ediments and flow restrictions).		N/A	
			g. Dependency of downstream h	abitats on quantity or quality of discharges.		5	
Current		With Impact	h. Protection of wetland functions	provided by uplands (upland AAs only).		4	
5		0	Additional North - Meagre Bay	Pond, East and West - Upland Habitat dominated y and adjacent lands to the south flows north thro		wn Road and Residential Structures.	
			a. Appropriateness of water leve	ls and flows			
			b. Reliability of water level indic				
			c. Appropriateness of soil moist				
=00			d. Flow rates /points of discharge				
.500	(6)(b) Water En n/a for uplan)		e. Fire frequency/severity.				
	(II/a IOI upiaii	us)	f. Type of vegetation.				
			g. Hydrologic stress on vegetati	on.			
			h. Use by animals with hydrolog	ic requirements.			
				associated with water quality (i.e., plants tolerar	t of poor WQ).		
	\neg			er by observation (I.e., discoloration, turbidity).			
Current		With Impact	k. Water quality data for the type	·			
		_	I. Water depth, wave energy, an	d currents.			
_			Additional N/A Notes:				
0		0					
	<u>.</u>	1	I. Appropriate/desirable species			2	
.500((6)(c) Community	y Structure	II. Invasive/exotic plant species			2	
			III. Regeneration/recruitment			2	
			IV. Age, size distribution.			5	
	X Ve	getation					
		_	V. Snags, dens, cavity, etc.			2	
		getation	V. Snags, dens, cavity, etc. VI. Plants' condition.			2 6	
	Be	nthic	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices			2 6 3	
		nthic	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi	a, channels, hummocks).		2 6 3 3	
	Be	nthic	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only	a, channels, hummocks).		2 6 3 3 N/A	
Current	Be	nthic	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi	a, channels, hummocks).		2 6 3 3	
Current	Be	nthic	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes:	a, channels, hummocks). score if present).	ninia	2 6 3 3 N/A	
Current 4	Be	nthic	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes:	a, channels, hummocks).	ninia	2 6 3 3 N/A	
Current 4	Be	nthic th With Impact	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes:	a, channels, hummocks). score if present).	ninia	2 6 3 3 N/A	
4	Be	nthic th With Impact 0	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes:	a, channels, hummocks). score if present).	ninia	2 6 3 3 N/A	
4 Raw Sco	Be	nthic th With Impact 0 ove scores/30	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes:	a, channels, hummocks). score if present). vola, seagrape, silver palm, seaside mahoe, bauh	ninia	2 6 3 3 N/A	
4 Raw Sco	Be Bo	nthic th With Impact 0 ove scores/30	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes:	a, channels, hummocks). score if present). vola, seagrape, silver palm, seaside mahoe, bauh	ninia	2 6 3 3 N/A	
4 Raw Sco	Be Bo	with Impact O ove scores/30 by 20)	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes:	a, channels, hummocks). score if present). vola, seagrape, silver palm, seaside mahoe, bauh	ninia	2 6 3 3 N/A	
4 Raw Sco	Be Bo	nthic th With Impact 0 ove scores/30	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes:	a, channels, hummocks). score if present). vola, seagrape, silver palm, seaside mahoe, bauh Impact Acres = 0.00	ninia	2 6 3 3 N/A	
4 Raw Sco	Be Bo	with Impact O ove scores/30 by 20)	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Australian pine, sca	a, channels, hummocks). score if present). vola, seagrape, silver palm, seaside mahoe, bauh	ninia	2 6 3 3 N/A	
4 Raw Sco	Be Bo	with Impact O ove scores/30 by 20)	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Australian pine, sca	a, channels, hummocks). score if present). vola, seagrape, silver palm, seaside mahoe, bauh Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]:	ninia	2 6 3 3 N/A	
4 Raw Sco (if	Be Bo	nthic th With Impact 0 ove scores/30 by 20) With Impact	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Australian pine, sca	a, channels, hummocks). score if present). vola, seagrape, silver palm, seaside mahoe, bauh Impact Acres = 0.00 Functional Loss (FL)	ninia	2 6 3 3 N/A	
4 Raw Sco (if	Be Bo	nthic th With Impact 0 ove scores/30 by 20) With Impact	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Australian pine, sca	a, channels, hummocks). score if present). vola, seagrape, silver palm, seaside mahoe, bauh Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = 0.000		2 6 3 3 N/A	
4 Raw Sco (if	Be Bo Bo Bre = Sum of ab f uplands, divide	nthic th With Impact 0 ove scores/30 by 20) With Impact 0.00	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Australian pine, sca	a, channels, hummocks). score if present). vola, seagrape, silver palm, seaside mahoe, bauk Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = 0.000 proposed to be mitigated at a mitigation bank the	at	2 6 3 3 N/A	
A Raw Sco	Be Bo	nthic th With Impact 0 ove scores/30 by 20) With Impact 0.00	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Australian pine, sca FL NOTE: If impact is was assessed using	a, channels, hummocks). score if present). vola, seagrape, silver palm, seaside mahoe, bauk Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = 0.000 proposed to be mitigated at a mitigation bank the UMAM, then the credits required for mitigation	at is	2 6 3 3 N/A	
A Raw Sco (if Current	Be Bo Bo Bre = Sum of ab f uplands, divide	nthic th With Impact 0 ove scores/30 by 20) With Impact 0.00	V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi IX. Submerged vegetation (only X. Upland assessment area Additional Notes: Australian pine, sca FL NOTE: If impact is was assessed using equal to Functiona mitigation bank tha	a, channels, hummocks). score if present). vola, seagrape, silver palm, seaside mahoe, bauk Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = 0.000 proposed to be mitigated at a mitigation bank the	at is a M	2 6 3 3 N/A	

Site/Project Name	F	Application Number		Assessment A	rea Name	or Number
					4	15
FLUCCs code	Further classificati	ion (optional)		Impact Type		Assessment Area Size
7000 -	Invasiv	ve species - Cası	uarina			Acres
Basin/Watershed Name/Number	Affected Waterbody (Class	s)	Special Classification	On (i.e.OFW, AP, other loca	l/state/federal	designation of importance)
Geographic relationship to and hyd	rologic connection with w	vetlands, other su	rface water, uplai	nds		
Uplands						
Assessment area description						
Undeveloped lot with Australian	pine.					
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative	e rarity in	relation to the regional
South - Caribean Sea. North - Bo coastal shrub areas.	dden Town Road. Wes	t and east -	None			
Functions			Mitigation for prev	vious permit/other h	istoric use)
barrier/protection, habitat						
Anticipated Wildlife Utilization Base that are representative of the asses be found)		ably expected to		ation by Listed Spec T, SSC), type of use)		
Observed Evidence of Wildlife Utiliz	zation (List species direc	ctly observed, or o	ther signs such a	s tracks, droppings,	casings,	nests, etc.):
Chicken, butterflies						
Additional relevant factors:						
Assessment conducted by:			Assessment date	(s):		
JS and MM			07/25/23			

Site/Project Na	ame:	-		Application Number:		Assessment Area	Name or Number: 45
npact or Mitig	ation:	Impact		Assessment Conducted by: JS and MM		Assessment Date	07/25/23
	Scoring Guida	nce	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)
would be su		r is based on what pe of wetland or sessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but suf maintain most wetland/surface waterf		Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions
				L	I	Enter Notes below (do NOT sco	ore each subcategory individually)
			a. Quality and quantity of habitab. Invasive plant species.c. Wildlife access to and from A				3 1 4
.500(6)(a) Lo	ocation and Lar	ndscape Support	d. Downstream benefits provide	ed to fish and wildlife. AA from land uses outside of AA.			3 3 3
Current		With Impact	h. Protection of wetland functions	nabitats on quantity or quality of discharg s provided by uplands (upland AAs only)			2
2		0	Additional Notes:				
.500(6)(b) Water En (n/a for upland		•	ture. e. ion. gic requirements. n associated with water quality (i.e., plan		poor WQ).	
Current		With Impact	k. Water quality data for the type I. Water depth, wave energy, ar		rbidity).		
0		0	Additional N/A Notes:				
.500(6	6)(c) Communit	y Structure	Appropriate/desirable species II. Invasive/exotic plant species III. Regeneration/recruitment				1 1 2
	XVe	getation	IV. Age, size distribution.				3
	Be	nthic	V. Snags, dens, cavity, etc. VI. Plants' condition.				3
	Во	th	VII. Land management practices VIII. Topographic features (refug				2
			IX. Submerged vegetation (only				N/A
Current		With Impact	X. Upland assessment area Additional Notes:	covers colubring Avetralia nine			2
2		0	Seasiue manue, se	agrape, calubrina, Australia pine			
	re = Sum of ab uplands, divide			Impact Acres =	0.00		
Current		With Impact		Functional Loss (FL)			
0.20		0.00		[For Impact Assessment Areas]: . = ID x Impact Acres =	0.000		
	Impact Delta	(ID)	•	proposed to be mitigated at a mitigation g UMAM, then the credits required for n			
		1	equal to Functiona	g OMAM, then the credits required for hill Loss (FL). If impact mitigation is propat was not assessed using UMAM, the	osed at a		

Site/Project Name		Application Number			Assessment Area Name or Number		
					10		
FLUCCs code	Further classifica	tion (optional)		Impact	t Туре	Assessment Area Size	
7000	Invasi	ive species - Cas	suarina			Acres	
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)				
Geographic relationship to and hyd	 rologic connection with	wetlands, other s	urface water, upla	nds			
Uplands. Adjacen to beach/ Cari		,	, I				
Assessment area description							
Australian pines in an undevelop	ped lot, along the coas	st and south of B	odden Town Roa	ıd.			
Significant nearby features			Uniqueness (co landscape.)	nsideri	ing the relative rarity in	relation to the regional	
Caribbean Sea			None				
Functions			Mitigation for pre	vious p	permit/other historic use)	
barrier/protection, habitat							
Anticipated Wildlife Utilization Base that are representative of the assembe found)		•	· ·	T, SSC	y Listed Species (List s C), type of use, and inte		
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	I other signs such a	s track	ks, droppings, casings,	nests, etc.):	
None							
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
JS and MM			07/26/23				

Site/Project Na	ame:	-		Application Number:			Name or Number:	
npact or Mitig	gation:	Impact		Assessment Conducted by: JS and MM		Assessment Date	07/26/23	
	Scoring Guida	nce	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)	
would be su	of each indicator	r is based on what pe of wetland or	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but suffi maintain most wetland/surface waterfu	cient to we	Minimal level of support of wetland/surface water functions Condition is insuff wetland/surface		
					Enter N	Notes below (do NOT sc	ore each subcategory individually)	
			a. Quality and quantity of habita	t support outside of AA.			5	
			b. Invasive plant species.				2	
5 00(0)()			c. Wildlife access to and from A	A (proximity and barriers).			7	
.500(6)(a) L	ocation and Lar	ndscape Support	d. Downstream benefits provide	<u> </u>			2	
			·	AA from land uses outside of AA.			4	
			•	ediments and flow restrictions).		<u> </u>	N/A	
	7		7	nabitats on quantity or quality of discharge	S.		2	
Current		With Impact		s provided by uplands (upland AAs only).		2		
	-			elopment and Caribbean sea. Mostly invas	sive			
•			Notes:	ciopment and Ganobean Sea. Mostly inva-	51VC.			
3		0						
			a. Appropriateness of water leve					
			b. Reliability of water level indic					
			c. Appropriateness of soil moistd. Flow rates/points of discharg					
.500((6)(b) Water En		e. Fire frequency/severity.	е.				
	(n/a for uplan	ds)	f. Type of vegetation.					
			g. Hydrologic stress on vegetat	ion.				
			h. Use by animal s with hydrolog					
			i. Plant community composition	n associated with water quality (i.e., plants	s tolerant of poor V	VQ).		
	_		j. Water quality of standing wa	ter by observation (I.e., discoloration, turn	oidity).			
Current		With Impact	k. Water quality data for the type	e of community.				
Current		with impact	l. Water depth, wave energy, ar	nd currents.				
			Additional N/A Notes:					
0		0	Notes.					
			I. Appropriate/desirable species				2	
.500((6)(c) Communit	y Structure	II. Invasive/exotic plant species				1	
			III. Regeneration/recruitment				2	
	X Ve	getation	IV. Age, size distribution.				6	
	D.	- d-1-	V. Snags, dens, cavity, etc.				<u> </u>	
	Be	nthic	VI. Plants' condition. VII. Land management practices	<u> </u>			4	
	Во	th	VIII. Topographic features (refug				1	
			IX. Submerged vegetation (only	<u> </u>			 N/A	
	7		X. Upland assessment area				4	
Current		With Impact	Additional					
	1		Notes: Australian pine, sca	avola, seagrape, silver palm, seaside maho	oe, bauhinia			
3		0						
_								
			<u> </u>	linnad Assas	0.00			
	re = Sum of ab			Impact Acres =	0.00			
(if	uplands, divide	by 20)						
	7							
Current		With Impact		Former 11 (Fr.)				
	1			Functional Loss (FL) [For Impact Assessment Areas]:				
0.00		0.00		[. 5past / 100003111011t / 11643].				
		0.00	FL	. = ID x Impact Acres =	0.000			
0.30		<u> </u>		L				
0.30			1					
0.30			· · - · · ·					
0.30	Impact Delta	(ID)		proposed to be mitigated at a mitigation a UMAM, then the credits required for mit				
0.30	Impact Delta	(ID)	was assessed usin equal to Functiona	g UMAM, then the credits required for mill Loss (FL). If impact mitigation is propo	igation is esed at a			
	Impact Delta	(ID) 0.300	was assessed usin equal to Functiona mitigation bank th	g UMAM, then the credits required for mit	igation is sed at a n UMAM			

Site/Project Name		Application Number		Assessment Ar	Assessment Area Name or Number		
					2	26	
FLUCCs code	Further classificat	tion (optional)		Impact Type		Assessment Area Size	
18311	Man-r	modified without	trees			Acres	
Basin/Watershed Name/Number	Affected Waterbody (Class	s)	Special Classification	On (i.e.OFW, AP, other local	/state/federa	designation of importance)	
Geographic relationship to and hydr	ologic connection with	wetlands, other su	ırface water, uplaı	nds			
Assessment area description							
Raised access road adjacent to a	ccess site.						
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative	rarity in	relation to the regional	
Development to east, Bodden To strip to the north.	wn Road to the south	and drag racing					
Functions			Mitigation for prev	vious permit/other hi	storic use	9	
barrier/protection, habitat							
Anticipated Wildlife Utilization Based that are representative of the asses be found)		ably expected to		ation by Listed Speci T, SSC), type of use)			
Observed Evidence of Wildlife Utiliz	ration (List species direc	othy observed or o	other signs such a	e tracke droppinge	casings	nocte etc.)	
Observed Evidence of Wildlife Office	ation (List species direc	city observed, or c	oniei signs such a	is tracks, droppings,	casings,	riests, etc.).	
Butterflies							
Additional relevant factors:							
Trash/litter - moderate							
Assessment conducted by:			Assessment date	e(s):			
JS and MM			07/25/23				

te/Project Na	ame:			Application Number:		Assessment Area	a Name or Number:
		-		-		A	26
pact or Mitig	ation:	Impact		Assessment Conducted by: JS and MI	М	Assessment Date	or/25/23
	Scoring Guida	nce	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)
		r is based on what	Condition is optimal and fully			Minimal level of support of	
would be su		pe of wetland or	supports wetland/surface water functions	Condition is less than optimal, but s maintain most wetland/surface water		wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions
						Enter Notes below (do NOT sc	ore each subcategory individually)
,			a. Quality and quantity of habitat	t support outside of AA.			3
			b. Invasive plant species.				3
500(6)(a) Lo	ocation and La	ndscape Support	c. Wildlife access to and from A	A (proximity and barriers).			8
000(0)(a) L	Joanon and Lai	idocape Capport	d. Downstream benefits provide	d to fish and wildlife.			1
			e. Adverse impacts to wildlife in /	AA from land uses outside of AA.			5
	_		f. Hydrologic connectivity (imp	ediments and flow restrictions).			N/A
O		VAC:41- Incompany	g. Dependency of downstream h	nabitats on quantity or quality of discha	rges.		N/A
Current		With Impact	h. Protection of wetland functions	s provided by uplands (upland AAs onl	y).		N/A
			Additional				
4		0	Notes:				
•							
			a. Appropriateness of water leve	le and flows			N/A
			b. Reliability of water level indic				N/A
			c. Appropriateness of soil moist				8
500/	C\/b\ \\/oto=	. i.u.a. u.a. a. u.t	d. Flow rates/points of discharge				N/A
.500(6)(b) Water En (n/a for uplan		e. Fire frequency/severity.				1
	(iiia ioi apiaii	4 0)	f. Type of vegetation.				8
			g. Hydrologic stress on vegetati				N/A
			h. Use by animal s with hydrolog				6
				associated with water quality (i.e., pla		of poor WQ).	8
	1			ter by observation (l.e., discoloration,	turbidity).		N/A
Current		With Impact	k. Water quality data for the type	·			N/A
			l. Water depth, wave energy, an	nd currents.			N/A
			Additional Notes:				
6		0					
500/0	3)/a) Oa:	Otmoreture.	I. Appropriate/desirable species				8
.500(6	6)(c) Communit	y Structure	II. Invasive/exotic plant species				4
	V V-		III. Regeneration/recruitment				2
	XVe	getation	IV. Age, size distribution. V. Snags, dens, cavity, etc.				7
	Re	nthic	VI. Plants' condition.				7
		THE HO	VII. Land management practices).			7
	Во	th	VIII. Topographic features (refugi				1
			IX. Submerged vegetation (only				N/A
		1000	X. Upland assessment area				3
Current		With Impact	Additional				
_	1	_	Notes: Bursera simaruba, I	Delonix regia, Ficus benjamina, Psycho	tria nervosa.	Invasives locate d on fringe.	
5		0					
		•					
Raw Scor	re = Sum of ab	ove scores/30		Impact Acres =	0.00		
(if	uplands, divide	by 20)					
	•		[
_		With Impact	l —				
Current			 	Functional Loss (FL)			
Current				[For Impact Assessment Areas]:			
Current		0.00	FL	= ID x Impact Acres =	0.000		
0.50			-				
			!				
0.50	Impact Dollar	(ID)	· ·	proposed to be mitigated at a mitigation			
0.50	Impact Delta	(ID)	was assessed using	g UMAM, then the credits required for	mitigation is		
0.50	Impact Delta	(ID)	was assessed using equal to Functiona		mitigation is oposed at a		

Site/Project Name		Application Number		Assessment Area Name or Number		
					2	22
FLUCCs code	Further classifica	tion (optional)		Impact Ty	уре	Assessment Area Size
18311	Man-	modified withou	t trees			Acres
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	on (i.e.OFW	/, AP, other local/state/federal	designation of importance)
Geographic relationship to and hyd	rologic connection with	wetlands, other s	I urface water, upla	nds		
Assessment area description						
Man-modified without trees.						
Significant nearby features			Uniqueness (co landscape.)	nsidering	the relative rarity in	relation to the regional
Surrounded by developed area w	rith trees.		None			
Functions			Mitigation for previous permit/other historic use			
Anticipated Wildlife Utilization Base that are representative of the asses be found)				T, SSC),	isted Species (List s type of use, and inte	
Observed Evidence of Wildlife Utiliz	zation (List species dire	ectly observed, or	other signs such a	ıs tracks,	droppings, casings,	nests, etc.):
Butterflies						
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
JS and MM			07/25/23			

	ame:			Application Number:		Assessment Area	Name or Number:
		-		-			22
pact or Mitigation: Impact				Assessment Conducted by: JS and MM		Assessment Date	07/25/23
	Cooring Cuidos		Optimal (40)	Madarata/7\		Minimal (4)	Not Propert (0)
	Scoring Guidar	ice	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)
would be su		is based on what be of wetland or essed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but suff maintain most wetland/surface waterful		Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions
						Enter Notes below (do NOT sc	ore each subcategory individually)
			a. Quality and quantity of habitat	support outside of AA.			3
			b. Invasive plant species.				1
F00(0)(-) I		da a a a a a Command	c. Wildlife access to and from A	A (proximity and barriers).			6
500(6)(a) Lo	ocation and Lan	dscape Support	d. Downstream benefits provide	d to fish and wildlife.			1
			· · · · · · · · · · · · · · · · · · ·	AA from land uses outside of AA.			2
			f. Hydrologic connectivity (imp	ediments and flow restrictions).			3
			g. Dependency of downstream h	abitats on quantity or quality of discharge	es.		0
Current		With Impact	· · · · · · · · · · · · · · · · · · ·	s provided by uplands (upland AAs only).			1
			Additional	provided by apianas (apiana 77 to only).	•		
•			Notes:				
2		0					
			a. Appropriateness of water leve				
			b. Reliability of water level indic				
			c. Appropriateness of soil moist				
.500(6)(b) Water Env		d. Flow rates/points of discharge	9.			
	(n/a for upland	ds)	e. Fire frequency/severity. f. Type of vegetation.				
			g. Hydrologic stress on vegetati	on			
			h. Use by animal s with hydrolog				
			, , ,	associated with water quality (i.e., plant	ts tolerant of	poor WQ).	
				er by observation (I.e., discoloration, tu		7	
	7		k. Water quality data for the type				
Current		With Impact	I. Water depth, wave energy, an				
	1		Additional N/A				
0		0	Notes:				
-							
	!		I. Appropriate/desirable species				1
500(6	6)(c) Community	/ Structure					1
.0000	<i>5</i>)(<i>6</i>) <i>6</i> 6111111111111	Guadiare	II. Invasive/exotic plant species III. Regeneration/recruitment				
	X Ve	getation	IV. Age, size distribution.				1
		gotation	V. Snags, dens, cavity, etc.				 1
	Bei	nthic	VI. Plants' condition.				6
			VII. Land management practices				3
	Bot	th	VIII. Topographic features (refugi	a, channels, hummocks).			1
	_ 		IX. Submerged vegetation (only	score if present).			N/A
		\A/ith loon = -4	X. Upland assessment area				2
Current		With Impact	Additional Notes:				
Current	_		Euphoribia sp. (Cha	maesyce/ Euphoribia bruntii), goose gras	ss (Eleusine	indica), guinea grass (Panicum	maximum/ Megathyrsus maximus)
	1	^					
Current 2		0					
		0		1			
2		<u> </u>		Impact Acros -	0.00		
2 Raw Scor	re = Sum of abo	ove scores/30		Impact Acres =	0.00		
2 Raw Scor	re = Sum of about	ove scores/30		Impact Acres =	0.00		
2 Raw Scor		ove scores/30		Impact Acres =	0.00		
2 Raw Scor		ove scores/30			0.00		
2 Raw Scor (if		ove scores/30 by 20)		Functional Loss (FL)	0.00		
2 Raw Scor (if Current		ove scores/30 by 20) With Impact			0.00		
2 Raw Scor (if		ove scores/30 by 20)		Functional Loss (FL)	0.00		
2 Raw Scor (if Current		ove scores/30 by 20) With Impact		Functional Loss (FL) For Impact Assessment Areas]:			
2 Raw Scor (if Current	uplands, divide	with Impact 0.00	NOTE: If impact is	Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = proposed to be mitigated at a mitigation	0.000 bank that		
2 Raw Scor (if Current		with Impact 0.00	NOTE: If impact is was assessed using	Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = proposed to be mitigated at a mitigation g UMAM, then the credits required for m	0.000 bank that aitigation is		
2 Raw Scor (if Current	uplands, divide	with Impact 0.00	NOTE: If impact is was assessed using equal to Functiona	Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = proposed to be mitigated at a mitigation	0.000 bank that sitigation is bosed at a		

Site/Project Name	A	Application Numbe			ber Assessment Area Name or Nu	
					2	23
FLUCCs code	Further classification	on (optional)		Impact Type	;	Assessment Area Size
18311	Man-m	odified without	trees			Acres
Basin/Watershed Name/Number	Affected Waterbody (Class))	Special Classificati	On (i.e.OFW, Al	P, other local/state/federal	designation of importance)
Geographic relationship to and hyd	rologic connection with w	vetlands, other su	urface water, upla	nds		
			. ,			
Assessment area description						
Man-modified without trees.						
Significant nearby features			Uniqueness (co landscape.)	nsidering th	e relative rarity in	relation to the regional
South of road. Surrounded by ag	gricultural in all direction	ns	None			
Functions			Mitigation for pre	vious permi	t/other historic use	9
Anticipated Wildlife Utilization Base that are representative of the assesbe found)			•	T, SSC), ty _l	•	species, their legal ensity of use of the
Observed Evidence of Wildlife Utili	zation (List species direct	tly observed, or o	other signs such a	s tracks, dr	oppings, casings,	nests, etc.):
Dragonfly, birds						
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
JS and MM 07/25/23						

Site/Project Na	ame:	-		Application Number:		Assessment Area	Name or Number:		
npact or Mitig	gation:	Impact		Assessment Conducted by: JS and MN	1	Assessment Date	Assessment Date: 07/25/23		
	Scoring Guida	nce	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)		
would be su	of each indicato	r is based on what pe of wetland or	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but su maintain most wetland/surface water		Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions		
					<u> </u>	Enter Notes below (do NOT so	ore each subcategory individually)		
			a. Quality and quantity of habita	t support outside of AA.			5		
			b. Invasive plant species.				6		
500(6)(a) I	agation and Lay	daaana Support	c. Wildlife access to and from A	A (proximity and barriers).			3		
.500(6)(a) L	.ocalion and Lai	ndscape Support	d. Downstream benefits provide	ed to fish and wildlife.			N/A		
			e. Adverse impacts to wildlife in A	AA from land uses outside of AA.			5		
			f. Hydrologic connectivity (imp	ediments and flow restrictions).			N/A		
			g. Dependency of downstream h	nabitats on quantity or quality of dischar	ges.		N/A		
Current		With Impact	h. Protection of wetland functions	s provided by uplands (upland AAs only	·).		0		
	1		Additional	<i>,</i>					
4		0	Notes:						
		_							
	1	1	a. Appropriateness of water leve	els and flows.					
			b. Reliability of water level indic						
			c. Appropriateness of soil moist						
500/	(6)(b) Water En	vironment	d. Flow rates/points of discharge	e.					
.500((n/a for uplan		e. Fire frequency/severity.						
		,	f. Type of vegetation.						
			g. Hydrologic stress on vegetati						
			h. Use by animals with hydrolog i Plant community composition	or requirements. nassociated with water quality (i.e., pla	nts tolerant o	of poor WO)			
				ter by observation (I.e., discoloration, t					
• .]		k. Water quality data for the type	e of community.	_				
Current		With Impact	l. Water depth, wave energy, ar	nd currents.					
			Additional N/A						
0		0	Notes:						
			I. Appropriate/desirable species				5		
.500(6)(c) Communit	y Structure	II. Invasive/exotic plant species				5		
			III. Regeneration/recruitment				4		
	X Ve	getation	IV. Age, size distribution.				5		
	Ro	nthic	V. Snags, dens, cavity, etc. VI. Plants' condition.				7		
			VII. Land management practices	<u> </u>			3		
	Во	th	VIII. Topographic features (refugi				2		
			IX. Submerged vegetation (only				N/A		
C		\A/:4b !:======	X. Upland assessment area				5		
Current		With Impact	Additional Notes: Red mombin (Spon	dias purpurea), Cocnut palm (Cocos nu	ciferal hono	a (Musa naradisana) tan tan (La	urgana leucochhala), wooning fig (F		
Л	1	0	benjamina)	naido parpareaz, oddina paini (60005 NU	onoraj, balla	a (iviusa paradisaca), tari-tari (LE	.aoacha ieucocphaiaj, weeping ng (F		
4									
			· ·						
	-	-		Impact Acres =	0.00				
	re = Sum of ab uplands, divide			•	2.00				
(11	aivide	-, ,							
	1	10000							
Current		With Impact		Functional Loss (FL)					
				[For Impact Assessment Areas]:					
0.40		0.00							
			FL	. = ID x Impact Acres =	0.000				
	1	1							
			NOTE: If impact is	proposed to be mitigated at a mitigatio	n bank that				
	Impact Delta	(ID)		g UMAM, then the credits required for i					
		` '		•	•				
		` <i>'</i>	equal to Functiona	I Loss (FL). If impact mitigation is pro	posed at a				
Current -	- w/Impact	0.400	equal to Functiona mitigation bank tha	•	posed at a hen UMAM				

Site/Project Name	,	Application Number		Assessment Area Nan	ssment Area Name or Number		
					2		
FLUCCs code	Further classificat	tion (optional)		Impact Type	Assessment Area Size		
1831	Man-m	nodified Without	Trees	Acres			
Basin/Watershed Name/Number	Affected Waterbody (Class	s)	Special Classificati	On (i.e.OFW, AP, other local/state/fed	eral designation of importance)		
N/A	N/A			N/A			
Geographic relationship to and hyd	rologic connection with v	wetlands, other su	urface water, upla	nds			
N/A							
Assessment area description							
Upland grassland that has been	cleared and is currently	y used for livest	ock/cattle.				
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity	in relation to the regional		
N/A			N/A				
Functions			Mitigation for previous permit/other historic use				
Food source and pastureland fo	r livestock		N/A				
Anticipated Wildlife Utilization Base that are representative of the assesbe found)				ation by Listed Species (Lis T, SSC), type of use, and i			
Observed Evidence of Wildlife Utili	zation (List species direc	ctly observed, or o	other signs such a	s tracks, droppings, casinç	gs, nests, etc.):		
Butterfly,							
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
RM & TS		07/25/23					

				TIGATION ASSESSMENT WORKSHI 2), F.A.C. (See Sections 62-345.500					
Site/Project Na	ame:			Application Number:		Assessment Area	a Name or Number:		
Impact or Mitiga	ation:	Impact		Assessment Conducted by: RM & TS		Assessment Date: 07/25/23			
	Scoring Guidan	nce	Optimal (10)	Moderate(7)	Min	nimal (4)	Not Present (0)		
would be sui	of each indicator uitable for the typ urface water asso		Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficie maintain most wetland/surface waterfunct	ent to wetland/	vel of support of /surface water unctions	Condition is insufficient to provide wetland/surface water functions		
					Enter Notes	below (do NOT sc	ore each subcategory individually)		
.500(6)(a) Lc	ocation and Lan		a. Quality and quantity of habitate b. Invasive plant species. c. Wildlife access to and from A.				2 5 2		
	d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. f. Hydrologic connectivity (impediments and flow restrictions).					3			
Current		With Impact		habitats on quantity or quality of discharges. s provided by uplands (upland AAs only).			2		
3		0		g and Shamrock Road adjacent to AA.					
.500(6	6)(b) Water Env (n/a for upland	rironment ds)	j. Water quality of standing wa	ion. gic requirements. n associated with water quality (i.e., plants to ter by observation (l.e., discoloration, turbid					
Current		With Impact	k. Water quality data for the type I. Water depth, wave energy, an Additional Notes:	•					
.500(6		getation nthic h	I. Appropriate/desirable species II. Invasive/exotic plant species III. Regeneration/recruitment IV. Age, size distribution. V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugi	ia, channels, hummocks).			5 5 5 4 3 5 3 3		
Current		With Impact	IX. Submerged vegetation (only X. Upland assessment area Additional Notes:				4		
4		0	Frequently grazed t	by cattle.					
	re = Sum of about			Impact Acres = 0	0.00				
Current		With Impact		Functional Loss (FL) [For Impact Assessment Areas]:					
0.35		0.00		· · · · · · · · · · · · · · · · · · ·	.000				
	Impact Delta (I	ID)	was assessed using	proposed to be mitigated at a mitigation ban ag UMAM, then the credits required for mitigatal Loss (FL). If impact mitigation is propose	ation is				
Current -	- w/Impact	0.350	mitigation bank tha	at was not assessed using UMAM, then assess impacts; use the assessment method	UMAM				

Site/Project Name		Application Number		Assessm	Assessment Area Name or Number			
					1	2		
FLUCCs code	Further classifica	ation (optional)		Impact Type		Assessment Area Size		
3112	Ponds, I	Pools, Mangrove	e Lagoons Direct Impact		Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	on (i.e.OFW, AP, ot	her local/state/federal	designation of importance)		
N/A	N/A				N/A			
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds				
Located on the edge of an active	mining operation. Ap	art of the Centra	l Mangrove Wetla	and				
Assessment area description								
Small open water area located o	n the northwestern bo	oundary of an act	tive mine.					
Significant nearby features			Uniqueness (co landscape.)	nsidering the r	elative rarity in	relation to the regional		
Active mine located to the south			Central Mangrove Wetland					
Functions			Mitigation for previous permit/other historic use					
			N/A					
Anticipated Wildlife Utilization Base that are representative of the asses be found)		•	•	T, SSC), type		species, their legal ensity of use of the		
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	other signs such a	s tracks, dropp	pings, casings,	nests, etc.):		
Additional relevant factors:								
Assessment conducted by:			Assessment date	e(s):				
RM & TS			07/26/23					

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: 12 Impact or Mitigation: Assessment Conducted by: Assessment Date: RM & TS 07/26/23 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) Minimal level of support of The scoring of each indicator is based on what Condition is optimal and fully Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 3 a. Quality and quantity of habitat support outside of AA. 8 b. Invasive plant species. 6 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support d. Downstream benefits provided to fish and wildlife. 5 e. Adverse impacts to wildlife in AA from land uses outside of AA. 3 5 Hydrologic connectivity (impediments and flow restrictions). g. Dependency of downstream habitats on quantity or quality of discharges. 7 With Impact Current Protection of wetland functions provided by uplands (upland AAs only). Additional Active mine located to the South. Within the Central Mangrove Wetland. Buffers/protects the downstream Central Mangrove Wetland from Notes: mining activities. 5 0 a. Appropriateness of water levels and flows. 7 7 Reliability of water level indicators. Appropriateness of soil moisture. 8 5 flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. 8 (n/a for uplands) Type of vegetation. 8 . Hydrologic stress on vegetation. 7 Use by animals with hydrologic requirements. 7 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 7 Water quality of standing water by observation (I.e., discoloration, turbidity). 5 5 . Water quality data for the type of community. With Impact Current 6 Water depth, wave energy, and currents. Additional Salinity 35 PPT Notes: 6 0 7 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. VI. Plants' condition. 3 Benthic VII. Land management practices. 3 VIII. Topographic features (refugia, channels, hummocks). Both Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: Vegetation appears to be stressed from nearby mining activities. Mangrove canopy is thin, recruitment and regeneration is low. Roots and trunks of plants are smothered with sediment. 0 5 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) With Impact Current **Functional Loss (FL)** [For Impact Assessment Areas]: 0.53 0.00 FL = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.530 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name Application N			r	Assessment Are	Assessment Area Name or Number				
					1	16			
FLUCCs code	Further classifica	tion (optional)		Impact Type		Assessment Area Size			
1831	Pastu	re		Direct Impac	ct	Acres			
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	on (i.e.OFW, AP, other local/	state/federal	designation of importance)			
	N/A			N/A					
Geographic relationship to and hydr	ologic connection with	wetlands, other s	urface water, uplar	nds					
Assessment area description									
Historically classified as man-mo	dified with trees, area	has been cleare	ed and is now ma	n-modified without	trees. L	anduse is primarily			
agriculture/livestock.	,								
Significant nearby features			Uniqueness (collandscape.)	nsidering the relative	rarity in	relation to the regional			
Surrounded by additional man-m without trees areas. Agriculture a		I man-modified	N/A						
Functions			Mitigation for prev	vious permit/other his	storic use	9			
			N/A						
Anticipated Wildlife Utilization Base that are representative of the asses be found)			•	ation by Listed Speci T, SSC), type of use)	•				
Observed Evidence of Wildlife Utiliz	zation (List species dire	ctly observed, or	l other signs such a	s tracks, droppings,	casings,	nests, etc.):			
lbis, Smooth Bill, Yellow Warbler	, Grackle, Cattle Eegro	et, Night Heron,	Mocking Bird, Bla	ack neck stilt, Gree	n heron,	Cattle			
Additional relevant factors:									
Cattle fencing and pens present									
Assessment conducted by:			Assessment date	(s):					
RM & TS	· · · · · · · · · · · · · · · · · · ·				07/28/23				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: 16 Impact or Mitigation: Assessment Conducted by: Assessment Date: RM & TS 07/28/23 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide supports wetland/surface water would be suitable for the type of wetland or wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 7 a. Quality and quantity of habitat support outside of AA. b. Invasive plant species. 1 8 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support d. Downstream benefits provided to fish and wildlife. 5 e. Adverse impacts to wildlife in AA from land uses outside of AA. 4 Hydrologic connectivity (impediments and flow restrictions). 3 p. Dependency of downstream habitats on quantity or quality of discharges. 4 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). 5 Additional Primary use is for agriculture/cattle. Neighboring land is similar use. 5 0 a. Appropriateness of water levels and flows. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. Use by animals with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Uplands Notes: 0 0 6 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species II. Regeneration/recruitment 3 IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 2 VI. Plants' condition. 7 Benthic VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area With Impact Current Additional Notes: Appears to be recently cleared. 0 4 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.45 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.450 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name	Application Numbe	umber Assessment Area Name or Number			or Number			
					1	8		
FLUCCs code	Further classificat	tion (optional)		Impact Type		Assessment Area Size		
3112	Ponds, Pod	ols and Mangrov	e Lagoons	Direct Im	pact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Class	s)	Special Classification	On (i.e.OFW, AP, other	local/state/federal	designation of importance)		
N/A	N/A			N	I/A			
Geographic relationship to and hydr	ologic connection with v	wetlands, other s	urface water, uplar	nds				
Isolated Pond								
Assessment area description								
Small isolated pond. Likely used	as a cattle pond or bo	rrow pit.						
Significant nearby features			Uniqueness (collandscape.)	nsidering the rela	tive rarity in	relation to the regional		
Surrounded by man-modified wit trees habitat. Used as agriculture		fied without	N/A					
Functions			Mitigation for previous permit/other historic use					
Water source for livestock			N/A					
Anticipated Wildlife Utilization Based that are representative of the asses be found)		•	·	T, SSC), type of	•	species, their legal ensity of use of the		
Observed Evidence of Wildlife Utiliz	ation (List species direc	ctly observed, or	other signs such a	s tracks, droppin	gs, casings,	nests, etc.):		
Minnow, Grackle, Green Heron, D	ragonfly, Butterfly, Ca	attle.						
Additional relevant factors:								
Assessment conducted by:			Assessment date	(s):				
RM & TS			07/26/23					

					FIGATION ASSESSMENT W 2), F.A.C. (See Sections 62-3	_		_		
Site/Project Na	ame:	<u>-</u>			Application Number:			Assessment Area	Name or Number:	
mpact or Mitiga	ation:	Impact			Assessment Conducted by:	TS		Assessment Date	: 07/26/23	
	Scoring Guidar	nce	Optimal (10	0)	Moderate(7)	nimal (4)	Not Present (0)			
would be su						Condition is insufficient to provide wetland/surface water functions				
			•				Enter Notes	s below (do NOT sco	ore each subcategory individually)	
			b. Invasive plant spe	ecies.	t support outside of AA.				8	
.500(6)(a) Lo	c. Wildlife access to and from AA (proximity and barriers). d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. f. Hydrologic connectivity (impediments and flow restrictions).					5 6				
Current		With Impact	g. Dependency of do	ownstream h	nabitats on quantity or quality of dis s provided by uplands (upland AAs		3			
6		0	Additional Isolated Notes:	I cattle pond	d or borrow pit located in an agricul	tural area/cattle p	asture.			
.500(6	6)(b) Water Env (n/a for upland	ironment	a. Appropriateness ofb. Reliability of waterc. Appropriateness ofd. Flow rates/pointse. Fire frequency/sex	r level indic of soil moist of discharge verity.	cators. ture.				8 8 8 7 8	
				on vegetativith hydrologoomposition			of poor WQ).		6 7 6 7	
Current		With Impact	k. Water quality data		<u>·</u>				6	
7		0	Additional Minnows Notes:	s Present, S	Salinity 8 PPT, Low Turbidity					
.500(6	S)(c) Community	Structure	I. Appropriate/desirab II. Invasive/exotic plan III. Regeneration/recre	nt species					7 8 6	
	X Veç	getation	IV. Age, size distribut	ion.					6	
	Ber	nthic	V. Snags, dens, caviVI. Plants' condition.						7	
•			VII. Land manageme						3	
	Bot	n	IX. Submerged vege	tation (only	ia, channels, hummocks). score if present).				5	
Current		With Impact	X. Upland assessmer Additional Notes:	nt area					5	
6		0								
	re = Sum of abouplands, divide				Impact Acres =	0.00				
Current		With Impact			Functional Loss (FL)					
0.63		0.00	[For Impact Assessment Areas]:							
			<u> </u>		= ID x Impact Acres =	0.000				
	Impact Delta (D)	was ass equal to	sessed using Functiona	proposed to be mitigated at a mit g UMAM, then the credits required I Loss (FL). If impact mitigation i	I for mitigation is proposed at a				
Current -	w/Impact	0.630	cannot b		at was not assessed using UMA assess impacts; use the assessme					

Site/Project Name Application Number Assessment Area Name or Number			or Number			
					19	
FLUCCs code	Further classifica	tion (optional)		Impact Type	Assessment Area Size	
3112	Ponds, F	Pools, Mangrove	Lagoons	Direct Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	On (i.e.OFW, AP, other local/state/federa	al designation of importance)	
N/A	N/A			N/A		
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds		
AA within Central Mangrove Wet	land					
Assessment area description						
Mangrove lagoon located within	the Central Mangrove	Wetland				
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity ir	relation to the regional	
Access road. Area historically us	sed for mosquitto con	trol?	Central Mangrov	ve Wetland		
Functions			Mitigation for prev	vious permit/other historic us	е	
			N/A			
Anticipated Wildlife Utilization Base that are representative of the assesbe found)		•	1	ation by Listed Species (List T, SSC), type of use, and int)		
Observed Evidence of Wildlife Utilia	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):	
Fish, Butterfly, Grackle, Galehen	, Little Blue Heron					
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
RM & TS			07/26/23			

				TIGATION ASSESSMENT WORK 2), F.A.C. (See Sections 62-345.				
Site/Project Na	ame:	-		Application Number:	Application Number: - Assessment Area Name or Number: 19			
mpact or Mitig	ation:	Impact		Assessment Conducted by: RM & TS				
	Scoring Guidar	nce	Optimal (10)	Moderate(7)	Moderate(7) Minimal (4)			Not Present (0)
would be su	f each indicator itable for the typ rface water ass		Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but su maintain most wetland/surface wate		Minimal level of wetland/surface function	ce water	Condition is insufficient to provide wetland/surface water functions
					<u> </u>	Enter Notes below	v (do NOT sco	ore each subcategory individually)
			a. Quality and quantity of habitab. Invasive plant species.	at support outside of AA.				6 9
c. Wildlife access to and from A. d. Downstream benefits provide e. Adverse impacts to wildlife in A. f. Hydrologic connectivity (imperiors)			ed to fish and wildlife. AA from land uses outside of AA.				7 8 7 6	
Current		With Impact	g. Dependency of downstream In. Protection of wetland function	habitats on quantity or quality of dischars provided by uplands (upland AAs only	-			8
7		0	Additional Notes:					
a. Appropriateness of water level b. Reliability of water level indic c. Appropriateness of soil moist d. Flow rates/points of discharg e. Fire frequency/severity. f. Type of vegetation. g. Hydrologic stress on vegetat				ture. ge. tion.				6 8 7 4 8 9 8
]			n associated with water quality (i.e., planter by observation (l.e., discoloration,		f poor WQ).		8 6 7
Current 7		With Impact	I. Water depth, wave energy, and Additional Salinity 22 PPT Notes:					7
.500(6	6)(c) Community	Structure	I. Appropriate/desirable species II. Invasive/exotic plant species III. Regeneration/recruitment					8 8 5
	X Veg	getation	IV. Age, size distribution. V. Snags, dens, cavity, etc.					5
	Ber	nthic	VI. Plants' condition.					6
	Bot	h	VII. Land management practices VIII. Topographic features (refug IX. Submerged vegetation (only	jia, channels, hummocks).				5 7
Current			X. Upland assessment area Additional Notes: Sooty mold presen	t on the majority of mangrove leaves.				
6		0						
	re = Sum of about			Impact Acres =	0.00			
Current		With Impact		Functional Loss (FL) [For Impact Assessment Areas]:				
0.67		0.00		= ID x Impact Acres =	0.000			
	Impact Delta (ID)	was assessed usin	proposed to be mitigated at a mitigation of the proposed to be mitigated at a mitigation of the proposed to be mitigated at a mitigation of the proposed to be mitigated at a mitigation of the proposed to be mitigated at a mitigation of the proposed to be mitigated at a mitigation of the proposed to be mitigated at a mitigation of the proposed to be mitigated at a mitigation of the proposed to be mitigated at a mitigation of the proposed to be mitigated at a mitigation of the proposed to be propos	mitigation is			
Current -	w/Impact	0.670	mitigation bank th	at was not assessed using UMAM, tassess impacts; use the assessment m	hen UMAM			

Site/Project Name Application			mber Assessment Area Name or Number			
					20	
FLUCCs code	Further classifica	tion (optional)		Impact Type	Assessment Area Size	
5250	Seasonally F	Flooded Mangrov Woodland	e Forest and	Direct Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	On (i.e.OFW, AP, other local/state/federa	al designation of importance)	
N/A	N/A			N/A		
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds		
AA within Central Mangrove Wet	land					
Assessment area description						
Mangrove forest located within t	he Central Mangrove \	Wetland				
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity in	relation to the regional	
Access road. Area historically us	trol?	Central Mangrove Wetland				
Functions			Mitigation for pre	vious permit/other historic us	e	
			N/A			
Anticipated Wildlife Utilization Base that are representative of the asses be found)		•	· ·	ation by Listed Species (List T, SSC), type of use, and int I)		
Observed Evidence of Wildlife Utiliz	zation (List species dire	ctly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):	
Butterfly, Grackle, Black Racer, (Green Heron					
Additional relevant factors:						
Mosquitto control area?						
Assessment conducted by:			Assessment date	e(s):		
RM & TS			07/26/23			

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: 20 Impact or Mitigation: Assessment Conducted by: Assessment Date: RM & TS 07/26/23 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 8 a. Quality and quantity of habitat support outside of AA. 8 b. Invasive plant species. 9 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support d. Downstream benefits provided to fish and wildlife. 8 e. Adverse impacts to wildlife in AA from land uses outside of AA. 3 7 Hydrologic connectivity (impediments and flow restrictions). p. Dependency of downstream habitats on quantity or quality of discharges. 7 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). Additional AA within the Central Mangrove Wetland Notes: 7 0 a. Appropriateness of water levels and flows. 7 8 Reliability of water level indicators. c. Appropriateness of soil moisture. 8 5 flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. 8 (n/a for uplands) Type of vegetation. 9 . Hydrologic stress on vegetation. 8 Use by animals with hydrologic requirements. 8 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 8 Water quality of standing water by observation (I.e., discoloration, turbidity). 5 7 . Water quality data for the type of community. With Impact Current 5 Water depth, wave energy, and currents. Additional Salinity 40 PPT (North), 33 PPT (South), Notes: 7 0 8 . Appropriate/desirable species .500(6)(c) Community Structure . Invasive/exotic plant species 8 II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. VI. Plants' condition. 6 Benthic VII. Land management practices. 5 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area With Impact Current Additional Notes: Sooty mold present on the majority of mangrove leaves. Mangroves in this area are not as mature as other areas. 7 0 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.70 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.700 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name			Application Numbe	r	As	ssessment Area Name	or Number	
						2	27	
FLUCCs code		Further classifica	tion (optional)		Impact T	уре	Assessment Area Size	
		Salt	Tollerent Succu	lents	[Direct Impact	Acres	
Basin/Watershed Name/Number	Affect	ed Waterbody (Clas	ss)	Special Classificati	on (i.e.OFW	V, AP, other local/state/federal	designation of importance)	
N/A		N/A				N/A		
Geographic relationship to and hy-	drologi	c connection with	wetlands, other s	urface water, upla	nds			
Located in the upland area adja	cent to	mangrove, pon	ds, pools, and la	goons habitats.				
Assessment area description								
Low lying land, appears to be p	eriodic	ally flooded. Spa	arse Canopy.					
Significant nearby features				Uniqueness (co landscape.)	nsidering	g the relative rarity in	relation to the regional	
Mine access road borders the E	ast sid	le.		N/A				
Functions				Mitigation for previous permit/other historic use				
				N/A				
Anticipated Wildlife Utilization Bas that are representative of the asse be found)			•		T, SSC),	Listed Species (List s , type of use, and inte		
Observed Evidence of Wildlife Uti	lization	(List species dire	ctly observed, or	other signs such a	is tracks,	, droppings, casings,	nests, etc.):	
Additional relevant factors:								
Assessment conducted by:				Assessment date	e(s):			
RM & TS				07/26/23				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: 27 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/26/23 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide supports wetland/surface water would be suitable for the type of wetland or wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 5 a. Quality and quantity of habitat support outside of AA. 8 b. Invasive plant species. 6 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support 2 d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. 6 2 Hydrologic connectivity (impediments and flow restrictions). p. Dependency of downstream habitats on quantity or quality of discharges. 2 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). Additional Mine access road located to the East. Mangroves, ponds, pools, and lagoons habitat located to the South, West and North. 0 4 a. Appropriateness of water levels and flows. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. Use by animals with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Notes: 0 0 8 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 2 VI. Plants' condition. 8 Benthic VII. Land management practices. 3 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 6 Impact Acres = 0.00 **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.50 0.00 FL = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.500 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name Applica			umber Assessment Area Name or Number			or Number	
					2	9	
FLUCCs code	Further classifica	tion (optional)		Impact Type		Assessment Area Size	
5250	Seasonally F	Flooded Mangrov Woodland	e Forest and		ect Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	on (i.e.OFW, AP	, other local/state/federal	designation of importance)	
N/A	N/A				N/A		
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, uplai	nds			
AA located on the North side of I	Bodden Town Road,						
Assessment area description							
Significant nearby features			Uniqueness (co	nsidering the	e relative rarity in	relation to the regional	
Single-family residences, Bodde Active mine access road.	en Town Road, Meagre	Bay Pond,	Central Mangrov	ve Wetland			
Functions			Mitigation for previous permit/other historic use				
			N/A				
Anticipated Wildlife Utilization Base that are representative of the assesbe found)		•	•	T, SSC), typ		pecies, their legal nsity of use of the	
Observed Evidence of Wildlife Utili	zation (Liet enecies dire	ctly observed or	other signs such a	e tracke dro	oppinge casings	nasts atc.)·	
Observed Evidence of Wildlife Otili.	zation (List species une	city observed, or	otilei sigiis suoii a	s tracks, urc	ppings, casings,	nesis, eic. <i>j</i> .	
Butterfly, Grackle							
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
RM & TS			07/25/23				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: 29 Impact or Mitigation: Assessment Conducted by: Assessment Date: RM & TS 07/25/23 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 5 a. Quality and quantity of habitat support outside of AA. 6 b. Invasive plant species. 5 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support 7 d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. 3 5 Hydrologic connectivity (impediments and flow restrictions). p. Dependency of downstream habitats on quantity or quality of discharges. 7 With Impact Current Protection of wetland functions provided by uplands (upland AAs only). Additional Bodden Town Road located to the South, Small dumping area located to the North of AA. Moderate amount of trash located within the AA. 5 0 a. Appropriateness of water levels and flows. 5 6 . Reliability of water level indicators. c. Appropriateness of soil moisture. 6 d. Flow rates/points of discharge. 4 .500(6)(b) Water Environment . Fire frequency/severity. 8 (n/a for uplands) Type of vegetation. 6 . Hydrologic stress on vegetation. 7 Use by animals with hydrologic requirements. 1 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 6 Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional No water present within the AA at the time of survey. Notes: 5 0 6 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 3 VI. Plants' condition. 7 Benthic VII. Land management practices. 3 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 5 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.50 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.500 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	er	Assessment Area Name	or Number	
					30	
FLUCCs code	Further classifica	ation (optional)		Impact Type	Assessment Area Size	
3112	Ponds, F	Pools, Mangrove	Lagoons	Direct Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	On (i.e.OFW, AP, other local/state/federa	al designation of importance)	
Meagre Bay Pond	N/A			Protected Area		
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds		
AA Within the Central Mangrove	Wetland					
Assessment area description						
Southern shoreline of Meagre Ba	y Pond					
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity in	relation to the regional	
Residential Area and Bodden To mining operations located to the		South. Active	Unique			
Functions			Mitigation for pre-	vious permit/other historic us	е	
			N/A			
Anticipated Wildlife Utilization Base that are representative of the asses be found)			·	ation by Listed Species (List T, SSC), type of use, and int)		
Observed Evidence of Wildlife Utiliz	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppings, casings,	, nests, etc.):	
Wood Pecker, Grackle, Fish, Frig	ate Bird, Smooth-bille	ed Ani, Turn, Fisl	n			
Additional relevant factors:						
Has an established protected are	ea management plan f	rom the Cayman	Islands Governn	nent.		
Assessment conducted by:			Assessment date	e(s):		
RM & TS			07/25/23			

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: Impact or Mitigation: Assessment Conducted by: Assessment Date: RM & TS 07/25/23 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) Minimal level of support of The scoring of each indicator is based on what Condition is optimal and fully Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 8 a. Quality and quantity of habitat support outside of AA. 6 b. Invasive plant species. 6 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support d. Downstream benefits provided to fish and wildlife. 9 e. Adverse impacts to wildlife in AA from land uses outside of AA. 4 5 Hydrologic connectivity (impediments and flow restrictions). p. Dependency of downstream habitats on quantity or quality of discharges. With Impact Current Protection of wetland functions provided by uplands (upland AAs only). Additional Bodden Town Rd located to the south and two active mines are located to the east and west. Stormwater runoff from Bodden Town Rd driectly enters Meagre Bay Pond. Large stands of Australian Pine are locaed along the southern shoreline. 6 0 a. Appropriateness of water levels and flows. 7 . Reliability of water level indicators. 8 Appropriateness of soil moisture. 8 d. Flow rates/points of discharge. 8 .500(6)(b) Water Environment . Fire frequency/severity. 8 (n/a for uplands) Type of vegetation. 7 . Hydrologic stress on vegetation. 8 Use by animals with hydrologic requirements. 8 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 8 7 Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. 6 With Impact Current Water depth, wave energy, and currents. 6 Additional Salinity - 18 PPT Notes: 7 0 7 . Appropriate/desirable species .500(6)(c) Community Structure . Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. VI. Plants' condition. 6 Benthic VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). Both Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: Very sparse benthic vegetation. Majority of bottom is composed up sand/silt and rock. 0 6 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) With Impact Current **Functional Loss (FL)** [For Impact Assessment Areas]: 0.63 0.00 **FL** = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.630 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Numbe	r	Ass	sessment Area Name o	or Number
					3	3
FLUCCs code	Further classificat	tion (optional)		Impact Ty	ре	Assessment Area Size
3112	Ponds, P	ools, Mangrove	Lagoons	Di	irect Impact	Acres
Basin/Watershed Name/Number	Affected Waterbody (Class	s)	Special Classification	on (i.e.OFW,	AP, other local/state/federal	designation of importance)
N/A	N/A				N/A	
Geographic relationship to and hydr	ologic connection with	wetlands, other s	urface water, uplar	nds		
Pease Bay Pond						
Assessment area description						
Medium Sized Pond/Lagoon. San	d and Rocky bottom.	Mangroves on s	horeline.			
Significant nearby features		Uniqueness (collandscape.)	nsidering	the relative rarity in	relation to the regional	
Surrounded by additional man-m without trees areas. Agriculture a	man-modified	N/A				
Functions		Mitigation for previous permit/other historic use				
			N/A			
Anticipated Wildlife Utilization Base that are representative of the asses be found)			•	T, SSC), t	isted Species (List s type of use, and inte	
Observed Evidence of Wildlife Utiliz	ation (List species direc	ctly observed, or o	other signs such a	s tracks, o	droppings, casings,	nests, etc.):
Additional relevant factors:						
Residential and Industrial located	I to the West and Sout	th. Solar located	to the North. Act	tive minir	ng located to the N	orth and East.
Assessment conducted by:			Assessment date	e(s):		
RM & TS 07/26/23						

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: 33 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/26/23 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 6 a. Quality and quantity of habitat support outside of AA. 9 b. Invasive plant species. 6 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support d. Downstream benefits provided to fish and wildlife. 6 e. Adverse impacts to wildlife in AA from land uses outside of AA. 7 Hydrologic connectivity (impediments and flow restrictions). 3 p. Dependency of downstream habitats on quantity or quality of discharges. With Impact Current Protection of wetland functions provided by uplands (upland AAs only). Additional Residential and Industrial located to the West and South. Solar located to the North. Active mining located to the North and East. Some areas of the shoreline have been hardened with rip rap along the mine access road. 6 0 a. Appropriateness of water levels and flows. 8 . Reliability of water level indicators. 8 c. Appropriateness of soil moisture. 8 d. Flow rates/points of discharge. 7 .500(6)(b) Water Environment . Fire frequency/severity. 8 (n/a for uplands) Type of vegetation. 8 . Hydrologic stress on vegetation. 8 Use by animals with hydrologic requirements. 8 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 7 Water quality of standing water by observation (I.e., discoloration, turbidity). 6 6 . Water quality data for the type of community. With Impact Current 7 Water depth, wave energy, and currents. Additional Salinity 16PPT Notes: 7 0 8 . Appropriate/desirable species .500(6)(c) Community Structure . Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. VI. Plants' condition. Benthic VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). Both Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 6 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.63 0.00 FL = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.630 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	er	Assessment A	Area Name	or Number
					3	36
FLUCCs code	Further classifica	ation (optional)		Impact Type		Assessment Area Size
1500		Dry Shrubland		Direct Imp	act	Acres
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	on (i.e.OFW, AP, other loc	al/state/federa	I designation of importance)
N/A	N/A			N/A	4	
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds		
Upland area located adjacent to	seaonally flooded ma	ngrove shrublan	d.			
Assessment area description						
Upland shrubland area dominate	ed by small Ironwood	shubs. Downwar	rd slopping south	east towards wet	land man	grove shurbland.
Significant nearby features			Uniqueness (co landscape.)	nsidering the relativ	ve rarity in	relation to the regional
Single-family residences			N/A			
Functions			Mitigation for pre	vious permit/other h	nistoric use	Э
			N/A			
Anticipated Wildlife Utilization Base that are representative of the asses be found)		•	· ·	ation by Listed Spe T, SSC), type of us)	•	
Observed Evidence of Wildlife Utili:	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):
Butterfly, Grackle, Mocking Bird						
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
RM & TS			07/25/23			

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: 36 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/25/23 **Impact** Scoring Guidance Optimal (10) Moderate(7) Minimal (4) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is insufficient to provide Condition is less than optimal, but sufficient to would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 5 a. Quality and quantity of habitat support outside of AA. 5 b. Invasive plant species. 6 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support 5 d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. 6 5 Hydrologic connectivity (impediments and flow restrictions). p. Dependency of downstream habitats on quantity or quality of discharges. 6 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). 7 Additional Major amounts of trash present within the AA. 6 0 a. Appropriateness of water levels and flows. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. Use by animals with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Notes: 0 5 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species 4 II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 3 VI. Plants' condition. 5 Benthic VII. Land management practices. 3 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 4 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.50 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.500 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number		Assessment Area Name or Number		
,		• •			37	
FLUCCs code	Further classificat	tion (optional)		Impact Type	Assessment Area Size	
1500		Dry Shrubland		Direct Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Class	s)	Special Classification	on (i.e.OFW, AP, other local/state/federa	al designation of importance)	
N/A	N/A			N/A		
Geographic relationship to and hyd	rologic connection with v	wetlands, other s	urface water, upla	nds		
AA located on the North side of l	Bodden Town Road.					
Assessment area description						
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity in	relation to the regional	
Single-family residences, Bodde	en Town Road, Atlantic	: Ocean	N/A			
Functions			Mitigation for prev	vious permit/other historic us	e	
			N/A			
Anticipated Wildlife Utilization Base that are representative of the assesbe found)				ation by Listed Species (List T, SSC), type of use, and int)		
Observed Evidence of Wildlife Utili	zation (List species direc	ctly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):	
Butterfly						
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
RM & TS			07/25/23			

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: 37 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/25/23 **Impact** Scoring Guidance Optimal (10) Moderate(7) Minimal (4) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide supports wetland/surface water would be suitable for the type of wetland or wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 5 a. Quality and quantity of habitat support outside of AA. 5 b. Invasive plant species. 5 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support d. Downstream benefits provided to fish and wildlife. 4 e. Adverse impacts to wildlife in AA from land uses outside of AA. 3 Hydrologic connectivity (impediments and flow restrictions). 4 p. Dependency of downstream habitats on quantity or quality of discharges. 3 With Impact Current Protection of wetland functions provided by uplands (upland AAs only). Additional Rockwall Present, Bodden Town Road located to the South, Moderate amount of trash located alond the edge of the AA. 0 4 a. Appropriateness of water levels and flows. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. (n/a for uplands) Type of vegetation. . **Hydrologic stress** on vegetation. Use by animals with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Notes: 0 4 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 5 VI. Plants' condition. 6 Benthic VII. Land management practices. 5 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 5 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.45 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.450 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	er	Assessi	ment Area Name	or Number	
					3	39	
FLUCCs code	Further classifica	ation (optional)		Impact Type		Assessment Area Size	
1500		Dry Shrubland		Direc	t Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	on (i.e.OFW, AP, o	other local/state/federal	designation of importance)	
N/A	N/A		N/A				
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds			
Upland area located adjacent to	seaonally flooded ma	ngrove shrublan	d.				
Assessment area description							
Shrubland area with large black	limestone features.						
Significant nearby features		Uniqueness (co landscape.)	nsidering the	relative rarity in	relation to the regional		
Parkers Raceway, Bodden Town	Road		N/A				
Functions			Mitigation for previous permit/other historic use				
			N/A				
Anticipated Wildlife Utilization Base that are representative of the asses be found)		•	· ·	T, SSC), type	•	species, their legal ensity of use of the	
Observed Evidence of Wildlife Utili:	zation (List species dire	ectly observed, or	other signs such a	s tracks, drop	ppings, casings,	nests, etc.):	
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
RM & TS			07/25/23				

				TIGATION ASSESSMENT WORKS 2), F.A.C. (See Sections 62-345.50		_	
Site/Project Na	ame:	<u> </u>		Application Number:		Assessment Area	Name or Number:
mpact or Mitiga	jation:	Impact		Assessment Conducted by: RM & TS		Assessment Date	07/25/23
	Scoring Guidar	nce	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)
MOUID DE CHITANIE TOLTDE TOLE DE MATIAND OF LE CHONOLIE METIAND/CHITACE MATEL						Condition is insufficient to provide wetland/surface water functions	
					Enter N	Notes below (do NOT sco	ore each subcategory individually)
			a. Quality and quantity of habitatb. Invasive plant species.c. Wildlife access to and from A/				6 6 7
d. Downst			d. Downstream benefits provide e. Adverse impacts to wildlife in A	ed to fish and wildlife. AA from land uses outside of AA.			5 6 4
Current]	With Impact	g. Dependency of downstream h	Hydrologic connectivity (impediments and flow restrictions). 4 Dependency of downstream habitats on quantity or quality of discharges. 5 Protection of wetland functions provided by uplands (upland AAs only). 6			
6		0	Additional Significant amounts Notes:	s of trash located to the West just outside the	he AA.		
.500(6	(6)(b) Water Env (n/a for upland	ds)	j. Water quality of standing wat k. Water quality data for the type	tion. gic requirements. n associated with water quality (i.e., plants nter by observation (l.e., discoloration, turb ne of community.		WQ).	
		0	I. Water depth, wave energy, an Additional Notes:	id currents.			
I. Appropriate/desirable species II. Invasive/exotic plant species III. Regeneration/recruitment IV. Age, size distribution. V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices. Both VIII. Topographic features (refugia, channels, hummocks).				7 6 9 7 8 7 7			
Current]	With Impact	IX. Submerged vegetation (only X. Upland assessment area Additional Notes:				7
8		0	Large black limesto	one outcrops and voids in terrain which sup	port succulent hal	ibitat and capture stormw	ater.
	re = Sum of about			Impact Acres =	0.00		
Current	 	With Impact		Functional Loss (FL) [For Impact Assessment Areas]:			
0.70		0.00			0.000		
	Impact Delta (I	ID)	was assessed using	proposed to be mitigated at a mitigation by UMAM, then the credits required for mitigal Loss (FL). If impact mitigation is proposed	igation is		
Current -	- w/Impact	0.700	_	at was not assessed using UMAM, ther assess impacts; use the assessment methods			

Site/Project Name		Application Number	er	Assessment	Area Name	or Number
					4	14
FLUCCs code	Further classifica	ation (optional)		Impact Type		Assessment Area Size
7000	Invas	sive Species Cas	uarina	Direct Imp	oact	Acres
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	on (i.e.OFW, AP, other lo	cal/state/federa	I designation of importance)
N/A	N/A		N/A			
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds		
AA located along Bodden Town	Road. Located on the	coast for the Atl	antic Ocean.			
Assessment area description						
Monoculture of invasive species	Casuarina.					
Significant nearby features		Uniqueness (co landscape.)	nsidering the relat	ive rarity in	relation to the regional	
Single-family residences, plots omonocultures, Atlantic Ocean, M		n Pine	N/A			
Functions		Mitigation for previous permit/other historic use				
			N/A			
Anticipated Wildlife Utilization Base that are representative of the assesbe found)		•	· ·	T, SSC), type of u	•	species, their legal ensity of use of the
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	other signs such a	s tracks, dropping	s, casings,	nests, etc.):
Additional relevant factors:						
Recently Burned						
Assessment conducted by:			Assessment date	e(s):		
RM & TS			07/25/23			

Site/Project Name:				Application Number:	Assessment Area	Assessment Area Name or Number: 44			
Impact or Mitigation: Impact				Assessment Conducted by: RM & TS	Assessment Date	: 07/25/23			
	Scoring Guida	nce	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)			
would be s		is based on what pe of wetland or sessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions			
					Enter Notes below (do NOT sc	ore each subcategory individually)			
			a. Quality and quantity of habitat	support outside of AA.		5			
			b. Invasive plant species.			1			
500/6\/a\ L	ocation and Lar	ndscape Support	c. Wildlife access to and from A	A (proximity and barriers).		4			
500(0)(a) L	LUCALIUIT ATIU LAI	iuscape Support	d. Downstream benefits provide	d to fish and wildlife.		5			
			e. Adverse impacts to wildlife in A	AA from land uses outside of AA.		4			
	_		f. Hydrologic connectivity (impe	ediments and flow restrictions).		3			
Curront		With Impact	g. Dependency of downstream h	nabitats on quantity or quality of discharges.		6			
Current		With Impact	h. Protection of wetland functions	s provided by uplands (upland AAs only).		6			
	1		Additional						
4		0	Notes:						
	1		a. Appropriateness of water leve	ls and flows.					
			b. Reliability of water level indic						
			c. Appropriateness of soil moist						
500	(6)(b) Water En	vironment	d. Flow rates/points of discharge	ə.					
.000	(n/a for upland		e. Fire frequency/severity.						
			f. Type of vegetation.						
			g. Hydrologic stress on vegetatih. Use by animals with hydrolog						
				associated with water quality (i.e., plants toleran	t of poor WQ).				
				ter by observation (I.e., discoloration, turbidity).					
			. Water quality data for the type of community.						
Current		With Impact	I. Water depth, wave energy, an						
	7		Additional						
		0	Notes:						
	-		I. Appropriate/desirable species			1			
.500((6)(c) Community	y Structure	II. Invasive/exotic plant species			1			
			III. Regeneration/recruitment			5			
	X Ve	getation	IV. Age, size distribution.			5			
	D.	. 0. 1 .	V. Snags, dens, cavity, etc.			5			
	ве	nthic	VI. Plants' condition. VII. Land management practices			5 7			
	Во	th	VIII. Topographic features (refugi			5			
			IX. Submerged vegetation (only	·		-			
			X. Upland assessment area			3			
		With Impact	Additional						
Current			Notos						
			Notes: Recently Burned						
Current 4		0	Notes: Recently Burned						
			Notes: Recently Burned						
			Notes: Recently Burned	Immed Acres - 0.00	7				
4 Raw Sco	ore = Sum of ab	ove scores/30	Notes: Recently Burned	Impact Acres = 0.00	7				
4 Raw Sco	ore = Sum of ab f uplands, divide	ove scores/30	Notes: Recently Burned	Impact Acres = 0.00					
4 Raw Sco		ove scores/30	Notes: Recently Burned	Impact Acres = 0.00					
4 Raw Sco		ove scores/30	Notes: Recently Burned]				
4 Raw Sco		ove scores/30 by 20)	Recently Burned	Functional Loss (FL)]				
A Raw Sco		ove scores/30 by 20) With Impact	Recently Burned						
4 Raw Sco		ove scores/30 by 20)	Recently Burned	Functional Loss (FL)					
4 Raw Sco (if		ove scores/30 by 20) With Impact	Recently Burned	Functional Loss (FL) [For Impact Assessment Areas]:					
Raw Sco		ove scores/30 by 20) With Impact	Recently Burned	Functional Loss (FL) [For Impact Assessment Areas]: = ID x Impact Acres = 0.000					
Raw Sco		ove scores/30 by 20) With Impact 0.00	Recently Burned FL NOTE: If impact is	Functional Loss (FL) [For Impact Assessment Areas]: = ID x Impact Acres = 0.000 proposed to be mitigated at a mitigation bank that					
Raw Sco (if	f uplands, divide	ove scores/30 by 20) With Impact 0.00	Recently Burned FL NOTE: If impact is was assessed using equal to Functional	Functional Loss (FL) [For Impact Assessment Areas]: = ID x Impact Acres = 0.000 proposed to be mitigated at a mitigation bank that g UMAM, then the credits required for mitigation it Loss (FL). If impact mitigation is proposed at a mitigation is propo	s a				
A Raw Sco (if Current	f uplands, divide	ove scores/30 by 20) With Impact 0.00	Recently Burned FL NOTE: If impact is was assessed using equal to Functional mitigation bank that	Functional Loss (FL) [For Impact Assessment Areas]: . = ID x Impact Acres = 0.000 proposed to be mitigated at a mitigation bank that g UMAM, then the credits required for mitigation is	s a M				

Site/Project Name Applica			er	Assessment Area Name or Number				
					47			
FLUCCs code	Further classification	ation (optional)		Impact Type	Assessment Area Size			
1100	Dry	Forest and Woo	dland	Direct Impact	Acres			
Basin/Watershed Name/Number	Affected Waterbody (Cla	ss)	Special Classificati	On (i.e.OFW, AP, other local/state/fed	leral designation of importance)			
N/A	N/A			N/A				
Geographic relationship to and hyd	drologic connection with	wetlands, other s	urface water, upla	nds				
AA located on the North side of	Bodden Town Road.							
Assessment area description								
Significant nearby features			Uniqueness (co landscape.)	Uniqueness (considering the relative rarity in relation to the regional landscape.)				
Single-family residences, Bodd	en Town Road		N/A					
Functions			Mitigation for previous permit/other historic use					
			N/A					
Anticipated Wildlife Utilization Base that are representative of the asse be found)		•	·	ation by Listed Species (List, SSC), type of use, and (a)				
Observed Evidence of Wildlife Util	ization (List species dire	ectly observed, or	other signs such a	ıs tracks, droppings, casinç	gs, nests, etc.):			
Grackle, Grand Cayman Parrot,	Butterflys							
Additional relevant factors:								
Assessment conducted by:			Assessment date	e(s):				
RM & TS			07/25/23					

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: 47 Impact or Mitigation: Assessment Conducted by: Assessment Date: RM & TS 07/25/23 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide supports wetland/surface water would be suitable for the type of wetland or wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 5 a. Quality and quantity of habitat support outside of AA. 6 b. Invasive plant species. 5 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support d. Downstream benefits provided to fish and wildlife. 3 e. Adverse impacts to wildlife in AA from land uses outside of AA. 5 Hydrologic connectivity (impediments and flow restrictions). 4 p. Dependency of downstream habitats on quantity or quality of discharges. 4 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). Additional Bodden Town Road located to the South, Single-family residences located to the North. Moderate amount of trash located within the AA. 5 0 a. Appropriateness of water levels and flows. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. Use by animals with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Notes: 0 6 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species II. Regeneration/recruitment 4 IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 6 VI. Plants' condition. 5 Benthic VII. Land management practices. 5 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 6 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.55 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.550 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number		Assessment Area Name or Number			
					50		
FLUCCs code	Further classifica	tion (optional)		Impact Type	Assessment Area Size		
2230	Seasonally Floo	oded / Saturated Forest	Semi-Deciduous	Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	on (i.e.OFW, AP, other local/state/	federal designation of importance)		
N/A	N/A			N/A			
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, uplar	nds			
AA is apart of a depressional are	a which transports sto	orwater towards	the Central Mang	rove Wetland.			
Assessment area description							
Seasonally flooded areas. Lots of agriculture/livestock.	of depressional pocke	ts which pool an					
Significant nearby features			Uniqueness (collandscape.)	nsidering the relative rar	ity in relation to the regional		
Central Mangrove Wetland			N/A				
Functions			Mitigation for previous permit/other historic use				
			N/A				
Anticipated Wildlife Utilization Base			· ·	ation by Listed Species (
that are representative of the asses be found)	sment area and reason	nably expected to	classification (E, assessment area	T, SSC), type of use, and	d intensity of use of the		
Observed Evidence of Wildlife Utiliz	zation (List species dire	ctly observed, or	other signs such a	s tracks, droppings, casi	ings, nests, etc.):		
Green Iguana							
Additional relevant factors:							
Livestock/cattle currently on site							
Assessment conducted by:			Assessment date	(s):			
RM & TS			07/25/23				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: 50 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/25/23 **Impact** Scoring Guidance Optimal (10) Moderate(7) Minimal (4) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 6 a. Quality and quantity of habitat support outside of AA. 6 b. Invasive plant species. 9 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support 5 d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. 6 Hydrologic connectivity (impediments and flow restrictions). 6 p. Dependency of downstream habitats on quantity or quality of discharges. 7 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). Additional Livestock/cattle use. Notes: 6 0 a. Appropriateness of water levels and flows. 8 Reliability of water level indicators. 8 Appropriateness of soil moisture. 8 d. Flow rates/points of discharge. 8 .500(6)(b) Water Environment . Fire frequency/severity. 8 (n/a for uplands) Type of vegetation. 6 . Hydrologic stress on vegetation. 8 **Use by animal**s with hydrologic requirements. 3 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 7 Water quality of standing water by observation (I.e., discoloration, turbidity). 3 3 . Water quality data for the type of community. With Impact Current 5 Water depth, wave energy, and currents. Additional Rain event during survey. Notes: 6 0 6 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 4 VI. Plants' condition. 5 Benthic VII. Land management practices. 2 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 5 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.57 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.570 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name	ber Assessment Area Name or N			or Number				
					5	53		
FLUCCs code	Further classificat	tion (optional)	Impact Type Assess			Assessment Area Size		
5252	Seasonally F	Flooded Mangrov	e Shrubland		Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Clas	s)	Special Classification	on (i.e.OF	W, AP, other local/state/federal	designation of importance)		
N/A	N/A				N/A			
Geographic relationship to and hydi	ologic connection with	wetlands, other s	urface water, upla	nds				
AA located on the North side of E	Bodden Town Road.							
Assessment area description								
Jagged black limestone wetland	area.							
Significant nearby features			Uniqueness (co landscape.)	nsiderin	ng the relative rarity in	relation to the regional		
Single-family residences, Bodde	n Town Road		N/A					
Functions			Mitigation for previous permit/other historic use					
			N/A					
Anticipated Wildlife Utilization Base that are representative of the asses be found)		•	· ·	T, SSC	Listed Species (List s), type of use, and inte			
Observed Evidence of Wildlife Utiliz	ration (List species direc	ctly observed, or	I other signs such a	s tracks	s, droppings, casings,	nests, etc.):		
Butterfly, Grand Cayman Parrot,	Purple Galluiine, Gree	en Iguana						
Additional relevant factors:								
Assessment conducted by:			Assessment date	e(s):				
RM & TS	07/25/23							

			Form 62-345.900	(2), F.A.C. (See Sections 62-34		PART II - IMPA 600, F.A.C.)			
Site/Project Na	ite/Project Name:			Application Number:	Application Number:			Name or Number: 53	
mpact or Mitig	ation:	Impact		Assessment Conducted by: RM & T	Assessment Conducted by: RM & TS			07/25/23	
	Scoring Guidar	nce	Optimal (10)	Moderate(7)		Minima	nimal (4) Not Present (0)		
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed Condition is optimal and fully supports wetland/surface water functions						Minimal level of wetland/surfa functio	ice water	Condition is insufficient to provide wetland/surface water functions	
						Enter Notes belo	w (do NOT sco	ore each subcategory individually)	
			a. Quality and quantity of habitb. Invasive plant species.c. Wildlife access to and from					4 6 5	
.500(6)(a) Lo	ocation and Lan	dscape Support	d. Downstream benefits provide. Adverse impacts to wildlife in					7 3 7	
Current		With Impact	g. Dependency of downstream h. Protection of wetland functio	n habitats on quantity or quality of disch				7	
6		0	Additional Minor amount of t Notes:	rash on the edge of the weltand.					
a. Appropriateness of water level b. Reliability of water level indica c. Appropriateness of soil moists d. Flow rates/points of discharge e. Fire frequency/severity.				licators. sture.	ators. ure.			6 6 6 5 8	
f. Type of vegeta g. Hydrologic stre h. Use by animal i. Plant communit			g. Hydrologic stress on vegeta h. Use by animals with hydrolo i. Plant community composition					5 7 6 7 6	
Current		With Impact		k. Water quality data for the type of community. 6 1. Water depth, wave energy, and currents.					
6		0	Additional Salinity - 25 PPT Notes:						
.500(6	6)(c) Community	Structure	I. Appropriate/desirable species II. Invasive/exotic plant species III. Regeneration/recruitment					5 6 6	
	X Veg	getation	IV. Age, size distribution. V. Snags, dens, cavity, etc.					6	
	Ber	nthic	VI. Plants' condition.					5 7	
	Bot	h	VII. Land management practice VIII. Topographic features (refu IX. Submerged vegetation (online)	gia, channels, hummocks).				5 8	
Current		With Impact	X. Upland assessment area Additional Notes:						
6		0							
	r e = Sum of abouplands, divide			Impact Acres =	0.00				
Current		With Impact		Functional Loss (FL)					
0.60		0.00	F	[For Impact Assessment Areas]: FL = ID x Impact Acres = 0.000					
	Impact Delta (ID)	NOTE: If impact i	s proposed to be mitigated at a mitiga	tion bank that				
Current -	w/Impact	0.600	equal to Function mitigation bank t	nal Loss (FL). If impact mitigation is phat was not assessed using UMAM assess impacts; use the assessment	oroposed at a , then UMAM				

Site/Project Name		Application Number		Assessment Area Name or Number			
					101		
FLUCCs code	Further classific	ation (optional)		Impact Type	Assessment Area Size		
3112	Ponds,	Pools, Mangrove	Lagoons	Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Cla	ass)	Special Classificati	on (i.e.OFW, AP, other local/state/fede	ral designation of importance)		
N/A	N/A	1		N/A			
Geographic relationship to and hyd	Irologic connection with	n wetlands, other s	urface water, upla	nds			
AA located on the North side of	Bodden Town Road,						
Assessment area description							
Monoculture of invasive species	Casuarina.						
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity i	n relation to the regional		
Single-family residences, Boddo Active mine access road.	en Town Road, Meagr	re Bay Pond,	Central Mangrove Wetland				
Functions			Mitigation for previous permit/other historic use				
			N/A				
Anticipated Wildlife Utilization Base that are representative of the assembe found)			· ·	ation by Listed Species (List T, SSC), type of use, and in I)			
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	l other signs such a	s tracks, droppings, casing	s, nests, etc.):		
Butterfly, Grackle							
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
RM & TS		07/25/23					

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: 101 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/25/23 **Impact** Scoring Guidance Optimal (10) Moderate(7) Minimal (4) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide supports wetland/surface water would be suitable for the type of wetland or wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 5 a. Quality and quantity of habitat support outside of AA. 8 b. Invasive plant species. 5 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support 7 d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. 4 Hydrologic connectivity (impediments and flow restrictions). 7 p. Dependency of downstream habitats on quantity or quality of discharges. 8 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). Additional Bodden Town Road located to the South, Small dumping area located to the West of AA. 6 0 a. Appropriateness of water levels and flows. 7 8 Reliability of water level indicators. c. Appropriateness of soil moisture. 8 d. Flow rates/points of discharge. 5 .500(6)(b) Water Environment . Fire frequency/severity. 8 (n/a for uplands) Type of vegetation. 8 . Hydrologic stress on vegetation. 8 Use by animals with hydrologic requirements. 7 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 8 Water quality of standing water by observation (I.e., discoloration, turbidity). 6 7 . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. 5 Additional Salinity - 15 PPT Notes: 7 0 8 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 4 VI. Plants' condition. 8 Benthic VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 7 0 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.67 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.670 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name Application Num			er	Asse	Assessment Area Name or Number		
					10	02	
FLUCCs code	Further classifica	ation (optional)		Impact Typ	oe e	Assessment Area Size	
1831	Man-ı	modified Withou	Trees	Dii	rect Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	on (i.e.OFW, A	AP, other local/state/federal	designation of importance)	
N/A	N/A				N/A		
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds			
AA located along Bodden Town	Road. Located on the	coast for the Atl	antic Ocean.				
Assessment area description							
Recently cleared land upland co	astal area.						
Significant nearby features			Uniqueness (co landscape.)	nsidering t	he relative rarity in	relation to the regional	
Single-family residences, plots omonocultures, Atlantic Ocean, M		n Pine	N/A				
Functions			Mitigation for previous permit/other historic use				
			N/A				
Anticipated Wildlife Utilization Base that are representative of the assesbe found)		•	· ·	T, SSC), ty	sted Species (List s ype of use, and inte		
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	other signs such a	s tracks, d	Iroppings, casings,	nests, etc.):	
Additional relevant factors:							
Recently Cleared							
Assessment conducted by:			Assessment date	e(s):			
RM & TS			07/25/23				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: 102 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/25/23 **Impact** Not Present (0) Scoring Guidance Optimal (10) Moderate(7) Minimal (4) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is insufficient to provide Condition is less than optimal, but sufficient to would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 3 a. Quality and quantity of habitat support outside of AA. 6 b. Invasive plant species. 3 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support d. Downstream benefits provided to fish and wildlife. 4 e. Adverse impacts to wildlife in AA from land uses outside of AA. 5 Hydrologic connectivity (impediments and flow restrictions). 3 p. Dependency of downstream habitats on quantity or quality of discharges. 7 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). 7 Additional Notes: 5 0 a. Appropriateness of water levels and flows. . Reliability of water level indicators. Appropriateness of soil moisture. d. Flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. Use by animals with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Notes: 0 3 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 1 VI. Plants' condition. 5 Benthic VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area With Impact Current Additional Notes: Recently Cleared 0 3 Impact Acres = 0.00 **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.40 0.00 **FL** = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.400 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name	Application Number		Assessment Area Name or Number				
					103		
FLUCCs code	Further classifica	tion (optional)		Impact Type	Assessment Area Size		
5250	Seasonally F	Flooded Mangrov Woodland	e Forest and	Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	on (i.e.OFW, AP, other local/state/feder	al designation of importance)		
N/A	N/A			N/A			
Geographic relationship to and hyd	rologic connection with	wetlands, other so	urface water, uplai	nds			
AA within Central Mangrove Wet	land						
Assessment area description							
Mangrove forest, fragmented by	accecss roads.						
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity in	n relation to the regional		
Access road. Area historically us	sed for mosquitto conf	trol?	Central Mangrov	ve Wetland			
Functions			Mitigation for previous permit/other historic use				
			N/A				
Anticipated Wildlife Utilization Base that are representative of the assesbe found)		•	· ·	ation by Listed Species (List T, SSC), type of use, and int I)			
Observed Evidence of Wildlife Utili:	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):		
Butterfly, Grackle, Green Heron,	Yellow Warbler, Flicke	er					
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
RM & TS			07/26/23				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: 103 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/26/23 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 7 a. Quality and quantity of habitat support outside of AA. 8 b. Invasive plant species. 8 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support d. Downstream benefits provided to fish and wildlife. 8 e. Adverse impacts to wildlife in AA from land uses outside of AA. 4 5 Hydrologic connectivity (impediments and flow restrictions). g. Dependency of downstream habitats on quantity or quality of discharges. 7 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). Additional Notes: 7 0 a. Appropriateness of water levels and flows. 6 . Reliability of water level indicators. 7 c. Appropriateness of soil moisture. 3 flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. 8 (n/a for uplands) Type of vegetation. 9 . Hydrologic stress on vegetation. 8 Use by animals with hydrologic requirements. 6 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 8 Water quality of standing water by observation (I.e., discoloration, turbidity). 5 5 . Water quality data for the type of community. With Impact Current 5 Water depth, wave energy, and currents. Additional Milky white substance floating ontop of the water, Salinity - 25 PPT (North) & 24 PPT (South). Notes: 6 0 7 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species II. Regeneration/recruitment 3 IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. VI. Plants' condition. Benthic VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). Both Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: Algal matting present, Sooty mold present on the majority of mangrove leaves. 0 5 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.60 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.600 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name Applica			Application Numbe	r		Assessment Area Name or Number		
						1	04	
FLUCCs code		Further classification (optional)		Impact		t Type	Assessment Area Size	
		Salt	Tollerent Succu	lents		Direct Impact	Acres	
Basin/Watershed Name/Number	Affecte	ed Waterbody (Clas	s)	Special Classificati	on (i.e.C	DFW, AP, other local/state/federa	I designation of importance)	
N/A		N/A				N/A		
Geographic relationship to and hyd	drologic	connection with	wetlands, other s	urface water, upla	nds			
Upland area located on the Sout	thwest	ern edge of the (Central Mangrov	e Wetland				
Assessment area description								
Open upland area with karst for	mation	ns dominated by	succulents.					
Significant nearby features				Uniqueness (co landscape.)	nsider	ing the relative rarity in	relation to the regional	
Cenetral Mangrove Wetland to the agriculture located to the South		th. Cattle pasture	e and	N/A				
Functions				Mitigation for previous permit/other historic use				
				N/A				
Anticipated Wildlife Utilization Bas that are representative of the asse be found)			•		T, SS	y Listed Species (List s C), type of use, and inte		
Observed Evidence of Wildlife Util	ization	(List species direct	ctly observed, or	i other signs such a	s track	ks, droppings, casings,	nests, etc.):	
Grand Cayman Parrot, Grackle,	Butter	fly						
Additional relevant factors:								
Derelict vehicles located in AA								
Assessment conducted by:				Assessment date	e(s):			
RM & TS				07/26/23				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: 104 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/26/23 **Impact** Minimal (4) Not Present (0) Scoring Guidance Optimal (10) Moderate(7) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide supports wetland/surface water would be suitable for the type of wetland or wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 7 a. Quality and quantity of habitat support outside of AA. 7 b. Invasive plant species. 7 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support 5 d. Downstream benefits provided to fish and wildlife. 5 e. Adverse impacts to wildlife in AA from land uses outside of AA. Hydrologic connectivity (impediments and flow restrictions). 3 p. Dependency of downstream habitats on quantity or quality of discharges. 5 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). 5 Additional Property fencing and derelict vehicles within AA. Notes: 6 0 a. Appropriateness of water levels and flows. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. Use by animals with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Notes: 0 7 . Appropriate/desirable species .500(6)(c) Community Structure 7 l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 2 VI. Plants' condition. 7 Benthic VII. Land management practices. 3 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area With Impact Current Additional Notes: Karst formations 0 5 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.55 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.550 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number		Assessment Area Name or Number			
					105		
FLUCCs code	Further classifica	ition (optional)		Impact Type	Assessment Area Size		
18311	Man	n-modified With T	rees	Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	on (i.e.OFW, AP, other local/state/fede	ral designation of importance)		
N/A	N/A			N/A			
Geographic relationship to and hyd	drologic connection with	wetlands, other s	urface water, upla	nds			
Upland area located on the Sout	hwestern edge of the	Central Mangrov	e Wetland				
Assessment area description							
Sparsly forested upland area us	ed for agriculture and	livestock.					
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity i	n relation to the regional		
N/A			N/A				
Functions			Mitigation for previous permit/other historic use				
			N/A				
Anticipated Wildlife Utilization Base that are representative of the asse be found)				ation by Listed Species (List T, SSC), type of use, and in)			
Observed Evidence of Wildlife Util	ization (List species dire	ectly observed, or	I other signs such a	s tracks, droppings, casings	s, nests, etc.):		
Butterfly, Grackle, Grand Cayma	nn Parrot, Cattle Eegre	t					
Additional relevant factors:							
Cattle fencing							
Assessment conducted by:			Assessment date	e(s):			
RM & TS			07/26/23				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: 105 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/26/23 **Impact** Not Present (0) Scoring Guidance Optimal (10) Moderate(7) Minimal (4) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is insufficient to provide Condition is less than optimal, but sufficient to would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 7 a. Quality and quantity of habitat support outside of AA. 7 b. Invasive plant species. 7 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support 3 d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. 7 2 Hydrologic connectivity (impediments and flow restrictions). g. Dependency of downstream habitats on quantity or quality of discharges. 4 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). 3 Additional Cattle fencing Notes: 5 0 a. Appropriateness of water levels and flows. Reliability of water level indicators. Appropriateness of soil moisture. d. Flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. **Use by animal**s with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Notes: 0 5 . Appropriate/desirable species .500(6)(c) Community Structure . Invasive/exotic plant species 7 II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 4 VI. Plants' condition. 6 Benthic VII. Land management practices. 2 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 5 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.50 0.00 **FL** = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.500 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name	Application Number	Assessment Area Name or Number					
					10	06	
FLUCCs code	Further classifica	ation (optional)		Impact Typ	e	Assessment Area Size	
		Palm Hammock		Dir	ect Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classification	on (i.e.OFW, A	P, other local/state/federal	designation of importance)	
N/A	N/A				N/A		
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, uplar	nds			
Upland area located on the Sout	nwestern edge of the	Central Mangrov	e Wetland				
Assessment area description							
Mature palm hammock							
Significant nearby features			Uniqueness (collandscape.)	nsidering tl	ne relative rarity in	relation to the regional	
Central Mangrove Wetland locate	ed to the North		Not previously catalogued habitat				
Functions			Mitigation for prev	vious perm	it/other historic use)	
Upland buffer for Central Mangro	ove Wetland		N/A				
Anticipated Wildlife Utilization Base that are representative of the assest be found)		•	· ·	T, SSC), ty	ted Species (List s pe of use, and inte		
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	ther signs such a	s tracks, d	roppings, casings,	nests, etc.):	
Green Iguana, Flicker, Termite M	ounds, Wasps						
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
RM & TS		07/26/23					

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: 106 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/26/23 **Impact** Not Present (0) Scoring Guidance Optimal (10) Moderate(7) Minimal (4) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 7 a. Quality and quantity of habitat support outside of AA. 8 b. Invasive plant species. 9 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support d. Downstream benefits provided to fish and wildlife. 6 e. Adverse impacts to wildlife in AA from land uses outside of AA. 6 Hydrologic connectivity (impediments and flow restrictions). 3 p. Dependency of downstream habitats on quantity or quality of discharges. 4 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). 6 Additional Notes: 6 0 a. Appropriateness of water levels and flows. . Reliability of water level indicators. Appropriateness of soil moisture. d. Flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. **Use by animal**s with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Notes: 0 8 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 8 VI. Plants' condition. 8 Benthic VII. Land management practices. 4 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 8 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.70 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.700 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Numbe	er	Assessment Area N	ame or Number		
					106		
FLUCCs code	Further classifica	tion (optional)		Impact Type	Assessment Area Size		
5250	Seasonally F	Flooded Mangrov Woodland	ve Forest and	Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Clas	s)	Special Classification	on (i.e.OFW, AP, other local/state/	federal designation of importance)		
N/A	N/A			N/A			
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, uplai	nds			
Located on the edge of an active	mining operation. Wit	thin the Central I	Mangrove Wetlan	d			
Assessment area description							
Mangrove							
Significant nearby features		Uniqueness (co landscape.)	nsidering the relative rari	ty in relation to the regional			
Active mine located to the south			Central Mangrove Wetland				
Functions		Mitigation for prev	vious permit/other histori	c use			
			N/A				
Anticipated Wildlife Utilization Base		•	·	ation by Listed Species (I			
that are representative of the asses be found)	sment area and reason	ably expected to	classification (E, T, SSC), type of use, and intensity of use of the assessment area)				
Observed Evidence of Wildlife Utiliz	zation (List species dire	ctly observed, or	other signs such a	s tracks, droppings, casi	ngs, nests, etc.):		
Black-necked Stilt, Tricolored He	ron, Yellow Warbler						
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
RM & TS		07/26/23					

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: 106 Impact or Mitigation: Assessment Conducted by: Assessment Date: RM & TS 07/26/23 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) Minimal level of support of The scoring of each indicator is based on what Condition is optimal and fully Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 3 a. Quality and quantity of habitat support outside of AA. 8 b. Invasive plant species. 6 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support d. Downstream benefits provided to fish and wildlife. 5 e. Adverse impacts to wildlife in AA from land uses outside of AA. 3 Hydrologic connectivity (impediments and flow restrictions). 5 g. Dependency of downstream habitats on quantity or quality of discharges. 7 With Impact Current Protection of wetland functions provided by uplands (upland AAs only). Additional Active mine located to the South. Within the Central Mangrove Wetland. Buffers/protects the downstream Central Mangrove Wetland from Notes: mining activities. 5 0 a. Appropriateness of water levels and flows. 7 6 Reliability of water level indicators. Appropriateness of soil moisture. 8 4 flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. 8 (n/a for uplands) Type of vegetation. 8 . Hydrologic stress on vegetation. 7 Use by animals with hydrologic requirements. 6 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 7 Water quality of standing water by observation (I.e., discoloration, turbidity). 5 5 . Water quality data for the type of community. With Impact Current 6 Water depth, wave energy, and currents. Additional Salinity 32 PPT Notes: 6 0 7 . Appropriate/desirable species .500(6)(c) Community Structure . Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 6 VI. Plants' condition. 4 Benthic VII. Land management practices. 3 VIII. Topographic features (refugia, channels, hummocks). Both Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: Vegetation appears to be stressed from nearby mining activities. Mangrove canopy is thin, recruitment and regeneration is low. Roots and trunks of plants are smothered with sediment. 0 5 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) With Impact Current **Functional Loss (FL)** [For Impact Assessment Areas]: 0.53 0.00 FL = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.530 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name	ŀ	Application Numbe	r	Assessment Area Na	me or Number		
					108		
FLUCCs code	Further classificati	ion (optional)		Impact Type	Assessment Area Size		
	Palustrine E	mergent Marsh	/Wetland	Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Class	5)	Special Classificati	on (i.e.OFW, AP, other local/state/fe	deral designation of importance)		
N/A	N/A	N/A N/A					
Geographic relationship to and hyd	rologic connection with w	vetlands, other s	urface water, upla	nds			
AA is an isolated, low lying area	, whithin an area predoi	minantly used b	by cattle.				
Assessment area description							
Seasonally flooded herbaceous	area.						
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)				
Central Mangrove Wetland			N/A				
Functions		Mitigation for pre	vious permit/other historic	use			
			N/A				
Anticipated Wildlife Utilization Base that are representative of the assembe found)				ation by Listed Species (Li T, SSC), type of use, and)			
Observed Evidence of Wildlife Utili	zation (List species direc	etly observed, or	I other signs such a	s tracks, droppings, casin	gs, nests, etc.):		
Dense population of Green Igua	na						
Additional relevant factors:							
Livestock/cattle currently on site).						
Assessment conducted by:			Assessment date	e(s):			
RM & TS		07/25/23					

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: 108 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/25/23 **Impact** Scoring Guidance Optimal (10) Moderate(7) Minimal (4) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide supports wetland/surface water would be suitable for the type of wetland or wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 6 a. Quality and quantity of habitat support outside of AA. 7 b. Invasive plant species. 9 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support d. Downstream benefits provided to fish and wildlife. 4 e. Adverse impacts to wildlife in AA from land uses outside of AA. 5 Hydrologic connectivity (impediments and flow restrictions). 4 g. Dependency of downstream habitats on quantity or quality of discharges. 5 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). Additional Livestock/cattle use. Notes: 6 0 a. Appropriateness of water levels and flows. 8 Reliability of water level indicators. 8 8 Appropriateness of soil moisture. d. Flow rates/points of discharge. 7 .500(6)(b) Water Environment . Fire frequency/severity. 8 (n/a for uplands) Type of vegetation. 7 . Hydrologic stress on vegetation. 7 **Use by animal**s with hydrologic requirements. 2 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 7 Water quality of standing water by observation (I.e., discoloration, turbidity). 3 5 . Water quality data for the type of community. With Impact Current 6 Water depth, wave energy, and currents. Additional Rain event during survey. Notes: 6 0 7 . Appropriate/desirable species .500(6)(c) Community Structure 7 l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 4 VI. Plants' condition. 5 Benthic VII. Land management practices. 2 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 6 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.60 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.600 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	er	Assessment Area Name or Number			
					109		
FLUCCs code	Further classifica	ation (optional)		Impact Type	Assessment Area Size		
	Palustrine	Emergent Marsh	n/Wetland	Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	On (i.e.OFW, AP, other local/state/fe	deral designation of importance)		
N/A	N/A			N/A			
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds			
AA is an isolated, low lying area,	, whithin an area pred	ominantly used b	by cattle.				
Assessment area description							
Seasonally flooded herbaceous	area.						
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)				
Central Mangrove Wetland			N/A				
Functions		Mitigation for pre	vious permit/other historic	use			
			N/A				
Anticipated Wildlife Utilization Base that are representative of the assesbe found)				ation by Listed Species (Li T, SSC), type of use, and i)			
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	I other signs such a	s tracks, droppings, casin	gs, nests, etc.):		
Dense population of Green Iguar	na						
Additional relevant factors:							
Livestock/cattle currently on site).						
Assessment conducted by:			Assessment date	e(s):			
RM & TS			07/25/23				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: 109 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/25/23 **Impact** Scoring Guidance Optimal (10) Moderate(7) Minimal (4) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide supports wetland/surface water would be suitable for the type of wetland or wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 6 a. Quality and quantity of habitat support outside of AA. 7 b. Invasive plant species. 9 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support 5 d. Downstream benefits provided to fish and wildlife. 5 e. Adverse impacts to wildlife in AA from land uses outside of AA. Hydrologic connectivity (impediments and flow restrictions). 4 g. Dependency of downstream habitats on quantity or quality of discharges. 5 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). Additional Livestock/cattle use. Notes: 6 0 a. Appropriateness of water levels and flows. 8 Reliability of water level indicators. 8 8 Appropriateness of soil moisture. d. Flow rates/points of discharge. 7 .500(6)(b) Water Environment . Fire frequency/severity. 8 (n/a for uplands) Type of vegetation. 8 . Hydrologic stress on vegetation. 8 **Use by animal**s with hydrologic requirements. 2 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 8 Water quality of standing water by observation (I.e., discoloration, turbidity). 3 5 . Water quality data for the type of community. With Impact Current 6 Water depth, wave energy, and currents. Additional Rain event during survey. Notes: 7 0 7 . Appropriate/desirable species .500(6)(c) Community Structure 7 l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 4 VI. Plants' condition. 7 Benthic VII. Land management practices. 2 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 6 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.63 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.630 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name Application N			Assessment Area Name or Number				
					1′	15	
FLUCCs code	Further classifica	tion (optional)		Impact Type		Assessment Area Size	
1831	Man-r	modified Without	Trees	Direct Impact Acres			
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	on (i.e.OFW, AP, other local/sta	ate/federal	designation of importance)	
N/A	N/A			N/A			
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, uplar	nds			
N/A							
Assessment area description							
Upland grassland that has been	cleared and is current	ly used for lives	tock/cattle.				
Significant nearby features			Uniqueness (collandscape.)	nsidering the relative r	arity in	relation to the regional	
N/A		N/A					
Functions		Mitigation for prev	vious permit/other histo	oric use)		
Food source for livestock			N/A				
Anticipated Wildlife Utilization Base that are representative of the asset be found)		•	· ·	ation by Listed Species T, SSC), type of use, a)	•		
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppings, ca	asings,	nests, etc.):	
Butterfly							
Additional relevant factors:							
Assessment conducted by:			Assessment date	(s):			
RM & TS			07/25/23				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: 115 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/25/23 **Impact** Not Present (0) Scoring Guidance Optimal (10) Moderate(7) Minimal (4) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is insufficient to provide Condition is less than optimal, but sufficient to would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 5 a. Quality and quantity of habitat support outside of AA. 5 b. Invasive plant species. 8 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support 2 d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. 7 2 Hydrologic connectivity (impediments and flow restrictions). p. Dependency of downstream habitats on quantity or quality of discharges. 3 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). 3 Additional Notes: 0 4 a. Appropriateness of water levels and flows. . Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. Use by animals with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Notes: 0 6 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 3 VI. Plants' condition. 5 Benthic VII. Land management practices. 2 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area With Impact Current Additional Notes: Frequently grazed by cattle. 0 4 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.40 0.00 **FL** = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.400 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name	Application Number	nber Assessment Area Name or Number				
					1	14
FLUCCs code	Further classifica	tion (optional)		Impact Type		Assessment Area Size
2230	Se	mi-deciduous fo	rest	Direct Impact Acres		
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	on (i.e.OFW, AF	P, other local/state/federal	designation of importance)
N/A	N/A				N/A	
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, uplar	nds		
Mastic Forest (Semi-deciduous fo	orest), Central Mangro	ove Wetland (We	st)			
Assessment area description						
Semi-deciduous forest						
Significant nearby features	Uniqueness (collandscape.)	nsidering th	e relative rarity in	relation to the regional		
Central Mangrove Wetland		Mastic Forest, Mastic Trail				
Functions			Mitigation for prev	vious permit	t/other historic use	}
			N/A			
Anticipated Wildlife Utilization Base that are representative of the asses be found)				T, SSC), typ	ed Species (List s be of use, and inte	pecies, their legal nsity of use of the
Observed Evidence of Wildlife Utiliz	zation (List species dire	ctly observed, or	other signs such a	s tracks, dr	oppings, casings,	nests, etc.):
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
RM & TS	07/25/23					

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: 114 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 07/25/23 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 6 a. Quality and quantity of habitat support outside of AA. b. Invasive plant species. 4 9 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support d. Downstream benefits provided to fish and wildlife. 5 e. Adverse impacts to wildlife in AA from land uses outside of AA. 6 Hydrologic connectivity (impediments and flow restrictions). 4 p. Dependency of downstream habitats on quantity or quality of discharges. 3 With Impact Current Protection of wetland functions provided by uplands (upland AAs only). Additional Mastic Trail, Mastic Forest, Younger portion of the forest. Young growth, appears to maybe have been cleared within the last 10 years. 5 0 a. Appropriateness of water levels and flows. Reliability of water level indicators. c. Appropriateness of soil moisture. flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. Use by animals with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Notes: 0 7 . Appropriate/desirable species .500(6)(c) Community Structure l. Invasive/exotic plant species 4 II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 5 VI. Plants' condition. 6 Benthic VII. Land management practices. 4 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: Native - Gumbo Limbo, ficus benjamina. Invasive - Cogon grass 0 5 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) Current With Impact **Functional Loss (FL)** [For Impact Assessment Areas]: 0.50 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.500 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name Application Nu			per Assessment Area Name or Number			
					;	3
FLUCCs code	Further classifica	tion (optional)		Impac	t Type	Assessment Area Size
1831	Man-	modified without	trees			Acres
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	on (i.e.C	FW, AP, other local/state/federal	designation of importance)
Geographic relationship to and hydr	ologic connection with	wetlands, other si	urface water, uplar	nds		
Assessment area description						
Man-modified without trees.						
Significant nearby features	Uniqueness (cor landscape.)	nsideri	ng the relative rarity in	relation to the regional		
Surrounded by residential, roads,		None				
Functions			Mitigation for prev	vious p	permit/other historic use	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)				T, SSC	y Listed Species (List s C), type of use, and inte	
Observed Evidence of Wildlife Utiliz	ation (List species dire	ctly observed, or	other signs such a	s track	s, droppings, casings,	nests, etc.):
Insects, birds						
Additional relevant factors:						
Trash/litter - moderate						
Assessment conducted by:			Assessment date	(s):		
JS and MM			07/25/23			

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: 3 Impact or Mitigation: Assessment Conducted by: Assessment Date: Impact JS and MM 07/25/23 Scoring Guidance Optimal (10) Moderate(7) Minimal (4) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface wate wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) a. Quality and quantity of habitat support outside of AA. 4 b. Invasive plant species. 3 Wildlife access to and from AA (proximity and barriers). 7 .500(6)(a) Location and Landscape Support N/A . Downstream benefits provided to fish and wildlife. Adverse impacts to wildlife in AA from land uses outside of AA. 4 N/A Hydrologic connectivity (impediments and flow restrictions). Dependency of downstream habitats on quantity or quality of discharges N/A Current With Impact . Protection of wetland functions provided by uplands (upland AAs only). 2 Notes: 4 0 a. Appropriateness of water levels and flows. Reliability of water level indicators Appropriateness of soil moisture. d. Flow rates/points of discharge. 500(6)(b) Water Environment Fire frequency/severity. (n/a for uplands) Type of vegetation. g. Hydrologic stress on vegetation. . Use by animals with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community Current With Impact Water depth, wave energy, and currents. Additional N/A Notes: 0 0 . Appropriate/desirable species 4 .500(6)(c) Community Structure II. Invasive/exotic plant species 4 III. Regeneration/recruitment X Vegetation IV. Age, size distribution. 1 V. Snags, dens, cavity, etc. 0 Benthic VI. Plants' condition. 6 VII. Land management practices VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). N/A X. Upland assessment area With Impact Current Additional Notes: Tecoma stans, Leucaena leucocephala, Haematoxylum campechianum, Bourreria venosa, Setaria geniculata/ parviflora (bristle grass) n 3 Impact Acres = 0.00 Raw Score = Sum of above scores/30 (if uplands, divide by 20) Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.35 0.00 FL = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.350 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

C. /D. 1							
Site/Project Name	Applica	tion Number	Assessment Area Name	or Number			
			2	24			
FLUCCs code	Further classification (op	otional)	Impact Type	Assessment Area Size			
18311	Man-modifie	ed without trees	Direct Impact	Acres			
Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classificat	ion (i.e.OFW, AP, other local/state/federa	I designation of importance)			
Geographic relationship to and hyd	rologic connection with wetland	ds, other surface water, upla	inds				
Assessment area description							
Man-modified without trees.							
Significant nearby features		Uniqueness (co landscape.)	onsidering the relative rarity in	relation to the regional			
Sourrounded west and south by	roads. Surrounded by agricu	ulture. None	None				
Functions		Mitigation for pre	vious permit/other historic use	9			
Anticipated Wildlife Utilization Base that are representative of the asses be found)			ation by Listed Species (List s T, SSC), type of use, and inte a)				
Observed Evidence of Wildlife Utiliz	zation (List species directly obs	served, or other signs such a	as tracks, droppings, casings,	nests, etc.):			
Lizards, butterflies, smooth billed	d anil (birds)						
Additional relevant factors:							
Assessment conducted by:		Assessment date	e(s):				
JS and MM		07/25/23					

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: 24 Impact or Mitigation: Assessment Conducted by: Assessment Date: Impact JS and MM 07/25/23 Scoring Guidance Optimal (10) Moderate(7) Minimal (4) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface wate wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) a. Quality and quantity of habitat support outside of AA. 6 b. Invasive plant species. 7 Wildlife access to and from AA (proximity and barriers). 4 .500(6)(a) Location and Landscape Support N/A . Downstream benefits provided to fish and wildlife. Adverse impacts to wildlife in AA from land uses outside of AA. 4 Hydrologic connectivity (impediments and flow restrictions). 2 Dependency of downstream habitats on quantity or quality of discharges 0 Current With Impact . Protection of wetland functions provided by uplands (upland AAs only). 0 Notes: 3 0 a. Appropriateness of water levels and flows. Reliability of water level indicators Appropriateness of soil moisture. d. Flow rates/points of discharge. 500(6)(b) Water Environment Fire frequency/severity. (n/a for uplands) Type of vegetation. g. Hydrologic stress on vegetation. . Use by animals with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community Current With Impact Water depth, wave energy, and currents. Additional N/A Notes: 0 0 . Appropriate/desirable species 6 .500(6)(c) Community Structure II. Invasive/exotic plant species 6 III. Regeneration/recruitment X Vegetation IV. Age, size distribution. 5 V. Snags, dens, cavity, etc. 1 Benthic VI. Plants' condition. VII. Land management practices VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). N/A X. Upland assessment area With Impact Current Additional Notes: Alamo vine (Merremia dissecta, coconut palm (cocos nucifera), logwood/bloodwood (Haematoxylum campechianum), tan-tan (Leucaena leucocephala), red mombin (Spondias purpurea), guinea grass (panicum maximum/megathyrsus maximus) n 4 Impact Acres = 0.00 Raw Score = Sum of above scores/30 (if uplands, divide by 20) Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.35 0.00 FL = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.350 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	nber Assessment Area Name or Number				
					4	1	
FLUCCs code	Further classifica	tion (optional)		Impact	Туре	Assessment Area Size	
1214		Coastal Shrub				Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)				
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, uplar	nds			
Caribean sea south of AA. Uplan	ds						
Assessment area description							
Coastal shrub south of Boddon	Гown Road.						
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)				
Residential, road		None					
Functions			Mitigation for prev	vious p	ermit/other historic use		
Anticipated Wildlife Utilization Base that are representative of the asses be found)				T, SSC	/ Listed Species (List s), type of use, and inte		
Observed Evidence of Wildlife Utiliz	zation (List species dire	ctly observed, or	lother signs such a	s track	s, droppings, casings,	nests, etc.):	
gecko, anole, birds							
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
JS and MM	07/26/23						

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: 41 Impact or Mitigation: Assessment Conducted by: Assessment Date: Impact JS and MM 07/26/23 Scoring Guidance Optimal (10) Moderate(7) Minimal (4) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface wate wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) a. Quality and quantity of habitat support outside of AA. 4 b. Invasive plant species. 8 Wildlife access to and from AA (proximity and barriers). 2 .500(6)(a) Location and Landscape Support . Downstream benefits provided to fish and wildlife. 2 Adverse impacts to wildlife in AA from land uses outside of AA. 3 Hydrologic connectivity (impediments and flow restrictions). Dependency of downstream habitats on quantity or quality of discharges 1 Current With Impact Protection of wetland functions provided by uplands (upland AAs only). 3 Additional Fragmented by road. Invsavies on fringe. Birds access. Stops erosion into Half Moon Bay. Notes: 3 0 a. Appropriateness of water levels and flows. Reliability of water level indicators. Appropriateness of soil moisture. d. Flow rates/points of discharge. 500(6)(b) Water Environment Fire frequency/severity. (n/a for uplands) Type of vegetation. g. Hydrologic stress on vegetation. Use by animals with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. Current With Impact Water depth, wave energy, and currents. Additional N/A Notes: . Appropriate/desirable species 8 .500(6)(c) Community Structure II. Invasive/exotic plant species 8 III. Regeneration/recruitment X Vegetation IV. Age, size distribution. 4 V. Snags, dens, cavity, etc. 2 Benthic VI. Plants' condition. 6 VII. Land management practices VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). N/A X. Upland assessment area With Impact Current Additional Notes: Native - seagrape (Coccoloba uvifera), bourreria (Bourreria venosa) n 4 Impact Acres = 0.00 Raw Score = Sum of above scores/30 (if uplands, divide by 20) Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.35 0.00 FL = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.350 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

2024 UMAM Sheets

Site/Project Name		Application Number	per Assessment Area Name or Number				
					A 1		
FLUCCs code	Further classifica	tion (optional)		Impact Type	Assessment Area Size		
3112	Seaso	nally Flooded Ma	ingrove	Direct Impact Acres			
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	on (i.e.OFW, AP, other local/state/federa	al designation of importance)		
N/A	N/A			N/A			
Geographic relationship to and hyd	Irologic connection with	wetlands, other s	urface water, upla	nds			
North sound located to the north	n of the AA. Urban resi	idential developn	nent located to th	ne west.			
Assessment area description							
Mangrove forest within mosquit	to control area.						
Significant nearby features		Uniqueness (considering the relative rarity in relation to the regional landscape.)					
Residential development nearby	to the west		Central Mangrove Wetland				
Functions			Mitigation for pre	vious permit/other historic us	е		
Stormwater runoff storage and t	reatment, Wildlife hab	itat	N/A				
Anticipated Wildlife Utilization Base that are representative of the asse be found)		•	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)				
Coastal avian and terrstrial spec	ies.						
Observed Evidence of Wildlife Util	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):		
Yellow warbler, Loggerhead flyc	atcher, Land Crab, Sm	nooth-billed Ani,	White-winged do	ve, Butterfly			
Additional relevant factors:							
Mangroves are impounded for m	osquitto control use.	Very little flushir	ng from tidal fluct	tuations.			
Assessment conducted by:			Assessment date	e(s):			
RM & TS	05/14/24						

Page of a Filing part Page						FIGATION ASSESSMENT WO 2), F.A.C. (See Sections 62-3			CT	
The county of continue of the county of county of continue of the county of co	Site/Project Na	ame:	-			Application Number:		Asse	essment Area	
Control Con	Impact or Mitig	gation:	Impact				тѕ	Asse	essment Date	
Security and substants for the type of ordinated subsected buries and substantial subsections. Comment		Scoring Guidar	nce	Optimal (1	0)	Moderate(7)		Minimal ((4)	Not Present (0)
Society of special contents and Landbooks Society 4. Current Society and special part specials. 5. Current Society of the Society of Society	would be suitable for the type of wetland or supports wetland/surface water water water water wetland/surface water wetland/surface water									
Martin M								Enter Notes below	v (do NOT sco	ore each subcategory individually)
Current Cur	b. Invasive plant species. c. Wildlife access to and from A. d. Downstream benefits provide			A (proximity and barriers). ed to fish and wildlife.				8 7 8		
With Impact September Se				•						
Presidence of wettered functioner provided by splanted kind professional production of the provided consistential professional control fragments hebbert and hydrologic consistential professional control fragments hebbert and hydrologic consistential professional control fragments hebbert and hydrologic consistential professional control fragments hebbert and flores. Application of the profession of t	Current]	With Impact				charges.			8
Second S				Additional Access		<u> </u>		nectivity.		
. Accordance S. Accordance				a. Appropriateness o	of water leve	els and flows.				5
Current				•						
First frequency/swerting				· · · ·						
Type of vegetation. 9	.500(· · · · · · · · · · · · · · · · · · ·		<u> </u>				
A contract Part Community Composition associated with waiter quality (i.e., plants beleant of poor WO). 9		(ii/a ioi apiano	,							9
Plant community composition associated with water quality (i.e., plants telerant of poor WO). 9 Water quality of standing water by observation (i.e., discoloration, turbidity). 4 4 6 7 7 7 7 7 7 7 7 7										
Wath Impact With Impact Wath Impact						<u> </u>	planta talarant	of poor WO		
Current With Impact								or poor ww.		
Nater depth, wave energy, and currents. S	_]								
Apropriate/desirable species 9	Current		With Impact	l. Water depth, wave	e energy, ar	nd currents.				5
1. Invasive/exotic plant species 9 1. Invasive/exotic plant species 9 1. Invasive/exotic plant species 9 1. Invasive/exotic plant species 1. Regeneration/recruitment 9 9 9 9	7		0	•	r: N @ 21PP	T, S @ 19PPT. Depth: N @ 17in, S	@ 16". Green f	ilm substance observ	ved on the w	aters surface.
III. Regeneration/recruitment 9 9 9 9 9 9 9 9 9				I. Appropriate/desira	ble species					9
V. Age, size distribution. 7	.500(6	6)(c) Community	Structure	II. Invasive/exotic pla	nt species					9
Senthic Functional Loss (FL) Functional Loss (FL) For impact Acres = 0.000										
Benthic Vi. Plants' condition. 7 7 7 7 7 7 7 7 7		X Veg	getation							,
VII. Land management practices. 5 VIII. Topographic features (refugia, channels, hummocks). 9 VIII. Topographic features (refugia, channels, hummocks). 9 VIII. Topographic features (refugia, channels, hummocks). VIII. Topographic features (refugia, channels, hummocks. VIII. Topographic features (Ror	othic							
VIII. Topographic features (refugia, channels, hummocks). 9 IX. Submerged vegetation (only score if present). Additional Notes: 40% Black Mangrove, 20% White Mangrove, 10% red mangrove, 30% Buttonwood; >30FT crown height; moderate crown density.			itilic			S.				·
Current With Impact Additional Notes: 40% Black Mangrove, 20% White Mangrove, 10% red mangrove, 30% Buttonwood; >30FT crown height; moderate crown density.		Bot	h							9
Current With Impact Additional Notes: 40% Black Mangrove, 20% White Mangrove, 10% red mangrove, 30% Buttonwood; >30FT crown height; moderate crown density.		٦				score if present).				
Raw Score = Sum of above scores/30 (iff uplands, divide by 20) Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: [For Impact Assessment Areas]: NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	Current		-	Additional Notes:		vo. 20% White Mangrove, 10% red	mangrove 30%	Ruttonwood: >30ET	C crown heigh	t: moderate crown density
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.73 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	8		0	40 /0 DI	ack Marigrov	ve, 20% writte mangiove, 10% led	mangrove, 5076	Buttonwood, 2001 1	r crown neigh	t, moderate crown density.
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: D.73 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	Raw Scor	re = Sum of abo	ove scores/30			Impact Acres =	0.00			
Functional Loss (FL) [For Impact Assessment Areas]: Impact Delta (ID)	(if	uplands, divide	by 20)					J		
Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	Current		With Impact							
was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.730 cannot be used to assess impacts; use the assessment method of the	0.73		0.00		FL	. = ID x Impact Acres =	0.000]		
mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.730 mitigation bank that was not assessed using UMAM, then UMAM		Impact Delta (ID)	was as	sessed using	g UMAM, then the credits required	for mitigation is	3		
	Current -	- w/Impact	0.730	mitigati cannot	on bank that be used to a	at was not assessed using UMAI	M, then UMAM	1		

Site/Project Name		Application Number	er Assessment Area Name or Number				
					A2		
FLUCCs code	Further classifica	tion (optional)		Impact Type	Assessment Area Size		
3112	Season	nally Flooded Ma	ingrove	Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	On (i.e.OFW, AP, other local/state/feder	al designation of importance)		
N/A	N/A			N/A			
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, uplar	nds			
North sound located to the north	west of the AA.						
Assessment area description							
Mangrove forest within mosquitt	o control area.						
Significant nearby features			nsidering the relative rarity in	relation to the regional			
			landscape.)				
			Central Mangrov	e Wetland			
Functions		Mitigation for prev	vious permit/other historic us	se			
Stormwater runoff storage and to	eatment, Wildlife habi	itat	N/A				
Anticipated Wildlife Utilization Base that are representative of the asses be found)		•	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)				
Coastal avian, marine and terrstr	ial species.						
Observed Evidence of Wildlife Utilia	zation (List species dire	ctly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):		
Common gallinule, butterflys, Sn	nooth-billed Ani, Grac	kle, Tri-colored h	neron.				
Additional relevant factors:							
Mangroves are impounded for m from tidal fluctuations.	osquitto control use c	on the south side	. No impoundme	nt evidence on the northe	n side. Some flushing		
Assessment conducted by:			Assessment date	e(s):			
RM & TS	05/14/24						

See Proposition 1997 Financial or Militage Act : Impact					TIGATION ASSESSMENT WORKS (2), F.A.C. (See Sections 62-345.5			СТ			
Summy Contract in bound on a less Operation (Pro) Minimal (II) Month (III) M	Site/Project Na	ame:	-		Application Number:		Asse	essment Area			
Packed to substitute of the process	Impact or Mitig	gation:	Impact		· ·		Asse	essment Date			
south to surface to the bype of volunted as part of membrane entransmission with defined under continuents of the bype of volunted as the property of the state of the bype of volunted as the property of the state of the bype of volunted as the property of the state of the bype of volunted as the property of the state of the bype of volunted as the property of the state of the bype of volunted as the property of the state of the bype of volunted as the property of the state of the bype of volunted as the property of the state of the bype of volunted as the property of		Scoring Guidar	nce	Optimal (10)	Moderate(7)		Minimal	(4)	Not Present (0)		
2. Cuting and quantity of habitat support sunds of AA. 3. Invasive plant species. 3. Overally and quantity of habitat support sunds of AA. 4. Invasive plant species. 5. Overally and quantity. 6. Invasive plant species. 7. Pythologic community of habitat support authorism, and the plant species. 8. Overally and of the NA. 7. Pythologic community of habitat support authorism, and the plant shall be a decided plant. 8. Overally and the plant species. 9. Pythologic community of habitat support and the NA. 7. Pythologic community of habitat support and the NA. 7. Pythologic community of habitat support and the NA. 7. Pythologic community of habitat support and the NA. 7. Pythologic community of habitat support and the NA. 7. Pythologic community of habitat support and the NA. 8. Perfect of the NA. 9. Per	would be su	uitable for the typ	e of wetland or	supports wetland/surface water	• •		wetland/surfac	ce water	· · · · · · · · · · · · · · · · · · ·		
Note							Enter Notes below	v (do NOT sco	ore each subcategory individually)		
Dependency of water femorarisms benefits protected to fish and visiting. Current With Impact B O O O O O O O O O O O O				. , ,	at support outside of AA.						
Current With Inspect B. Dependency of chromatures and flow or prelations (b. 1) B. Dependency of chromatures (b. 1) Additional Access ranks for miscognite content frequencies habited and some phydrologic consciency. Additional Access ranks for miscognite content frequencies habited and some phydrologic consciency. B. Appropriateness of water levels and flows. J. Appropriateness of water levels and flows. J. Appropriateness of water levels and flows. J. Report and flows. J. Report and flows. J. Report and flows. J. Report and flows. J. Part and flows. J. Part and flows. J. Type of wegetation. J. Type of wegetation. J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Water quality of samining water flow observation (b. decrease). J. Appropriate decrease observation (b. decrease). J. Water quality of samining water flows. J. Page and the flow observation (b. decrease). J. Appropriate decrease observation (b. decrease). J. Appropriate decrease observation (b. decrease). J. Appropriate decrease observation (b. decrease). J. Page and the flow observation (b. decrease). J. Appropriate decrease observation (b	.500(6)(a) Lo	ocation and Lan	dscape Support	d. Downstream benefits provided to fish and wildlife.					9		
B Production of western discretions provided by uplands (signated Aks anyl). Additional Access roads for notiquate control fragments habital and some hydrologic conectivity. Additional Access roads for notiquate control fragments habital and some hydrologic conectivity. Additional Access roads for notiquate control fragments habital and some hydrologic conectivity. Additional Access roads for notiquate control fragments habital and some hydrologic conectivity. Additional Access roads for notiquate control fragments habital and some hydrologic conectivity. Additional Access roads for notiquate control fragments habital and some hydrologic conectivity. 9				·							
Additional Association of wettered functioning provided by updated Arks only). Additional Association control francepolitic control fragrenous healthst and assume hyphologic contentivity. Notice: Additional Associations of water levels and flows. Associations of water levels and flows. Association of water levels flows. Association of water levels and flows.	Current		With Impact	g. Dependency of downstream	habitats on quantity or quality of discharge	es.			9		
8	Curront	1	Titti iiipast		· · · · · · · · · · · · · · · · · · ·						
Second Comment Seco	8		0								
				., .					,		
Source Environment (rive for upsands) - Flow retexpoints of discharge. - Fire requency/seventy. - Type of vegetation In year quality of standing water by observation (tie., discoloration, lurobidity). - Water quality data for the type of community. - Water quality data for the type of community Water quality water for the type of community Water quality water for the type of community The year of community Water quality of standing water by observation (tie., discoloration, lurobidity). - Water quality data for the type of community Water quality of standing water by observation (tie., discoloration, lurobidity) Water quality data for the type of community The year of community Water quality data for the type of community Network depth, wave energy, and currents Southerney, and currents Assimonal Sainty. N & 22.8 FPT. S @ 21.2 FPT. Depth: N ® 16in. S @ 20°. Green film substance observed on the waters surface, high turbidity Notes: - Investment species Year of the waters surface, high turbidity Notes: - Investment species Year of the waters surface, high turbidity Years of section Years of standing species Years of standing species Years of standing species Years of standing species Years of species.											
Pite frequencyseventy. 7	=00/	(0) (1) 144 (' ' '							
### Current Plant community composition associated with water quality (i.e., plants tolerant of poor WO). 9	.500(. , . ,							7		
N. Use by animals with hydrologic reduirements. 4		` .	,								
Plant community composition associated with water quality (i.e., plants talerant of poor WO). 9 Water quality of standing water by observation (i.e., discoloration, turbicity). 3 3 3 3 3 3 3 3 3 3				• • •					4		
Current With Impact E. Water quality data for the type of community: 9					<u>- </u>	ts tolerant o	of poor WQ).		9		
With Impact Water depth, wave energy; and currents. S Additional Salinity: N @ 22 BPFT, S @ 21.2PPT. Depth: N @ 16in, S @ 20' Green film substance observed on the waters surface, high turbidity. Notes: Soo(6)(c) Community Structure II. Appropriate/desirable species 9 III. A		-		j. Water quality of standing wa	ater by observation (l.e., discoloration, tu	rbidity).			3		
Apropriate/desirable species 9	Current		With Impact								
II. Invasive/exotic plant species 9	7		0	•	PPT, S @ 21.2PPT. Depth: N @ 16in, S (20". Gree	en film substance ob	bserved on th	e waters surface, high turbidity.		
III. Regeneration/recruitment 6 6				I. Appropriate/desirable species					9		
V. Age, size distribution. 7 V. Snags, dens, cavity, etc. 8 8 M. V. Snags, dens, cavity, etc. 8 M. V. Plants' condition. 8 M. VII. Land management practices. 5 VIII. Topographic features (refugia, channels, hummocks). 9 M. Submerged wegetation (only score if present). V. Submerged	.500(6	6)(c) Community	Structure	II. Invasive/exotic plant species					9		
Senthic V. Snags, dens, cavity, etc. 8				-							
Benthic VI. Plants' condition. Both VIII. Land management practices. VIII. Land management practices. VIII. Topographic leatures (refugia, channels, hummocks). JUII. Topographic leatures (refugia, channels, hummocks. JUII. Topographic leatures (refugia, channels). JUII. Topographic leatures (refugia, channels). JUII. Topographic leatures (refugia, channels). JUII. Topographic leatures (re		X Veg	getation						'		
Both VII. Land management practices. 5		Ber	nthic	·							
X. Submerged vegetation (only score if present): X. Upland assessment area Additional Notes: 60% Black Mangrove, 35% Red Mangrove, 5% Buttonwood. 10-30FT height, Crown density: Good/Full overall, however Buttonwood looks stressed due to possible overinundation.			11110		PS.						
Current With Impact X. Upland assessment area Additional Notes: 60% Black Mangrove, 35% Red Mangrove, 5% Buttonwood. 10-30FT height, Crown density: Good/Full overall, however Buttonwood looks Stressed due to possible overinundation. Impact Acres = 0.00		Bot	h						9		
Current With Impact Additional Notes: 60% Black Mangrove, 35% Red Mangrove, 5% Buttonwood. 10-30FT height, Crown density: Good/Full overall, however Buttonwood looks stressed due to possible overinundation.		7		` ` ` `	/ score if present).						
Raw Score = Sum of above scores/30 (if uplands, divide by 20) Current	Current		With Impact	Additional	ove, 35% Red Mangrove, 5% Buttonwood.	. 10-30FT h	eight, Crown densit	ty: Good/Full	overall, however Buttonwood looks		
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.77 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	8		0	stressed due to po	essible overinundation.						
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.77 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was assessed using UMAM, then UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the		•					1				
Current - w/Impact 0.770 0.00 Functional Loss (FL) [For Impact Assessment Areas]: Functional Loss (FL) [For Impact Assessment Areas]:					Impact Acres =	0.00					
O.77 D.00 FL = ID x Impact Acres = D.000	Current		With Impact		· · ·						
was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.770 cannot be used to assess impacts; use the assessment method of the	0.77		0.00	F		0.000					
mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.770 cannot be used to assess impacts; use the assessment method of the		Impact Delta (ID)	was assessed usin	ng UMAM, then the credits required for m	nitigation is					
	Current -	- w/Impact	0.770	mitigation bank the cannot be used to	nat was not assessed using UMAM, th	en UMAM					

Site/Project Name		Application Number	er	nber Assessment Area Name or Number			
					А3		
FLUCCs code	Further classifica	tion (optional)		Impact Type	Assessment Area Size		
3112	Seasor	nally Flooded Ma	Mangrove Direct Impact Acres				
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	On (i.e.OFW, AP, other local/state/feder	al designation of importance)		
N/A	N/A			N/A			
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, uplar	nds			
North sound located to the north	west of the AA.						
Assessment area description							
Mangrove forest within mosquitt	o control area.						
Significant nearby features				nsidering the relative rarity in	relation to the regional		
			landscape.)				
			Central Mangrov	ve Wetland			
Functions			Mitigation for prev	vious permit/other historic us	e		
Stormwater runoff storage and to	eatment, Wildlife habi	itat	N/A				
Anticipated Wildlife Utilization Base that are representative of the assesbe found)		•	•	ation by Listed Species (List T, SSC), type of use, and int)			
Coastal avian, marine and terrstr	ial species.						
Observed Evidence of Wildlife Utili:	zation (List species dire	ctly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):		
Butterflys, Tri-colored heron, Gr	ackle						
Additional relevant factors:							
Mangroves are impounded for m from tidal fluctuations.	osquitto control use c	on the south side	e. No impoundme	nt evidence on the norther	n side. Some flushing		
Assessment conducted by:			Assessment date	e(s):			
RM & TS			05/14/24				

				TIGATION ASSESSMENT WORK 2), F.A.C. (See Sections 62-345.5						
Site/Project Na	ıme:	-		Application Number:		Asses	sment Area	Name or Number:		
Impact or Mitiga	ation:	Impact		Assessment Conducted by: RM & TS		Asses	sment Date:	05/14/24		
	Scoring Guidar	ice	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)		
would be sui		is based on what be of wetland or essed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but suf maintain most wetland/surface waterf		Minimal level of su wetland/surface functions	water	Condition is insufficient to provide wetland/surface water functions		
						Enter Notes below (do NOT sco	ore each subcategory individually)		
			a. Quality and quantity of habitab. Invasive plant species.	t support outside of AA.				9		
.500(6)(a) Lo	ocation and Lan	dscape Support	c. Wildlife access to and from AA (proximity and barriers). d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA.				,	7 10		
			f. Hydrologic connectivity (imp					5		
				nabitats on quantity or quality of discharg	es.			9		
Current		With Impact	h. Protection of wetland functions	s provided by uplands (upland AAs only)						
8		0	Additional Access roads for m Notes:	Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity.						
•			a. Appropriateness of water leve	els and flows.				7		
			b. Reliability of water level indic					9		
			c. Appropriateness of soil moistd. Flow rates/points of discharg					9 5		
.500(6	6)(b) Water Env n/a for upland)		e. Fire frequency/severity.	•				7		
	(iiia ioi apiana	- ,	f. Type of vegetation.					9		
			g. Hydrologic stress on vegetath. Use by animals with hydrologic					8		
				n associated with water quality (i.e., plan	ts tolerant o	of poor WQ).		9		
			j. Water quality of standing wa	ter by observation (I.e., discoloration, tu	rbidity).			3		
Current	fr. 11	With Impact	k. Water quality data for the type I. Water depth, wave energy, ar	nd currents.				9 5		
7		0	Additional Salinity: N @ 33PP Notes:	T, S @ 30PPT. Depth: N @ 14in, S @ 19	9". Green fil	Im substance observe	ed on the wa	aters surface, high turbidity.		
<u> </u>			I. Appropriate/desirable species					9		
.500(6)	(c) Community	Structure	II. Invasive/exotic plant species					9		
	V \/oc	uototion	III. Regeneration/recruitment IV. Age, size distribution.					7		
-	X Veg	jetation	V. Snags, dens, cavity, etc.					8		
	Ber	nthic	VI. Plants' condition.					8		
-			VII. Land management practices					5		
-	Bot	h	VIII. Topographic features (refug IX. Submerged vegetation (only					9		
			X. Upland assessment area	oooro ii prooority.						
Current		With Impact	Additional Notes: 45% Black Mangrov	ve, 40% Red Mangrove, 5% White Mang stressed due to possible overinundation.	rove, 10% E	Buttonwood. 10-30FT	height, Cro	own density: Good/Full overall, however		
8		0	Buttoriwood looks s	stressed due to possible overindination.						
	e = Sum of abo			Impact Acres =	0.00					
(if u	uplands, divide l	oy 20)								
Current		With Impact		Functional Loss (FL) [For Impact Assessment Areas]:						
0.77		0.00	FL	_ = ID x Impact Acres =	0.000					
	Impact Delta (l	D)	was assessed usin	proposed to be mitigated at a mitigation g UMAM, then the credits required for mall Loss (FL). If impact mitigation is prop	nitigation is					
Current -	w/Impact	0.770	mitigation bank the	at was not assessed using UMAM, the assess impacts; use the assessment me	en UMAM					

Site/Project Name		Application Numbe	umber Assessment Area Name or Number				
					A	A4	
FLUCCs code	Further classifica	ation (optional)		Impact	Туре	Assessment Area Size	
3112	Seaso	nally Flooded Ma	Mangrove Direct Impact Acres				
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	on (i.e.Of	FW, AP, other local/state/federal	designation of importance)	
N/A	N/A				N/A		
Geographic relationship to and hyd	rologic connection with	wetlands, other su	urface water, uplar	nds			
North sound located to the north	nwest of the AA.						
Assessment area description							
Mangrove forest within mosquit	to control area.						
Significant nearby features			Uniqueness (collandscape.)	nsiderii	ng the relative rarity in	relation to the regional	
			Central Mangrov	ve Wet	land		
Functions			Mitigation for prev	vious p	ermit/other historic use)	
Stormwater runoff storage and t	reatment, Wildlife hab	itat	N/A				
Anticipated Wildlife Utilization Base that are representative of the asse be found)		•	·	T, SSC	Listed Species (List s;), type of use, and inte		
Coastal avian, marine and terrst	rial species.						
Observed Evidence of Wildlife Util	zation (List species dire	ectly observed, or	ther signs such a	s track	s, droppings, casings,	nests, etc.):	
Butterflys, Fish, Grackle, Lizard							
Additional relevant factors:							
Mangroves are impounded for m from tidal fluctuations.	nosquitto control use o	on the west side.	No impoundmen	nt evide	ence on the eastern s	ide. Some flushing	
Assessment conducted by:			Assessment date	e(s):			
RM & TS			05/14/24				

Page Control Page						TIGATION ASSESSMENT W 2), F.A.C. (See Sections 62-			ACT			
Scorego Capacina (1999)	Site/Project Na	ame:	-			Application Number:		Ass	sessment Area			
The country of such information is asserted and support of such that the process of very support of very support of such that the process of very support of very support of such that the process of very support of such that the process of very support of such that the process of very support of very support of such that the process of very support of very support of such that the process of very support of very support of such that the process of very support of such that the process of very support of very sup	Impact or Mitig	ation:	Impact				k TS					
souther to make per a material strategies for the per a material strategie		Scoring Guidar	nce	Ор	timal (10)	Moderate(7)		Minimal	ıl (4)	Not Present (0)		
Exercises and Landscape Steps	would be su	iitable for the typ	e of wetland or	supports we	tland/surface water	•		wetland/surfa	ace water	·		
Description Courters Description Des								Enter Notes below	ow (do NOT sc	ore each subcategory individually)		
Current With Impact Page	.500(6)(a) Lo	ocation and Lan	dscape Support	b. Invasive p c. Wildlife ac d. Downstre	lant species. cess to and from A am benefits provide	A (proximity and barriers). ed to fish and wildlife.				9 7 9		
Current Wish Impact Part					·							
Appropriate control frequency According to the control frequency According to passed According]					scharges.					
a. Appropriateness of water levels and flows. 7 b. Rodolfolly Water Environment (n/s for Ludands) (n/s for Ludands) (n/s for Ludands)	Current		With Impact	· .								
Berthic With Impact	8		0									
										<u> </u>		
Flow reservations of dechange. 5												
Part Frequency		->//>->										
April Apri	.500(e. Fire frequ	ency/severity.					7		
Note Section		, ,	,									
Plant community composition associated with water quality (i.e., plants tolerant of poor WO). 9 With Impact With Impact With Impact With Impact												
Current With Impact With Impact With Impact Current							nlants tolerant	of poor WO				
With Impact Uniform Impact Delta (ID)								or poor ww.				
LWater depth, wave energy, and currents. 5	•		NACCO I				, , , , , , , , , , , , , , , ,					
Current With Impact With Impact Current With Impact With Impact Current Current Current With Impact Current With Impact Current Current Current Current Current With Impact Current	Current		with impact	l. Water dept	th, wave energy, ar	nd currents.				5		
II. Invasive/exotic plant species 9	7		0		Salinity: W @ 25PF	PT, E @ 29PPT. Depth: W @ 36ir	, E @ 18". Green	film substance obs	served on the	waters surface, high turbidity.		
III. Regeneration/recruitment				I. Appropriate	e/desirable species					9		
Note: If impact Acres = 0.000 Note: If impact Acres = 0.000 Note: If impact Acres = 0.	.500(6	6)(c) Community	Structure	II. Invasive/ex	xotic plant species					9		
Benthic V. Snags, dens, cavity, etc. 8												
Benthic VI. Plants' condition. 6		X Veg	getation							, , , , , , , , , , , , , , , , , , ,		
Both VIII. Land management practices. 5 VIII. Topographic features (refuglia, channels, hummocks). 8 K. Submerged vegetation (only score if present).		Rer	othic		<u>*</u>					-		
IX. Submerged vegetation (only score if present). Current						S.						
Current With Impact Additional Additional Notes: 50% Black Mangrove, 40% Red Mangrove, 5% White Mangrove, 5% Buttonwood. 10-30FT height, Crown density: All mangrove are showing lower than usuall crown density. Black sooty mold present on leaves and limbs. Impact Acres = 0.00		Bot	h	VIII. Topogra	phic features (refug	ia, channels, hummocks).				8		
Current With Impact Mith Impact Additional Notes: S0% Black Mangrove, 40% Red Mangrove, 5% White Mangrove, 5% Buttonwood. 10-30FT height, Crown density: All mangrove are showing lower than usuall crown density. Black sooty mold present on leaves and limbs. Raw Score = Sum of above scores/30 (if uplands, divide by 20) Impact Acres = 0.00		1				score if present).						
Impact Acres = 0.00	Current		With Impact	Additional Notes:	50% Black Mangro	-	_		FT height, Crov	vn density: All mangrove are showing		
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.53 O.00 FL = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	1		0		lower than usuall cr	rown density. Black sooty mold pre	esent on leaves a	nd limbs.				
Functional Loss (FL) [For Impact Assessment Areas]: Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the						Impact Acres =	0.00					
Impact Delta (ID)	Current		With Impact			Functional Logo (FL)		1				
Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the				1		• •						
was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.530 cannot be used to assess impacts; use the assessment method of the	0.53		0.00		FL	= ID x Impact Acres =	0.000					
mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.530 cannot be used to assess impacts; use the assessment method of the		Impact Delta (ID)		was assessed usin	g UMAM, then the credits require	d for mitigation is	3				
	Current -	· w/Impact	0.530		mitigation bank the cannot be used to a	at was not assessed using UM	AM, then UMAM	1				

Site/Project Name		Application Number	mber Assessment Area Name or Number			or Number		
					A	\ 5		
FLUCCs code	Further classifica	tion (optional)		Impact	t Type	Assessment Area Size		
3112	Season	nally Flooded Ma	angrove		Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	on (i.e.O	FW, AP, other local/state/federal	designation of importance)		
N/A	N/A				N/A			
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, uplar	nds				
North sound located to the north	west of the AA.							
Assessment area description								
Mangrove forest within mosquitt	o control area.							
Significant nearby features			Uniqueness (collandscape.)	nsideri	ing the relative rarity in	relation to the regional		
			Central Mangrove Wetland					
Functions			Mitigation for prev	vious p	permit/other historic use	9		
Stormwater runoff storage and to	reatment, Wildlife habi	itat	N/A					
Anticipated Wildlife Utilization Base that are representative of the assesbe found)			· ·	T, SSC	y Listed Species (List s C), type of use, and inte			
Coastal avian, marine and terrstr	ial species.							
Observed Evidence of Wildlife Utili	zation (List species dire	ctly observed, or	other signs such a	s track	ks, droppings, casings,	nests, etc.):		
Butterflys, yellow warbler								
Additional relevant factors:								
Mangroves are impounded for m from tidal fluctuations.	osquitto control use c	on the south side	e. No impoundme	nt evid	dence on the nothern	side. Some flushing		
Assessment conducted by:			Assessment date	e(s):				
RM & TS			05/14/24					

						TIGATION ASSESSMENT WO 2), F.A.C. (See Sections 62-3			ACT	
Impact Content (16) Modernamin(1) Minimal (4) Not Present (9)	Site/Project Na	ame:	-			Application Number:		A	ssessment Area	
The secret of seach infection to secret white support with extract the target of selection secret functions and support extraction for secret functions and support extraction for secret functions. Condition is best sharp expended whether secret functions are supported to the secret functions. Condition is best sharp expended to secret functions.	Impact or Mitig	gation:	Impact				тѕ	А	ssessment Date	
south to suitable for the type of vietned or surface variety or surface and the control of the c		Scoring Guidar	nce	Optimal	(10)	Moderate(7)		Minim	nal (4)	Not Present (0)
. Southly and quentity of habitet support outside of AA. Discouration and Landestage Support Committee	would be su	uitable for the typ	e of wetland or	supports wetland/	surface water	•		wetland/su	rface water	Condition is insufficient to provide wetland/surface water functions
S. Diceasion and Landscape Buspoon With Impact Current With Impact Output Valuer Environment (via hit updates) Output Valuer Environment (via hit updates) Output Valuer (author) Output Valuer								Enter Notes be	low (do NOT sc	ore each subcategory individually)
Current With Impact A physiologic connectivity (modelments and flow senticone). G G	.500(6)(a) Lo	ocation and Lan	dscape Support	b. Invasive plant s c. Wildlife access d. Downstream be	to and from A	A (proximity and barriers). ed to fish and wildlife.				9 7 9
### Current With Impact Current Current With Impact Current Current With Impact Current Current Current With Impact Current Current Current Current Current Current With Impact Current Current Current Current Current With Impact Current Current Current With Impact Current Current Current Current With Impact Current Current Current Current With Impact Current Current Current With Impact Current Cu				·						
Price Part		1					charges.			
Additional Access roads for mosquiric control fragments habitate and some hydrologic consectivity. Notes: **Appropriateness of water levels and flows. **D. Reliability of water levels and flows. **O. Appropriateness of water levels and flows. **O. Appropriateness of water levels and flows. **O. Appropriateness of sold moleture. **O. Appropriateness of sold moleture. **O. Appropriateness of sold moleture. **O. Error frequency/southy. **O. Appropriateness of water levels and flows. **O. Appropriateness of sold moleture. **O. Appropriateness of water levels and flows. **O. Appropriateness of water levels and flows. **O. Appropriateness of sold moleture. **O. Hydrologic stress on revegation. **O. Hydrologic repulsements. **O. Water quality (i.e., plants tolerant of poor VVO). **O. Billow Hydrologic repulsements. **O. Water quality (i.e., discoloration, strictley). **O. Additional Saminty, N & 27797, S & 28797. Depth. N & 6 in. S & 30°. Green filth substance observed on the waters surface. **O. Notes: **O. Additional Saminty, N & 27797, S & 28797. Depth. N & 6 in. S & 30°. Green filth substance observed on the waters surface. **O. Notes: **O. Additional Saminty, N & 27797, S & 28797. Depth. N & 6 in. S & 30°. Green filth substance observed on the waters surface. **O. Notes: **O. Notes: Appropriate levels and supplies to the surface of	Current		With Impact							
Selection Sele	8			Additional Acce	tional Access roads for mosquitto control fragments habitat and some hydrologic conectivity.					
. Appropriateness of soil moisture. (riva for uplands) (riva for										7
A - Flow retemporise of discharge. 5 5										
c. Fire frequency/seventy. (rola for uplanets) 6. Pige frequency/seventy. (.Type of vegetation. 9. Hydrologic stress on vegetation. 10. Le by a minate with hydrologic requirements. 10. Plant community. Commonstron associated with water quality (i.e., plants tolerant of poor WQ). 8. Water quality of standing water by observation (i.e., discoloration, turbidity). 10. With Impact 11. Water depth, wave energy, and currents. 12. Appropriate desirable species 13. Notes: 14. Appropriate desirable species 15. Il. Regeneration/recruitment 16. Regeneration/recruitment 17. Il. Land management practices 18. Regeneration/recruitment 18. Regeneration/recruitment 19. Regeneration/recruitment 19. Re										
F. Type of vegetation. 9	.500(<u>_</u>	-				
1. Use by animals with hydrologic requirements. 7 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ); 8		(iiia ioi apiano	,							9
Plant community composition associated with water quality (i.e., plants tolerant of poor WQ):				• • •						
With Impact						<u> </u>	nlants tolerant	of poor WO)		'
Current With Impact					-			or poor way.		
Current With Impact With Impact Current With Impact Current With Impact Current Current With Impact Current Current Current Current With Impact Current	Command]	Mith Imposes	<u> </u>						5
Appropriate/desirable species 9	Current		with impact							
I. Invasive/exotic plant species 9	7		0		ity: N @ 27PP	T, S @ 26PPT. Depth: N @ 6in, S	@ 30". Green fili	m substance obs	erved on the wa	ters surface.
III. Regeneration/recruitment 5 X Vegetation IV. Age, size distribution. 7 V. Snags, dens, cavity, etc. 8 VI. Plants' condition. 7 VIII. Land management practices. 5 VIII. Topographic features (refugia, channels, hummocks). 8 VIII. Topographic features (refugia, channels, hummocks). 10 VIII. Topographic features (refugia, channels, hummocks				I. Appropriate/desi	rable species					9
V. Age, size distribution. 7 7 7 7 7 7 7 7 7	.500(6	6)(c) Community	Structure							9
Benthic V. Snags, dens, cavity, etc. 8		V V	and a Cons							
Benthic VI. Plants' condition. 7 7 7 7 7 7 7 7 7		X Veg	getation							,
Both VII. Land management practices. 5 VIII. Topographic features (refugia, channels, hummocks). 7 VIII. Topographic features (refugia, channels, hummocks). 8 X. Submerged vegetation (only score if present). X. Upland assessment area Additional Notes: 30% Red Mangrove, 40% White Mangrove, 30% Buttonwood. 10-30FT height, Crown density: All mangrove are showing good crown of the state of the		Ber	nthic							
IX. Submerged vegetation (only score if present). X. Upland assessment area Additional Notes: 30% Red Mangrove, 40% White Mangrove, 30% Buttonwood. 10-30FT height, Crown density: All mangrove are showing good crown of 10 10 10 10 10 10 10 1						S.				5
Current With Impact X. Upland assessment area Additional Notes: 30% Red Mangrove, 40% White Mangrove, 30% Buttonwood. 10-30FT height, Crown density: All mangrove are showing good crown of the state of the		Bot	h							8
Current With Impact Additional Notes: 30% Red Mangrove, 40% White Mangrove, 30% Buttonwood. 10-30FT height, Crown density: All mangrove are showing good crown of the state of the s		7				score if present).				
Raw Score = Sum of above scores/30 (if uplands, divide by 20) Current	Current		-	Additional Notes:		e. 40% White Mangrove. 30% Butto	nwood. 10-30F7	T height. Crown c	lensitv: All mano	rove are showing good crown density.
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.73 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is	7		0		Ü	, ,		J	, .	
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.73 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is				1 -				7		
Functional Loss (FL) [For Impact Assessment Areas]: Functional Loss (FL) For Impact Assessment Areas]:						Impact Acres =	0.00			
0.73 Delta (ID) Delta (ID) Delta (ID	Current		With Impact			• •]		
Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is	0.73		0.00				0.000]		
tudi lo i unclivitai coss ii ci. Ii ilindale ilililidalion is biobosco ai a		Impact Delta (ID)	was a	assessed using	g UMAM, then the credits required	for mitigation is	5		
Current - w/Impact 0.730 mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.	Current -	- w/Impact	0.730	mitiga cann	ation bank that ot be used to a	at was not assessed using UMA	M, then UMAM	1		

Site/Project Name		Application Number	er	,	Assessment Area Name	or Number		
					A	\ 6		
FLUCCs code	Further classific	ation (optional)		Impact	Туре	Assessment Area Size		
1831	Ma	an-modified with t	vith trees Direct Impact Acres					
Basin/Watershed Name/Number	Affected Waterbody (Cla	ass)	Special Classification	on (i.e.Ol	FW, AP, other local/state/federa	designation of importance)		
N/A	N/A	1			N/A			
Geographic relationship to and hy-	drologic connection with	n wetlands, other s	urface water, uplai	nds				
Adjacent to the central mangrov	e wetland							
Assessment area description								
Man-modified habitat, stock pile	s of aggregate and ov	verburden scatter	ed throughout, h	aul equ	uipment stagging are	a.		
Significant nearby features			Uniqueness (co landscape.)	nsideri	ng the relative rarity in	relation to the regional		
Lime Rock Mine			Central Mangrove Wetland					
Functions			Mitigation for prev	vious p	ermit/other historic use	9		
Laydown and operations yard fo	or the lime rock mine		N/A					
Anticipated Wildlife Utilization Bas that are representative of the assebe found)		•	•	T, SSC	y Listed Species (List s			
Observed Evidence of Wildlife Util	ization (List species dir	ectly observed, or	other signs such a	s track	s, droppings, casings,	nests, etc.):		
Butterflys, Loggerhead kingbird	I							
Additional relevant factors:								
Some evidence of soil staining	present within the AA							
Assessment conducted by:			Assessment date	e(s):				
RM & TS			05/14/24					

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: **A6** Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 05/14/24 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide supports wetland/surface water would be suitable for the type of wetland or wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) a. Quality and quantity of habitat support outside of AA. 4 b. Invasive plant species. 4 4 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support Downstream benefits provided to fish and wildlife. 5 e. Adverse impacts to wildlife in AA from land uses outside of AA. 1 5 Hydrologic connectivity (impediments and flow restrictions). 6 p. Dependency of downstream habitats on quantity or quality of discharges. With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). 3 Additional Active lime rock mine. Notes: 0 4 a. Appropriateness of water levels and flows. Reliability of water level indicators. . Appropriateness of soil moisture. d. Flow rates/points of discharge. .500(6)(b) Water Environment e. Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. **Use by animal**s with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Notes: 0 0 Appropriate/desirable species 6 .500(6)(c) Community Structure 5 l. Invasive/exotic plant species II. Regeneration/recruitment 2 IV. Age, size distribution. 3 Vegetation V. Snags, dens, cavity, etc. 4 VI. Plants' condition. 2 Benthic VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 3 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) With Impact Current **Functional Loss (FL)** [For Impact Assessment Areas]: 0.35 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.350 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	er		Assessment Area Name	or Number	
					A	A7	
FLUCCs code	Further classifica	tion (optional)		Impact	Туре	Assessment Area Size	
	Seasonally I	Flooded Mangrov	ve Shrubland		Direct Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	on (i.e.O	FW, AP, other local/state/federal	I designation of importance)	
N/A	N/A				N/A		
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds			
Buffer to the central mangrove w	vetland						
Assessment area description							
Mangrove shrubland adjacent to deposits throughout the AA.	active lime rock mine	, no standing wa	iter present, sign	ificant	amounts of waste, do	ebris and limerock	
Significant nearby features			Uniqueness (co landscape.)	nsideri	ng the relative rarity in	relation to the regional	
Active lime rock mine, Adjacent	to Central Mangrove V	Vetland					
Functions			Mitigation for pre	vious p	permit/other historic use	e	
Stormwater runoff storage and t	reatment, Wildlife hab	itat	N/A				
Anticipated Wildlife Utilization Base that are representative of the asset be found)			The state of the s	T, SSC	y Listed Species (List s C), type of use, and inte		
Avian and terrestrial species							
Observed Evidence of Wildlife Utili	zation (List species dire	ctly observed, or	other signs such a	s track	s, droppings, casings,	nests, etc.):	
Yellow warbler, Anhinga							
Additional relevant factors:							
Soul staining and dispossed 55 (gallon drums present i	in the assessme	nt area.				
Assessment conducted by:			Assessment date	e(s):			
RM & TS			05/14/24				

					TIGATION ASSESSMENT WO 2), F.A.C. (See Sections 62-3	_		_		
Site/Project Na	ame:	-			Application Number:			Assessment Area	Name or Number:	
Impact or Mitig	ation:	Impact			Assessment Conducted by: RM &	тѕ		Assessment Date	05/14/24	
	Scoring Guidar	nce	Opt	imal (10)	Moderate(7)		Min	nimal (4)	Not Present (0)	
would be su	f each indicator itable for the typ irface water asse		supports wet	optimal and fully land/surface water inctions	Condition is less than optimal, but maintain most wetland/surface w		wetland/	vel of support of surface water nctions	Condition is insufficient to provide wetland/surface water functions	
							Enter Notes	below (do NOT sco	ore each subcategory individually)	
.500(6)(a) Lo	ocation and Lan	dscape Support	b. Invasive p	lant species.	A (proximity and barriers).				3 8 4 5	
				·	AA from land uses outside of AA.				3	
Current		With Impact	g. Dependency of downstream habitats on quantity or quality of discharges.					6		
5		0	Additional Notes:	or wettand functions	s provided by apianas (upiana AAs	AAs only).				
			b. Reliability	eness of water level of water level indice eness of soil moist	cators.				7 6 6	
.500(۱	6)(b) Water Env (n/a for upland			s/points of dischargency/severity.					6 7 6 8	
			g. Hydrologic h. Use by an	stress on vegetati		, plants tolerant	of poor WQ).		6 2 7	
	1 1				ter by observation (l.e., discoloration	on, turbidity).			5	
Current		With Impact		lity data for the type h, wave energy, ar					6	
6		0	Additional Notes:	Dry season - no sta	anding water present					
			I. Appropriate	/desirable species					8	
.500(6	6)(c) Community	Structure		otic plant species ion/recruitment					4	
	XVeg	jetation	IV. Age, size						5	
	Dow		V. Snags, de VI. Plants' co	ns, cavity, etc.					5 4	
	Ber	nthic		nagement practices	 S.				1	
	Bot	h	VIII. Topograp	phic features (refug	ia, channels, hummocks).				3	
]			ed vegetation (only sessment area	score if present).					
Current		With Impact	Additional Notes:	10% Black Mangrov	ve, 55% White Mangrove, 35% Butt resent on leaves and limbs.	onwood. ~10FT	「height, Crown	n density: All mangi	rove are showing low crown density.	
5		0		Diack sooty mola pi	resent of leaves and limbs.					
	re = Sum of about				Impact Acres =	0.00				
Current		With Impact] [Functional Loss (FL)]			
0.53		0.00			[For Impact Assessment Areas]: = ID x Impact Acres =	0.000	-			
	Impact Delta (I	D)		was assessed usin	proposed to be mitigated at a mitig	for mitigation is	5			
Current -	w/Impact	0.530		mitigation bank the	al Loss (FL). If impact mitigation is at was not assessed using UMAI assess impacts; use the assessmer	M, then UMAN	1			

Site/Project Name		Application Number	umber Assessment Area Name or Number				
					A8		
FLUCCs code	Furthe	er classification (optional)		Impact Type	Assessment Area Size		
3112		Seasonally Flooded Ma	Mangrove Direct Impact Acres				
Basin/Watershed Name/Number	Affected Wat	terbody (Class)	Special Classificati	On (i.e.OFW, AP, other local/state/fede	eral designation of importance)		
N/A		N/A		N/A			
Geographic relationship to and hy	drologic conn	ection with wetlands, other s	urface water, upla	nds			
Adjacent to mine pits and uplar	nd areas use	d in an active lime rock mir	e operation.				
Assessment area description							
Seasonally flooded mangrove f	orest. Depre	ssion and shallow pooling	common through	nt the habitat.			
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity	in relation to the regional		
Active lime rock mine							
Functions			Mitigation for pre	vious permit/other historic ι	se		
Stormwater runoff storage and	treatment, W	/ildlife habitat	N/A				
Anticipated Wildlife Utilization Bas that are representative of the asso be found)			· ·	ation by Listed Species (Lis T, SSC), type of use, and in n)			
Coastal avian, marine and terrs	trial species.						
Observed Evidence of Wildlife Ut	ilization (List s	species directly observed, or	I other signs such a	s tracks, droppings, casing	s, nests, etc.):		
Grackle							
Additional relevant factors:							
Abandoned limerock mine road	I to the north						
Assessment conducted by:			Assessment date	e(s):			
RM & TS			05/14/24				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: **Application Number:** Assessment Area Name or Number: **A8** Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 05/14/24 **Impact** Scoring Guidance Optimal (10) Moderate(7) Minimal (4) Not Present (0) Condition is optimal and fully Minimal level of support of The scoring of each indicator is based on what Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) a. Quality and quantity of habitat support outside of AA. 3 8 b. Invasive plant species. 6 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support Downstream benefits provided to fish and wildlife. 6 e. Adverse impacts to wildlife in AA from land uses outside of AA. 4 Hydrologic connectivity (impediments and flow restrictions). 5 7 p. Dependency of downstream habitats on quantity or quality of discharges. With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). Additional Notes: 6 0 a. Appropriateness of water levels and flows. 8 Reliability of water level indicators. 8 Appropriateness of soil moisture. 8 7 flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. 7 (n/a for uplands) Type of vegetation. 8 . Hydrologic stress on vegetation. 7 **Use by animal**s with hydrologic requirements. 6 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 7 7 Water quality of standing water by observation (I.e., discoloration, turbidity). 7 . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Salinity: 30PPT. Dry season, very little standing water present, no flow, some algae growing on the surface of depressional pools. Notes: 7 0 Appropriate/desirable species 9 .500(6)(c) Community Structure l. Invasive/exotic plant species 8 II. Regeneration/recruitment IV. Age, size distribution. 8 Vegetation V. Snags, dens, cavity, etc. VI. Plants' condition. 7 Benthic 5 VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 100% Black Mangrove. 10-30FT height, Crown density: All mangrove are showing moderate crown density. Black sooty mold present on leaves and limbs. 7 0 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) With Impact Current **Functional Loss (FL)** [For Impact Assessment Areas]: 0.67 0.00 FL = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.670 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	er	Assessment Area Name	e or Number		
					A9		
FLUCCs code	Further classi	fication (optional)		Impact Type	Assessment Area Size		
3112	Sea	sonally Flooded Ma	Mangrove Direct Impact Acres				
Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classificati	On (i.e.OFW, AP, other local/state/feder	ral designation of importance)		
N/A	N	I/A		N/A			
Geographic relationship to and hy	drologic connection w	vith wetlands, other s	urface water, upla	nds			
Buffer mangroves for the Centr	al Mangrove Wetlan	d and the active lim	e rock mine.				
Assessment area description							
Seasonally flooded mangrove f	orest.						
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity in	n relation to the regional		
Active lime rock mine, Central I	Mangrove Wetland						
Functions			Mitigation for pre	vious permit/other historic us	se		
Stormwater runoff storage and	treatment, Wildlife h	nabitat	N/A				
Anticipated Wildlife Utilization Bas that are representative of the ass be found)		•		ation by Listed Species (List T, SSC), type of use, and in)			
Coastal avian, marine and terrs	trial species.						
Observed Evidence of Wildlife Ut	ilization (List species	directly observed, or	other signs such a	s tracks, droppings, casings	s, nests, etc.):		
Tri-colored heron, Anhinga, Sti	lt, Butterfly, Fiddler	crab					
Additional relevant factors:							
Active lime rock mine nearby.							
Assessment conducted by:			Assessment date	e(s):			
RM & TS			05/14/24				

				TIGATION ASSESSMENT WORKS (2), F.A.C. (See Sections 62-345.50			ACT		
Site/Project Na	ame:	-		Application Number:		A	Assessment Area Name or Number:		
Impact or Mitig	ation:	Impact		Assessment Conducted by: RM & TS		А	ssessment Date	05/14/24	
	Scoring Guidar	nce	Optimal (10)	Moderate(7)		Minim	nal (4)	Not Present (0)	
would be su		is based on what be of wetland or essed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but suffi maintain most wetland/surface waterfu		Minimal level wetland/su func	• •	Condition is insufficient to provide wetland/surface water functions	
						Enter Notes be	elow (do NOT sc	ore each subcategory individually)	
			a. Quality and quantity of habitab. Invasive plant species.	at support outside of AA.				8	
d. Down			c. Wildlife access to and from A d. Downstream benefits provide e. Adverse impacts to wildlife in	· · · · · · · · · · · · · · · · · · ·				5 8 3	
			f. Hydrologic connectivity (imp					5	
Current		With Impact		Dependency of downstream habitats on quantity or quality of discharges. 8 Protection of wetland functions provided by uplands (upland AAs only).					
6		0	Additional Notes:						
			a. Appropriateness of water leve	els and flows.				8	
			b. Reliability of water level indi					8	
			c. Appropriateness of soil mois					7	
.500(6)(b) Water Env		d. Flow rates/points of dischargee. Fire frequency/severity.	ge.				8	
	(n/a for upland	is)	f. Type of vegetation.					9	
			g. Hydrologic stress on vegeta					8	
			h. Use by animal s with hydrologic	gic requirements. n associated with water quality (i.e., plant	o toloront o	of poor MO		8 8	
				ater by observation (l.e., discoloration, tur		or poor www.		7	
Current		With Impact	k. Water quality data for the type of community.					7	
			Additional Salinity: 25PPT. Di	ry season. Sedimentation present on man	groves adja	acent to mining o	operation.		
8		0	Notes:						
500/0	2\/a\ Camana ini	Christian	I. Appropriate/desirable species 9						
.500(6	6)(c) Community	Structure	II. Invasive/exotic plant species 9 III. Regeneration/recruitment 7				9		
	X Ve	getation	IV. Age, size distribution.				·		
		,	V. Snags, dens, cavity, etc. 7				7		
	Ber	nthic	/I. Plants' condition.						
	5.		II. Land management practices. 3						
	Bot	TI .	VIII. Topographic features (refuging) IX. Submerged vegetation (only					8	
			X. Upland assessment area	. ,					
Current		With Impact	Additional Notes: 15% Black Mangro	000/ M/I its Manager 50/ D. Harris	. 40 00FT	The labet One	L		
7		0	density.	ove, 80% White Mangrove, 5% Buttonwood	1. 10-30F1	neight, Crown C	density: Ali mang	grove are snowing moderate crown	
					1				
	re = Sum of abouplands, divide			Impact Acres =	0.00				
Current		With Impact		Functional Loss (FL)					
0.70		0.00	FI	[For Impact Assessment Areas]: L = ID x Impact Acres =	0.000				
]	·					
	Impact Delta (ID)	was assessed usir equal to Functiona	NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM					
Current -	w/Impact	0.700		assess impacts; use the assessment met					

Site/Project Name		Application Number	lumber Assessment Area Name or Number				
					A10		
FLUCCs code	Further cla	assification (optional)		Impact Type	Assessment Area Size		
3112		Seasonally Flooded Ma	Tangrove Direct Impact Ac				
Basin/Watershed Name/Number	Affected Waterbo	dy (Class)	Special Classificati	On (i.e.OFW, AP, other local/state/feder	al designation of importance)		
N/A		N/A		N/A			
Geographic relationship to and hy	drologic connection	on with wetlands, other s	urface water, upla	nds			
Buffer mangroves for the Centr	al Mangrove Wet	tland and the active lim	e rock mine.				
Assessment area description							
Seasonally flooded mangrove f	orest.						
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)				
Active lime rock mine, Central I	Mangrove Wetlan	nd					
Functions			Mitigation for pre	vious permit/other historic us	se		
Stormwater runoff storage and	treatment, Wildli	fe habitat	N/A				
Anticipated Wildlife Utilization Bas that are representative of the asse be found)			•	ation by Listed Species (List T, SSC), type of use, and int)			
Coastal avian, marine and terrs	trial species.						
Observed Evidence of Wildlife Uti	lization (List spec	ies directly observed, or	ther signs such a	s tracks, droppings, casings	, nests, etc.):		
Stilts, White-winged doves							
Additional relevant factors:							
Active lime rock mine nearby.							
Assessment conducted by:			Assessment date	e(s):			
RM & TS			05/14/24				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: A10 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 05/14/24 **Impact** Minimal (4) Not Present (0) Scoring Guidance Optimal (10) Moderate(7) Minimal level of support of The scoring of each indicator is based on what Condition is optimal and fully Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) a. Quality and quantity of habitat support outside of AA. 8 b. Invasive plant species. 5 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support Downstream benefits provided to fish and wildlife. 8 e. Adverse impacts to wildlife in AA from land uses outside of AA. 4 Hydrologic connectivity (impediments and flow restrictions). 6 8 p. Dependency of downstream habitats on quantity or quality of discharges. With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). Additional Notes: 6 0 a. Appropriateness of water levels and flows. 8 8 Reliability of water level indicators. 8 Appropriateness of soil moisture. 8 flow rates/points of discharge. .500(6)(b) Water Environment e. Fire frequency/severity. 7 (n/a for uplands) Type of vegetation. 9 . Hydrologic stress on vegetation. 8 **Use by animal**s with hydrologic requirements. 7 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 8 7 Water quality of standing water by observation (I.e., discoloration, turbidity). 7 . Water quality data for the type of community. With Impact Current 8 Water depth, wave energy, and currents. Additional Salinity: 27PPT. Dry season. Tannic water Notes: 8 0 Appropriate/desirable species 8 .500(6)(c) Community Structure l. Invasive/exotic plant species 8 II. Regeneration/recruitment 8 IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. VI. Plants' condition. 8 Benthic 3 VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 15% Black Mangrove, 80% White Mangrove, 5% Buttonwood. 10-30FT height, Crown density: All mangrove are showing moderate crown density. 7 0 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) With Impact Current **Functional Loss (FL)** [For Impact Assessment Areas]: 0.70 0.00 **FL** = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.700 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	umber Assessment Area Name or Number				
					A11		
FLUCCs code	Fur	ther classification (optional)		Impact Type	Assessment Area Size		
3112		Seasonally Flooded Ma	Mangrove Direct Impact Acre				
Basin/Watershed Name/Number	Affected W	Vaterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)				
N/A		N/A		N/A			
Geographic relationship to and hy	/drologic co	nnection with wetlands, other s	urface water, upla	nds			
Buffer mangroves for the Centr	al Mangrov	ve Wetland and the active lim	e rock mine.				
Assessment area description							
Low density Seasonally flooded	d mangrov	e forest.					
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)				
Active lime rock mine, Central I	Mangrove \	Wetland					
Functions			Mitigation for pre	vious permit/other historic us	se		
Stormwater runoff storage and	treatment,	Wildlife habitat	N/A				
Anticipated Wildlife Utilization Basthat are representative of the assibe found)			·	ation by Listed Species (List T, SSC), type of use, and in)			
Coastal avian, marine and terrs	strial specie	es.					
Observed Evidence of Wildlife Ut	ilization (Lis	st species directly observed, or	I other signs such a	s tracks, droppings, casings	s, nests, etc.):		
Kingbird							
Additional relevant factors:							
Active lime rock mine nearby.							
Assessment conducted by:			Assessment date	e(s):			
RM & TS			05/14/24				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: **A11** Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 05/14/24 **Impact** Not Present (0) Scoring Guidance Optimal (10) Moderate(7) Minimal (4) Minimal level of support of The scoring of each indicator is based on what Condition is optimal and fully Condition is insufficient to provide Condition is less than optimal, but sufficient to would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) a. Quality and quantity of habitat support outside of AA. 9 Invasive plant species. 5 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support Downstream benefits provided to fish and wildlife. 8 e. Adverse impacts to wildlife in AA from land uses outside of AA. 4 Hydrologic connectivity (impediments and flow restrictions). 6 p. Dependency of downstream habitats on quantity or quality of discharges. 8 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). Additional Notes: 6 0 a. Appropriateness of water levels and flows. 7 8 Reliability of water level indicators. 8 Appropriateness of soil moisture. 7 flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. 7 (n/a for uplands) Type of vegetation. 8 . Hydrologic stress on vegetation. 6 **Use by animal**s with hydrologic requirements. 4 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 8 5 Water quality of standing water by observation (I.e., discoloration, turbidity). 7 . Water quality data for the type of community. With Impact Current 7 Water depth, wave energy, and currents. Additional Dry season. No pools or water present within the AA. Notes: 7 0 Appropriate/desirable species 8 .500(6)(c) Community Structure 9 l. Invasive/exotic plant species II. Regeneration/recruitment 6 IV. Age, size distribution. 6 Vegetation V. Snags, dens, cavity, etc. VI. Plants' condition. 3 Benthic 5 VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 95% Black Mangrove, 5% Buttonwood. 10-30FT height, Crown density: All mangrove are showing very low crown density. Black sooty mold present on leaves and limbs. 0 6 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) With Impact Current **Functional Loss (FL)** [For Impact Assessment Areas]: 0.63 0.00 **FL** = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.630 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	umber Assessment Area Name or Number				
					A12		
FLUCCs code	Fu	urther classification (optional)		Impact Type	Assessment Area Size		
3112		Seasonally Flooded Ma	angrove	Direct Impact	Acres		
Basin/Watershed Name/Number	Affected	Waterbody (Class)	Special Classificati	On (i.e.OFW, AP, other local/state/fede	ral designation of importance)		
N/A		N/A		N/A			
Geographic relationship to and hy	/drologic c	connection with wetlands, other s	urface water, upla	nds			
Buffer mangroves for the Centr	al Mangro	ove Wetland and the active lim	e rock mine.				
Assessment area description							
High density Seasonally floode	d mangro	ove forest.					
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)				
Active lime rock mine, Central I	Mangrove	Wetland					
Functions			Mitigation for pre	vious permit/other historic us	se		
Stormwater runoff storage and	treatmen	t, Wildlife habitat	N/A				
Anticipated Wildlife Utilization Basthat are representative of the assibe found)			•	ation by Listed Species (List T, SSC), type of use, and in)			
Coastal avian, marine and terrs	trial spec	ies.					
Observed Evidence of Wildlife Ut	ilization (L	ist species directly observed, or	ther signs such a	s tracks, droppings, casings	s, nests, etc.):		
Grackle							
Additional relevant factors:							
Active lime rock mine nearby.							
Assessment conducted by:			Assessment date	e(s):			
RM & TS			05/14/24				

Special States (1997) The source of each inductor is passed and support control of the state of the source of the source of the state of the source of the						TIGATION ASSESSMENT WO 2), F.A.C. (See Sections 62-3			PACT		
impact impact with the poor of pointed (10) Moderate(17)	Site/Project Na	ame:	-			Application Number:		1			
The sources was included to be local or alloy of processor of the composition of the comp	Impact or Mitig	gation:	Impact			·	·				
Social of a character of the high part of wellback or a contract of the second part of the high part of wellback or a contract of the high part of the high par		Scoring Guidar	nce	Optin	nal (10)	Moderate(7)		Minir	mal (4)	Not Present (0)	
a Custom and Landosepe Signors Signors	would be su	uitable for the typ	e of wetland or	supports wetlar	nd/surface water	•		wetland/su	wetland/surface water wetland/surface water fun		
2. Montained and Landcorpe Steeport 2. Montained particular 2. M								Enter Notes b	elow (do NOT sc	ore each subcategory individually)	
E. Address in process to written in Ast from land uses an oblination of As. 4 Current With Impact Address B. Dispendency of convinterim habitats on quantity or quality of dispharapse. 5 Address Address Address Address B. Addr	.500(6)(a) Lo	ocation and Lan	dscape Support	b. Invasive plan	nt species.	A (proximity and barriers).		9 5			
Current With Impact Community Comm	e. Adve			e. Adverse impa	acts to wildlife in	AA from land uses outside of AA.				4	
Section Sect	Current With Impact g. Dependency of downstream habitats on quantity or quality of discharges. 8										
. Sociological Water Environment (Wa for uplands) . Reliability of water level indicators.	7		0								
4. Flow rates points of discharge. 6. Plant create points of discharge. 7. Current (vis for uplands) 7. Type of vegetation. 8. Plant create with hydrologic recordingments. 9. Plant create with hydrologic recordingments. 1. Use by animate with hydrologic requirements. 1. Use the panimate with hydrologic requirements. 1. Visit of the panimate of the				b. Reliability of	water level indic	cators.				9	
Per requency/secenty/ Type of vegetation. 9	- 00/	d. Flow rates/points of dischare									
Both	.500(.500(6)(b) Water Environment (n/a for uplands) e. Fire frequency /severity.								·	
F. Use by animals with hydrologic requirements. 5	f. Type of vegetation.				ion						
L Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). j. Water quality of standing water by observation (i.e., discoloration, turbidity). Reference of the property of the propert											
Current With Impact Current Current With Impact Current Current Current Current With Impact Current Curren						·	, plants tolerant	of poor WQ).			
With Impact With Impact With Impact Water depth, wave energy, and currents. 7		٦					on, turbidity).				
Additional Notes: Additional Notes: Additional Notes: Appropriate/desirable species 9	Current		With Impact					·			
Appropriate/desirable species 9										/	
In Invasive/exotic plant species 9	8		0		,	,					
III. Regeneration/recruitment	/-	->./ > -								9	
V. Age, size distribution. 8	.500(6	6)(c) Community	Structure								
Benthic Benthic Both VI. Plants' condition. Both VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). VIII. Topographic features (refugia, channels, humm		X Vec	retation						·		
Solution			jotation	_							
Note: Note		Ber	nthic	VI. Plants' cond							
IX. Submerged vegetation (only score if present): X. Upland assessment area Additional Notes: 80% Black Mangrove, 20% White Mangrove. >30FT height, Crown density: All mangrove are showing high crown density.					· .						
Current With Impact Additional Notes: 80% Black Mangrove, 20% White Mangrove. >30FT height, Crown density: All mangrove are showing high crown density. Impact Acres = 0.00 Current With Impact With Impact O.77 With Impact Functional Loss (FL) [For Impact Assessment Areas]: FL = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM		Bot	h							9	
8 0 80% Black Mangrove, 20% White Mangrove. >30FT height, Crown density: All mangrove are showing high crown density. Raw Score = Sum of above scores/30 (if uplands, divide by 20)	Current		-	X. Upland asses		score ii present).					
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: D.77 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM	8		_	Notes: 80	% Black Mangro	ve, 20% White Mangrove. >30FT he	eight, Crown der	nsity: All mangro	ove are showing h	igh crown density.	
Functional Loss (FL) [For Impact Assessment Areas]: Document						Impact Acres =	0.00				
O.77 D.00 FL = ID x Impact Acres = D.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM	Current		With Impact	<u> </u>		• •]			
Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM	0.77		0.00	-			0.000	1			
equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM		Impact Delta (ID)								
mitigaiton bank.	Current -	- w/Impact	0.770	ec mi ca	ual to Functiona itigation bank than nnot be used to	al Loss (FL). If impact mitigation is at was not assessed using UMA	proposed at a M, then UMAM	a 1			

Site/Project Name		Application Number	er	e or Number		
					A13	
FLUCCs code	Further classifica	ation (optional)		Impact Type	Assessment Area Size	
1100	D	ry Forest Woodla	and	Direct Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	On (i.e.OFW, AP, other local/state/feder	al designation of importance)	
N/A	N/A			N/A		
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds		
Downsloping towards a depress	ional wetland. Small i	solated pool of fi	reshwater located	d outside of the AA to the e	east.	
Assessment area description						
Karst outcrops scattered throug	hout with a ~20ft can	opy of mixed har	dwood species.			
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)			
Mastic Trail to the north. Cleared	l land adjacent to the	East.				
Functions			Mitigation for pre	vious permit/other historic us	se .	
Stormwater runoff storage and t	reatment, Wildlife hab	itat	N/A			
Anticipated Wildlife Utilization Base that are representative of the asset be found)		•	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)			
Aavian, marine and terrstrial spe	ecies.					
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):	
White-winged dove, Bananaquit,	, Cayman Parrot, Bull	finch.				
Additional relevant factors:						
Karst deposits found throughou	t measuing to be appr	roximatly 1-3ft ab	oove ground level			
Assessment conducted by:			Assessment date	e(s):		
RM & TS		05/15/24				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: A13 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 05/15/24 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 5 a. Quality and quantity of habitat support outside of AA. 7 b. Invasive plant species. 8 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support Downstream benefits provided to fish and wildlife. 8 e. Adverse impacts to wildlife in AA from land uses outside of AA. 5 Hydrologic connectivity (impediments and flow restrictions). 8 8 p. Dependency of downstream habitats on quantity or quality of discharges. With Impact Current Protection of wetland functions provided by uplands (upland AAs only). 8 Additional Karst formations allow for stormwater to pool and store for wildlife utilization. Notes: 7 0 a. Appropriateness of water levels and flows. Reliability of water level indicators. . Appropriateness of soil moisture. d. Flow rates/points of discharge. .500(6)(b) Water Environment e. Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. **Use by animal**s with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Notes: 0 Appropriate/desirable species 8 .500(6)(c) Community Structure 7 l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. Vegetation V. Snags, dens, cavity, etc. 10 VI. Plants' condition. 7 Benthic 5 VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 8 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) With Impact Current **Functional Loss (FL)** [For Impact Assessment Areas]: 0.75 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.750 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	ımber Assessment Area Name or Number			
					A14	
FLUCCs code	Further classifica	tion (optional)		Impact Type	Assessment Area Size	
1100	Dr	ry Forest Woodla	ind	Direct Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	On (i.e.OFW, AP, other local/state/feder	al designation of importance)	
N/A	N/A			N/A		
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds		
Assessment area description					_	
7.00000mont area accompact						
Karst outcrops scattered throug	hout with a ~10-20ft c	anopy of mixed	hardwood specie	es.		
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)			
Mastic Trail to the north. Cleared	d land adjacent to the v	west.				
Functions			Mitigation for pre	vious permit/other historic us	se	
Stormwater runoff storage and t	reatment, Wildlife hab	itat	N/A			
Anticipated Wildlife Utilization Bas that are representative of the asse be found)		•	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)			
Aavian, marine and terrstrial spo	ecies.					
Observed Evidence of Wildlife Util	ization (List species dire	ectly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):	
Smooth-billed Ani, Green Iguan	a, White-winged dove,	Mocking bird.				
Additional relevant factors:						
Karst deposits found throughou	t measuing to be appr	oximatly 1-3ft ab	ove ground level			
Assessment conducted by:			Assessment date	e(s):		
RM & TS			05/15/24			

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: A14 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 05/15/24 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 5 a. Quality and quantity of habitat support outside of AA. 7 b. Invasive plant species. 7 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support Downstream benefits provided to fish and wildlife. 6 e. Adverse impacts to wildlife in AA from land uses outside of AA. 4 5 Hydrologic connectivity (impediments and flow restrictions). 5 p. Dependency of downstream habitats on quantity or quality of discharges. With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). 5 Additional Recently cleared upland habitat located to the west of the AA. Notes: 7 0 a. Appropriateness of water levels and flows. Reliability of water level indicators. . Appropriateness of soil moisture. flow rates/points of discharge. .500(6)(b) Water Environment e. Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. **Use by animal**s with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Notes: 0 Appropriate/desirable species 7 .500(6)(c) Community Structure 7 l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. 7 Vegetation V. Snags, dens, cavity, etc. 8 VI. Plants' condition. 7 Benthic VII. Land management practices. 4 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area With Impact Current Additional Notes: Fringe effect on edge of woodland habitat present. 7 0 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) With Impact Current **Functional Loss (FL)** [For Impact Assessment Areas]: 0.70 0.00 **FL** = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.700 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	umber Assessment Area Name or Number			
					A15	
FLUCCs code	Further classific	ation (optional)		Impact Type	Assessment Area Size	
1100	D	ry Forest Woodla	Iland Direct Impact A			
Basin/Watershed Name/Number	Affected Waterbody (Cla	ass)	Special Classificati	On (i.e.OFW, AP, other local/state/feder	al designation of importance)	
N/A	N/A	1		N/A		
Geographic relationship to and hy	drologic connection with	n wetlands, other s	urface water, upla	nds		
Lagoons and Mangroves locate	ed to the East.					
Assessment area description						
Small amounts of karst outcrop	os scattered throughou	ut with a ~10-20ft	canopy of mixed	I hardwood species.		
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)			
Mastic Trail to the East.						
Functions			Mitigation for pre	vious permit/other historic us	se .	
Stormwater runoff storage and	treatment, Wildlife hak	oitat	N/A			
Anticipated Wildlife Utilization Bathat are representative of the ass be found)		•	· ·	ation by Listed Species (List T, SSC), type of use, and in I)		
Avian, marine and terrstrial spe	ecies.					
Observed Evidence of Wildlife Ut	ilization (List species dire	ectly observed, or	I other signs such a	as tracks, droppings, casings	, nests, etc.):	
Bananaquit						
Additional relevant factors:						
Access road present. Significat	nt amount of dumping/	trash along the e	dges of the acces	ss road.		
Assessment conducted by:			Assessment date	e(s):		
RM & TS			05/15/24			

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: A15 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 05/15/24 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 5 a. Quality and quantity of habitat support outside of AA. 5 b. Invasive plant species. 6 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support 7 Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. 7 Hydrologic connectivity (impediments and flow restrictions). 6 p. Dependency of downstream habitats on quantity or quality of discharges. 6 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). 6 Additional Notes: 6 0 a. Appropriateness of water levels and flows. Reliability of water level indicators. Appropriateness of soil moisture. flow rates/points of discharge. .500(6)(b) Water Environment e. Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. **Use by animal**s with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Occasional pooling of water in adjacent depressional areas on either side of the access road. Notes: 0 Appropriate/desirable species 6 .500(6)(c) Community Structure 5 l. Invasive/exotic plant species II. Regeneration/recruitment 6 IV. Age, size distribution. 6 Vegetation V. Snags, dens, cavity, etc. 8 VI. Plants' condition. 7 Benthic VII. Land management practices. 6 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area With Impact Current Additional Notes: Fringe effect on edge of woodland habitat present. 0 6 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) With Impact Current **Functional Loss (FL)** [For Impact Assessment Areas]: 0.60 0.00 **FL** = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.600 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	er	or Number		
				<i>-</i>	A16	
FLUCCs code	Further classifica	tion (optional)		Impact Type	Assessment Area Size	
3112	Seasoi	nally Flooded Ma	angrove	Direct Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	on (i.e.OFW, AP, other local/state/federa	al designation of importance)	
N/A	N/A			N/A		
Geographic relationship to and hyd	Irologic connection with	wetlands, other s	urface water, upla	nds		
Shallow surface water flow ways	s adjacent to the AA.					
Assessment area description						
Seasonally flooded mangrove fo	rest.					
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity in	relation to the regional	
Active lime rock mine to the sou	th. 2ft AGL abandoned	Central Mangrove Wetland				
Functions			Mitigation for pre-	vious permit/other historic us	е	
Stormwater runoff storage and t	reatment, Wildlife hab	itat	N/A			
Anticipated Wildlife Utilization Base that are representative of the assembe found)		•	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)			
Coastal avian, marine and terrst	rial species.					
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppings, casings,	nests, etc.):	
Stilts, Anhinga						
Additional relevant factors:						
Mangroves are impounded for m from tidal fluctuations.	osquitto control use c	on the south side	e. No impoundme	nt evidence on the nothern	side. Some flushing	
Assessment conducted by:			Assessment date	e(s):		
RM & TS	05/15/24					

Impact Impact	A16 5/15/24 Not Present (0) dition is insufficient to provide tland/surface water functions
Scoring Guidance Optimal (10) Moderate(7) Minimal (4)	Not Present (0) dition is insufficient to provide tland/surface water functions in subcategory individually)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed Condition is optimal and fully supports wetland/surface water functions Enter Notes below (do NOT score each s functions) Enter Notes below (do NOT score each s death of functions) Enter Notes below (do NOT score each s death of functions) Enter Notes below (do NOT score each s death of functions) Enter Notes below (do NOT score each s death of functions) Enter Notes below (do NOT score each s death of functions) Enter Notes below (do NOT score each s death of functions) Enter Notes below (do NOT score each s death of functions) Current With Impact With Impact With Impact O Enter Notes below (do NOT score each s death of functions) A definition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions Enter Notes below (do NOT score each s death of functions) Current A description of functions death of functions death of functions and believe the functions of functions death of functions and functions and functions and functions of functions	dition is insufficient to provide tland/surface water functions in subcategory individually)
would be suitable for the type of wetland or surface water assessed supports wetland/surface water functions Enter Notes below (do NOT score each s mintain most wetland/surface waterfunctions Enter Notes below (do NOT score each s 5 b. Invasive plant species. c. Wildlife access to and from AA (proximity and barriers). d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. f. Hydrologic connectivity (impediments and flow restrictions). With Impact With Impact With Impact O Additional Impoundments to the south and west. Notes: a. Appropriateness of water level and flows. b. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge.	tland/surface water functions n subcategory individually)
a. Quality and quantity of habitat support outside of AA. 5 b. Invasive plant species. c. Wildlife access to and from AA (proximity and barriers). 7 d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. f. Hydrologic connectivity (impediments and flow restrictions). 4 Current With Impact With Impact O With Impact Additional Impoundments to the south and west. Notes: a. Appropriateness of water levels and flows. b. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge.	
b. Invasive plant species. c. Wildlife access to and from AA (proximity and barriers). d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. f. Hydrologic connectivity (impediments and flow restrictions). 4 Current With Impact With Impact O Additional Impoundments to the south and west. Notes: a. Appropriateness of water levels and flows. b. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge.	8
e. Adverse impacts to wildlife in AA from land uses outside of AA. f. Hydrologic connectivity (impediments and flow restrictions). 4 Current With Impact O Dependency of downstream habitats on quantity or quality of discharges. h. Protection of wetland functions provided by uplands (upland AAs only). Additional Impoundments to the south and west. Notes: a. Appropriateness of water levels and flows. b. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge.	8
Current With Impact G. Dependency of downstream habitats on quantity or quality of discharges. h. Protection of wetland functions provided by uplands (upland AAs only). Additional Impoundments to the south and west. Notes: a. Appropriateness of water levels and flows. b. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge.	8
Current Note	8
Appropriateness of water levels and flows. b. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge.	8
b. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge.	8
c. Appropriateness of soil moisture . d. Flow rates /points of discharge.	
500(6)(b) Water Environment d. Flow rates/points of discharge.	8
.300(0)(0) Water Environment	6
(n/a for uplands) e. Fire frequency/severity.	7
f. Type of vegetation. g. Hydrologic stress on vegetation.	9
h. Use by animal s with hydrologic requirements.	5 4
i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ).	8
j. Water quality of standing water by observation (l.e., discoloration, turbidity).	
Current With Impact k. Water quality data for the type of community.	
I. Water depth, wave energy, and currents. Additional Salinity: 51PPT. Dry season. Seasonally flooded, no water present at the time of the assessment. Advantatious ro	5
7 Notes: level.	Tools Troot up above ground
I. Appropriate/desirable species	
.500(6)(c) Community Structure II. Invasive/exotic plant species III. Regeneration/recruitment	
X Vegetation IV. Age, size distribution. 7	<u> </u>
V. Snags, dens, cavity, etc.	7
Benthic VI. Plants' condition. 5	5
VII. Land management practices. 5	
Both VIII. Topographic features (refugia, channels, hummocks). 7 IX. Submerged vegetation (only score if present).	<u>/</u>
Current With Impact X. Upland assessment area Additional	
Notes: 30% Black Mangrove, 60% White Mangrove, 10% Buttonwood. 10-30FT height, Crown density: All mangrove are	re showing good crown density.
Raw Score = Sum of above scores/30 (if uplands, divide by 20) Impact Acres = 0.00	
Current With Impact Functional Loss (FL)	
[For Impact Assessment Areas]:	
0.67	
Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a	
mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.670 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.	

Site/Project Name		Application Number	er	or Number				
				,	A 17			
FLUCCs code	Further classifica	ation (optional)		Impact Type	Assessment Area Size			
	Ponds, I	Pools, Mangrove	Lagoons	Direct Impact	Acres			
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	On (i.e.OFW, AP, other local/state/feder	al designation of importance)			
N/A	N/A			N/A				
Geographic relationship to and hyd	Irologic connection with	wetlands, other s	urface water, upla	nds				
Buffer to Meagre Bay Pond								
Assessment area description								
Mangrove lagoon								
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity ir	relation to the regional			
Meagre Bay Pond, Active lime ro	ock mine.		Meagre Bay Pond					
Functions			Mitigation for pre-	vious permit/other historic us	se			
Stormwater runoff storage and t	reatment, Wildlife hab	itat	N/A					
Anticipated Wildlife Utilization Base that are representative of the asse be found)		•	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)					
Coastal avian, marine and terrst	rial species.							
Observed Evidence of Wildlife Util	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):			
Tern, Stilt, Anole, Smooth-billed	Ani, Cattle Egret							
Additional relevant factors:								
Dry season, No standing water.								
Assessment conducted by:			Assessment date	e(s):				
RM & TS			05/15/24					

Security Graduation Application Number Applicat						TIGATION ASSESSMENT V 2), F.A.C. (See Sections 62			PACT		
Security Guidance Optional (II)	Site/Project Na	ame:	-			Application Number:					
The existing in electrical process of the plant process of the plant process of the control process of the plant p	Impact or Mitig	gation:	Impact				·				
Securities what is authorities on the pyre of evaluated or support was excellent datase and an extended on the control of the		Scoring Guidar	nce	Opti	mal (10)	Moderate(7)		Mini	mal (4)	Not Present (0)	
a. Custom and Landscape Support Book(S)(a) Location and Landscape Support Book (S)(a) Location and Landscape Support Book (S) Location and Landscape Support Support Book (S) Location and Landscape Support Support Book (S) Location and Landscape Support Support Support Support Book (S) Location and Landscape Support Supp	would be su	uitable for the typ	oe of wetland or	supports wetla	and/surface water	•		wetland/s	urface water		
Description and Landscrape Support Owner Course Landscrape Support Output With Impact Appropriate control of Assert Service								Enter Notes b	elow (do NOT sco	ore each subcategory individually)	
Current	.500(6)(a) Lo	ocation and Lan		b. Invasive pla	int species.					8	
Current With Impact September Impact Data (D) September	e. Ac				eacts to wildlife in A	AA from land uses outside of AA.				4	
According to the second control of the sec	Current		With Impact	g. Dependency of downstream habitats on quantity or quality of discharges.							
Description Section	6		0								
Current With Impact				b. Reliability o	f water level indic	cators.				9	
(n/a for uplands) O Hydrologic stress on vegetation. O Hydrologic requirements. I Use by animals with hydrologic requirements. I Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). S I Water quality of standing water by observation (i.e., discolaration, rurbidity). Full requisity of standing water by observation (i.e., discolaration, rurbidity). With Impact With Impact I Appropriate/desirable species I Regentation Additional Salinity, 30PPT. Dry season. Seasonally flooded, no water present at the time of the assessment. Mangrove pneumotophores © 13in above voltes. I Appropriate/desirable species I Regentation I Regentation Plant species I Regentation I Regentation Plant species I Regentation VI. Plant scondition. VI. Plant scondition. VII. Indian amanagement practices. I VII. Indian amanagement practices. VIII. Topoprophic features (refugila, channels, hummodes). VIII. Submerged vegetation (only score it present). Current O With Impact With Impact With Impact Functional Loss (FL) For Impact Acress = 0.000 NOTE: If impact Assessment Areas): Impact Acress = 0.000 NOTE: If impact Assessment Areas = 0.000 NOTE: If impact Assessment Areas = 0.000	500(d Flow rates/points of discharge									
A Hydrologic stress on vegetation 5 1. Hodd cologic stress on vegetation 5 1. Hodd community composition associated with water quality (i.e., plants tolerant of poor WQ). 8 8 8 9 9 9 9 9 9 9	(n/a for uplands) e. Fire frequency/severity.								ı		
Description						ion.					
With Impact										5	
Current With Impact E. Water quality data for the type of community. 6 E. Water depth, wave energy, and currents. 5 Additional Salinity: 20PPT. Dry season. Seasonally flooded, no water present at the time of the assessment. Mangrove pneumatophores @ 13in above notes: 1500(6)(c) Community Structure								of poor WQ).			
Current With Impact Ewater depth, wave energy, and currents. S		1					ition, turbidity).				
Additional Salimity: 30PPT. Dry season. Seasonally flooded, no water present at the time of the assessment. Mangrove pneumatophores ® 13in above Notes: ground. Solicity Structure I. Appropriate/desirable species 8 1. Invasive/excite plant species 1. Inv	Current		With Impact			<u>_</u>					
In Invasive/exotic plant species S III. Regeneration/recruitment 5 X Vegetation X Age, size distribution. 5 Benthic V. Age, size distribution. 5 Benthic V. Age, size distribution. 5 Benthic V. Sangar, dens. cavity, etc. 7 VII. Land management practices. 4 VIII. Topographic features (refugia, channels, hummocks). 7 X. Submerged vegetation (only score if present). X. Upland assessment area Additional Notes: 70% Black Mangrove, 25% White Mangrove, 5% Buttonwood10FT height, Crown density: All mangrove are showing very low crown density and stunted growth. Raw Score = Sum of above scores/30 (if uplands, divide by 20) With Impact	7		0		•	y season. Seasonally flooded, no	water present at t	the time of the a	assessment. Mang	grove pneumatophores @ 13in above	
III. Regeneration/recruiment 5				I. Appropriate/	desirable species					8	
V. Age, size distribution. S	.500(6	6)(c) Community	Structure	II. Invasive/exc						8	
Benthic Benthic VI. Plants' condition. 4 VI. Plants' condition. 4 VII. Land management practices. 4 VIII. Topographic features (refugia, channels, hummocks). 7 IX. Submerged vegetation (only score if present). X. Upland assessment area Additional Notes: 70% Black Mangrove, 25% White Mangrove, 5% Buttonwood. ~10FT height, Crown density: All mangrove are showing very low crown density and stunted growth. Raw Score = Sum of above scores/30 (if uplands, divide by 20) Current With Impact O.63 O.00 FL = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact inspect of a sequired for mitigation is equal to Functional Loss (FL). If impact impact mitigation is equal to Functional Loss (FL). If impact mitigation is equal to Functional Loss (FL). If impact mitigation is not assessed using UMAM, then UMAM		V Vos									
Benthic VI. Plants' condition. 4 VII. Land management practices. 4 VIII. Topographic features (refugia, channels, hummocks). 7 VIII. Submerged vegetation (only score if present). Current With Impact Raw Score = Sum of above scores/30 (if uplands, divide by 20) Current With Impact Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is requiled to Manage Management and Submit Management and Submit Management and Submit Management Access and Submit Management Management Access and Submit Management Access and Submit Management Management Access and Submit Management Access and Submit Management Management Management Access and Submit Management Management Access and Submit Management Management Management Management Access and Submit Management Managemen			getation						7		
Both VIII. Topographic features (refugia, channels, hummocks). 7		Ber	nthic							4	
Current With Impact Additional Notes: Town density All mangrove are showing very low crown density Town density Additional and stunted growth.					<u> </u>			•			
Current With Impact Additional Notes: 70% Black Mangrove, 25% White Mangrove, 5% Buttonwood. ~10FT height, Crown density: All mangrove are showing very low crown density and stunted growth.		Bot	h							7	
Raw Score = Sum of above scores/30 (if uplands, divide by 20) Impact Acres = 0.00	Current		With Impact	X. Upland asso	essment area						
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: D.63 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM	6		0	1	_		tonwood. ~10FT ł	height, Crown de	ensity: All mangro	ove are showing very low crown density	
Functional Loss (FL) [For Impact Assessment Areas]: Impact Delta (ID)						Impact Acres =	0.00				
Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM	Current		With Impact	Г		Functional Loss (FL)		1			
Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM	0.63		0.00	_			0.000				
equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM		Impact Delta (ID)								
Current - w/Impact 0.630 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.	Current -		0.630	e n c	qual to Functiona nitigation bank tha annot be used to a	al Loss (FL). If impact mitigation at was not assessed using UM	is proposed at a AM, then UMAM	a 1			

Site/Project Name		Application Number	mber Assessment Area Name or Number				
					A18		
FLUCCs code	Further classific	ation (optional)		Impact Type	Assessment Area Size		
3112	Seaso	onally Flooded Ma	angrove	Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Cla	iss)	Special Classificati	On (i.e.OFW, AP, other local/state/feder	al designation of importance)		
N/A	N/A		N/A				
Geographic relationship to and hyd	drologic connection with	n wetlands, other s	urface water, upla	nds			
Central Mangrove Wetland to the	e North						
Assessment area description							
Seasonally flooded mangroves	with large karst depos	sits scattered thro	oughout.				
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity in	relation to the regional		
Active limerock mine	Adjacent to the Central Mangrove Wetland						
Functions			Mitigation for pre	vious permit/other historic us	se		
Stormwater runoff storage and t	reatment, Wildlife hab	oitat	N/A				
Anticipated Wildlife Utilization Bas that are representative of the asse be found)		•		ation by Listed Species (List T, SSC), type of use, and int I)			
Coastal avian, marine and terrst	rial species.						
Observed Evidence of Wildlife Util	ization (List species dir	ectly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):		
See Taylors notes							
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
RM & TS			05/15/24				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: A18 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 05/15/24 **Impact** Scoring Guidance Optimal (10) Moderate(7) Minimal (4) Not Present (0) Minimal level of support of The scoring of each indicator is based on what Condition is optimal and fully Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or wetland/surface water supports wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 5 a. Quality and quantity of habitat support outside of AA. 7 Invasive plant species. 6 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support Downstream benefits provided to fish and wildlife. 8 e. Adverse impacts to wildlife in AA from land uses outside of AA. 5 Hydrologic connectivity (impediments and flow restrictions). 5 p. Dependency of downstream habitats on quantity or quality of discharges. 8 With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). Additional Abandoned road running North to South through the AA. Approximatly ~2FT above grade. 6 0 a. Appropriateness of water levels and flows. 7 9 Reliability of water level indicators. 7 Appropriateness of soil moisture. 7 flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. 7 (n/a for uplands) Type of vegetation. 8 . Hydrologic stress on vegetation. 7 Use by animals with hydrologic requirements. 3 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 8 Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Dry Season. No standing water present at time of assessment. Pneumatphore height approximatly 6in above ground. Notes: 7 0 Appropriate/desirable species 8 .500(6)(c) Community Structure . Invasive/exotic plant species 7 II. Regeneration/recruitment IV. Age, size distribution. 6 Vegetation V. Snags, dens, cavity, etc. VI. Plants' condition. 5 Benthic 5 VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 10% Black Mangrove, 75% White Mangrove, 15% Buttonwood. 10-30FT height, Crown density: All mangrove are showing moderate crown density but with stunted growth. Black sooty mold present on leaves and limbs. 0 6 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) With Impact Current **Functional Loss (FL)** [For Impact Assessment Areas]: 0.63 0.00 FL = ID x Impact Acres = 0.000 NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.630 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	Assessment Area Name or Number				
					A19		
FLUCCs code	Further classification	ation (optional)		Impact Type	Assessment Area Size		
3112	Seaso	onally Flooded Ma	angrove	Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Cla	iss)	Special Classificati	On (i.e.OFW, AP, other local/state/feder	al designation of importance)		
N/A	N/A		N/A				
Geographic relationship to and hyd	drologic connection with	n wetlands, other s	urface water, upla	nds			
Central Mangrove Wetland to the	e North						
Assessment area description							
Seasonally flooded mangroves v	with large karst depos	sits scattered thro	oughout.				
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity in	relation to the regional		
Active limerock mine to the Sou	Adjacent to the Central Mangrove Wetland						
Functions			Mitigation for pre	vious permit/other historic us	se		
Stormwater runoff storage and t	reatment, Wildlife hak	oitat	N/A				
Anticipated Wildlife Utilization Base that are representative of the asse be found)		•		ation by Listed Species (List T, SSC), type of use, and int I)			
Coastal avian, marine and terrst	rial species.						
Observed Evidence of Wildlife Util	ization (List species dire	ectly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):		
Bananaquit							
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
RM & TS			05/15/24				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Assessment Area Name or Number: Application Number: A19 Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 05/15/24 **Impact** Scoring Guidance Optimal (10) Moderate(7) Minimal (4) Not Present (0) Minimal level of support of The scoring of each indicator is based on what Condition is optimal and fully Condition is less than optimal, but sufficient to Condition is insufficient to provide would be suitable for the type of wetland or supports wetland/surface water wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 6 a. Quality and quantity of habitat support outside of AA. b. Invasive plant species. 6 6 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support 7 Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. 4 Hydrologic connectivity (impediments and flow restrictions). 5 8 p. Dependency of downstream habitats on quantity or quality of discharges. With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). Additional Karst deposits and small upland islands scattered throughout. Notes: 6 0 a. Appropriateness of water levels and flows. 7 Reliability of water level indicators. 8 Appropriateness of soil moisture. 8 7 flow rates/points of discharge. .500(6)(b) Water Environment . Fire frequency/severity. 7 (n/a for uplands) Type of vegetation. 8 . Hydrologic stress on vegetation. 5 Use by animals with hydrologic requirements. 3 Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 8 Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. 4 Additional Dry Season. No standing water present at time of assessment. Notes: 7 0 Appropriate/desirable species 7 .500(6)(c) Community Structure 7 l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. 6 Vegetation V. Snags, dens, cavity, etc. 8 VI. Plants' condition. 5 Benthic 5 VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 45% Black Mangrove, 20% White Mangrove, 35% Buttonwood. 10-30FT height, Crown density: All mangroves are showing low crown density. Black sooty mold present on leaves and limbs. Lead tree present on edge of habitat. 0 6 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) With Impact Current **Functional Loss (FL)** [For Impact Assessment Areas]: 0.63 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.630 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Site/Project Name		Application Number	mber Assessment Area Name or Number				
					A20		
FLUCCs code	Further classifica	tion (optional)		Impact Type	Assessment Area Size		
3112	Season	nally Flooded Ma	ingrove	Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	on (i.e.OFW, AP, other local/state/fed	eral designation of importance)		
N/A	N/A			N/A			
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds			
North sound located to the north	ı of the AA.						
Assessment area description							
Mangrove forest within mosquit	to control area.						
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative rarity	in relation to the regional		
Cattle pasture to the south	Central Mangrove Wetland						
Functions			Mitigation for pre	vious permit/other historic u	use		
Stormwater runoff storage and t	reatment, Wildlife habi	itat	N/A				
Anticipated Wildlife Utilization Base that are representative of the asse be found)		•	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)				
Coastal avian, marine and terrst	rial species.						
Observed Evidence of Wildlife Util	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppings, casing	s, nests, etc.):		
Cayman Parrot, Butterfly, Yellow	/ Warbbler, Land Crab	, Whistling Duck	, Common Gallin	ule			
Additional relevant factors:							
Access road running East to We	st.						
Assessment conducted by:			Assessment date	e(s):			
RM & TS			05/16/24				

Impact or Miligation: Scoring Guidance			
Souring Guidance	or Number:		
The scoring of each indicator is based on what would be suitable for the type of welfand or surface welfar accessed. Condition is less than optimal, but sufficient to welfand for welfand for trunctions. Enter Notes below (do NOT score each functions and Landscape Support of welfandsufface water functions). Sol(6)(a) Location and Landscape Support of the surface water functions are sufficed with a support outside of AA. Solitory and quantity of habitat support outside of AA. Solitory and quantity of habitat support outside of AA. Solitory and provided to fish and wildlife. Adverse impacts to welfall in AA from land uses outside of AA. Adverse impacts to welfall in AA from land uses outside of AA. Adverse impacts of welfall in AA from land uses outs	5/16/24		
would be suitable for the type of welfand or surface water assessed Current Suffice water assessed Support Supports welfandsurface water Current Suffice water assessed Support Supports welfandsurface water Current Suffice water assessed Support Supports welfandsurface water Current Suffice water assessed Support Suffice water Suf	Not Present (0)		
a. Quality and quantity of habitat support outside of AA. 8 b. Invasive plant species. 8 c. Wildlife access to and from AA (proximity and barriers). 7 d. Downstream benefits provided to fish and wildlife. 9 e. Adverse impacts to wildlife in AA from land uses outside of AA. 7 f. Hydrologic connectivity (impediments and flow restrictions). 6 g. Dependency of downstream habitats on quantity or quality of discharges. 8 f. Protection of welland functions provided by uplands (upland AAs only). Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Notes: Benefits (n/a for uplands) A. Appropriateness of water levels and flows. 6 b. Reliability of water level indicators. 6 c. Appropriateness of soil moisture. 9 e. Fire fraguancy/seventy. 1 f. Type of vegetation. 9 b. Type of vegetation. 9 b. Type of vegetation. 1 b. Use by animals with hydrologic requirements. 1 b. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). 1 b. Water quality of standing water by observation (i.e., discoloration, turbidity). 8 b. Water quality data for the type of community. 1 b. Water quality data for the type of community. 1 b. Water quality data for the type of community. 1 b. Water quality data for the type of community. 1 b. I. Appropriate/desirable species 11 b. II. Invasive/excite plant species 11 b. Invasive/excite plant species 12 b. Invasive/excite	dition is insufficient to provide tland/surface water functions		
b. Invasive plant species. c. Wildlife access to and from AA (proximity and barriers). 7 (d. Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. 7 (t. Hydrologic connectivity (impediments and flox restrictions). 8 (e. Adverse impacts to wildlife in AA from land uses outside of AA. 7 (t. Hydrologic connectivity (impediments and flox restrictions). 8 (e. Adverse impacts to wildlife in AA from land uses outside of AA. 7 (t. Hydrologic connectivity (impediments and flox restrictions). 8 (e. Dependency of downstream habitats on quantity or quality of discharges. 8 (e. Appropriateness of water levels and flows. 9 (e. Appropriateness of water levels and flows. 9 (e. Reliability of water levels and flows. 9 (e. Reliability of water levels and flows. 9 (e. Fire frequency/severity. 9 (f. Type of vegetation. 9 (e. Fire frequency/severity. 9 (f. Type of vegetation. 9 (e. Fire frequency/severity. 9 (f. Type of vegetation. 9 (f. Water quality data for the type of community. 9 (f. Water quality data for the type of community. 9 (f. Water depth, wave energy, and currents. 9 (f. Appropriate/desirable species. 9 (f. Appropriate/d	ı subcategory individually)		
e. Adverse impacts to wildlife in AA from land uses outside of AA. I. Hydrologic connectivity (impediments and flow restrictions). 8 Dependency of downstream habitats on quantity or quality of discharges. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Notes: Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Appropriateness of water levels and flows. Appropriateness of water levels and flows. Appropriateness of water levels and flows. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additio			
Current With Impact Dependency of downstream habitats on quantity or quality of discharges. B. Potection of wetland functions provided by uplands (upland A/As only). Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Notes: Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Notes: B. Appropriateness of water levels and flows. D. Reliability of water level indicators. C. Appropriateness of soil moisture. G. Fire frequency/seventy. F. Type of vegetation. B. Use by animals with hydrologic requirements. Fire frequency/seventy.			
Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Additional Access roads for mosquitto control fragments habitat and some hydrologic conectivity. Notes: a. Appropriateness of water levels and flows. b. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge. e. Fire frequency/severity. f. Type of vegetation. g. Hydrologic stress on vegetation. h. Use by animals with hydrologic requirements. i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). j. Water quality of standing water by observation (i.e., discoloration, turbidity). With Impact With Impact With Impact I. Appropriate/desirable species II. Appropriate/desirable species III. Regeneration/recruitment 7 II. Appropriate/desirable species III. Regeneration/recruitment 7 IV. Age, size distribution. V. Snags, dens, cavity, etc. VI. Plants condition. VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). X. Upland assessment area Additional Notes: 20% Black Mangrove, 50% White Mangrove, 30% Buttonwood. 10-30FT height, Crown density: Good/Full overse			
b. Reliability of water level indicators. c. Appropriateness of soil moisture. d. Flow rates/points of discharge. e. Fire frequency/severity. f. Type of vegetation. g. Hydrologic stress on vegetation. h. Use by animals with hydrologic requirements. i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). j. Water quality of standing water by observation (i.e., discoloration, turbidity). k. Water quality of standing water by observation (i.e., discoloration, turbidity). k. Water quality of standing water by observation (i.e., discoloration, turbidity). k. Water quality of standing water by observation (i.e., discoloration, turbidity). k. Water quality of standing water by observation (i.e., discoloration, turbidity). k. Water depth, wave energy, and currents. Additional Salinity: N @ 27PPT, S @ 31PPT. Green film substance observed on the waters surface, high tannins Notes: 1. Appropriate/desirable species 1. I. Appropriate/desirable species 1. I. Nasive/exotic plant species 1. I. Nasive/exotic plant species 1. I. Nasive/exotic plant species 1. I. Ageneration/recruitment 1. Age, size distribution. 2. Sangs, dens, cavity, etc. 3. Submerged vegetation (only score if present). 3. V. Upland assessment area 4. Vulland assessment area 4. Additional 4. Notes: 4. Vulland assessment area 4. Additional 5. Submerged vegetation (only score if present). 5. V. Upland assessment area 6. Additional 6. Notes: 6. V. V. Plants condition. 7. V.			
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Section Community Community Structure Section	6		
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Current With Impact K. Water quality data for the type of community.	8		
Current With Impact I. Water depth, wave energy, and currents. Additional Notes: Salinity: N @ 27PPT, S @ 31PPT. Green film substance observed on the waters surface, high tannins Notes: II. Appropriate/desirable species III. Invasive/exotic plant species III. Regeneration/recruitment X Vegetation V. Age, size distribution. V. Snags, dens, cavity, etc. Benthic Benthic VII. Plants' condition. VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). IX. Submerged vegetation (only score if present). X. Upland assessment area Additional Notes: 20% Black Mangrove, 50% White Mangrove, 30% Buttonwood. 10-30FT height, Crown density: Good/Full overal stressed.	4		
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Current Notes: Notes: No	6		
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Benthic V. Snags, dens, cavity, etc. V. Snags, dens, cavity, etc. V. Plants' condition. 66 VII. Land management practices. 55 VIII. Topographic features (refugia, channels, hummocks). IX. Submerged vegetation (only score if present). X. Upland assessment area Additional Notes: 20% Black Mangrove, 50% White Mangrove, 30% Buttonwood. 10-30FT height, Crown density: Good/Full overal stressed. Stressed VIII. Topographic features (refugia, channels, hummocks). 9 IX. Submerged vegetation (only score if present). VIII. Topographic features (refugia, channels, hummocks). 9 IX. Submerged vegetation (only score if present). VIII. Topographic features (refugia, channels, hummocks). 9 IX. Submerged vegetation (only score if present). VIII. Topographic features (refugia, channels, hummocks). 9 IX. Submerged vegetation (only score if present). VIII. Topographic features (refugia, channels, hummocks). 9 IX. Submerged vegetation (only score if present). VIII. Topographic features (refugia, channels, hummocks). 9 IX. Submerged vegetation (only score if present). VIII. Topographic features (refugia, channels, hummocks). 9 IX. Submerged vegetation (only score if present). VIII. Topographic features (refugia, channels, hummocks). 9 IX. Submerged vegetation (only score if present). VIII. Topographic features (refugia, channels, hummocks). 1 IX. Submerged vegetation (only score if present). VIII. Topographic features (refugia, channels, hummocks). VIII. Topographic features (refug	8		
Both VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). IX. Submerged vegetation (only score if present). X. Upland assessment area Additional Notes: 20% Black Mangrove, 50% White Mangrove, 30% Buttonwood. 10-30FT height, Crown density: Good/Full overal	8		
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Current With Impact Additional Notes: 20% Black Mangrove, 50% White Mangrove, 30% Buttonwood. 10-30FT height, Crown density: Good/Full overal	9		
etressed			
	all, however Buttonwood looks		
Impact Acres = 0.00			
Raw Score = Sum of above scores/30 (if uplands, divide by 20)			
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]:			
0.77 0.00 FL = ID x Impact Acres = 0.000			
NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a			
equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigaiton bank.			

Site/Project Name		Application Number	mber Assessment Area Name or Number				
					A21		
FLUCCs code	Further classifica	ation (optional)		Impact Type	Assessment Area Size		
3112	Seaso	nally Flooded Ma	angrove	Direct Impact	Acres		
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	On (i.e.OFW, AP, other local/state/feder	al designation of importance)		
N/A	N/A			N/A			
Geographic relationship to and hyd	Irologic connection with	wetlands, other s	urface water, upla	nds			
North sound located to the north	of the AA.						
Assessment area description							
Low quality mangrove forest wit	hin mosquitto control	area.					
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)				
North sound to the north.		Central Mangrove Wetland					
Functions			Mitigation for pre	vious permit/other historic us	se		
Stormwater runoff storage and t	reatment, Wildlife hab	itat	N/A				
Anticipated Wildlife Utilization Base that are representative of the assesbe found)		•	· ·	ation by Listed Species (List T, SSC), type of use, and int i)			
Coastal avian, marine and terrsti	rial species.						
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):		
Fish, West Indian Woodpecker, E	3utterfly, Cayman Pari	rot.					
Additional relevant factors:							
Access road running North to So	outh.						
Assessment conducted by:			Assessment date	e(s):			
RM & TS			05/16/24				

				MITIGATION ASSESSMENT WO 00(2), F.A.C. (See Sections 62-34			CT			
Site/Project Na	ame:	-		Application Number:	Application Number:			Assessment Area Name or Number: A21		
Impact or Mitiga	ation:	Impact		Assessment Conducted by: RM & TS Assessment Date: 05/16/24						
	Scoring Guidar	nce	Optimal (10)	Moderate(7)		Minimal	(4)	Not Present (0)		
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed Condition is optimal and fully supports wetland/surface water functions						Minimal level of s wetland/surfac function	ce water	Condition is insufficient to provide wetland/surface water functions		
						Enter Notes below	v (do NOT sco	ore each subcategory individually)		
a. Quality and quantity of habit b. Invasive plant species. c. Wildlife access to and from d. Downstream benefits provid e. Adverse impacts to wildlife in			om AA (proximity and barriers).		7 8 8 8 8 7					
	1		f. Hydrologic connectivity	(impediments and flow restrictions).				5		
Current		With Impact		am habitats on quantity or quality of disch				8		
7		0		ctions provided by uplands (upland AAs or or mosquitto control fragments habitat an	- /	ogic conectivity.				
			a. Appropriateness of water					7		
			b. Reliability of water levelc. Appropriateness of soil n					9 8		
= 00//	0)(1)14(-1)		d. Flow rates /points of disc					7		
.500(6	6)(b) Water Env (n/a for upland		e. Fire frequency/severity.	9	7					
f. Type of vegetation.								9		
g. Hydrologic stress on vegetation								6		
			h. Use by animal s with hyd		alanta talarant	of noor MO		7		
				sition associated with water quality (i.e., paragraphy observation (I.e., discoloration)		or poor vvQ).		<u>8</u> 6		
]			 j. Water quality of standing water by observation (I.e., discoloration, turbidity). k. Water quality data for the type of community. 						
Current		With Impact	l. Water depth, wave energ	··				6		
7		0	Additional Salinity: W @ 2 Notes:	22PPT, E @ 19PPT. Green film substanc	e observed on	the waters surface				
			I. Appropriate/desirable spec	cies				9		
.500(6	6)(c) Community	Structure	II. Invasive/exotic plant spec	otic plant species			9			
			III. Regeneration/recruitment	<u> </u>				4		
	X Veg	getation	IV. Age, size distribution.				7			
	Bor	nthic	V. Snags, dens, cavity, etc. VI. Plants' condition.	·			1			
		itilic	VII. Land management prac				·			
	Bot	h		efugia, channels, hummocks).				8		
	•		IX. Submerged vegetation (only score if present).						
Current		With Impact		grove, 5% Black Mangrove, 65% White M		Buttonwood. <10FT	height, Crow	n density: Very Low Crown Density on		
6		0	ali species. Dia	ck sooty mold on leave and limbs tillough	iout.					
	re = Sum of about			Impact Acres =	0.00					
Current		With Impact		Functional Loss (FL) [For Impact Assessment Areas]:]				
0.67		0.00		FL = ID x Impact Acres =	0.000	1				
Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a										
Current -	· w/Impact	0.670	mitigation ban	k that was not assessed using UMAM d to assess impacts; use the assessment	, then UMAM	1				

Site/Project Name		Application Number	er		Assessment Area Name	or Number	
					A	22	
FLUCCs code	Further classifica	ation (optional)		Impact	Туре	Assessment Area Size	
3112	Seaso	nally Flooded Ma	ingrove		Direct Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classification	on (i.e.O	FW, AP, other local/state/federa	designation of importance)	
N/A	N/A				N/A		
Geographic relationship to and hyd	drologic connection with	wetlands, other s	urface water, uplar	nds			
North sound located to the north	n of the AA.						
Assessment area description							
Mangrove forest within mosquit	to control area.						
Significant nearby features			Uniqueness (collandscape.)	nsideri	ng the relative rarity in	relation to the regional	
North sound located to the north	of the AA.		Central Mangrove Wetland				
Functions		Mitigation for prev	vious p	permit/other historic use	9		
Stormwater runoff storage and t	reatment, Wildlife hab	itat	N/A				
Anticipated Wildlife Utilization Base that are representative of the asse be found)		•	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)				
Coastal avian, marine and terrst	rial species.						
Observed Evidence of Wildlife Util	zation (List species dire	ectly observed, or	other signs such a	s track	s, droppings, casings,	nests, etc.):	
Cayman Parrot, Butterfly, Yellow	/ Warbbler, Land Crab	, Common Gallin	ule				
Additional relevant factors:							
Access road running East to We	st.						
Assessment conducted by:			Assessment date	e(s):			
RM & TS		05/16/24					

Site/Project Nan	ne:								
Impact or Mitigat		-		Application Number:		A	ssessment Area	Name or Number:	
,	tion:	Impact		Assessment Conducted by: RM & TS Assessment Date: 05/16/24					
S	Scoring Guidan	ce	Optimal (10)	Moderate(7)		Minim	nal (4)	Not Present (0)	
would be suita		is based on what e of wetland or essed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but su maintain most wetland/surface wate		Minimal level wetland/sur funct	rface water	Condition is insufficient to provide wetland/surface water functions	
						Enter Notes be	low (do NOT sco	ore each subcategory individually)	
a. Quality and quantity of habi b. Invasive plant species. c. Wildlife access to and from d. Downstream benefits provi e. Adverse impacts to wildlife in			AA (proximity and barriers).				7 9 7 8 7		
			•	ric connectivity (impediments and flow restrictions).					
Current		With Impact	g. Dependency of downstream	habitats on quantity or quality of dischar	ges.			9	
7		0		ns provided by uplands (upland AAs only nosquitto control fragments habitat and s	•	ogic conectivity.			
			a. Appropriateness of water leve					7	
			b. Reliability of water level indic. Appropriateness of soil mois					9 8	
F00(6)	\/b\ \/\otor Envi		d. Flow rates/points of discharge					4	
)(b) Water Envi (n/a for upland:		e. Fire frequency/severity.				7		
f. Type of vegetation.								8	
g. Hydrologic stress on vegetation								7	
			h. Use by animals with hydrologic Plant community composition	gic requirements. n associated with water quality (i.e., pla	nts tolerant	of poor WO)		7	
				ater by observation (I.e., discoloration, t		01 pool (VQ).		6	
0		MC(I. Income of	k. Water quality data for the type of community.						
Current		With Impact	l. Water depth, wave energy, a	nd currents.				4	
6		0	Additional Salinity: N @ 26PF Notes:	PT, S @ 25PPT. Green film substance o	oserved on t	the waters surfac	e, high tannins		
			I. Appropriate/desirable species					9	
.500(6)	(c) Community		II. Invasive/exotic plant species					9	
	.,		III. Regeneration/recruitment					6	
_	X Veg		IV. Age, size distribution. V. Snags, dens, cavity, etc.					7 8	
	Ben		VI. Plants' condition.	<u> </u>			7		
			VII. Land management practice	·			5		
	Both	า	VIII. Topographic features (refug	gia, channels, hummocks).				8	
	Г		IX. Submerged vegetation (only	score if present).					
Current		With Impact		re, 35% White Mangrove, 35% Buttonwo	od. 10-30FT	T height, Crown d	ensity: Good/Fu	Il overall, however Buttonwood looks	
7		0	stressed.						
	e = Sum of abo plands, divide b			Impact Acres =	0.00				
Current		With Impact		Functional Loss (FL) [For Impact Assessment Areas]:]			
0.67		0.00	FI	L = ID x Impact Acres =	0.000	1			
NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is									
Current - v	w/Impact	0.670	mitigation bank th	al Loss (FL). If impact mitigation is pronat was not assessed using UMAM, tassess impacts; use the assessment m	hen UMAM	1			

Site/Project Name		Application Number	mber Assessment Area Name or Number				
					A23		
FLUCCs code	Further classification	ation (optional)		Impact Type	Assessment Area Size		
1831	Mai	n-modified with t	trees Direct Impact Acres				
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	on (i.e.OFW, AP, other local/state/federa	al designation of importance)		
N/A	N/A		N/A				
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds			
Stormwater flows north to the co	enetral mangrove wetl	and.					
Assessment area description							
Man-modified with trees. Monoc	ulture of Buttonwood.						
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)				
Central Mangrove Weltand to the	e North						
Functions			Mitigation for pre	vious permit/other historic us	e		
Livestock grazing area and Wild	life habitat.		N/A				
Anticipated Wildlife Utilization Base that are representative of the asset be found)		•	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)				
Avian and terrestrial species.							
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	other signs such a	s tracks, droppings, casings	, nests, etc.):		
Hickity turtle, Snowy Egret, Yello	ow warbler, Cayman p	arrot, Smooth-bi	lled Ani, Land Cr	ab			
Additional relevant factors:							
Active cattle operation							
Assessment conducted by:			Assessment date	e(s):			
RM & TS			05/16/24				

Page					TIGATION ASSESSMENT WORKS 2), F.A.C. (See Sections 62-345.5	_	_	Γ			
Impact Service Spring Customs Sp	Site/Project Na	ame:	-		Application Number:		Asses	ssment Area			
The contract reference in based on many appears and support containing appears and support co	Impact or Mitig	gation:	Impact								
sendant or under a statement or the graph or windows or settled to statement or the part of the part o		Scoring Guidar	nce	Optimal (10)	Moderate(7)		Minimal (4	l)	Not Present (0)		
S. Curative and Lumbeacoe Support With Impact With Impact With Impact T. Hydrologic connectively impactines are of the real valence of AA. 7. Hydrologic connectively impactines are of the real valence of AA. 7. Hydrologic connectively impactines are of the real valence of AA. 7. Hydrologic connectively impactines are of the real valence of AA. 7. Hydrologic connectively impactines are of the real valence of AA. 7. Hydrologic connectively impactines are of the real valence of AA. 7. Hydrologic connectively impactines are of the real valence of AA. 7. Hydrologic connectively impactines are of the real valence of AA. 7. Hydrologic connectively impactines are of the real valence of the AA. Evidence of foreign hydrology in the AA. Aparticular was a valent level indicators. 9. Aparticular was of valent level indicators. 9. Aparticular was off	would be su	uitable for the typ	e of wetland or	supports wetland/surface water	•		wetland/surface	water			
Decision Location and Landercape Support Decision							Enter Notes below ((do NOT sco	ore each subcategory individually)		
4. December of the control and control of the contr					t support outside of AA.						
Current With Impact Current With Impact Current Curren	.500(6)(a) Lo	ocation and Lan	dscape Support		,						
Current Wish Impact Dependency of documental materials on quantity or quality of declarages. 7				·							
With Impact Protection of wettend functions provided by splanes (supland Aka, poly). 8		7									
Additional facts deposits at the surface of the AA. Evidence of fleatry hydrology in the AA. Appropriate Additional facts deposits at the surface of the AA. Evidence of fleatry hydrology in the AA. Appropriate Additional flower.	Current		With Impact								
Appropriateness of water levels and flows. 1. Shouldly of water fevel indicators. 2. Appropriateness of water levels and flows. 3. Shouldly of water fevel indicators. 4. Shouldly of water fevel indicators. 5. Appropriateness of soll mobilities. 6. Plant commence of soll mobilities. 6. Plant commence of soll mobilities. 6. Plant commence of soll mobilities. 7. Plant community composation accided with vater quality (i.e., plants tolerant of poor WO). 7. Plant community composation accided with vater quality (i.e., plants tolerant of poor WO). 7. Plant community composation accided with vater quality (i.e., plants tolerant of poor WO). 7. Plant community composation accided with vater quality (i.e., plants tolerant of poor WO). 7. Plant community composation accided with vater quality (i.e., plants tolerant of poor WO). 7. Plant community composation of community. 7. Plant community commosation of community. 7. Additional vater of poor WO). 7. A			1				4h o A A		8		
b. Reliability of water level indicators. C. Apoproprientees of soil moleture. C. Plow ratesquiries of disprisage. C. Plow registation. C. Hydrologic artees on vegetation. C. Water quality of standing water by observation (i.e., discoloration, turbidity). C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of community. C. Water quality date for the type of the type of community. C. Water quality date for the type of the typ	7		0	·	ie surface of the AA. Evidence of flashy n	iyarology in t	tne AA.				
. Appropriate of solid project (Water Environment (Wa for uplands) . First frequency swears) . Lyse of vegetation Put for uplands) . Hydrologic stress on vegetation Put for uplands) . With Impact Current With Impact . Water quality composition associated with water quality (i.e., plants tolerand of poor WO) Water quality composition associated with water quality (i.e., plants tolerand of poor WO) Water quality composition associated with water quality (i.e., plants tolerand of poor WO) Water quality data for the type of community. . Water quality data for the type of community. . Additional Noises Raw Score = Sum of above scores/30 (if uplands, divide by 20) Current With Impact With Impact Impact Data (ID) Impact Data (ID) NOTE: If impact is proceed to be mitigated as a mitigation bank that was not assessed using UMAN, then UMAM cannot be used to assess impact use the assessment method of the				a. Appropriateness of water leve	els and flows.						
Flow retex/points of discharge.				<u> </u>							
Bentic With Impact Livease exercise (Fig. 2 per common protection (Fig. 2 per common protection) Bentic (Fig. 2 per common protection) Bentic (Fig. 2 per common protection) With Impact (Fig. 2 per common protection) Bentic (Fig. 2 per common protection) Bentic (Fig. 2 per common protection) With Impact (Fig. 2 per common protection) Bentic (Fig. 2 per common protection) With Impact (Fig. 2 per common protection) Bentic (Fig. 2 per common protection) Bentic (Fig. 2 per common protection) With Impact (Fig. 2 per common protection) With Impact (Fig. 2 per common protection) With Impact (Fig. 2 per common protection) Current (Fig. 2 per common protection) Raw Score = Stam of above ecores/20 (if uplands, divide by 20) Fig. 2 per common protection prote											
1. Type of vegetation. 1. Type of vegetati	.500(,							
No. Use by animals with hydrologic requirements Participation Particip		(n/a for upland	is)								
Plant community composition associated with water quality (i.e., plants tolerant of poor WQ) With Impact With Impact With Impact Land management parallels Management paral				• • •							
With Impact With Impact With Impact Current Current With Impact Current Cu							() ()				
Current With Impact I. Water qualify data for the type of community. I. Water dopth, wave energy, and currents.							r poor vvQ).				
Additional Notes: Notes:	Current		With Impact	k. Water quality data for the typ	. Water quality data for the type of community.						
Appropriate/desirable species 6		1		Additional							
II. Invasive/exotic plant species 8	0		0	Notes:							
III. Regeneration/recruitment	F00//	C)(a) Camana inita	Christian								
Notes Note	.500(6	o)(c) Community	Structure								
Benthic V. Snags, dens, cavity, etc. 5 VI. Plants' condition. 6 VI. Hants' condition. 5 VII. Land management practices. 5 VIII. Topographic features (refugia, channels, hummocks). 5 VIX. Submerged vegetation (only score if present). Current With Impact Additional Notes: Notes:		X Vec	netation								
Both VII. Land management practices. 5			,o.ao						5		
Substitution Subs		Ber	nthic	VI. Plants' condition.					6		
X. Submerged vegetation (only score if present). X. Upland assessment area 5		_									
Current With Impact X. Upland assessment area Additional Notes:		Bot	n						5		
Current With Impact Additional Notes: Raw Score = Sum of above scores/30 (if uplands, divide by 20) Impact Acres = 0.00]		• • • • • • •	ocoro ii procenty.				5		
Raw Score = Sum of above scores/30 (if uplands, divide by 20) Current	Current		With Impact	Additional							
Impact Acres = 0.00		1	_	INOTES:							
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.65 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	6		0								
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.65 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the											
Functional Loss (FL) [For Impact Assessment Areas]: Impact Delta (ID)					Impact Acres =	0.00					
NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	Current		With Impact		· · ·						
NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	0.65		0.00		· · ·	0.000					
was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.650 cannot be used to assess impacts; use the assessment method of the				<u> </u>	10 x 1111paul Aules =	0.000					
Current - w/Impact 0.650 cannot be used to assess impacts; use the assessment method of the		Impact Delta (ID)	was assessed usin equal to Functiona	ig UMAM, then the credits required for mal Loss (FL). If impact mitigation is prop	nitigation is nosed at a					
	Current -	- w/Impact	0.650	mitigation bank th cannot be used to	at was not assessed using UMAM, th	en UMAM					

Site/Project Name	Project Name Application Nu				mber Assessment Area Name or Number		
					A	24	
FLUCCs code	Further classifica	tion (optional)		Impac	t Type	Assessment Area Size	
1831	Mar	n-modified with t	rees		Direct Impact	Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	on (i.e.C	DFW, AP, other local/state/federal	designation of importance)	
N/A	N/A				N/A		
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, uplar	nds			
Man-modified habitat with small are also present in the AA. Possi	-	•	tered throughout.	. Som	e depressional areas	with pools of water	
Assessment area description							
Historic agricultural field, heavy	land disturbances pre	esent.					
Significant nearby features	Uniqueness (collandscape.)	nsider	ing the relative rarity in	relation to the regional			
Active construction to the West of the AA.							
Functions			Mitigation for prev	vious p	permit/other historic use)	
Livestock grazing area and Wildl	ife habitat.		N/A				
Anticipated Wildlife Utilization Base that are representative of the asses be found)		•	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)				
Avian and terrestrial species.							
Observed Evidence of Wildlife Utili	zation (List species dire	ectly observed, or	other signs such a	s tracl	ks, droppings, casings,	nests, etc.):	
Hickity turtle, Snowy Egret, Yello	ow warbler, Cayman pa	arrot, Smooth-bi	lled Ani, Land Cra	ab			
Additional relevant factors:							
Piled up fencing and vegitation f	rom clearing activites	present within t	he AA.				
Assessment conducted by:			Assessment date(s):				
RM & TS			05/16/24				

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.) Site/Project Name: Application Number: Assessment Area Name or Number: **A24** Assessment Date: Impact or Mitigation: Assessment Conducted by: RM & TS 05/16/24 **Impact** Minimal (4) Scoring Guidance Optimal (10) Moderate(7) Not Present (0) The scoring of each indicator is based on what Condition is optimal and fully Minimal level of support of Condition is less than optimal, but sufficient to Condition is insufficient to provide supports wetland/surface water would be suitable for the type of wetland or wetland/surface water maintain most wetland/surface waterfunctions wetland/surface water functions surface water assessed functions functions Enter Notes below (do NOT score each subcategory individually) 5 a. Quality and quantity of habitat support outside of AA. 7 b. Invasive plant species. 6 . Wildlife access to and from AA (proximity and barriers). .500(6)(a) Location and Landscape Support 7 Downstream benefits provided to fish and wildlife. e. Adverse impacts to wildlife in AA from land uses outside of AA. 5 7 Hydrologic connectivity (impediments and flow restrictions). 6 p. Dependency of downstream habitats on quantity or quality of discharges. With Impact Current . Protection of wetland functions provided by uplands (upland AAs only). 7 Additional Used for agriculture. Notes: 6 0 a. Appropriateness of water levels and flows. Reliability of water level indicators. . Appropriateness of soil moisture. d. Flow rates/points of discharge. .500(6)(b) Water Environment e. Fire frequency/severity. (n/a for uplands) Type of vegetation. . Hydrologic stress on vegetation. **Use by animal**s with hydrologic requirements. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). Water quality of standing water by observation (I.e., discoloration, turbidity). . Water quality data for the type of community. With Impact Current Water depth, wave energy, and currents. Additional Salinty of small pools: 15PPT Notes: 0 0 Appropriate/desirable species 7 .500(6)(c) Community Structure 7 l. Invasive/exotic plant species II. Regeneration/recruitment IV. Age, size distribution. 5 Vegetation V. Snags, dens, cavity, etc. VI. Plants' condition. 7 Benthic VII. Land management practices. 5 VIII. Topographic features (refugia, channels, hummocks). Both IX. Submerged vegetation (only score if present). X. Upland assessment area Current With Impact Additional Notes: 0 6 0.00 Impact Acres = **Raw Score** = Sum of above scores/30 (if uplands, divide by 20) With Impact Current **Functional Loss (FL)** [For Impact Assessment Areas]: 0.60 0.00 0.000 **FL** = ID x Impact Acres = NOTE: If impact is proposed to be mitigated at a mitigation bank that Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.600 cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

te/Project Name Application Nu			mber Assessment Area Name or Number			or Number
					E	31
FLUCCs code	Further classifica	tion (optional)		Impact Type		Assessment Area Size
3112	Seaso	nally Flooded Ma	angrove			Acres
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	on (i.e.OFW, AP, other loo	cal/state/federal	designation of importance)
Geographic relationship to and hyd	drologic connection with	wetlands others	urface water upla	nde		
Geographic relationship to and hyd	nologic connection with	wettarius, other s	unace water, upia	ius		
Mangroves located on other side	e of road, and impacte	d mine site				
Assessment area description						
Mangrove fringe dominated by k	plack and white mangr	ove edge of the s	site			
Significant nearby features			Uniqueness (considering the relative rarity in relation to the regional landscape.)			
Mine, open water pond, piles						
Functions			Mitigation for pre	vious permit/other I	historic use)
Isolated, no downstream benefit	ts .					
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)			
Birds, butterflies						
Observed Evidence of Wildlife Util	ization (List species dire	ectly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):
Birds, butterflies, small burrow	holes					
Additional relevant factors:						
			1			
Assessment conducted by:			Assessment date(s):			
JS, MM, LK			05/14/24			

	lame:			Application Number:	Assessment Area	Name or Number:			
• •				-		B1			
Impact or Mitigation:			/	Assessment Conducted by:	Assessment Date	Assessment Date: 05/14/24			
				JS, MM, LK					
	Scoring Guida	nce	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)			
			Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions			
					Enter Notes below (do NOT sco	ore each subcategory individually)			
			a. Quality and quantity of habitat	support outside of AA.		2			
			b. Invasive plant species.			8			
.500(6)(a) L	_ocation and Lar	ndscape Support	c. Wildlife access to and from AA	(proximity and barriers).		3			
1000(0)(0) =			d. Downstream benefits provided	to fish and wildlife.		2			
			e. Adverse impacts to wildlife in A	A from land uses outside of AA.		3			
		<u></u>	f. Hydrologic connectivity (impe	diments and flow restrictions).		2			
Current		Mith have a st	g. Dependency of downstream ha	bitats on quantity or quality of discharges.	. 1				
Guireill		With Impact	h. Protection of wetland functions	provided by uplands (upland AAs only).	1	N/A			
			Additional	<u>'</u>					
3		0	Notes:						
	ı	<u>!</u>	a. Appropriateness of water levels	s and flows		6			
			b. Reliability of water level indica			7			
			c. Appropriateness of soil moist u			7			
			d. Flow rates/points of discharge			2			
.500	(6)(b) Water Englan (n/a for uplan)		e. Fire frequency/severity.			7			
	(II/a IOI apiaii	u3)	f. Type of vegetation.			7			
			g. Hydrologic stress on vegetation.			8			
			h. Use by animal s with hydrologic requirements.						
			•	associated with water quality (i.e., plants tolerant	of poor WQ).	4			
	7		j. Water quality of standing water by observation (l.e., discoloration, turbidity).						
Current		With Impact	k. Water quality data for the type of community. 7						
		•	Water depth, wave energy, and currents.						
			Additional Salinity 22ppt. Water depth - 10"+ Notes:						
6		0	110.00.						
			I. Appropriate/desirable species			8			
.500((6)(c) Communit	y Structure	II. Invasive/exotic plant species			9			
			III. Regeneration/recruitment			5			
X Vegetation			IV. Age, size distribution.			7			
			V. Snags, dens, cavity, etc.			7			
	_		VI. Plants' condition.						
	Be	nthic				5			
			VII. Land management practices.	ahannala hummaaka)		1			
	Be		VII. Land management practices. VIII. Topographic features (refugia	•		1 4			
			VII. Land management practices.	•		1			
Current			VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only s X. Upland assessment area Additional	•		1 4 N/A			
Current		th	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only s X. Upland assessment area Additional Notes:	core if present).		1 4 N/A			
Current 6		th	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only s X. Upland assessment area Additional Notes:	•		1 4 N/A			
		th With Impact	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only s X. Upland assessment area Additional Notes:	core if present).		1 4 N/A			
		th With Impact	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only s X. Upland assessment area Additional Notes:	core if present).		1 4 N/A			
6	Bo	With Impact	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only s X. Upland assessment area Additional Notes: Black Mangrove 70%	core if present).		1 4 N/A			
6 Raw Sco		With Impact 0 ove scores/30	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only s X. Upland assessment area Additional Notes: Black Mangrove 70%	o, White Mangrove 10%, Height = less than 10'.		1 4 N/A			
6 Raw Sco	Boone = Sum of ab	With Impact 0 ove scores/30	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only s X. Upland assessment area Additional Notes: Black Mangrove 70%	o, White Mangrove 10%, Height = less than 10'.		1 4 N/A			
Raw Sco	Boone = Sum of ab	With Impact 0 ove scores/30 by 20)	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only s X. Upland assessment area Additional Notes: Black Mangrove 70%	o, White Mangrove 10%, Height = less than 10'.		1 4 N/A			
6 Raw Sco	Boone = Sum of ab	With Impact 0 ove scores/30	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only s X. Upland assessment area Additional Notes: Black Mangrove 70%	o, White Mangrove 10%, Height = less than 10'.		1 4 N/A			
Raw Sco	Boone = Sum of ab	With Impact 0 ove scores/30 by 20)	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only s X. Upland assessment area Additional Notes: Black Mangrove 70%	core if present). o, White Mangrove 10%, Height = less than 10'. Impact Acres = 0.00		1 4 N/A			
Raw Sco	Boone = Sum of ab	With Impact 0 ove scores/30 by 20)	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only six. Upland assessment area Additional Notes: Black Mangrove 70%	core if present). b, White Mangrove 10%, Height = less than 10'. Impact Acres = 0.00 Functional Loss (FL) for Impact Assessment Areas]:		1 4 N/A			
Raw Sco	Boone = Sum of ab	With Impact O ove scores/30 by 20) With Impact	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only six. Upland assessment area Additional Notes: Black Mangrove 70%	core if present). b, White Mangrove 10%, Height = less than 10'. Impact Acres = 0.00 Functional Loss (FL)		1 4 N/A			
Raw Sco	Boone = Sum of ab	With Impact O ove scores/30 by 20) With Impact	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only six. Upland assessment area Additional Notes: Black Mangrove 70%	core if present). b, White Mangrove 10%, Height = less than 10'. Impact Acres = 0.00 Functional Loss (FL) for Impact Assessment Areas]:		1 4 N/A			
Raw Sco (if	Boone = Sum of ab	With Impact O ove scores/30 by 20) With Impact	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only s X. Upland assessment area Additional Notes: Black Mangrove 70%	core if present). b, White Mangrove 10%, Height = less than 10'. Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = 0.000		1 4 N/A			
Raw Sco (if	Boone = Sum of ab	With Impact O ove scores/30 by 20) With Impact 0.00	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only s X. Upland assessment area Additional Notes: Black Mangrove 70% [F	core if present). b, White Mangrove 10%, Height = less than 10'. Impact Acres = 0.00 Functional Loss (FL) for Impact Assessment Areas]:		1 4 N/A			
Raw Sco	pre = Sum of ab f uplands, divide	With Impact O ove scores/30 by 20) With Impact 0.00	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only six. Upland assessment area Additional Notes: Black Mangrove 70% FL = NOTE: If impact is piece was assessed using equal to Functional	core if present). To, White Mangrove 10%, Height = less than 10'. Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]: FID x Impact Acres = 0.000 Toposed to be mitigated at a mitigation bank that UMAM, then the credits required for mitigation is Loss (FL). If impact mitigation is proposed at a		1 4 N/A			
Raw Sco (if Current	pre = Sum of ab f uplands, divide	With Impact O ove scores/30 by 20) With Impact 0.00	VII. Land management practices. VIII. Topographic features (refugia IX. Submerged vegetation (only six. Upland assessment area Additional Notes: Black Mangrove 70% FL = NOTE: If impact is picked was assessed using equal to Functional mitigation bank that	core if present). c, White Mangrove 10%, Height = less than 10'. Impact Acres = 0.00 Functional Loss (FL) For Impact Assessment Areas]: = ID x Impact Acres = 0.000 roposed to be mitigated at a mitigation bank that UMAM, then the credits required for mitigation is		1 4 N/A			

Site/Project Name	Application Number	ation Number		Assessment Area Name or Number			
					E	32	
FLUCCs code	Further classifica	Further classification (optional)		Impact Type		Assessment Area Size	
3112	nally Flooded Ma	angrove			Acres		
Basin/Watershed Name/Number Affected Waterbody (Class)			Special Classificati	On (i.e.OFW, AP, other loc	cal/state/federal	designation of importance)	
Geographic relationship to and hyd	drologic connection with	wetlands, other s	urface water, upla	nds			
Located East of isolated open w	ater and roadway. Min	e adjacent.					
Assessment area description							
15'-20' tall black mangrove domi	nated. White mangrov	es present.					
Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)						
road, pond, mangroves							
Functions			Mitigation for previous permit/other historic use				
stormwater filtration and storag	e						
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)				
Birds, small reptiles, insects							
Observed Evidence of Wildlife Util	ization (List species dire	ectly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):	
insects - mosquitoes, termites, a	anoles, birds						
Additional relevant factors:							
Salinity 26ppt, algal presence							
Assessment conducted by:			Assessment date	ssessment date(s):			
JS, MM, LK			05/14/24				

			Form	62-345.900(2	2), F.A.C. (See Sections 62-3	45.500 and .	.600, F.A.C.)					
Site/Project Name:				Application Number:			Assessment Area Name or Number:					
mpact or Mitigation: Impact			Assessment Conducted by: JS, MM	JS, MM, LK			ssment Date: 05/14/24					
Scoring Guidance Optimal (10)					Moderate(7) Mi			inimal (4) Not Present (0)				
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed Condition is optimal and supports wetland/surface functions			d/surface water	Condition is less than optimal, but maintain most wetland/surface w		wetland/s	el of support of urface water ctions	Condition is insufficient to provide wetland/surface water functions				
							Enter Notes b	pelow (do NOT sc	ore each subcategory individually)			
.500(6)(a) Location and Landscape Support			a. Quality and quantity of habitat support outside of AA. b. Invasive plant species. c. Wildlife access to and from AA (proximity and barriers). d. Downstream benefits provided to fish and wildlife.				3 9 6 2					
			·		AA from land uses outside of AA.				2			
Current	Current With Impact			c connectivity (impediments and flow restrictions). acy of downstream habitats on quantity or quality of discharges. 3 of wetland functions provided by uplands (upland AAs only). N/A			3					
4		0	Additional Notes:				y).					
			a. Appropriatene b. Reliability of v	vater level indic	ators.				7 8			
			c. Appropriatened. Flow rates/pc					10 6				
.500(6	6)(b) Water Env n/a for upland)		e. Fire frequenc	y /severity.				7				
	•		f. Type of vegetation.				10					
			g. Hydrologic stress on vegetation. h. Use by animal s with hydrologic requirements.			<u>6</u> 2						
			i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ			of poor WQ).						
	1 1			y of standing water by observation (l.e., discoloration, turbidity).								
Current		With Impact		. Water quality data for the type of community.					7			
				r depth, wave energy, and currents. nal Salinity 26ppt. Water depth - 3".				,				
7		0	Notes:									
500/0	2) () (2) ''	O :	I. Appropriate/desirable species					8				
.500(6	6)(c) Community	Structure	II. Invasive/exotic plant species				9 4					
	X Veg	jetation		Regeneration/recruitment Age, size distribution.				6				
				Snags, dens, cavity, etc.				7				
	Benthic			lants' condition.				2				
Both				Land management practices. Topographic features (refugia, channels, hummocks).				7				
				Submerged vegetation (only score if present).				N/A				
Current			Notes:						N/A			
6		0	Bla	ck Mangrove 70'	%, White Mangrove 10%, buttonwo	od - 20%.						
	I.		1 -				7					
	re = Sum of abouplands, divide				Impact Acres =	0.00						
Current		With Impact	Functional Loss (FL) [For Impact Assessment Areas]:									
0.57												
Impact Delta (ID)			was	NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is								
Current - w/Impact 0.570			miti can	equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigaiton bank.								

Site/Project Name Applic			Number As:		ssessment Area Name or Number	
					E	33
FLUCCs code	Further classification	Further classification (optional)		Impact Type		Assessment Area Size
3112	Seasor	nally Flooded Ma	ngroves			Acres
Basin/Watershed Name/Number Affected Waterbody (Class)			Special Classificati	On (i.e.OFW, AP, other loc	al/state/federal	designation of importance)
Geographic relationship to and hyd	 drologic connection with	wetlands, other s	urface water, upla	nds		
West of mine access road. Sout	h of mine pond. Old ac	ccess road to the	south.			
Assessment area description						
10'-20' black and white mangrov	res, no standing water					
Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)					
Mine access road and old acces	s road.					
Functions		Mitigation for previous permit/other historic use				
Minimal habitat, stormwater (mi	nimal)					
Anticipated Wildlife Utilization Bas that are representative of the asse be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)					
Coastal avian						
Observed Evidence of Wildlife Util	ization (List species dire	ectly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):
Butterflies						
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
JS, MM, LK	05/14/24					

Application Number Applica						FIGATION ASSESSMENT Work (See Sections 62-3	_		PACT	
Soviety Currents Comment (N)	Site/Project Na	ame:	-			Application Number:			Assessment Area	
The extension of seach in the control and in the control and and the control and in the c	Impact or Mitig	gation:	Impact				, LK		Assessment Date	
Securities automated for the type of a reference of professional control of the c		Scoring Guidar	nce	Ор	timal (10)	Moderate(7)		Mini	mal (4)	Not Present (0)
SOURCE Location and Landissone Suprior of Machine support pageties. SOURCE Location and Landissone Suprior Su	would be su	uitable for the typ	oe of wetland or	supports wet	land/surface water	•		wetland/s	urface water	
According to contain and Landscape Support Courrent								Enter Notes b	elow (do NOT sc	ore each subcategory individually)
Current With Impact Current	.500(6)(a) Lo	ocation and Lan	dscape Support	b. Invasive p	lant species.	A (proximity and barriers).				9 8
Current With Impact Current Curr					·					
Particular of well-and functions provided by sphands (upland Abs proy). NAA Additional A	Current]	With Impact				charges.			
Society Soci	Current		with impact		of wetland functions	s provided by uplands (upland AAs	only).		1	N/A
. 5. Reliability of water level indicators	6		0							
. Appropriate rest and indications. SOO(8)(s) Water Environment (Wa for uplands) First frequency/sweetly. Define frequency/sweetly. Type of vegetation. Plant community composition associated with water quality (i.e., plants tolerant of poor WO). With Impact With Impact Additional Satinly 26ppm. No water, but mangrowes present. Additional Satinly 26ppm. No water by been additional										
A. Flow rates(s)-prints of discharge. NA										
Prior Industrial Community Composition (Community Composition) Prior Industrial Community Composition (Community Composition) Prior Industrial Community Composition associated with water quality (i.e., plants tolerant of poor WQ). NA	500/	(0) (1) \ \ \ (0) \ (1) \ \ \ (1) \ \ (2) \ \ (3) \ (4) \ \ (4) \ \ (5) \ \ (5) \ \ (6) \ (1) \ \ (6) \ (1) \ \ (7) \ \ (8) \ \								
Additional Section S	.500(e. Fire frequ	ency/severity.					N/A
Note by animals with hydrologic requirements. 2 N/A		` '	,		<u> </u>					'
Plant community composition associated with water quality (i.e., plants tolerant of poor WO). NA Water quality of standing water by observation (i.e., discoloration, turbidity). NA With Impact With Impact Water quality data for the type of community. NA Water quality data for the type of community. NA Water depth, wave energy, and currents. NA Additional Salinity 26ppm, No water, but mangroves present.										
With Impact With Impact With Impact With Impact University Universi						·	nlante tolerant	of poor WO		
Current With Impact Learn of the type of community Learn of type Learn of typ							· · · · · · · · · · · · · · · · · · ·	oi pooi wa).		
With Impact With Impact Additional Salinity 26ppm. No water, but mangroves present. N/A		1					on, tarbiany).			
Appropriate/desirable species 9	Current		With Impact			·				N/A
Laptropriste/desirable species B		1								
II. Invasive/exotic plant species 9	6		0	Notes:						
III. Regeneration/recruitment 4	500/6	0)() 0	0							
V. Age, size distribution. 7 V. Age, size distribution. 6 V. Dehart's Condition. 4 VII. Land management practices. 2 VIII. Topographic features (refugia, channels, hummocks). 2 VIII. Topographic features (refugia, channels, hummocks). N/A	.500(6	6)(c) Community	Structure							
Benthic Functional Loss (FL) For impact Acres = 0.000		V \/o	rotation							
Benthic Vil. Indam management practices. 2 2 2 2 2 2 2 2 2			getation							,
Submerged vegetation (only score if present). NIA		Ber	nthic		•					
X. Submerged vegetation (only score if present). N/A				VII. Land ma	nagement practices	S.				2
Current With Impact Additional Notes: 10-20ft height, 10% logwood, Black Mangrove 65%, White Mangrove 20%, buttonwood 5%. Soil is dry and compact causing shallow roots. Dead branches and sooty mold present. Raw Score = Sum of above scores/30 (if uplands, divide by 20) Current With Impact Functional Loss (FL) (For Impact Assessment Areas): [For Impact Acres = 0.000] NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the		Bot	h							
Current With Impact Additional Notes: 10-20ft height, 10% logwood, Black Mangrove 65%, White Mangrove 20%, buttonwood 5%. Soil is dry and compact causing shallow roots. Dead branches and sooty mold present.		1				score if present).				
Raw Score = Sum of above scores/30 (if uplands, divide by 20) Current With Impact Functional Loss (FL) [For Impact Assessment Areas]:	Current		With Impact	Additional		6 logwood, Black Mangrove 65%, W	/hite Mangrove :	20%, buttonwoo	nd 5%. Soil is dry a	
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.60 Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	6		0		roots.Dead branche	es and sooty mold present.				
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.60 Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the		•		,				7		
Current - w/Impact 0.600 0.00 Functional Loss (FL) [For Impact Assessment Areas]: Functional Loss (FL) [For Impact Assessment Areas]: Functional Loss (FL) [For Impact Assessment Areas]: NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the						Impact Acres =	0.00			
The second of	Current		With Impact					1		
Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the										
was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.600 cannot be used to assess impacts; use the assessment method of the	0.60		0.00		FL	. = ID x Impact Acres =	0.000			
mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.600 cannot be used to assess impacts; use the assessment method of the		Impact Delta (ID)		was assessed usin	g UMAM, then the credits required	for mitigation is	5		
	Current -	- w/Impact	0.600		mitigation bank the cannot be used to a	at was not assessed using UMA	M, then UMAM	1		

Site/Project Name		Application Number	lumber Assessment Area Name or Numb			or Number
					E	34
FLUCCs code	Further classification	ation (optional)		Impact Type		Assessment Area Size
1831	Man	modified withou	t trees			Acres
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	On (i.e.OFW, AP, other loo	cal/state/federal	designation of importance)
Geographic relationship to and hy	 drologic connection with	wetlands, other s	urface water, upla	nds		
Mangroves located to north and	I west. Adjacent to Mas	stic Reserve.				
Assessment area description						
Area appears to have been clea	red in recent years					
Significant nearby features			Uniqueness (co	nsidering the relati	ve rarity in	relation to the regional
Mastic Reserve to the north/nor east	tial to south/	Cleared				
Functions			Mitigation for pre	vious permit/other	historic use	9
Habitat and foraging.						
Anticipated Wildlife Utilization Bas that are representative of the asse be found)			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)			
birds, butterflies, insects						
Observed Evidence of Wildlife Uti	lization (List species dire	ectly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):
birds, butterflies, insects						
Additional relevant factors:						
No standing water, no visable w	ater at surface					
Assessment conducted by:			Assessment date	e(s):		
JS, MM, LK		05/15/24				

					TIGATION ASSESSMENT 2), F.A.C. (See Sections 6			PACT	
Site/Project Na	ame:	-			Application Number:	-		Assessment Area	Name or Number:
Impact or Mitig	ation:	Impact			Assessment Conducted by: JS,	MM, LK		Assessment Date	05/15/24
	Scoring Guidar	nce	Opt	imal (10)	Moderate(7)	Mini	mal (4)	Not Present (0)
would be su	f each indicator iitable for the typ irface water asso		supports wet	optimal and fully land/surface water nctions	Condition is less than optima maintain most wetland/surfa		wetland/s	el of support of urface water ctions	Condition is insufficient to provide wetland/surface water functions
							Enter Notes b	elow (do NOT sc	ore each subcategory individually)
.500(6)(a) Lo	ocation and Lan	dscape Support	b. Invasive pl c. Wildlife acd d. Downstrea	ant species. cess to and from A m benefits provide	A from land uses outside of AA.	^			5 7 8 6
				mpacts to wildlife in AA from land uses outside of AA. 7 ic connectivity (impediments and flow restrictions). 7					
Current		With Impact			nabitats on quantity or quality of	_			7
6		0	Additional Notes:						
.500((6)(b) Water Env (n/a for upland	ironment ls)	c. Appropriated. Flow rates e. Fire frequent. Type of verg. Hydrologich. Use by an i. Plant commit i. Water qual	getation. stress on vegetate imals with hydrologounity composition ity of standing wa	ture. e. ion. gic requirements. n associated with water quality ter by observation (l.e., discolo		of poor WQ).		
Current		With Impact	I. Water dept Additional	lity data for the type h, wave energy, ar	·				
0		0	Notes:						
500(6	6)(c) Community	Structure		/desirable species otic plant species					7 6
	,,(-,			ion/recruitment					9
	X Veg	•	IV. Age, size						5 8
	Ber		V. Shags, de	ns, cavity, etc.					8
				nagement practices					3
	Bot			· · ·	ia, channels, hummocks).				8
Current		With Impact	X. Upland ass Additional	ed vegetation (only sessment area	score ii present).				N/A 6
7		0	Notes:						
							_		
	re = Sum of about				Impact Acres =	0.00			
Current		With Impact			Functional Loss (FL) [For Impact Assessment Areas]]		
0.65		0.00			_ = ID x Impact Acres =	0.000]		
	Impact Delta (I	ID)	,	was assessed usin	proposed to be mitigated at a g UMAM, then the credits requ ll Loss (FL). If impact mitigation	red for mitigation is	;		
Current -	· w/Impact	0.650		mitigation bank the	at was not assessed using Lassess impacts; use the assess	MAM, then UMAM	I		

Site/Project Name		Application Number	nber Assessment Area Name			or Number
					В	35
FLUCCs code	Further classifica	tion (optional)		Impact	Туре	Assessment Area Size
1813	Mar	n made without t	rees			Acres
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classification	on (i.e.OF	FW, AP, other local/state/federal	designation of importance)
Geographic relationship to and hyd	I Irologic connection with	wetlands, other s	ı urface water, uplaı	nds		
Uplands						
Assessment area description						
AA cleared. FAC wet plants pres to south. Construction site to so		rest all around. I	Mastic Reserve n	earby t	o the north/west. Res	sidential and roadway
Significant nearby features		Uniqueness (co landscape.)	nsiderir	ng the relative rarity in	relation to the regional	
Mastic Reserve						
Functions			Mitigation for prev	vious pe	ermit/other historic use	,
Habitat						
Anticipated Wildlife Utilization Base that are representative of the asse be found)						
Birds, butterflies, insects						
Observed Evidence of Wildlife Util	zation (List species dire	ctly observed, or	other signs such a	s tracks	s, droppings, casings,	nests, etc.):
Birds, butterflies						
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
JS, MM, LK		05/15/24				

Secretary Characters Impact Secretary Charac						TIGATION ASSESSMENT W 2), F.A.C. (See Sections 62-				
Specimen	Site/Project Na	ame:	-			Application Number:			Assessment Area	
Subject Sub	Impact or Mitig	ation:	Impact				1, LK		Assessment Date	
souther to the type or woman's process water and the common of the commo		Scoring Guidar	nce	Opt	imal (10)	Moderate(7)		Min	imal (4)	Not Present (0)
2. Clarity and quantity of habitat support oracisor of AA. 2. Invasive plant species. 2. Evality and quantity of habitat support oracisor of AA. 2. Invasive plant species. 3. Political coasion and Landissaye Support 4. Evalities access in an firm AA (proximity and harmon). 3. Boundaries an internet plant species. 4. Pythologic commercity in proximity and electric. 7. Pythologic commercity in proximity and electric. 7. Pythologic commercity in proximity or analysis of all containings. 7. Pythologic commercity in proximity or analysis of all containings. 7. Pythologic commercity in proximity or analysis of all containings. 7. Pythologic commercity in proximity or analysis of all containings. 7. Pythologic commercity in proximity or analysis of all containings. 7. Pythologic commercity in proximity or analysis of all containings. 7. Pythologic commercity in proximity or analysis of all containings. 7. Pythologic commercity in the restriction of AA. 8. Approximation of water levels and flows. 8. Approximation of section of water levels and flows. 8. Approximation of an electrocity of AA. 8. Approximation of an electrocity of AA. 8. Approximation of an electrocity of AA. 8. Pythologic commercity of AA. 8. Approximation of an electrocity of AA. 8. Approximation of an el	would be su	itable for the typ	e of wetland or	supports wet	land/surface water	-		wetland/s	surface water	
								Enter Notes I	below (do NOT sc	ore each subcategory individually)
Current With Impact A Dependency of connections of procedures and flow or reactioners. 7	.500(6)(a) Lo	ocation and Lan	dscape Support	b. Invasive pl c. Wildlife ac d. Downstrea	lant species. cess to and from A m benefits provide	A (proximity and barriers). ed to fish and wildlife.				7 8 7
Second Comment With Impact Second Comment Second					·					
Additional Master Review nearby to the north/week. Residential and receively to south. Construction site to south. Additional Master Review nearby to the north/week. Residential and receively to south. Construction site to south. Additional Master Review nearby to the north/week. Residential and receively to south. Construction site to south. Additional Master Review nearby to the north/week. Residential and receively to south. Construction site to south. Additional Master Review nearby to the north/week. Residential and receively to south. Construction site to south. Additional Master Review nearby to the north/week. Residential and receively to south. Construction site to south. Additional Master Review nearby to the north/week. Residential and receively to south. Construction site to south. Additional Master Review nearby to the north/week. Residential and receively to south. Construction site to south. Additional Master Review nearby to the north/week. Residential and receivers you south. Construction site to south. Additional Master Review nearby to the north/week. Residential and receivers. NIVA	Current		With Impact	-						4
1. Reliability of water level indicators. N/A				Additional				south. Construc	ction site to south.	
## Aproprotection of the protection of the prote										
Additional No surface water present. Uplands No No No No No No No N	500/	0)///)] []								
Type of vegetation. NA NA NA NA NA NA NA N	.500(·					N/A
No.		(,		<u> </u>					
Plant community composition associated with water quality (i.e., plants tolerant of poor WQ); NA										
With Impact With Impact With Impact With Impact Current Current With Impact Current						·	nlants tolerant	of poor WO		
Current With Impact L. Water dupit, wave energy, and currents. NA NA								or poor www.		
Water depth, wave energy, and currents. N/A]		-						
Appropriate/desirable species 7	Current		With Impact	I. Water dept	h, wave energy, ar	nd currents.				N/A
I. Invasive/exotic plant species 7	0		0		No surface water p	resesnt. Uplands				
I. Invasive/exotic plant species 7				I Appropriate	/desirable aposics					7
III. Regeneration/recruitment 9 9	.500(6	6)(c) Community	Structure							
N. Age, size distribution	,	, , ,								•
Benthic Hold Benthic Hold Benthic Benthic Benthic Benthic Benthic Benthic Benthic Benthic Benthic Will. Topographic features (refugia, channels, hummocks). 7		X Veg	getation							
Sum of above scores/30 (if uplands, divide by 20) Impact Delta (ID)					· · · · · · · · · · · · · · · · · · ·					8
Note: Submerged vegetation (only score if present). Ni/A		Ber	nthic							
X. Submerged vegetation (only score if present). X. Upland assessment area 6		Pot	h		<u> </u>					
Current With Impact X. Upland assessment area Additional Notes:			11							
Raw Score = Sum of above scores/30 (if uplands, divide by 20) Impact Acres = 0.00	Current		With Impact	X. Upland ass Additional		, ,				
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.65 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	7		0	Notes.						
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.65 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the										
Functional Loss (FL) [For Impact Assessment Areas]: Description						Impact Acres =	0.00			
Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	Current		With Impact]		
was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.650 cannot be used to assess impacts; use the assessment method of the	0.65		0.00		FL	_ = ID x Impact Acres =	0.000]		
mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.650 cannot be used to assess impacts; use the assessment method of the		Impact Delta (ID)	,	was assessed usin	g UMAM, then the credits require	for mitigation is	5		
	Current -	w/Impact	0.650		mitigation bank the cannot be used to	at was not assessed using UM	M, then UMAM	1		

Site/Project Name		Application Number	Number Assessment Area Name or Number			or Number
					E	36
FLUCCs code	Further classifica	tion (optional)		Impact Type		Assessment Area Size
3112	Seasor	nally flooded ma	ngroves			Acres
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	On (i.e.OFW, AP, other loc	cal/state/federal	designation of importance)
Geographic relationship to and hyd	drologic connection with	wetlands, other s	urface water, upla	nds		
Mastic Reserve to the west. Nati	onal Trust Property. P	EM lagoons to s	outheast.			
Assessment area description						
Black mangrove dominated area	ı. Mangrove heights 10)'-30' tall.				
Significant nearby features			Uniqueness (co landscape.)	nsidering the relativ	ve rarity in	relation to the regional
National Trust trail. Adjacent to		Adjacent to Mastic Reserve. National Trust property.				
Functions			Mitigation for pre	vious permit/other h	nistoric use)
Habitat and water storage						
Anticipated Wildlife Utilization Base that are representative of the asse be found)						
birds, butterflies, small reptiles						
Observed Evidence of Wildlife Util	ization (List species dire	ectly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):
birds, butterflies, reptiles (anole	s)					
Additional relevant factors:						
On National Trust trail						
Assessment conducted by:			Assessment date	e(s):		
JS, MM, LK			05/15/24			

				ITIGATION ASSESSMENT WORK (2), F.A.C. (See Sections 62-345.5			IPACT	
Site/Project Na	ame:	<u> </u>		Application Number:			Assessment Area	a Name or Number:
Impact or Mitiga	ation:	Impact		Assessment Conducted by: JS, MM, LK			Assessment Date	o5/15/24
	Scoring Guidar	nce	Optimal (10)	Moderate(7)		Mini	imal (4)	Not Present (0)
The scoring of would be su		is based on what be of wetland or	Condition is optimal and fully supports wetland/surface wate functions	Condition is less than optimal, but suf maintain most wetland/surface waterf		wetland/s	el of support of surface water actions	Condition is insufficient to provide wetland/surface water functions
						Enter Notes b	pelow (do NOT sc	ore each subcategory individually)
			a. Quality and quantity of habit b. Invasive plant species.					9
.500(6)(a) Lo	ocation and Lan	dscape Support	d. Downstream benefits provide. Adverse impacts to wildlife in	· · · · · · · · · · · · · · · · · · ·				9 9 9
Current		With Impact	g. Dependency of downstream	pediments and flow restrictions). habitats on quantity or quality of discharg				9
9		0	Additional Notes:	ns provided by uplands (upland AAs only)				9
			a. Appropriateness of water lev b. Reliability of water level ind					8
			c. Appropriateness of soil mois	sture.				9
.500(6	6)(b) Water Env		d. Flow rates/points of dischar e. Fire frequency/severity.	ge.				7
	(n/a for upland	s)	f. Type of vegetation.					9
			g. Hydrologic stress on vegeta	ation.				10
			h. Use by animal s with hydrolo	<u></u>		()((0)		N/A
				on associated with water quality (i.e., planater by observation (l.e., discoloration, tu		of poor WQ).		8 N/A
Current		With Impact	k. Water quality data for the tyll. Water depth, wave energy, a	pe of community.				8 N/A
9		0	Additional Salinity = 40 ppt Notes:					
			I. Appropriate/desirable species	5				9
.500(6	6)(c) Community	Structure	II. Invasive/exotic plant species					10
	X Vec	jetation	III. Regeneration/recruitment IV. Age, size distribution.					9
		jotation	V. Snags, dens, cavity, etc.					9
	Ber	nthic	VI. Plants' condition.					9
	Bot	h	VII. Land management practice VIII. Topographic features (refu					8 8
		11	IX. Submerged vegetation (only					N/A
Current		With Impact	X. Upland assessment area Additional Notes:					N/A
9		0	Black mangroves	80%, buttonwood 20%, height 10'-30'				
	re = Sum of about			Impact Acres =	0.00			
Current		With Impact		Functional Loss (FL) [For Impact Assessment Areas]:				
0.90		0.00	F	FL = ID x Impact Acres =	0.000			
	Impact Delta (I	D)	was assessed usi	s proposed to be mitigated at a mitigationing UMAM, then the credits required for m	itigation is			
Current -	w/Impact	0.900	mitigation bank t	nal Loss (FL). If impact mitigation is proper hat was not assessed using UMAM, the assess impacts; use the assessment me	en UMAM			

Site/Project Name		Application Numbe	mber Assessment Area Name			or Number	
					E	37	
FLUCCs code	Further classifica	tion (optional)		Impact	t Type	Assessment Area Size	
3112	Season	nally flooded man	ngroves			Acres	
Basin/Watershed Name/Number	Affected Waterbody (Clas	s)	Special Classificati	on (i.e.O	FW, AP, other local/state/federal	designation of importance)	
Geographic relationship to and hyd	Irologic connection with	wetlands, other s	urface water, uplai	nds			
North of mine site. West of old n	nine access road. Sout	h of Central Mar	ngrove.				
Assessment area description							
Seasonally flooded mangrove in	npounded by old acces	ss road					
Significant nearby features			Uniqueness (co landscape.)	nsideri	ing the relative rarity in	relation to the regional	
Mine site		Adjacent to old access road					
Functions			Mitigation for pre-	vious p	permit/other historic use	,	
Stormwater treatment and habita	at						
Anticipated Wildlife Utilization Base that are representative of the asset be found)				T, SSC	y Listed Species (List s C), type of use, and inte		
avian, insects							
Observed Evidence of Wildlife Utili	zation (List species dire	ctly observed, or	other signs such a	s track	s, droppings, casings,	nests, etc.):	
West Indian wood pecker, termit	es, other birds						
Additional relevant factors:							
Per NRA area to the west is drie	r and dominated by loç	gwood trees.					
Assessment conducted by:		Assessment date	e(s):				
JS, MM, LK		05/15/24					

					TIGATION ASSESSMENT WO 2), F.A.C. (See Sections 62-3				
Site/Project Na	ame:				Application Number:			Assessment Area	Name or Number:
Impact or Mitig	ation:	Impact			Assessment Conducted by: JS, MM	LK		Assessment Date	05/15/24
	Scoring Guidar	nce	Ор	timal (10)	Moderate(7)		Min	imal (4)	Not Present (0)
would be su		is based on what be of wetland or essed	supports we	s optimal and fully tland/surface water unctions	Condition is less than optimal, but maintain most wetland/surface w		wetland/s	rel of support of surface water nctions	Condition is insufficient to provide wetland/surface water functions
							Enter Notes I	below (do NOT sc	ore each subcategory individually)
.500(6)(a) Lo	ocation and Lan	dscape Support	b. Invasive p	lant species.	A (proximity and barriers).				6 9 8 8
			e. Adverse in	npacts to wildlife in A	AA from land uses outside of AA.				5
	1				ediments and flow restrictions).	horaco			7
Current		With Impact	· .		nabitats on quantity or quality of disc s provided by uplands (upland AAs				V/A
7		0			ess road causing a lack of hydrolog		wetland.		
				eness of water leve					8
				of water level indicates of soil moist					9
				teness of soil moist s /points of discharg					7
.500(6)(b) Water Env n/a for upland)			ency/severity.	-				7
	(iiia ioi apiano	,	f. Type of ve						9
				c stress on vegetati					8
				nimals with hydrolog	<u>'</u>	nlanta talarant	of noor MO		6
					n associated with water quality (i.e., ter by observation (l.e., discoloration)	·	or poor wQ).		8 N/A
				lity data for the type		ori, tarbiaity).			N/A
Current		With Impact		th, wave energy, ar					N/A
				Salinity = 38 ppt					
8		0	Notes:						
				e/desirable species					9
.500(6	6)(c) Community	Structure		xotic plant species					9
	V V-			tion/recruitment					8
	X Veg	getation	IV. Age, size	ens, cavity, etc.					9
	Ber	nthic	VI. Plants' co						8
			VII. Land ma	nagement practices	S.				5
	Bot	h		·	ia, channels, hummocks).				8
	1			ed vegetation (only	score if present).				N/A
Current		With Impact	X. Upland as Additional Notes:			tall with a few n	mangrove trees	greater than 30 fe	N/A eet. Abundant recruitment. Abundant
9		0		snags and deadwo	od.				
Raw Scor	r e = Sum of abo	ove scores/30			Impact Acres =	0.00]		
(if	uplands, divide	by 20)					J		
Current		With Impact			Functional Loss (FL) [For Impact Assessment Areas]:]		
0.80		0.00			. = ID x Impact Acres =	0.000	1		
	Impact Delta (ID)]	was assessed usin	proposed to be mitigated at a mitig	for mitigation is	5		
Current -	w/Impact	0.800		equal to Functiona mitigation bank that	Il Loss (FL). If impact mitigation is at was not assessed using UMAI assess impacts; use the assessmen	proposed at a M, then UMAM	a 1		
			_						

Site/Project Name		Application Number	mber Assessment Area Name or Nu			or Number
					E	38
FLUCCs code	Further classifica	tion (optional)		Impact Type		Assessment Area Size
3112	Seasor	nally flooded mai	ngroves			Acres
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	On (i.e.OFW, AP, other loc	cal/state/federal	designation of importance)
Geographic relationship to and hyd	 drologic connection with	wetlands, other s	urface water, upla	nds		
South of central mangroves. No	rth of mines					
Assessment area description						
seasonally flooded mangroves r	north of mines. Central	l mangroves to n	orth			
Significant nearby features			Uniqueness (co landscape.)	nsidering the relativ	ve rarity in	relation to the regional
Central mangroves, mines						
Functions			Mitigation for pre	vious permit/other h	nistoric use)
Habitat, stormwater treatment						
Anticipated Wildlife Utilization Base that are representative of the asse be found)				ation by Listed Spe T, SSC), type of us l)		
Birds, insects, small reptiles						
Observed Evidence of Wildlife Util	ization (List species dire	ectly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):
birds, insects						
Additional relevant factors:						
Assessment conducted by:			Assessment date	e(s):		
JS, MM, LK		05/15/24				

				TIGATION ASSESSMENT WORK 2), F.A.C. (See Sections 62-345.5			PACT	
Site/Project Na	ame:			Application Number:		A	Assessment Area	a Name or Number:
Impact or Mitig	ation:	Impact		Assessment Conducted by: JS, MM, LK		A	Assessment Date	e: 05/15/24
	Scoring Guidar	nce	Optimal (10)	Moderate(7)		Minin	nal (4)	Not Present (0)
The scoring of would be su		is based on what be of wetland or	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but suf maintain most wetland/surface waterf		wetland/su	of support of Irface water Itions	Condition is insufficient to provide wetland/surface water functions
						Enter Notes be	elow (do NOT sc	ore each subcategory individually)
			a. Quality and quantity of habita b. Invasive plant species.					5 9
.500(6)(a) Lo	ocation and Lan	dscape Support	c. Wildlife access to and from Ad. Downstream benefits providee. Adverse impacts to wildlife in A					9 6 4
Current		With Impact		pediments and flow restrictions). habitats on quantity or quality of discharg s provided by uplands (upland AAs only)				7 6 N/A
7		0	Additional Notes:	s provided by uplands (upland AAS only)				
			a. Appropriateness of water level b. Reliability of water level indices.					9
.500(6	6)(b) Water Env	ironment	c. Appropriateness of soil mois d. Flow rates /points of discharg					9
	(n/a for upland		e. Fire frequency/severity. f. Type of vegetation.					9
			g. Hydrologic stress on vegetat	ion.				8
			h. Use by animal s with hydrolog		to tolorant (of poor MO		9
				n associated with water quality (i.e., plan ter by observation (l.e., discoloration, tu		oi poor ww.		9
Current		With Impact	k. Water quality data for the typ					6 8
9		0	Additional Salinity = 55 ppt. To Notes:	anins present in water. Water depth - 12"				
			I. Appropriate/desirable species					9
.500(6	6)(c) Community	Structure	II. Invasive/exotic plant species					10
	X Vec	getation	III. Regeneration/recruitment IV. Age, size distribution.					8 8
,			V. Snags, dens, cavity, etc.					7
	Ber	nthic	VI. Plants' condition. VII. Land management practices	2				3
	Bot	h	VIII. Topographic features (refug					8
			IX. Submerged vegetation (only	score if present).				N/A
Current		With Impact	X. Upland assessment area Additional Notes:					N/A
8		0	Black mangroves -	90%, Wite mangroves - 10%. Height 10'-	30'. Diebad	ck present		
	re = Sum of abouplands, divide			Impact Acres =	0.00			
Current		With Impact		Functional Loss (FL) [For Impact Assessment Areas]:				
0.80		0.00		= ID x Impact Acres =	0.000			
	Impact Delta (I	ID)	was assessed usin	proposed to be mitigated at a mitigation g UMAM, then the credits required for m	itigation is			
Current -	w/Impact	0.800	mitigation bank th	al Loss (FL). If impact mitigation is propat was not assessed using UMAM, the assess impacts; use the assessment metals.	en UMAM			

Site/Project Name		Application Number	Assessment Area Name or Nu			or Number
					E	39
FLUCCs code	Further classifica	tion (optional)		Impact Type		Assessment Area Size
1813	Man-mo	odified upland w	ith trees			Acres
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	On (i.e.OFW, AP, other loc	cal/state/federa	designation of importance)
Geographic relationship to and hyd	drologic connection with	wetlands others	urface water unla	nds		
Ocographic relationship to and hyd	arologic connection with	wettarias, other s	unace water, upia	1103		
North of mines and pond. Adjac	ent to seasonally flood	led mangroves.				
Assessment area description						
Disturbed upland area between	pond, mine and seaso	nally flooded ma	ngroves.			
Significant nearby features			Uniqueness (co landscape.)	nsidering the relativ	ve rarity in	relation to the regional
Mine, pond, mangroves						
Functions			Mitigation for pre	vious permit/other h	nistoric use	9
Habitat						
Anticipated Wildlife Utilization Bas that are representative of the asse be found)			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)			
Birds, insects, reptiles						
Observed Evidence of Wildlife Util	lization (List species dire	ectly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):
Eveidnece of crabs, birds - obse	erved two Cayman parr	rots.				
Additional relevant factors:						
No surface water observed in A	Α.					
Assessment conducted by:			Assessment date	e(s):		
JS, MM, LK		05/15/24				

Page of Milegales Impact						FIGATION ASSESSMENT W 2), F.A.C. (See Sections 62-			PACT	
Sample S	Site/Project Na	ame:	-			Application Number:			Assessment Area	
	Impact or Mitig	ation:	Impact				M, LK	ı	Assessment Date	
		Scoring Guidar	nce	Optima	I (10)	Moderate(7)		Mini	mal (4)	Not Present (0)
SOURCE Current With Impact 6. Custory and quantity of habibita support notatic of AA. 5. Invasive reports on the Processor Control of AA. 5. Invasive reports on the Processor Control of AA. 6. Invasive reports on the Processor Control of AA. 6. Invasive reports on the Processor Control of AA. 6. Invasive reports on the Processor Control of AA. 6. Invasive reports on the Processor Control of AA. 6. Invasive reports on the Processor Control of AA. 6. Invasive reports on the Processor Control of AA. 6. Invasive reports on the Processor Processor Control of AA. 6. Invasive reports on the Processor Processor Control of AA. 6. Invasive reports on the Processor Control of AA. 6. Invasive re	would be su	f each indicator litable for the typ	is based on what be of wetland or	Condition is opt supports wetland	imal and fully /surface water	•		Minimal leve wetland/si	el of support of urface water	Condition is insufficient to provide
								Enter Notes b	elow (do NOT sc	ore each subcategory individually)
Current Cur	.500(6)(a) Lo	ocation and Lan	dscape Support	b. Invasive plant c. Wildlife access d. Downstream b	species. s to and from A enefits provide	A (proximity and barriers). ed to fish and wildlife.				9 8 6
West harpase Comment West harpase Comment Comm				·						
Second]					scharges.			
Appropriate leaves to water levels and flows. N/A	Current		With Impact							6
Description Course Cours	6		0		h of mine and բ	oond. Adjacent to seasonally flood	ed mangroves.			
		•		a. Appropriatenes	s of water leve	els and flows.				N/A
Courset With Impact Courset Shark Section Courset Cour										
Subject to replace to the process of										
Type of vegetation	.500(6.				
No. Set by animate with hydrologic requirements. NA		(n/a ioi upiano	15)		<u> </u>					N/A
Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). NA NA				g. Hydrologic str	ess on vegetati	ion.				N/A
Wathr quality of standing water by observation (i.e., discoloration, turbidity). NA NA NA						·				
With Impact With Impact With Impact Water quality data for the type of community. N/A								of poor WQ).		
With Impact Water depth, wave energy, and currents. N/A		1					tion, turbidity).			
Additional Notes:	Current		With Impact			<u> </u>				
Laptropriate desirable species 8				•	<u></u>					
II. Invasive/exotic plant species 9	0		0	Notes:						
III. Regeneration/recruitment 5	500/6	2)(-) 0	. Ct							
Note: Note	.500(6	o)(c) Community	Structure							
Benthic V. Snags, dens, cavity, etc. 7 7		X Vec	retation							
Senthic Functional Loss (FL) For impact Acres = 0.000			getation							7
Submerged vegetation (only score if present). N/A		Ber	nthic	=						6
X. Submerged vegetation (only score if present): N/A				VII. Land manage	ement practices	S.				4
Current With Impact Additional Additional Notes: Logwood, buttonwood, white mangroves, shrub species. Current With Impact Functional Loss (FL) [For Impact Acres = 0.00		Bot	h			<u> </u>				
Current With Impact Additional Notes: Logwood, buttonwood, white mangroves, shrub species.		1				score ir present).				
Raw Score = Sum of above scores/30 (if uplands, divide by 20) Description With Impact Functional Loss (FL) [For Impact Assessment Areas]:	Current		-	Additional Notes:		ood, white mangroves, shrub spec	es.			
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: D.60	6		0							
Functional Loss (FL) [For Impact Assessment Areas]: Impact Delta (ID)						Impact Acres =	0.00			
NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	Current		With Impact			• •		1		
Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the	ი გი		0 00			[⊢or Impact Assessment Areas]:	T	1		
was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.600 cannot be used to assess impacts; use the assessment method of the	0.00		0.00		FL	= ID x Impact Acres =	0.000]		
mitigation bank that was not assessed using UMAM, then UMAM Current - w/Impact 0.600 mitigation bank that was not assessed using UMAM, then UMAM		Impact Delta (ID)	was	assessed usin	g UMAM, then the credits require	d for mitigation is	5		
	Current -	· w/Impact	0.600	mitiç canı	gation bank that not be used to a	at was not assessed using UM	AM, then UMAM	1		

Site/Project Name		Application Number	umber Assessment Area Name or Num			or Number
					В	10
FLUCCs code	Further classifica	tion (optional)		Impac	t Type	Assessment Area Size
3112	Seasonall	y Flooded Mangr	ove Forest			Acres
Basin/Watershed Name/Number	Affected Waterbody (Clas	ss)	Special Classificati	on (i.e.C	DFW, AP, other local/state/federal	designation of importance)
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds		
Assessment area description						
Mangrove dominated system with	n black, white and red	l mangroves. Ma	ngrove height - 1	0-30'		
Significant nearby features			Uniqueness (co landscape.)	nsider	ing the relative rarity in	relation to the regional
Mosquito ditches, access road (g	ravel), mangroves on	both sides				
Functions			Mitigation for pre	vious p	permit/other historic use	9
Habitat, stormwater storage						
Anticipated Wildlife Utilization Base that are representative of the asses be found)		•		T, SS	y Listed Species (List s C), type of use, and inte	
Observed Evidence of Wildlife Utiliz	zation (List species dire	ectly observed, or	Lother signs such a	s tracl	ks, droppings, casings,	nests, etc.):
yellow warblers, fish, butterflies,	heron					
Additional relevant factors:						
access road separates both, nort	h side salinity 35 ppt,	south side salin	ity 27 ppt.			
Assessment conducted by:			Assessment date	e(s):		
JS, MM, LK			05/14/24			

				TIGATION ASSESSMENT WOF 2), F.A.C. (See Sections 62-345					
te/Project Na	ame:	<u>-</u>		Application Number:		Assessment Are	ea Name or Number:		
pact or Mitig	ation:	Impact		Assessment Conducted by: JS, MM, L	_K	Assessment Date	te: 05/14/24		
	Scoring Guidar	nce	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)		
ne scoring o	f each indicator	is based on what be of wetland or		Condition is less than optimal, but maintain most wetland/surface wat		Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions		
						Enter Notes below (do NOT se	core each subcategory individually)		
500(6)(a) Lo	ocation and Lan	dscape Support	 a. Quality and quantity of habita b. Invasive plant species. c. Wildlife access to and from A d. Downstream benefits provide 	A (proximity and barriers).		7 8 8			
			e. Adverse impacts to wildlife in	AA from land uses outside of AA. ediments and flow restrictions).			8 6 4		
Current		With Impact	g. Dependency of downstream l	nabitats on quantity or quality of discharge provided by uplands (upland AAs or			7 N/A		
7		0	Additional Notes:						
	l	<u> </u>	a. Appropriateness of water level b. Reliability of water level indices.				7 8		
			c. Appropriateness of soil mois	ture.			8		
.500(6)(b) Water Env		d. Flow rates/points of discharge. Fire frequency/severity.	е.			7		
	(n/a for upland	ds)	f. Type of vegetation.				8		
			g. Hydrologic stress on vegetat				7		
			h. Use by animal s with hydrolog		lanta talanant	of man (MO)	7		
				n associated with water quality (i.e., p ter by observation (l.e., discoloration		or poor www.	6		
_]		k. Water quality data for the typ		, 10		7		
Current		With Impact	l. Water depth, wave energy, ar	nd currents.			6		
7		0	Additional 6 feet deep on sou Notes:	th side, 24" on north side.					
		<u>. </u>	I. Appropriate/desirable species				9		
.500(6	6)(c) Community	Structure	II. Invasive/exotic plant species				9		
	V Vo	actation	III. Regeneration/recruitment IV. Age, size distribution.						
	X Ve	getation	V. Snags, dens, cavity, etc.				<u> </u>		
	Ber	nthic	VI. Plants' condition.				7		
			VII. Land management practices				6		
	Bot	:h	VIII. Topographic features (refug				8		
Current		With Impact	IX. Submerged vegetation (onlyX. Upland assessment areaAdditional	score ii present).			N/A N/A		
8		0	Notes: black mangroves 4	0%, red mangroves 40%, buttonwood	10%, white m	angrove 10%, 10'-30' height			
			1 -		1	1			
	re = Sum of abouplands, divide			Impact Acres =	0.00				
Current		With Impact		Functional Loss (FL) [For Impact Assessment Areas]:					
0.73		0.00		_ = ID x Impact Acres =	0.000				
	Impact Delta (ID)	was assessed usin	proposed to be mitigated at a mitigate g UMAM, then the credits required for	r mitigation is				
Current -	· w/Impact	0.730	mitigation bank th	Il Loss (FL). If impact mitigation is p at was not assessed using UMAM, assess impacts; use the assessment	then UMAM				

Site/Project Name		Application Number	mber Assessment Area Name or N			or Number	
					В	11	
FLUCCs code	Further classifica	tion (optional)		Impact	t Type	Assessment Area Size	
3112	Season	ally Flooded Ma	I Mangroves Acres				
Basin/Watershed Name/Number	Affected Waterbody (Clas	s)	Special Classificati	on (i.e.O	FW, AP, other local/state/federal	designation of importance)	
Geographic relationship to and hyd	rologic connection with	wetlands, other s	 urface water, upla	nds			
Assessment area description							
Mangrove forest with mosquito	ditches						
Significant nearby features			Uniqueness (co landscape.)	nsideri	ing the relative rarity in	relation to the regional	
Functions			Mitigation for pre	vious p	permit/other historic use		
Habitat, stormwater treatment							
Anticipated Wildlife Utilization Base that are representative of the asset be found)				T, SSC	y Listed Species (List s C), type of use, and inte		
Birds, butterflies, fish							
Observed Evidence of Wildlife Utili	zation (List species dire	ctly observed, or	other signs such a	s track	s, droppings, casings,	nests, etc.):	
Birds, gallinule, butterflies, aqua	tic bug, fish						
Additional relevant factors:							
Access road seegments AA							
Assessment conducted by:			Assessment date	e(s):			
JS, MM, LK			05/16/24				

				2), F.A.C. (See Sections 62-345.50	o and .o	00, 1 17.0.)			
ite/Project Na	ame:			Application Number:		Assessment Area	Name or Number:		
.6/1 10/001110	a	-		-	-				
pact or Mitig	gation:			Assessment Conducted by:		Assessment Date	:		
		Impact		JS, MM, LK			05/16/24		
	Scoring Guida	nce	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)		
_		r is based on what	Condition is optimal and fully	Condition is less than optimal, but suffi	icient to	Minimal level of support of	Condition is insufficient to provid		
	uitable for the ty urface water ass	pe of wetland or sessed	supports wetland/surface water functions	maintain most wetland/surface waterfu		wetland/surface water functions	wetland/surface water functions		
					•	Enter Notes below (do NOT sco	ore each subcategory individually)		
			a. Quality and quantity of habitat	support outside of AA.			7		
			b. Invasive plant species.				10		
F00(C)(a) I		adagana Cumpant	c. Wildlife access to and from A	A (proximity and barriers).			8		
.500(6)(a) L	ocation and Lar	ndscape Support	d. Downstream benefits provide	d to fish and wildlife.			8		
			•	AA from land uses outside of AA.			6		
			f. Hydrologic connectivity (imp				7		
]			abitats on quantity or quality of discharge	es.		7		
Current		With Impact	, ,	s provided by uplands (upland AAs only).			N/A		
	-		Additional high water level AA				W/ \		
•			Notes:						
8		0							
		<u> </u>							
			a. Appropriateness of water leve	ls and flows.			9		
			b. Reliability of water level indic	ators.			9		
			c. Appropriateness of soil moist	ure.			9		
5000	(6)(b) Water En	vironment	d. Flow rates/points of discharge	9.			6		
	(n/a for uplan		e. Fire frequency/severity.				7		
			f. Type of vegetation.				9		
			g. Hydrologic stress on vegetati				7		
			h. Use by animal s with hydrolog	·			6		
				a associated with water quality (i.e., plants		of poor WQ).	8		
	٦		· · · · · · · · · · · · · · · · · · ·	ter by observation (l.e., discoloration, tur	bidity).		5		
Current		With Impact	k. Water quality data for the type	e of community.			6		
			l. Water depth, wave energy, ar				7		
7		0	Additional North 30ppt, south Notes:	35ppt, water level up to access road, gree	en algae or	n north side. Turbid water, watel	depth - 10" on north, 12" on south.		
			I. Appropriate/desirable species				9		
.500(6)(c) Communit	y Structure	II. Invasive/exotic plant species				10		
			III. Regeneration/recruitment				4		
	X Ve	getation	IV. Age, size distribution.				7		
			V. Snags, dens, cavity, etc.				8		
	Be	nthic	VI. Plants' condition.				9		
			VII. Land management practices				6		
	Bo	th	VIII. Topographic features (refugi				7		
	7		IX. Submerged vegetation (only	score if present).			N/A		
Current		With Impact	X. Upland assessment area				N/A		
Guilelli		•••iiii iiiipact	Additional Notes:						
	1		black mangroves 5°	%, red mangroves 80%, buttonwood 5%, v	white mano	grove 10%, 10'-30' height (20-30	').		
8		0							
Raw Scor	re = Sum of ab	ove scores/30		Impact Acres =	0.00				
	uplands, divide			L					
	7	NAPAL A	<u> </u>						
O		With Impact		Functional Loss (FL)					
Current]			For Impact Assessment Areas]:					
Current	I	0.00		1					
	1	1	FL	= ID x Impact Acres =	0.000				
0.77									
				L					
	Impact Delta	(ID)	•	proposed to be mitigated at a mitigation					
	Impact Delta	(ID)	was assessed using	g UMAM, then the credits required for mi	tigation is				
	Impact Delta	(ID)	was assessed using equal to Functiona		tigation is osed at a				
0.77	Impact Delta	(ID) 0.770	was assessed using equal to Functional mitigation bank that	g UMAM, then the credits required for mill Loss (FL). If impact mitigation is propo	tigation is osed at a en UMAM				

Site/Project Name		Application Number	mber Assessment Area Name or Number			or Number	
					В	12	
FLUCCs code	Further classifica	ation (optional)		Impact Type		Assessment Area Size	
3112	Seasonall	y Flooded Mangı	ingrove Forest Acr				
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	on (i.e.OFW, AP, other loc	al/state/federal	designation of importance)	
Geographic relationship to and hyd	drologic connection with	wetlands, other s	urface water, upla	nds			
Central Mangrove wetlands to n	orth, mangrove forest	to south. Bisecte	ed by mosquito r	oad			
Assessment area description							
Seasonally flooded mangrove fo	prest						
Significant nearby features			Uniqueness (co	nsidering the relativ	e rarity in	relation to the regional	
Mosquito road, mangrove forest	t		Hydrology disconnected from N/S sides				
Functions			Mitigation for pre	vious permit/other h	nistoric use	9	
Water storage, habitat							
Anticipated Wildlife Utilization Bas that are representative of the assebe found)			· ·	ation by Listed Spe T, SSC), type of us I)	•		
Birds, insects							
Observed Evidence of Wildlife Util	ization (List species dire	ectly observed, or	I other signs such a	s tracks, droppings	s, casings,	nests, etc.):	
Yellow warbler, Inca dove							
Additional relevant factors:							
salinity 35ppt on south side, 36	ppt on north side						
Assessment conducted by:			Assessment date	e(s):			
JS, MM, LK			05/16/24				

ite/Project Na	ame:			Application Number:		Assessment Area	a Name or Number:		
.,		-		-		B12			
pact or Mitig	ation:			Assessment Conducted by: Assessment Date:					
		Impact		JS, MM, LK			05/16/24		
	Scoring Guida	nce	Optimal (10)	Moderate(7)		Minimal (4)	Not Present (0)		
would be su		is based on what pe of wetland or essed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but suffice maintain most wetland/surface waterful		Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions		
						Enter Notes below (do NOT so	I ore each subcategory individually)		
			a. Quality and quantity of habitat	t support outside of AA		,	7		
			b. Invasive plant species.	support outside of 70%.			9		
			c. Wildlife access to and from A	A (provimity and harriers)			7		
.500(6)(a) Lo	ocation and Lan	dscape Support	d. Downstream benefits provide				7		
			·	AA from land uses outside of AA.			6		
			·	ediments and flow restrictions).			5		
	1						7		
Current		With Impact	-	nabitats on quantity or quality of discharge	o.		•		
1				s provided by uplands (upland AAs only).			N/A		
7		0	Additional Notes:						
			a. Appropriateness of water leve				7		
			b. Reliability of water level indic				9		
			c. Appropriateness of soil moistd. Flow rates/points of discharge				9 5		
.500(6	6)(b) Water Env n/a for upland)		e. Fire frequency/severity.	o.			7		
	(n/a for upland	us)	f. Type of vegetation.				9		
			g. Hydrologic stress on vegetati	on.			9		
			h. Use by animal s with hydrolog				6		
				a associated with water quality (i.e., plants		f poor WQ).	8		
=	1			ter by observation (l.e., discoloration, turk	oidity).		5		
Current		With Impact	k. Water quality data for the typel. Water depth, wave energy, ar	<u> </u>			6		
				and 18" on south side.					
7		0	Notes:						
	l	<u> </u>	I. Appropriate/desirable species				9		
.500(6	6)(c) Community	/ Structure	II. Invasive/exotic plant species				9		
			III. Regeneration/recruitment				5		
•	X Ve	getation	IV. Age, size distribution.				7		
	Po	nthic	V. Snags, dens, cavity, etc. VI. Plants' condition.				7		
		TITTIC	VII. Land management practices	<u> </u>			4		
	Bot	th	VIII. Topographic features (refugi				6		
			IX. Submerged vegetation (only				N/A		
Commence		VACIAL Income	X. Upland assessment area				N/A		
Current		With Impact	Additional Notes:						
7	1	0	black mangroves 30	0%, red mangroves 30%, buttonwood 10%	s, white ma	ngrove 30%, Height - 10'-30'.			
		· ·							
				In.,, and A.,, a	0.00				
	re = Sum of abouplands, divide			Impact Acres =	0.00				
]								
Current		With Impact		Functional Loss (FL)					
				[For Impact Assessment Areas]:					
0.70		0.00	FL	= ID x Impact Acres =	0.000				
			NOTE: If impact is	proposed to be mitigated at a mitigation l	hank that				
	Impact Delta ((ID)	was assessed using	g UMAM, then the credits required for mit	igation is				
			equal to Functiona	I Loss (FL). If impact mitigation is propo	sed at a				
Current -	w/Impact	0.700	mitigation bank that	at was not assessed using UMAM, the assess impacts; use the assessment meth	n UMAM				

Site/Project Name		Application Number	mber Assessment Area Name or Number			or Number	
					В	13	
FLUCCs code	Further classifica	ation (optional)		Impact Type		Assessment Area Size	
3112	Seasor	nally Flooded Ma	Mangroves Acr				
Basin/Watershed Name/Number	Affected Waterbody (Class	ss)	Special Classificati	On (i.e.OFW, AP, other lo	ocal/state/federal	designation of importance)	
Geographic relationship to and hyd	drologic connection with	wetlands, other s	urface water, upla	nds			
Within cow pasture, connected v	with mangroves that a	re around mosqu	uito roads				
Assessment area description							
Seasonally flooded mangroves a	adjacent to cow pastui	re uplands.					
Significant nearby features			Uniqueness (co landscape.)	nsidering the relat	ive rarity in	relation to the regional	
Cow pasture, mosquito roads							
Functions			Mitigation for pre	vious permit/other	historic use)	
Water retention, habitat							
Anticipated Wildlife Utilization Base that are representative of the asse be found)				T, SSC), type of u		species, their legal ensity of use of the	
Avian, insects							
Observed Evidence of Wildlife Util	ization (List species dire	ectly observed, or	other signs such a	s tracks, dropping	gs, casings,	nests, etc.):	
Grackle, crab holes, insects, but	terflies, tri-colored he	ron, egret					
Additional relevant factors:							
Assessment conducted by:			Assessment date	a(s).			
JS, MM, LK			05/16/24				
100, mm, Erc			301 1 31 E-T				

The script disable industry or section of section of section in Section 2 and Section						TIGATION ASSESSMENT V 2), F.A.C. (See Sections 62-	_		PACT	
Examp Quisioner Option (10) Moderate (1) Mo	Site/Project Na	ame:	-			Application Number:		A	Assessment Area	
The course of worth viscolars inscribed in second on why south the second and was a substant viscolar declared and the second	Impact or Mitig	gation:	Impact			·	W, LK	A	Assessment Date	
The security of seach inflations in security and support of security of securi		Scoring Guidar	nce	Opt	imal (10)	Moderate(7)		Minin	nal (4)	Not Present (0)
A. Quality and quantity of habitats support outside of AA. 5. Invasive plant support outside of AA. 6. Outside and analyse plant support outside of AA. 6. Willife access to and from AA (proximity and burners): 9. Outside Adversaria makes to and from AA (proximity and burners): 9. Outside Adversaria makes to and from AA (proximity and burners): 9. Outside Adversaria makes to written in A formation and used outside of AA. 7. In the outside of AA. 7. Outside A. Outside A. 8. Outside Adversaria makes to written in A formation of usuality of discharges. 7. Advantage of discharges. 7. Advantage of discharges. 8. Appropriate and and flower. 8. Received AA. 9. Advantage of AA. 9. Received AA. 9. Receive	would be su	of each indicator uitable for the typ	is based on what be of wetland or	Condition is supports wet	optimal and fully land/surface water	Condition is less than optimal,		Minimal level wetland/su	l of support of	Condition is insufficient to provide wetland/surface water functions
Society Location and Lundistage Stoppot Society								Enter Notes be	elow (do NOT sc	ore each subcategory individually)
Current With Impact Current With Impact Current With Impact Current With Impact Current	.500(6)(a) Lo	ocation and Lan	dscape Support	b. Invasive pl	lant species.	A (proximity and barriers).				9
### Part Community Community Substrate Part					·					
Additional Notes:	Current		With Impact	g. Dependen	cy of downstream h	habitats on quantity or quality of d				7
. Reliability of water level indicators	8			Additional						
d. Flow rates/points of discharge. 6				b. Reliability	of water level indic	cators.				9
Current With Impact Impact Delta (ID) Impact Acres = 0.000 Impact Acres = 0.000 Impact Acres = 0.000 Impact Acres = 0.000 Impact Delta (ID) Impact Delta (ID) Impact Delta (ID) Impact Separate proposed using species 0.000 Impact Acres = 0.000 Impact Acres = 0.000 Impact Delta (ID) I		(0)(1) 11(1)								
Type of vegetation. 9	.500(·					7
1. Use by animals with hydrologic requirements 8 - Plant community composition associated with water quality (i.e., plants tolerant of poor WO). 9		` .	,		<u> </u>					
Plant community composition associated with water quality (i.e., plants tolerant of poor WO). 9 Water quality of standing water by observation (i.e., discoloration, turbidity). 8										
Current With Impact I. Water quality data for the type of community. 9 1. Water depth, wave energy, and currents. 7 7 7 7 7 7 7 7 7							e., plants tolerant	of poor WQ).		
Notes: With Impact With Impact With Impact										8
National Salinity 21 ppt. Water depth. 4" deep. Mud crabs present. Some turbidity observed.	Current		With Impact	k. Water qual	lity data for the type	e of community.				9
Appropriate/desirable species 9	Guirent		With impact							7
II. Invasive/exotic plant species 9	8		0		salinity 21 ppt. Wat	ter depth - 4" deep. Mud crabs pro	esent. Some turbi	idity observed.		
III. Regeneration/recruitment 5 5 5 5 5 5 5 5 5				I. Appropriate	/desirable species					9
Note: Second Note	.500(6	6)(c) Community	Structure							9
Benthic Both Both With Impact Current Raw Score = Sum of above scores/30 (if uplands, divide by 20) With Impact On O FLe ID x Impact Acres = Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits requise to repose mitigated in a proposed at a singulation is requal to functional Loss (FL.) [For control multipact is proposed to be mitigated at a mitigation is proposed at a										
Benthic VI. Plants' condition. 7 VII. Land management practices. 5 VIII. Topographic features (refugia, channels, hummocks). 6 IX. Submerged vegetation (only score if present). N/A Current With Impact 7 0 With Impact 7 Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is proposed at a		Xveg	getation							7
VII. Land management practices. 5 VIII. Topographic features (refugia, channels, hummocks). 6 XI. Submerged vegetation (only score if present). N/A		Ber	nthic		<u>-</u>					7
IX. Submerged vegetation (only score if present). N/A				VII. Land ma	nagement practices	S.				5
Current With Impact Additional Notes: Dack mangroves 10%, buttonwood 40%, rahdbadenia vines cover mangroves, 10'-30' height (more 10-20ft).		Bot	h							
Current With Impact Additional Notes: black mangroves 10%, buttonwood 40%, rahdbadenia vines cover mangroves, 10'-30' height (more 10-20ft). Raw Score = Sum of above scores/30 (if uplands, divide by 20) Impact Acres = 0.00		1				score if present).				
Raw Score = Sum of above scores/30 (if uplands, divide by 20) Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: 0.77 0.00 FL = ID x Impact Acres = 0.000	Current		-	Additional Notes:		0%. buttonwood 40%. rahdbaden	a vines cover ma	naroves. 10'-30'	heiaht (more 10-	
Current With Impact Functional Loss (FL) [For Impact Assessment Areas]: D.77 NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a	7		0					.	5 (,
O.77 O.00 Functional Loss (FL) [For Impact Assessment Areas]: NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a				[Impact Acres =	0.00]		
Impact Delta (ID) NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a	Current		With Impact	ļ		* *				
Impact Delta (ID) was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a	0.77		0.00]			0.000]		
		Impact Delta (ID)	,	was assessed usin	ig UMAM, then the credits require	d for mitigation is	S		
Current - w/Impact 0.770 mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigaiton bank.	Current -	- w/Impact	0.770		mitigation bank the cannot be used to	at was not assessed using UM	AM, then UMAM	1		

Site/Project Name		Application Number	mber Assessment Area Name or Number			or Number	
					В	14	
FLUCCs code	Further classifica	ation (optional)		Impact Type		Assessment Area Size	
3112		Mangrove Lagoo	goon Acre				
Basin/Watershed Name/Number	Affected Waterbody (Cla	ss)	Special Classificati	On (i.e.OFW, AP, other loo	cal/state/federal	designation of importance)	
		4 1 4					
Geographic relationship to and hyd	drologic connection with	wetiands, other s	urrace water, upia	nas			
South of Central mangrove man	groves. Surrounded b	y residential dev	elopment and ag	riculture.			
Assessment area description							
Lagoon surrounded by white ma	angroves, manmade w	vith trees adjacen	it, adjacent to res	idential and road	way		
Significant nearby features			Uniqueness (co landscape.)	nsidering the relati	ve rarity in	relation to the regional	
Central mangroves to the north							
Functions			Mitigation for pre	vious permit/other l	historic use)	
Habitat							
Anticipated Wildlife Utilization Bas that are representative of the assebe found)				ation by Listed Spe T, SSC), type of us l)			
Birds, reptiles, insects, fish							
Observed Evidence of Wildlife Util	lization (List species dire	ectly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):	
green iguanas, fish							
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
JS, MM, LK			05/16/24				

				TIGATION ASSESSMENT WORK 2), F.A.C. (See Sections 62-345.5			ACT	
Site/Project Na	ame:	-		Application Number:		As	ssessment Area	Name or Number:
Impact or Mitig	ation:	Impact		Assessment Conducted by: JS, MM, LK		As	ssessment Date	05/16/24
	Scoring Guidar	nce	Optimal (10)	Moderate(7)		Minima	al (4)	Not Present (0)
The scoring o		is based on what be of wetland or	Condition is optimal and fully supports wetland/surface water functions	Condition is less than ontimal, but suf-		Minimal level o wetland/suri functi	of support of face water	Condition is insufficient to provide wetland/surface water functions
			-			Enter Notes bel	ow (do NOT sc	ore each subcategory individually)
			a. Quality and quantity of habita b. Invasive plant species.					6
.500(6)(a) Lo	ocation and Lan	dscape Support	·	ed to fish and wildlife. AA from land uses outside of AA.				6 8 6
Current		With Impact		pediments and flow restrictions). habitats on quantity or quality of discharg s provided by uplands (upland AAs only)				7 N/A
7		0	Additional Notes:					
			a. Appropriateness of water level b. Reliability of water level indices.					8 9
.500(0	6)(b) Water Env (n/a for upland		c. Appropriateness of soil moistd. Flow rates/points of discharge. Fire frequency/severity.					8 8 7
		,	f. Type of vegetation. g. Hydrologic stress on vegetat h. Use by animals with hydrolog					7 7 8
	.			n associated with water quality (i.e., plan ter by observation (l.e., discoloration, tu		of poor WQ).		8
Current		With Impact	k. Water quality data for the typ I. Water depth, wave energy, ar	nd currents.				8
8		0	Additional salinity 7 ppt, Wate Notes:	er depth - 20" deep.				
500/0	2)(a) Cammunitu	Christian	I. Appropriate/desirable species					7
.500(6	6)(c) Community	Structure	II. Invasive/exotic plant species III. Regeneration/recruitment					7
	X Veg	getation	IV. Age, size distribution.					8
	Ber	nthic	V. Snags, dens, cavity, etc. VI. Plants' condition.					7
		itino	VII. Land management practices	S.				6
	Bot	h	VIII. Topographic features (refug					7
]		IX. Submerged vegetation (only X. Upland assessment area	score if present).				N/A N/A
Current		_	Additional	s - tan-tan, seaside mahoe. White mangi	oves 70%,	, black mangroves	s 15%, buttonwo	
7		0	,					
	re = Sum of about			Impact Acres =	0.00			
Current		With Impact		Functional Loss (FL) [For Impact Assessment Areas]:				
0.73		0.00		= ID x Impact Acres =	0.000			
	Impact Delta (ID)	was assessed usin	proposed to be mitigated at a mitigation of UMAM, then the credits required for many large to the proposed to the control of t	itigation is			
Current -	· w/Impact	0.730	mitigation bank th	al Loss (FL). If impact mitigation is prop at was not assessed using UMAM, th assess impacts; use the assessment me	en UMAM			

Site/Project Name		Application Number	ımber Assessment Area Name or Number				
					В	15	
FLUCCs code	Further classification	ation (optional)		Impact Type		Assessment Area Size	
1500		Dry Shrubland	and Acr				
Basin/Watershed Name/Number	Affected Waterbody (Cla	ss)	Special Classification	On (i.e.OFW, AP, other loc	cal/state/federal	designation of importance)	
Geographic relationship to and hyd	rologic connection with	wetlands, other s	urface water, upla	nds			
Upland adjacent to prision and o	developed areas. Cent	ral Mangrove we	tland to the north	. Adjacent to cell	tower.		
Assessment area description							
Dry shrubland							
Significant nearby features			Uniqueness (co landscape.)	nsidering the relative	ve rarity in	relation to the regional	
Adjacent cell tower and prison							
Functions			Mitigation for prev	vious permit/other I	nistoric use)	
Habitat							
Anticipated Wildlife Utilization Base that are representative of the asse be found)				ation by Listed Spe T, SSC), type of us)			
Birds, reptiles, insects							
Observed Evidence of Wildlife Util	ization (List species dire	ectly observed, or	other signs such a	s tracks, droppings	s, casings,	nests, etc.):	
Yellow warbler, butterflies							
Additional relevant factors:							
Assessment conducted by:			Assessment date	e(s):			
JS, MM, LK			05/16/24				

					TIGATION ASSESSMENT WO 2), F.A.C. (See Sections 62-3			ACT		
Site/Project Na	ame:	-		Application Number:				Assessment Area Name or Number: B15		
Impact or Mitig	ation:	Impact			Assessment Conducted by: JS, MM	, LK	A	assessment Date	05/16/24	
	Scoring Guidar	nce	Optim	al (10)	Moderate(7)		Minin	nal (4)	Not Present (0)	
The scoring o		is based on what be of wetland or	supports wetlar	is optimal and fully condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions			wetland/su	Minimal level of support of wetland/surface water functions Condition is insufficient to provide wetland/surface water functions		
				Enter				elow (do NOT sco	ore each subcategory individually)	
.500(6)(a) Lo	ocation and Lan	dscape Support	a. Quality and quantity of habitat support outside of AA. b. Invasive plant species. c. Wildlife access to and from AA (proximity and barriers). d. Downstream benefits provided to fish and wildlife.					6 6 6 4		
			·		AA from land uses outside of AA.				4 N/A	
Current		With Impact	g. Dependency	of downstream h	pediments and flow restrictions). habitats on quantity or quality of disc				5	
5		0	h. Protection of wetland functions provided by uplands (upland AAs only). Additional Notes:							
			a. Appropriateness of water levels and flows. b. Reliability of water level indicators. c. Appropriateness of soil moisture.					N/A N/A N/A		
.500((6)(b) Water Env (n/a for upland		d. Flow rates/points of discharge. e. Fire frequency/severity. f. Type of vegetation. g. Hydrologic stress on vegetation.					N/A N/A N/A N/A		
			 h. Use by animals with hydrologic requirements. i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ). j. Water quality of standing water by observation (l.e., discoloration, turbidity). 				of poor WQ).	N/A /Q). N/A N/A		
Current		With Impact	k. Water quality	Water quality data for the type of community. Water depth, wave energy, and currents.					N/A N/A	
0		0	Additional Notes:							
			I. Appropriate/desirable species					6		
.500(6	6)(c) Community	Structure	II. Invasive/exotic plant species III. Regeneration/recruitment					<u>6</u> 5		
	X Veg	getation	IV. Age, size distribution.					6		
	Dor	athia	V. Snags, dens, cavity, etc. VI. Plants' condition.					6		
	Ber	nthic	VII. Land management practices. 7						0	
	Bot	h	VIII. Topographic features (refugia, channels, hummocks).							
	1		IX. Submerged vegetation (only score if present).						8	
Current			X. Upland assessment area Additional Notes: Logwood, caster bean, tatch palm, Stachytarpheta jamaicensis.							
6		0	Lo	gwood, caster be	ean, taton paim, Stachytaipheta jam	aicerisis.				
Raw Score = Sum of above scores/30 (if uplands, divide by 20)				Impact Acres = 0.00						
Current	Functional Loss (FL)									
0.55 0.00		0.00	[For Impact Assessment Areas]: FL = ID x Impact Acres = 0.000				_			
	Impact Dalta //	וחו		DTE: If impact is	proposed to be mitigated at a mitig	gation bank that				
	Impact Delta (I	0.550	eq mi ca	was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the						
			mi	tigaiton bank.						

Appendix K.2 Terrestrial Habitat Descriptions

Attachment K.2 Terrestrial Habitat Descriptions

Terrestrial Habitat Descriptions

Habitat classifications and descriptions are based on the Vegetation Classification for the Cayman Islands (Burton, 2007). Based on the desktop and field evaluations previously discussed, additional subclassifications were also included. The broad classifications encountered, and additional subclassifications for the Proposed Project are detailed as follows:

1.0 Man-Modified

This habitat classification includes any land which has been altered or disturbed due to a variety of human activities including habitat conversion for use as residential, commercial, or industrial activities. These areas may also include activities managed for agricultural purposes, or those that come under the influence of agricultural practices, specifically, the growing of fruits, crops or the keeping of livestock.

Man-modified Without Trees

This habitat subclassification is defined as any land without trees which has been modified. Although these areas are classified as man-modified, they still may contain a vegetative component suitable for providing functional habitat to important species. Per Burton (2008b), this would include seasonally flooded grasslands, medium or short tropical/subtropical grassland with broadleaved evergreen or semi-evergreen shrubs, or saturated tropical/subtropical perennial forb vegetation.

Plant species noted during the field evaluation included, but were not limited to: buttonwood (Conocarpus erectus), sea-purselane (Sesuvium portulacastrum), seaside heliotrope (Heliotropium curassavicum), queen of the night (Selenicereus grandifloras), white button (Spilanthes urens), beach naupaka (Scaevola taccada), bay vine (Ipomoea pes-caprae), chick weed (Chamaesyce/Euphorbia hypericifolia), prostrate sandmat (Euphorbia prostrata), cutleaf groundcherry (Physalis angulata), Australian pine (Casuarina equisetifolia), buff coat (Waltheria indica), seaside mahoe (Thespesia populnea), Euphorbia (Chamaesyce/Euphorbia bruntii), goose grass (Eleusine indica), Alamo vine (Merremia dissecta), coconut palm (Cocos nucifera), logwood/bloodwood (Haematoxylum campechianum), tan-tan (Leucaena leucocephala), red mombin (Spondias purpurea), banana (Musa paradisiacal), weeping fig (Ficus benjamina), gumbo limbo (Bursera simaruba), royal poinciana (Delonix regia), wild coffee (Psychotria nervosa), guinea grass (Panicum maximum/ Megathyrsus maximus) and ackee fruit (Blighia sapida).

Field biologists also observed butterflies, Greater Antillean grackle (*Quiscalus niger caymanensis*), black-necked stilt (*Himantopus mexicanus*), black-crowned night heron (*Nycticorax nycticorax*), glossy ibis (*Plegadis falcinellus*), Grand Cayman parrot, western cattle egret (*Bubulcus ibis*), yellow warbler (*Setophaga petechia*), tri-colored heron (*Egretta tricolor*), green heron (*Butorides virescens*), northern mockingbird (*Mimus polyglottos*), dragonflies, anoles, and smooth-billed ani (*Crotophaga ani*).



Figure 1: Man-Modified Without Trees (July 2023 and May 2024 Field Evaluation)

Man-modified With Trees

This habitat subclassification is defined as any land with trees which has been modified. Although these areas are classified as man-modified, they still may contain a vegetative component suitable for providing functional habitat to important species. This habitat subclassification would include any man-modified areas which have established a dominance of woody vegetation, including broad-leaved evergreen or semi-evergreen trees.

Plant species noted during the field evaluation included, but were not limited to: saltwort (*Batis maritima*), samphire (*Blutaparon vermiculare*), sea-purselane (*Sesuvium portulacastrum*), white button (*Spilanthes urens*), buttonwood, logwood (*Haematoxylum campechianum*), and yellow root (*Morinda royoc*). Field biologists also observed Greater Antillean grackle.





Figure 2: Man-Modified With Trees (July 2023 and May 2024 Field Evaluation)

Commercial

This habitat subclassification includes areas that have been developed for commercial use and contain minimal vegetation or vegetation is present but is maintained. These areas consist of hotels, automotive facilities, retail developments, and other businesses.

Institutional

This habitat subclassification includes areas that have been developed for institutional use and contain minimal vegetation or vegetation is present but is maintained. These areas include schools, parks, and municipal areas.

Pasture

This habitat subclassification includes pastureland used for livestock grazing.



Figure 3: Cattle Pasture (July 2023 Field Evaluation)

Residential

This habitat subclassification consists of residential land use ranging from low to medium density single family homes, to multiple dwelling units. These areas contain minimal vegetation or vegetation is present but is controlled.



Figure 4: Residential (July 2023 Field Evaluation)

Roads

This habitat subclassification includes paved roads extending through residential and commercial areas, as well as unpaved access roads through rural or agricultural areas.



Figure 5: Roads (July 2023 and May 2024 Field Evaluation)

2.0 Man-Made Ponds

This habitat subclassification includes man-made (artificial) ponds.



Figure 6: Man-made excavated pond (July 2023 and May 2024 Field Evaluation)

3.0 Upland

Dry Forest and Woodland

Dry forest is defined as a class of vegetation characterized by a closed tree canopy, with interlocking crowns generally providing 60-100% cover. Woodland, by comparison, is characterised by an open canopy, with tree crowns constituting just 25-60% cover. The canopy height of forest and woodland ranges from 16 metres down to 4.5 metres in height, below which shrubland species dominate. Per Burton (2008b), vegetative communities included in this habitat

are lowland semi-deciduous forest, seasonally flooded/saturated semi-deciduous forest, xeromorphic semi-deciduous forest, lowland/submontane drought-deciduous forest woodland, and tropical/subtropical semi-deciduous woodland.

During the field evaluation, biologists identified the following plant species in this habitat: pink trumpet tree (*Tabebuia heterophylla*), devil head (*Morisonia ferruginea*), lead tree, queen of the night, bloody head (*Capparis flexuosa*), shamrock (*Tecoma stans*), silver palm, West Indian almond (*Terminalia catappa*), gumbo limbo, wild olive (*Bontia daphnoides*), tan-tan, Asian leatherleaf (*Colubrina asiatica*), butterfly orchid tree (*Bauhinia divaricata*), seaside mahoe (*Thespesia populnea*), Australian pine, grey nickel, Cayman agave, and frangipani (*Plumeria obtussa*). Insects observed included honeybees (*Apis* sp.), and Julia butterfly (*Dryas iulia*).



Figure 7: Dry Forest and Woodland (July 2023 and May 2024 Field Evaluation)

Invasive Species - Casuarina

This habitat is defined as invasive, or monoculture habitats dominated by invasive woody species (primarily *Casuarina*). Invasive plant species observed were Australian pine, beach naupaka, seaside mahoe, scaevola (*Scaevola taccada*), Asian leatherleaf, seagrape, tan-tan, parrot berry, orange geiger (*Cordia sebestena*), gumbo limbo, lavender (*Tournefortia gnaphalodes*), and *Cenchrus tribuloides*.

Field observations also recorded domestic chicken (Gallus domesticus), butterflies, and small birds.



Figure 1: Australian Pine (Casuarina equisetifolia) (July 2023 Field Evaluation)

Palm Hammock

This habitat consists of forest community composed of predominantly palms and is found on sandy type soils. Observed woody species were coconut palm, silver palm, match head (*Phyla nodiflora*), logwood/bloodwood, northern needle-leaf (*Tillandsia balbisiana*), yellow root, prickly pear (*Opuntia dillenii*), wire wiss (*Smilax habanensis*), and queen of the night. Field observations consisted of green iguana (*Iguana iguana*), northern flicker (*Colaptes auratus gundlachi*), termite mounds, and wasps.

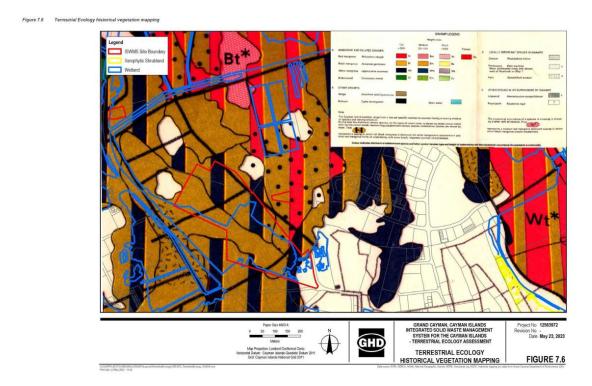


Figure 2: Palm Hammock (July 2023 Field Evaluation)

4.0 Wetland Habitats

Wetland habitats within the EIA study area support a variety of floral and faunal species. Mangrove species are especially prominent within the EIA study area wetland habitats, including

red mangrove, white mangrove, black mangrove, and buttonwood. Historic mapping of dominant mangrove species found during the May 2024 field evaluation can be found in **Figure 7-6**.



Ponds, Pools, Mangrove Lagoons

This habitat is defined as natural and man-modified areas of standing permanent and temporary water and associated vegetation. This habitat category consists of semi-permanently flooded grasslands, aquatic vegetation, tidal tropical/sub-tropical forb vegetation, mangrove pools/ponds/lagoons, man-made ditches and ponds, pools, and flooded marl pits.

During the field evaluation, biologists documented the following plant species in this habitat: black mangrove, buttonwood, mangrove fern, white mangrove, seaside mahoe (*Thespesia populnea*), Australian pine (*Casuarina equisetifolia*), seagrape, red mangrove, and sea-purselane.

Field observations also included Greater Antillean grackle, black-necked stilt, tri-colored heron, magnificent frigatebird (*Fregata magnificens*), northern flicker, smooth-billed ani, yellow warbler, minnows, green heron, dragonflies, butterflies, cattle, honeybees, mosquitoes, and mud crabs.



Figure 10: Ponds, Pools, and Mangrove Lagoons (July 2023 and May 2024 Field Evaluation)

Seasonally Flooded Mangrove Forest and Woodland

This habitat consists of forests of mangroves and mangrove associates, mostly growing on deep autochthonous peat with the surface 0 to 50 centimetres above mean high spring tide and located far enough inland to be free of tidal inundation under all conditions. Summer rainfall stratifies freshwater flooding over the more saline groundwater, with buttonwood, black mangrove, and mangrove rubber vine (*Rhabdadenia biflora*) all producing opportunistic rootlets to exploit the transient freshwater layer. (Burton, 2007).

During the field evaluation, biologists observed rat holes, mosquitos, termites, ants, common gallinule (*Gallinula galeata*), yellow warbler, damsel fly, geckos, butterflies, snowy egret (*Egretta thula*), common ground dove (*Columbina passerina*), northern flicker, West Indian woodpecker (*Melanerpes superciliaris caymanensis*), yellow-bellied sapsucker (*Sphyrapicus varius*), Greater Antillean grackle, and green heron in this habitat.

Plant species observed consisted of kapok tree (*Ceiba sp.*), black mangrove, red mangrove, white mangrove, mangrove fern, buttonwood, flat-leaf flat sedge (*Cyperus planifolius*), pine fern (*Amenia adiantifolia*), bermuda grass (*Cynodon dactylon*), Balbis' airplant, Simpson's stopper, coconut palm, lancewood (*Ocotea coriacea*), sea-purslane, tan-tan, lucy Julia (*Stylosanthes hamata*), coat button (*Tridax procumbens*), *Spermacoce tetraquetra*, parrot berry, grey nickel, gumbo limbo, slender false buttonwood (*Spermacoce verticillate*), Australian pine, *Chiococca parviflora*, beach naupaka, seaside mahoe, and round-leaf sage (*Lantana involucrata*).



Figure 11: Buttonwood (left) and Black Mangrove (right) (July 2023 Field Evaluation)



Figure 3: White Mangrove (left) and Red Mangrove (right) (July 2023 Field Evaluation)



Figure 4: Seasonally Flooded Mangrove Forest and Woodland (July 2023 and May 2023 Field Evaluation)

Seasonally Flooded/Saturated Semi-deciduous Forest

This habitat consists of areas at the intersection between lowland semi-deciduous forest and seasonally flooded mangrove. It generally consists of forests of flood-tolerant trees in shallow peat over saturated oxisol soil (Burton, 2007).

During the field evaluation, biologists documented the following plant species in this habitat: gumbo limbo, mangrove fern, silver palm, pink trumpet tree, Cayman agave, wild olive, mangrove rubber vine, bamboo, bastard mahogany (*Trichilia glabra*), duppy bush (*Phyllanthus angustifolius*), snowberry (*Chiococca alba*), and wire wiss.

Field observations also included green iguana, Cuban tree frog (*Osteopilus septentrionalis*), and Caribbean dove (*Leptotila jamaicensis*).



Figure 14: Seasonally Flooded/Saturated Semi-deciduous Forest (July 2023 Field Evaluation)

Appendix K.3 - List of Species (NBAP)

Key Species Tables and Species Action Plans from the *National Biodiversity Action Plan* of 2009

Table of Contents

1. Key Species Tables

- Mangrove
- Pools, Ponds and Mangrove Lagoons
- Farm and Grassland
- Dry Shrubland
- Forest and Woodland
- Urban and Man-Modified Areas
- Roads

2. Species Action Plans (SAP)

- Bats
- Brown Booby
- Cayman Parrot
- Cayman Pygmy Blue butterfly
- Grand Cayman Blue Iguana
- Mosquito fish
- Red-footed Booby
- Vitelline Warbler
- West Indian Whistling Duck
- White Land Crab
- White-tailed Tropicbird

The following Key Species tables are reproduced from the Cayman Islands National Biodiversity Action Plan of 2009. Part 1 and Part 2 classifications correspond to the draft National Conservation Law. The National Conservation Law, 2013, is available as Supplement No. 1 published with Extraordinary Gazette No. 9 dated 5th February, 2014.

	KEY SPECIES	for MANGROVE				
Category	egory Detail Scientific Reference					
PART 1						
Mammals	All bats are protected under part 1	Chiroptera	SAP			
Birds	All birds are protected under part 1, unless specifically listed in part 2. Of special significance to this habitat:					
	Grand Cayman Parrot	Amazona leucocephala caymanensis	SAP			
	Greater Antillean grackle	Quiscalus niger caymanensis / bangsi				
	West Indian Whistling-duck	Dendrocygna arborea	SAP			
	White-crowned pigeon	Patagioenas leucocephala				
Corals	All soft corals (including Gorgonians & Telestaceans)	Anthozoa all species				
Reptiles	American crocodile	Crocodylus acutus				
Invertebrates	Echinoderms	Echinodermata all species				
Invertebrates	Sponges	Porifera all species				
	PA	RT 2	 			
Reptiles	Hickatee (Taco River Slider)	Trachemys decussata angusta				
Fish	All bony fish - except those specifically listed in Part 1 or elsewhere in Part 2	Teleostei species				
Fish	Mosquito fish	Gambusia xanthosoma	SAP			
Fish	Mosquito fish	Limia caymanensis	SAP			
Invertebrates	White Land crab	Cardisoma guanhumi	SAP			
Invertebrates	Lobsters	Palinura species				
Invertebrates	Spiny lobster	Panulirus argus	SAP			
Invertebrates	Queen conch	Strombus gigas	SAP			
Plants	Black mangrove	Avicennia germinans (= nitida)				
Plants	Buttonwood	Conocarpus erectus				
Plants	White mangrove	Laguncularia racemosa				
Plants	Red mangrove	Rhizophora mangle				
Plants	Green algae	Chlorophyta species				
Plants	Brown algae	Phaeophyta species				
Plants	Red algae	Rhodophyta species				

KEY SI	PECIES for POOLS, PON	IDS AND MANGROVE LA	AGOONS
Category	Detail	Scientific Reference	NBAP
	P	ART 1	<u>.</u>
Mammals	All bats are protected under part 1	Chiroptera	SAP
Birds	All birds are protected under part 1, unless specifically listed in part 2. Of special significance to this habitat:	Aves	
	Herons, egrets, waterfowl		
	West Indian Whistling-duck	Dendrocygna arborea	SAP
	Antillean nighthawk (Rickery-dick)	Chordeiles gundlachii	
Invertebrates	Pygmy Blue butterfly	Brephidium exilis thompsoni	SAP
	P	ART 2	
Birds	Blue-winged teal	Anas discors	
Reptiles	Hickatee (Taco River slider)	Trachemys decussata angusta	
Reptiles	Grand Cayman Water snake	Tretanorhinus variabilis lewisi	
Fish	Mosquito fish	Gambusia xanthosoma	SAP
Fish	Mosquito fish	Limia caymanensis	SAP
Invertebrates	Isopod	Anopsilana crenata	
Plants		Ruppia maritima	
	IN	VASIVE	1
Reptiles	Red-eared slider	Trachemys scripta	
Plants	Water Snowflake	Nymphoides indica	

KEY SPECIES for FARM AND GRASSLAND				
Category	Detail	Scientific Reference	NBAP	
	P	ART 1		
Mammals	All bats are protected under part 1	Chiroptera	SAP	
Birds	All birds are protected under part 1, unless specifically listed in part 2. Of special significance to this habitat:	Aves		
	Grand Cayman parrot	Amazona leucocephala caymanensis	SAP	
	Brac parrot	Amazona leucocephala hesterna	SAP	
	West Indian Whistling-duck	Dendrocygna arborea	SAP	
Reptiles	Grand Cayman Blue iguana	Cyclura lewisi	SAP	
Plants		Agalinis kingsii		
	P	ART 2		
		none		
	IN	VASIVE		
Birds	Monk parakeet (Parrot SAP)	Myiopsitta monachus	SAP	

G 4	KEY SPECIES for 1		*I** · =
Category	Detail PAI	Scientific Reference	NBAP
Mammals	All bats are protected under part 1		SAP
Birds		Chiroptera	SAP
Birds	All birds are protected under part 1, unless specifically listed in part 2. Of special significance to this habitat:	Aves	
	Bananaquit	Coereba flaveola sharpei	
	Vitelline warbler	Dendroica vitellina crawfordi / vitellina	SAP
	Caribbean elaenia	Elaenia martinica caymanensis	
	Cuban bullfinch	Melopyrrha nigra taylori	
	Western spindalis	Spindalis zena salvini	
	Red-legged thrush	Turdus plumbeus coryi	
	Loggerhead kingbird	Tyrannus caudifasciatus caymanensis	
	Thick-billed vireo	Vireo crassirostris alleni	
	Yucatan vireo	Vireo magister caymanensis	
Reptiles	Grand Cayman Blue iguana	Cyclura lewisi	SAP
Reptiles	Sister Islands Rock iguana	Cyclura nubila caymanensis	SAP
Invertebrates	Little Cayman snail	Cerion nanus	SAP
Plants	Elete Cayman shan	Banara caymanensis	SAP
Plants		Consolea millspaughii caymanensis	SAP
Plants		Pleurothallis caymanensis	SAI
T latits	DAI	RT 2	
Dantilas	Grand Cayman Blue-throated anole		
Reptiles		Anolis conspersus	
Reptiles	Wood slave gecko	Aristelliger praesignis praesignis	
Reptiles	Grand Cayman Ground boa	Tropodophis caymanensis	
Reptiles	Cayman racer	Alsophis cantherigerus	CAD
Reptiles	Little Cayman Green anole	Anolis maynardi	SAP
Reptiles	Grand Cayman Blue-throated anole	Anolis conspersus	
Invertebrates	Little Cayman cicada	Diceroprocta caymanensis	
Invertebrates	Grand Cayman cicada	Diceroprocta cleavesi	
Invertebrates	Cayman Brac cicada	Diceroprocta ovata	
Invertebrates	Centipede	Leptophilus caribeanus	
Plants	Corato	Agave caymanensis	
Plants		Allophylus cominia var. caymanensis	
Plants		Banara caymanensis	SAP
Plants		Buxus bahamensis	
Plants	Ironwood	Chionanthus caymanensis	SAP
Plants	Silver thatch	Coccothrinax proctorii	SAP
Plants	Broadleaf	Cordia sebestena caymanensis	SAP
Plants		Dendropemon caymanensis	SAP
Plants		Euphorbia cassythoides	
Plants		Evolvulus squamosus	
Plants	Banana orchid	Myrmecophila thomsoniana minor / thomsoniana	SAP
Plants		Phyllanthus caymanensis	
Plants		Pilostyles globosa caymanensis	
Plants		Phyllanthus caymanensis	
Plants		Scolosanthus roulstonii	
Plants	Satinwood	Zanthoxylum flavum	1

KEY SPECIES for FOREST AND WOODLAND				
Category	Detail	Scientific Reference	NBAP	
Ma 1	PART		CAD	
Mammals Birds	All bats are protected under part 1 All birds are protected under part 1, unless	Chiroptera	SAP	
Dilus	specifically listed in part 2. Of special			
	significance to this habitat:		CAD	
	Grand Cayman parrot	Amazona leucocephala caymanensis	SAP SAP	
	Brac parrot Northern flicker	Amazona leucocephala hesterna Colaptes auratus gundlachi	SAP	
	White-crowned pigeon	Patagioenas leucocephala		
	Caribbean dove	Leptotila jamaicensis collaris		
	West Indian woodpecker	Melanerpes superciliaris caymanensis		
	Western spindalis	Spindalis zena salvini		
	Loggerhead kingbird	Tyrannus caudifasciatus caymanensis		
	Thick-billed vireo	Vireo crassirostris alleni		
	Yucatan vireo	Vireo magister caymanensis		
Invertebrates	Soldier crab (Hermit)	Coenobita clypeatus	SAP	
Invertebrates	Cayman Brown Leaf butterfly	Memphis vericordia danielana		
Invertebrates	Swallowtail butterfly (endemic)	Heraclides andraemon tailori		
Invertebrates	Cayman Zoe julia	Dryas iulia zoe		
Plants		Aegiphilia caymanensis	SAP	
Plants		Buxus bahamensis		
Plants		Casearia staffordiae	~ -	
Plants	Ironwood	Chionanthus caymanensis	SAP	
Plants	Ghost orchid	Dendrophylax fawcettii	SAP	
Plants		Encyclia kingsii	CAR	
Plants	OLLC	Epiphyllum phyllanthus var. plattsii	SAP	
Plants Plants	Old George	Hohenbergia caymanensis	SAP SAP	
Plants		Pisonia margarettiae Pleurothallis caymanensis	SAF	
Plants		Terminalia eriostachya margaretiae		
Plants		Tolumnia (= Oncidium) calochilum		
Plants		Tolumnia (= Oncidium) variegata		
1 lants	PART	, , , , , , , , , , , , , , , , , , ,		
Reptiles	Western Grand Cayman Blue-throated anole	Anolis conspersus conspersus		
Reptiles	Eastern Grand Cayman Blue-throated anole	Anolis conspersus lewisi		
Reptiles	Cayman racer	Alsophis cantherigerus		
Reptiles	Yellow galliwasp	Celestus crusculus maculatus		
Invertebrates	Little Cayman cicada	Diceroprocta caymanensis		
Invertebrates	Grand Cayman cicada	Diceroprocta cleavesi		
Invertebrates	Cayman Brac cicada	Diceroprocta ovata		
Plants		Allophylus cominia var. caymanensis		
Plants	Cayman Silverbush	Argythamnia proctorii		
Plants		Beloglottis costaricensis		
Plants	Yoke wood	Catalpa longissima		
Plants	Cedar	Cedrela odorata	SAP	
Plants		Celtis trinervia		
Plants	Ironwood	Chionanthus caymanensis	SAP	
Plants	Silver Thatch palm	Coccothrinax proctorii	SAP	
Plants		Colubrina arborescens		
Plants	Clamcherry	Cordia laevigata		
Plants		Crossopetalum caymanense		
Plants		Daphnopsis americana		
Plants		Dendropanax arboreus		
Plants Plants	Smokewood	Drypetes sp.		
Plants Plants	SHIOKEWOOU	Erythroxylum confusum Faramea occidentalis		
Plants		Jatropha divaricata		
Plants		Licaria triandra		
		Lignum vitae		
	Lignum vitae			
Plants	Lignum vitae	9		
Plants Plants		Margaritaria nobilis	SAP	
Plants Plants	Lignum vitae Banana orchid	Margaritaria nobilis Myrmecophila thomsoniana minor / thomsoniana	SAP	
Plants Plants Plants Plants		Margaritaria nobilis Myrmecophila thomsoniana minor / thomsoniana Oeceoclades maculata	SAP	
Plants Plants Plants Plants Plants		Margaritaria nobilis Myrmecophila thomsoniana minor / thomsoniana Oeceoclades maculata Prosthechea cochleata	SAP	
Plants Plants Plants Plants Plants Plants Plants		Margaritaria nobilis Myrmecophila thomsoniana minor / thomsoniana Oeceoclades maculata Prosthechea cochleata Rauvolfia nitida	SAP	
Plants Plants Plants Plants Plants Plants Plants Plants		Margaritaria nobilis Myrmecophila thomsoniana minor / thomsoniana Oeceoclades maculata Prosthechea cochleata Rauvolfia nitida Tillandsia festucoides	SAP	
Plants	Banana orchid	Margaritaria nobilis Myrmecophila thomsoniana minor / thomsoniana Oeceoclades maculata Prosthechea cochleata Rauvolfia nitida Tillandsia festucoides Trichilia havanensis	SAP	
Plants Plants Plants Plants Plants Plants Plants Plants		Margaritaria nobilis Myrmecophila thomsoniana minor / thomsoniana Oeceoclades maculata Prosthechea cochleata Rauvolfia nitida Tillandsia festucoides	SAP	

KE	Y SPECIES for URBAN AND	U MAN-MODIFIED AREA	45				
Category	Detail	Scientific Reference	NBAP				
PART 1							
Mammals	All bats are protected under part 1	Chiroptera	SAP				
Birds	All birds are protected under part 1, unless specifically listed in part 2. Of special significance to this habitat:	Aves					
	Grand Cayman parrot	Amazona leucocephala caymanensis	SAP				
	Brac parrot	Amazona leucocephala hesterna	SAP				
	West Indian Whistling-duck	Dendrocygna arborea	SAP				
	Greater Antillean grackle	Quiscalus niger caymanensis					
Invertebrates	Swallowtail butterfly (endemic)	Heraclides andraemon tailori					
Invertebrates	Cayman Zoe julia	Dryas iulia zoe					
Plants	Ghost orchid	Dendrophylax fawcettii	SAP				
Plants	Old George	Hohenbergia caymanensis	SAP				
Plants	Tea banker	Pectis caymanensis var. robusta	SAP				
	PART	2	.				
Birds	White-winged dove	Zenedia asiatica					
Reptiles	Eastern Grand Cayman Blue-Throated anole	Anolis conspersus lewisi					
Reptiles	Grand Cayman racer	Alsophis cantherigerus caymanus					
Reptiles	Cayman Brac racer	Alsophis cantherigerus fuscicauda					
Reptiles	Little Cayman racer	Alsophis cantherigerus ruttyi					
Reptiles	Grand Cayman Water snake	Tretanorhinus variabilis lewisi					
Reptiles	Grand Cayman Ground boa (Lazy snake)	Tropidophis caymanensis caymanensis					
Reptiles	Little Cayman Ground boa (Wood snake)	Tropidophis caymanensis parkeri					
Reptiles	Cayman Brac Ground boa (Lazy snake)	Tropidophis caymanensis schwartzi					
Reptiles	Cayman Brac Blind snake	Typhlops biminiensis epactia					
Reptiles	Grand Cayman Blind snake	Typhlops caymanensis					
Reptiles	Taco River slider (Hickatee)	Trachemys decussata angusta					
Plants	Silver Thatch palm	Coccothrinax proctorii	SAP				
Plants	Banana orchid	Myrmecophila thomsoniana minor / thomsoniana	SAP				
	INVASI	VE					
Birds	Monk parakeet (Parrot SAP)	Myiopsitta monachus	SAP				
Reptiles	Red-eared slider	Trachemys scripta					

KEY SPECIES for ROADS					
Category	Detail	Scientific Reference			
	PART	1			
Mammals	All bats are protected under part 1	Chiroptera	SAP		
Birds	All birds are protected under part 1, unless specifically listed in part 2.	Aves			
Reptiles	Grand Cayman Blue iguana	Cyclura lewisi	SAP		
Reptiles	Lesser Cayman Islands iguana	Cyclura nubila caymanensis S.			
	PART	2	·		
Invertebrates	White Land crab	Cardisoma guanhumi	SAP		
Plants		Epiphyllum phyllanthus var. plattsii	SAP		
Plants		Pisonia margarettiae	SAP		
Plants	Cayman sage	Salvia caymanensis	SAP		
Plants		Turnera triglandulosa	SAP		
	INVASI	VE	1		
Birds	Monk parakeet (Parrot SAP)	Myiopsitta monachus	SAP		

TERRESTRIAL SPECIES

Bats

INSERT IMAGES

Taxonomy and Range

Kingdom: Animalia, Phylum: Chordata, Class: Mammalia, Order: Chiroptera

There are nine species of bats in the Cayman Islands. None are Vampire Bats. Bats constitute our only extant native mammals. Bats are not rodents: the common term "rat bats" is a misnomer.

Status

Distribution: While many species are distributed widely throughout the Caribbean, Central and South America, the Big Brown bat *Eptesicus fuscus minor*, the smallest known representative of *E. fuscus*, is a subspecies endemic to Grand Cayman (Morgan 1994). The subspecies found on Cayman Brac is the same as the Cuban subspecies. Neither is recorded on Little Cayman.

Conservation:

Big Brown bat *Eptesicus fuscus minor* is listed as Lower Risk/least concern (IUCN), however, the status of the Cayman Islands' population is currently unknown. There has been recent evidence of roost desertion on Grand Cayman. Three were observed in a garage roof, indicating that some may utilise artificial structures.

Buffy Flower bat *Erophylla sezekorni* is listed as Lower Risk/least concern(IUCN), however, the status of the Cayman Islands' population is currently unknown. It is currently unknown whether *E. sezekorni* is a genetically distinct population in the Cayman Islands.

Antillean Nectar bat *Brachyphylla nana nana* is listed as Lower Risk/near threatened (IUCN). The status of the Cayman Islands' population is currently unknown. Furthermore, no roosting sites have ever been located, making protection of critical habitat difficult.

Jamaican Fruit bat *Artibeus jamaicensis parvipes* is listed as Lower Risk/least concern (IUCN). The population on Grand Cayman will likely recover following Hurricane Ivan, given maintenance of undisturbed roosting areas and foraging sites over the next few years.

Brazilian Free-tailed bat *Tadarida brasiliensis muscala* is listed as Lower Risk/near threatened (IUCN). The status of the Cayman Islands' population is currently unknown, though calls have been documented via Anabat and a D-20 Petterson bat detector (Freeman 1979, Simmons et al 1978). A colony of est. 8,000-30,000 appears to have abandoned the large cave in Old Man Bay. Sixteen were observed in the Salina Cave, pre-hurricane Ivan.

Pallas' Mastiff bat *Molossus molossus* is listed as Lower Risk/least concern (IUCN). Currently there is no critical concern for the status of the local population of *M. molossus minor*, which is known only from the Cayman Islands and Cuba.

Red bat *Lasiurus borealis* (subspecies unknown) is listed as Lower Risk/least concern (IUCN), however the status of the Cayman Islands' population is currently unknown. Only three individuals have ever been recorded on Grand Cayman; with singles in the Lower Valley Forest, the Botanic Park and Northward.

Waterhouse's Leaf-nosed bat *Macrotus waterhousii minor* is listed as Lower Risk/least concern (IUCN). The population in Little Cayman currently appears stable, but should be monitored. In Grand Cayman, roosts have been abandoned at Old Man Bay, Spotts Bat Cave, the Agriculture Pavilion Cave, and Pirate's Cave side tunnel.

White-shouldered Bat *Phyllops falcatus* is listed as Lower Risk/near threatened (IUCN), however, the status of the Cayman Islands' population is currently unknown. This bat has always appeared rare on Grand

Cayman (Morgan 1994, Band 2007) and, if still present, likely is threatened due to Hurricane Ivan and anthropogenic destruction of its mature *dry forest* habitat (Band 2007). More intensive monitoring is needed to assess the possibility of this species having been extirpated on Grand Cayman.

Legal: *Bats* currently have no legal protection in the Cayman Islands. Pending legislation, *bats* would be protected under the National Conservation Law (Schedule I). The Department of Environment would be the lead body for legal protection.

Natural history

The following is an abbreviated overview of the natural history of bats in the Cayman Islands. For more detail see the DoE report "The status of bats in the Cayman Islands 2006".

Bats occupy a variety of ecological niches, making them important indicators of a healthy and functional natural environment. Some, such as Pallas' Mastiff bat *Molossus molossus*, are insectivorous, consuming night-flying insects including mosquitoes. Others are nectivorous and frugivorous, pollinating many species of native plants and dispersing their seeds. Only two of Cayman' nine species of bats eat cultivated fruit, however, this propensity results in conflict situations arising with fruit-growers and farmers. While damaging some fruit, bats equally contribute to pollination, and effective removal of insect fruit pests. Seed dispersal by bats helps maintain forest diversity, and contributes to natural reseeding and restoration of degraded habitats.

Individual bats may live up to 30 years, but most bear only a single pup each year. This low productivity makes bats vulnerable to extinction and slow to recover numbers following losses.

Caves provide crucial habitat for several species of bats. Some species are especially sensitive to human disturbance of their roost sites, and may desert an otherwise suitable site *en-mass* if disturbed. Spring and early summer months are critical periods, when flightless youngsters are present, and may be deserted if parents are disturbed. Other species are more adaptable to living alongside humans.

In the face of natural habitat loss some, such as Pallas' Mastiff bat, will colonize roof cavities. This can result in undesirable noise, droppings and odours. For this reason, a *Bat Conservation Project* has long been operative in the Cayman Islands. Volunteer workers inspect roof spaces, construct and emplace bat houses, and assist with advice on exclusion methods; removing bats safely and permanently from roof spaces. To-date, with the cooperation of Caribbean Utilities Co., Ltd (CUC) the *Bat Conservation Project* has erected over 95 bat houses on utility poles around Grand Cayman, providing an alternative roost for bats, while maintaining their eco-system services within *urban and man-modified areas*.

Associated Habitats and Species for Bats

ASSOCIATED HABITAT PLANS	ASSOCIATED SPECIES PLANS
	Cayman parrot Amazona leucocephala.
9. Mangrove	E. fuscus, M. molossus, L. borealis.
13. Pools, ponds and mangrove lagoons	Most species of insectivorous bats benefit from the insects associated with <i>pools</i> , <i>ponds and mangrove lagoons</i> .
14. Dry shrubland	E. sezekorni, L. borealis, M. waterhousii.
15. Dry forest	E. fuscus, E. sezekorni, B. nana, A. jamaicensis, T. brasiliensis, M. molossus, L. borealis, M. waterhousii, P. falcatus.
16. Caves	E. sezekorni, B. nana, A. jamaicensis, T. brasiliensis, M. waterhousii, E. fuscus on GC and M. molossus on Brac.
17. Farm and grassland	E. fuscus, E. sezekorni, B. nana, A. jamaicensis, T. brasiliensis, M. molossus, L. borealis, M. waterhousii, P. falcatus.

376

18. Urban and man-modified areas	T. brasiliensis, M. molossus, P. falcatus, A. jamaicensis.
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Current Factors Affecting Bats

- Disturbance of natural roosts: many species of bats are highly sensitive to human disturbance of roost sites, elevating the risk of accidental disturbance by visiting members of the public and inappropriate scientific research methods. Deliberate disturbance of roosts arises from cultural fear of bats, blanket persecution of (all) species as crop pests, and deliberation acts of vandalism.
- Disturbance of man-made roosts: hygiene and disturbance issues associated with bats occupying roof cavities makes most people unwilling to share their houses with bats. Inappropriate exclusion of bats can result in animals being trapped and dying in roof cavities. Humane exclusions guard against trapping, and are only performed outside of the breeding season. Where feasible, impact of humane exclusion may be mitigated by on-site placement of an artificial bat box.
- Loss of natural roosts: clearance of vegetation and in-filling of caves in land slated for development and dumping of garbage in caves contribute to a loss of natural roost sites.
- Loss / fragmentation of natural habitat: land clearance and development impact nature roosting and feeding habitats for bats.
- Landscaping: non-native landscaping reduces natural food availability for many species of bats.
- *Incidental factors:* disruption of traditional flight lines, motor traffic, mosquito control, power lines, and wind turbines can result in the incidental death of bats. A study by Edward B. Arnett (BCI), financed largely by the American Wind Energy Association, conducted at Florida Power & Light Co's Mountaineer Wind Energy Centre, indicated that its 44 turbines may have caused between 1,300 and 2,000 bat deaths in a six-week period, 2005.
- *Cultural:* along with snakes and frogs, bats are shunned as "frightening" creatures by many cultures and by phobic individuals.
- *Predation by non-native species*: rats have the potential to significantly impact colonies.
- *Conservation efforts:* despite their lack of protected status, bats in the Cayman Islands have benefited from an effective long-term voluntary Bat Conservation Programme.

Opportunities and Current Local Action for *Bats*

The National Trust for the Cayman Islands has a long established Bat Conservation Programme, run by Ms. Lois Blumenthal. This programme raises public awareness through the media, PowerPoint presentations to public groups and schools, and an informational website: www.Caymanwildlife.org.

The Bat Conservation Programme also assists with the active management of bat colonies which establish in roof spaces. Volunteer workers inspect roof spaces, construct and emplace bat houses, and assist with advice on exclusion methods; removing bats safely, humanely and permanently from roof spaces. To-date, with the cooperation of Caribbean Utilities Co., Ltd (CUC) the Programme has erected over 95 bat houses on utility poles around Grand Cayman, providing an alternative roost for bats, while maintaining their ecosystem services within *urban and man-modified areas*.

SPECIES ACTION PLAN for Bats

The Proposed Actions for *Bats* are largely based on the research and recommendations of Dr. Annie Band, arising from her long-term studies, and an assessment of bats funded by DoE in conjunction with the Bat Conservation Programme, following Hurricane Ivan "*The status of bats in the Cayman Islands*" (Band 2006).

OBJECTIVES	TARGET
1. Establish legal protection for all bats in the Cayman Islands.	2006
2. Reduce impact resulting from conflict situations between bats and humans.	ongoing
3. Improve understanding of, and protect, key habitat, especially natural roost sites.	2015
4. Expand educational programmes to inform the public, allay fears, facilitate timely	ongoing
and practical management, and raise awareness of the ecological role of bats.	

Bats PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Policy & Legislation				
PL1. Targeted awareness towards the promotion of the National Conservation Law and the Endangered Species (Trade & Transport) Law.	DoE	CIG NT	2006	1-4
PL2. Protect <i>Bats</i> under Schedule I of the National Conservation Law, through establishment of conservation regulations.	DoE	CIG	2006	1-4
PL3. Act to protect all known established natural roosts, and implement protection of newly discovered natural roosts, and critical foraging habitat.	DoE	CIG MP NT	2010	1,3
PL4. Promote amendment of the Planning Law, to facilitate rapid imposition of stop-orders on illegal developments and provide a responsive and effective enforcement mechanism.	DoP	DoE CIG	2010	2,3
PL5. Strengthen the <i>Development Plan</i> on Grand Cayman, incorporating a long-term vision for the environmental, social, and economic development of the Islands.	DoP CPA	CIG MP DoE	ongoing	2,3
PL6. Promote establishment of a <i>Development Plan</i> for the Sister Islands, incorporating a long-term vision for the environmental, social, and economic development of the Islands.	DoP DCB	CIG MP DoE	ongoing	2,3
PL7. Enable DoE Conservation Officers to implement legal eradication of invasive species, as necessary to ensure the survival of endangered native species.	DoE	CIG	ongoing	3
Safeguards & Management				
SM1. Maintain and expand bat house construction and placement initiative under the current Bat Conservation Programme, towards conserving <i>M. molossus</i> .	NT	DoE IntC MP	ongoing	2
SM2. Develop and implement sustainable management strategies for conservation of <i>A. jamaicensis</i> and <i>B. nana</i> , which reasonably mitigate local farmers for damage to their fruit crops.	DoE DoA	DoT NT CIG MP IntC	2015	2,3,4
SM3. Eradicate Monk parakeets <i>Myiopsitta monachus</i> from the Cayman Islands, towards removing this croppest.	DoE	MP	2009	2
SM4. Use the <i>Environmental Protection Fund</i> to	CC	DoE NT	2015	3

The same of the sa		T	T	,
purchase and protect / establish management agreements		MP CIG		
with landowners of the caves and forest and woodland		IntC		
associated with the Old Man Bay (Bat) Caves, Grand				
Cayman to assist in the preservation of <i>E. fuscus</i> and <i>A</i> .				
jamaicensis. This system is also a historic roost site for				
T. brasiliensis.				
SM5. Investigate feasibility of establishing Cayman Brac	CC	NT MP	2010	3
Bluff Cave site as a protected area/ establish		DoE CIG		
management agreements with landowners, towards		IntC		
preserving the only known roost of E. sezekorni.				
SM6. Investigate feasibility of establishing Miller's Cave	CC	NT MP	2010	3
system as a protected area / establish management		DoE CIG		
agreements with landowners, towards preserving A.		IntC		
jamaicensis.				
SM7. Investigate feasibility of establishing Dolphin.	CC	NT MP	2010	3
Cave (Sybil McLaughlin's property on Queen's		DoE CIG		
Highway) as a protected area / establish management		IntC		
agreements with landowners, to assist in the preservation				
of A. jamaicensis.				
SM8. Investigate status of the Salinas Reserve cave, to	CC NT	MP DoE	2010	3
assist in the preservation of A. jamaicensis, M.		IntC		
waterhousii and T. brasiliensis.				
SM9. Investigate the feasibility of establishing protected	CC	NT MP	2010	3
caves at two sites on Cayman Brac bluff, one at the base,		DoE CIG		
the other a single cave with small opening about 20 feet		IntC		
up on the bluff face - the latter being home to ca. 500 <i>M</i> .				
molossus.				
SM10. Investigate feasibility of restoring the Agriculture	DoA	NT MP	2010	3
Pavilion Cave, and establishing the site as a protected		DoE CIG		
area. This is currently inaccessible to bats due to the		IntC		
dumping of garbage. Cleanup and fencing would be a				
simple inexpensive way to restore this cave roost for				
potential recolonisation by A. jamaicensis and M.				
waterhousii, in line with DoA's Agritourism initiative.				
SM11. Investigate feasibility of establishing Spot Bay	CC	NT MP	2010	3
Bat Cave as a protected area / establish management		DoE CIG		
agreements with landowners, to assist in the preservation		IntC		
of Macrotus waterhousii.				
SM12. Encourage maintenance and planting of mature	DoE	NT	2008	2,3
fruit trees in developed areas. <i>P. falcatus</i> , for example,	QEIIBP			_,_
will roost adjacent to housing complexes if mature <i>Ficus</i>	Z			
remain.				
SM13. Supply native trees suitable for bats feeding and	DoE	NT	2008	2,3
roosting, through the <i>Native Tree Nursery</i> .	QEIIBP		2000	
SM14. Use the Environmental Protection Fund to	CC	DoE NT	2015	2,3,4
purchase and protect / establish management agreements		MP CIG	2013	2,3,1
with landowners of a <i>cave</i> suitable for establishment as a		DE DE		
"show-cave". Develop on-site access and interpretation				
to facilitate visitation by school-groups, towards				
educating students regarding the geological and				
biological interest of <i>caves</i> .				
SM15. Control predation by rats and cats.	DEH	NT	2007	3
51.113. Control predation by fats and cats.	DoE HS	111	2007	3
	DoE HS DoA			
SM16. Restore damaged roosting habitat where possible.	DoE NT		2010	3
			- 4010	1 .)

	MP			
SM17. Establish a full-time DoE field conservation	DoE		2012	2,3,4
officer on Cayman Brac and Little Cayman to implement				
conservation actions.				
SM18. Implement associated HAPs.	DoE		2015	1,2,3,4
Advisory				
A1. Maintain communications with planning agencies	DoE	DoP	ongoing	2,3
and developers, towards early identification of potential		NRA MP		
development conflicts, and effective mitigation action				
towards the preservation / incorporation of roosts into				
new developments. This measure will be of particular				
importance to species such as B. nana and E. sezekorni.				
A2. Work with planners to encourage maintenance of	DoE	DoP	ongoing	2,3
mature fruit trees in developments. P. falcatus, for		NRA MP		
example, will roost adjacent to housing complexes if				
mature Ficus trees remain.				
A3. Promote the use of native plants in landscaping,	DoP	DoE	2009	2,3,4
through maintenance of existing vegetation and use of a				
Recommended Planting Palette in new developments.				

Bats PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Research & Monitoring				
RM1. Further monitoring via mist-netting is needed to	DoE NT	IntC	2010	3
assess whether P. falcatus and E. sezekorni are still				
present on Grand Cayman, and if so, determine extent of				
population recovery.	D = 1.1m		2010	
RM2. Augment existing studies with more sophisticated	DoE NT	IntC	2010	3
radio-telemetry efforts and acoustical monitoring via Anabat or Sonobat.				
RM3. Determine location of new roost sites for all	DoE NT	IntC	2010	3
species, a priority being species for which no roost sites	DOENT	inte	2010	3
are currently known, such as <i>B. nana</i> , and species with a				
dependency on primary forest, such as <i>P. falcatus</i> .				
RM4. Determine foraging habitat requirements and key	DoE NT	IntC	2010	3
sites for all species (mature forest appears critical to	DOLIVI	Inco	2010	
some species, such as <i>P. falcatus</i> , others are able to adapt				
to secondary forest, and low-development farmland and				
plantation).				
RM5. Extend bat monitoring programme, to monitor	DoE NT	IntC	2010	3
populations, impact of development and effectiveness of				
conservation management efforts.				
RM6. Promote international links and facilitate visiting	DoE NT	IntC	ongoing	3
scientists when their methods and studies have the				
potential to benefit the conservation of Cayman Islands				
bats.	D. E.M.	T. (C		0.0
RM7 . Ban unnecessarily invasive research techniques,	DoE NT	IntC	ongoing	2,3
which might encourage desertion of roosts, with particular attention to sensitive species such as <i>E</i> .				
sezekorni.				
RM8. Work with international experts to determine	DoE NT	IntC	ongoing	3
appropriate management of specific sites and species,	DOLIVI	inte	ongoing	
especially where species are sensitive to critical				
environmental conditions, or disturbance, such as <i>E</i> .				
sezekorni.				
RM9. Investigate feasibility of implementing <i>Parrot Jam</i>	DoE MP	DoT NT	2012	2,3,4
<i>Project</i> – a financial / PR incentive scheme to offset crop	DoA	CIG		
damage suffered by local fruit farmers.				
RM10. Construct quarters for visiting scientists in	DoE		2012	2,3,4
Cayman Brac, and support research initiatives				
complimentary to the objectives of the NBAP.				
Communication & Publicity	NITT	D = 1 ~		124
CP1. Continue proactive public awareness initiative, to	NT	DoE IntC	ongoing	2,4
raise awareness of the Bat House Conservation				
Programme to conserve <i>M. molossus</i> , and reduce incidental deaths of the endemic <i>Eptesicus fuscus</i> .				
CP2. Raise public awareness of the sensitivity of some	NT	DoE	ongoing	2,3,4
bats species to disturbance, such as <i>E. sezekorni</i> .	111	DOE	ongoing	2,3,+
CP3. Subject to SM14, utilise a "show colony" site to	CC	DoE NT	2015	2,3,4
raise public awareness of the importance of bats.		MP CIG	2013	2,3,4
raise paone awareness of the importance of oats.		DE DE		
CD4 E (11' 1	NT	DoE DE	2010	2,3,4
CP4. Establish a schools involvement programme to run	111	בוכו שטע		4.5.7

CP5. Establish a lectures and publicity programme for	DoE NT	IntC	ongoing	4
all visiting scientists.				
CP6. Raise awareness of the value of native landscaping	DoE DoP	MP CN	2010	3
for wildlife.	NT	GC OS		
	QEIIBP	SB LCN		
CP7. Investigate potential for red-light / infra-red live	DoE NT	IntC	2010	3,4
streaming link to active colony, to that the public can				
view a colony in action.				
CP8. Utilise native flora and fauna, and associated	CIG DoT	DoE	2010	4
preservation efforts, in the international promotion of the	QEIIBP	NT MP		
Cayman Islands.				

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Informational website: www.Caymanwildlife.org

TERRESTRIAL SPECIES

Brown booby Sula leucogaster

INSERT IMAGES

Taxonomy and Range

Kingdom: Animalia, Phylum: Chordata, Class: Aves, Order: Pelecaniformes, Family: Sulidae Genus: Sula, Species: leucogaster

The Brown booby *Sula leucogaster* is the most common of the three West Indian boobies, breeding on cays off the coast of the Yucatan Peninsula, Panama, Columbia, Venezuela, and throughout the West Indies. This species has a large range, with an estimated global breeding Extent of Occurrence of 50,000-100,000 km² (IUCN). The Brown booby is one of the Cayman Islands' six breeding seabirds.

Status

Distribution: The Brown booby is resident in the Cayman Islands, and breeds only on Cayman Brac. It is vagrant in Grand Cayman: most commonly juveniles displaced during stormy weather. **Conservation:** The Brown booby *Sula leucogaster* has a large global population, estimated to be ca. 200,000 individuals (IUCN). Global population trends have not been quantified, but the species is not believed to approach the thresholds for the population decline criterion of the IUCN Red List (i.e. declining more than 30% in ten years or three generations). As a result, it is listed as least concern globally (IUCN); however, the Cayman Island's birds have undergone a significant population decline during the past 30 years. Once an abundant breeder in the Islands, despite historical exploitation, with ca. 480 individuals reported in the 1980s, numbers fell to below 100 individuals by the end of the 1990s. The last estimate of numbers was 350 (max.) individuals in 2007 (Bradley *in prep.*). The slight recovery observed in recent years may have suffered a severe set-back with the advent of hurricane Paloma, Nov 2008.

Legal: The Brown booby *Sula leucogaster* is protected under the Animals Law (1976). Pending legislation, it would be protected under the National Conservation Law (Schedule I). The Department of Environment is the lead body for legal protection.

The Cayman Brac colony has been noted in ornithological records since 1888. Following a decline > 80% during the 1980-90s, the colony appears stabilized.

Year	Nesting Pairs	Fledglings	Total
1983	170	140	480
1996	32	20	84
2000	49	5	103
2001	61	8	130
2003	60-80		
2007	80-110		

Natural history

The striking adult plumage of the Brown booby comprises chocolate brown head and upperparts, sharply defined from white belly and abdomen. In juveniles, the belly and abdomen remain light brown. Bobbies forage for fish in coastal areas, and further out at sea, plunging into the water from some height. Courtship between prospective mates comprises pair flights, territorial displays, and symbolic nesting building. This may last 4-8 weeks, during which time the pair bond is formed / renewed. Nesting is confined to inaccessible *maritime cliffs*: a simple scrape on bare rock, or a more elaborate collection of seagrass, Sargassum, flotsam, sticks and stones. Locally, a single prolonged breeding season is evident (Bradley 1994, 1997). Peak nesting period is Oct-Apr, however breeding has been observed in all months. Clutches of 1-2 white eggs are laid. In cases where both eggs hatch, the second is usually dispatched by "sibling murder" within the first two weeks.

Absent from the fossil record of the Sister Islands (Morgan 1994), it remains unclear as to whether the Brown and Red-footed Boobies were ever sympatric on the Brac and Little Cayman, or whether they have always segregated, possible as a result of habitat preference.

Associated Habitats and Species for Brown booby

ASSOCIATED HABITAT PLANS	ASSOCIATED SPECIES PLANS
1. Open sea	Verbesina caymanensis
7. Maritime cliffs and ironshore	White-tailed tropicbird <i>Phaethon lepturus</i>
11. Coastal shrubland	Cayman parrot Amazona leucocephala
16. Caves	Sister Islands Rock iguana Cyclura nubila caymanensis

Current Factors Affecting Brown booby

- Development: the northwest section of the large bluff-top land parcel on which many of the birds nest has commenced subdivision into residential bluff-edge plots.
- Human disturbance: the Lighthouse trail facilitates access to and disturbance of the Brown boobies which nest along the Bluff lip. The unwillingness of sitting birds to vacate nests coupled with a lack of access restriction and on-site interpretation means that visitors tend to approach close to nesting birds. Since the 1990s the area has became increasingly popular with climbers and cavers. At one point, some 250 climbers used 75 routes. About 15 of these routes were close to nesting sites. This activity has now relinquished somewhat. Tour boat guides have been observed to "clap" their hands to encourage nesting birds to take flight, for the edification of tourists.
- Natural predators: birds of prey, especially wintering Peregrine falcons Falco peregrinus.
- Introduced predators: rats and cats. This area is a dumping site for unwanted kittens.
- *Historically exploitation:* harvesting of eggs continued routinely until the mid-1970s, ceasing by the early 1990s.
- *Decline in Sargassum:* shortage of this preferred nesting material may increase clutch vulnerability during incubation.
- *Displacement:* terrestrial disturbance and predator avoidance encourage nesting on lower ledges, vulnerable to inundation during high seas.
- *Commercial fisheries:* a potential source of conflict, this is not a significant issue in Cayman, as local fisheries are of a subsistence / recreational nature.
- *Maritime pollution:* Cayman Brac lies close to major shipping lanes. Birds covered in oil and bilge wash are occasionally collected from along the shore.
- *Storms:* Bluff-edge habitat is susceptible to severe weather. The carcasses of twenty-one adult birds were retrieved following Hurricane Paloma, Nov 2008.

Opportunities and Current Local Action for Brown booby

A Management Plan to Conserve and sustain the Brown booby Colony and its Habitat on Cayman Brac has been completed, (Bradley 2002).

Interpretative signage has been installed at the Lighthouse trailhead.

A Checklist of Birds of the Cayman Islands was published (Bradley 2006).

Training of nature guides in bird identification on Cayman Brac and Little Cayman as part of the Nature Tourism Initiative on the Sister Islands, has been completed, however a structured monitoring and reporting programme for the islands' birdlife is not in place.

SPECIES ACTION PLAN for Brown booby

This Species Action Plan is based on Management Plan to Conserve and sustain the Brown booby Colony and its Habitat on Cayman Brac (Bradley 2002).

OBJECTIVES	TARGET
1. Restore population to 1980s level (ca. 200 breeding pairs).	2015

2. Establish a protected area on the bluff, sufficient to ensure survival and continued recovery of the established booby colony.	2010
3. Implement management measures to minimize impact of human disturbance and	2011
developmental impacts on established nest sites.	
4. Reduce predation by non-native species.	2011
5. Preserve the aesthetic and ecological value of this area of outstanding natural	2015
beauty.	
6. Improve media profile and public understanding of the Brown booby.	2009

Brown booby PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Policy & Legislation				
PL1. Pass and implement the National Conservation	CIG	DoE	2006	1-6
Law.				
PL2. Implement the Endangered Species (Trade &	DoE	CIG	2006	3
Transport) Law.	D E	GTG	2006	1.6
PL3. Protect Sula leucogaster under Schedule I of the	DoE	CIG	2006	1-6
National Conservation Law, through establishment of				
conservation regulations. PL4. Promote amendment of the Planning Law, to	DoP	DoE CIG	2010	3,5
facilitate rapid imposition of stop-orders on illegal	DOF	DOE CIG	2010	3,3
developments and provide a responsive and effective				
enforcement mechanism.				
PL5. Promote establishment of a <i>Development Plan</i> for	DoP	CIG MP	ongoing	3,5
the Sister Islands, incorporating a long-term vision for	DCB	DoE	2 2	,
the environmental, social, and economic development of				
the Islands.				
PL6. Universal enforcement of leash laws for dogs on	DoA	DoE CIG	2010	3,4
the Sister Isles.		MP		
PL7. Enable DoE Conservation Officers to implement	DoE	CIG	2008	3,4
legal eradication of invasive species, as necessary to				
ensure the survival of endangered native species.				
Safeguards & Management	CC	CIC MD	2000	1.2.5
SM1. Establish the bluff face Crown lands and Little	CC	CIG MP	2009	1,2,5
Cayman Brac as protected areas, and use the Environmental Protection Fund to establish a protected		SIDA DCB		
area / management agreement with land owners		DoE NT		
including, the vertical face of the bluff, lip, associated		DOLNI		
caves, and parcels 111E 220 and 111A 5,70,69.				
SM2. Negotiate with land owners for the establishment	CC	CIG MP	2009	1,2,5
of a bluff-top protected area extending inland 25m from		SIDA	2009	1,2,3
the cliff edge.		DCB		
		DoE NT		
SM3. Use the <i>Environmental Protection Fund</i> to	CC	CIG MP	2009	1,2,5
purchase and protect the six-acre lighthouse site, as a		SIDA		
base for conservation management and interpretation of		DCB		
the area.		DoE NT		
SM4. Use the <i>Environmental Protection Fund</i> to	CC	CIG MP	2009	1,2,5
establish a protected area / management agreement with		SIDA		
land owners encompassing the 200 hectare strip along		DCB		
the bluff lip.	D.F.	DoE NT	2015	1.6
SM5. Employ a warden / guide on site to undertake	DoE	DoT	2015	1-6
reserves management, species monitoring, interpretation		SIDA NT		

and assist visitors as necessary.		CIG		
SM6. Management of caving activities, including	DoE DoT		2010	3
prohibition of access to the large cave (N19°44'50"	SIDA			
W79°43'40") during breeding season.				
SM7. Management of climbing activities, including code	DoE DoT	SIDA	2010	3
of conduct, development of new routes, bolt placement				
and seasonal access restrictions.				
SM8. Develop code of conduct for boat operators.	DoE DoT	SIDA	2010	3
SM9. Develop and implement long-term non-native	DEH	DoE	2010	3,4
predator control on site.	DoA	SIDA		
SM10. Promote spaying and neutering of domestic cats.	DoA	DoE	ongoing	3,4
SM11. Eradicate feral dogs and <i>Iguana iguana</i> in	DoE	DEH	2010	3,4
Cayman Brac.		IntC		
		DoA MP		
SM12. Establish a full-time DoE field conservation	DoE		2012	1-6
officer on Cayman Brac and Little Cayman to implement				
conservation actions.				
SM13. Implement associated HAPs.	DoE		2015	1-6
Advisory				
A1. Recommend maintenance of an unsealed road for	DoE	LS, DoP	2008	3,5
500m directly west of lighthouse, with no further	DCB	AGC		
expansion, and no perimeter road on the eastern bluff.	NRA	SIDA		
A2. Recommend appropriate building set-back from the	DoE	SIDA	2008	3,5
bluff edge and base.	DCB	MP DoP		
A3. Recommend appropriate restrictions on removal of	DoE	SIDA	2008	3,5
vegetation from the bluff edge.	DCB	MP DoP		
A4. Targeted awareness of the need for the National	DoE	CIG NT	2006	1-6
Conservation Law and the Endangered Species (Trade &				
Transport) Law.				

Brown booby	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE	
PROPOSED ACTION				OBJECTIVE	
Research & Monitoring					
RM1. Monitor population and breeding success every	DoE	NT	2008	1,6	
three years (minimum).					
RM1. REPORT: Preliminary assessment of site reveals 21 dead adults in	Ĭ				
RM2. Investigate the potential for artificial augmentation	DoE	NT,	2012	1,3	
of nesting ledges to assist in colony expansion /		SIDA			
relocation.					
RM3. Monitor and eradicate <i>Iguana iguana</i> in Little	DoE	DoA	ongoing	4	
Cayman and Cayman Brac.		DEH MP			
RM4. Conduct pilot project towards eradication of feral	DoE	DoA	2015	4	
cats in Little Cayman, and improve control of rats and		CSL			
feral cats on Cayman Brac.					
RM5. Construct quarters for visiting scientists in Little	DoE		2012	3	
Cayman and Cayman Brac, and support research					
initiatives complimentary to the objectives of the NBAP.					
Communication & Publicity		T	1		
CP1. Develop and publicize a code of conduct for	DoE	SIDA	2012	3,6	
visitors (inc. climbers, cavers, boaters) outlining site		DoT			
status and restrictions.					
CP2 . Produce brochure guides to the area.	DoT	DoE, NT	ongoing	6	
	SIDA				
CP3. Establish of a dedicated warden / nature tour guide,	DoT	DoE, NT	2015	1-6	
responsible for site interpretation.	SIDA				
CP4. Improve interpretative facilities at key areas.	DoT	DoE, NT	2012	3,6	
	SIDA			_	
CP5. Raise public awareness of the Brown booby and	NT	DoE	ongoing	6	
other birds through local media (e.g. Know Your Islands		DE			
column), public talks and schools presentations (e.g. Do					
You Know Me?), and natural history websites.	1 0 100		011	177	
CP5. REPORT: DoE and NMBCA jointly fund development of Bird ID c Bird Guide for the Cayman Islands through CaymanBiodiversity.com, 20	CP5. REPORT: DoE and NMBCA jointly fund development of Bird ID cards for NT "Do You Know Me?" programme, and Virtual Bird Guide for the Cayman Islands through CaymanBiodiversity.com, 2007.				
CP6. Utilise native flora and fauna, and associated	CIG	DoE DoT	2010	5,6	
preservation efforts, in the international promotion of the		NT MP			
Cayman Islands.		QEIIBP			

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TERRESTRIAL SPECIES

Cayman parrot / Cuban parrot / Rose-throated parrot Amazona leucocephala

INSERT IMAGE

Taxonomy and Range

Kingdom: Animalia, Phylum: Chordata, Class: Aves, Order: Psittaciformes, Family: Psittacidae Genus: Amazona, Species: leucocephala

The Cayman parrot *Amazona leucocephala* is a restricted range neotropical species occurring in the Cayman Islands, Cuba and the Bahamas. There are five endemic races: *A. l. caymanensis* on Grand Cayman and *A. l. hesterna* on Cayman Brac; two races on Cuba, and one in the Bahamas, confined to Great Inagua and Abaco. Preliminary genetic analysis indicates *A. l hesterna* as highly divergent from the other four races, and studies are in progress to determine its status as a separate species.

On Grand Cayman, *A. l. caymanensis* suffered a major loss of breeding habitat following devastation of mature Black mangrove in the Central Mangrove Wetland during hurricane Ivan (2004). Breeding is currently restricted to central and eastern dry forest. On Cayman Brac *A. l hesterna* breeds on the bluff in mature *dry forest*. On Little Cayman, the race *A. l. hesterna* became extirpated in the 1940s. Current status on Little Cayman is problematic. Four birds recolonised from Cayman Brac in 2000. In 2006, three birds were regularly observed on the south coast (a pair and a young bird). One of the adults, however, was possibly *A. l. caymanensis*. It is currently undetermined whether this offspring is a hybrid. Only one bird remained in 2007/8.

Status

Distribution: Subspecies endemic to Grand Cayman, and Cayman Brac.

Conservation: The Cayman parrot is listed as near-threatened (IUCN Red List; Appendix 1 CITES) due to its restricted range. The last population estimates for *A. l. leucocephala* gave max. 2000 birds in 1995, and 400 birds for *A. l. hesterna*. Presently DoE is undertaking a new survey of parrot populations on Grand Cayman and Cayman Brac, with the support of USFWS. The race *hesterna* is considered at risk of extinction (Wiley *et al.* 2004).

Legal: The Cayman parrot *Amazona leucocephala* is protected under the Animals Law (1976). Pending legislation, it would be protected under the National Conservation Law (Schedule I). The Department of Environment is the lead body for legal protection.

Natural history

The Cayman parrot is the National Bird of the Cayman Islands. It is a cavity nester, breeding only in mature habitats: *dry forest* and *mangrove* forest. There is one instance of a wild pair breeding in an artificial nestbox at the Botanic Park. The species forages throughout Grand Cayman and Cayman Brac. On Grand Cayman parrots breed in cavities in dead and live Black mangrove *Avicennia germinans* and in dry forest, in Mango *Mangifera indica*, Strangler fig *Ficus aurea*, Royal palm *Roystonea regia* and Red birch *Bursera simaruba*.

On Cayman Brac, Cedar *Cederola odorata* is the preferred cavity tree, but recruitment of Cedar is currently very low due to infestation by the Mahogany shoot-borer *Hypsipyla grandella*. The Brac Parrots are seen throughout the island, feeding in *dry shrubland* in the interior, along the littoral Seagrape *Coccoloba uvifera* and Cocoplum *Chrysobalanus icaco* of *coastal shrubland*, and in gardens and plantations. The parrot is frugivorous, but also forages on young leaves and flowers. Crop predation by parrots results in their persecution by some farmers.

Clutch size ranges from 2-5 eggs (mean 3.2). Incubation is about 28 days. Young fledge by 55-60 days, and remain with their parents, at least until the next breeding season. Natural predators include Racer snakes *Alsophis cantherigerus*, Barn Owl *Tyto alba* and Peregrine Falcon *Falco peregrinus*.

Associated Habitats and Species for the Cayman parrot

ASSOCIATED HABITAT PLANS	ASSOCIATED SPECIES PLANS
9. Mangrove	Vitelline warbler Dendroica vitellina
11. Coastal shrubland	Banana orchid Myrmecophila thompsoni
14. Dry shrubland	Silver Thatch palm Coccothrinax proctorii
15. Dry forest	Cedar Cedrela odorata
17. Farm and grassland	
18. Urban and man-modified areas	

Current Factors Affecting the Cayman parrot

- Habitat loss: dry forest has been a primary target for development on Grand Cayman since 1980. Wetlands in western Grand Cayman have been cleared since 1984, and no viable breeding habitat remains. Breeding habitat in the Central Mangrove Wetland, (Black mangrove Avicennia germinans) was significantly impacted during hurricane Ivan, 2004. Though it has since reestablished somewhat, full recovery of this habitat will likely take another 20 years. Since 2000, rapid development of the bluff has impacted dry forest habitat on Cayman Brac.
- Remnant habitat fragmentation: through land clearance, urban development, agricultural clearance, rapid expansion of roads networks on both islands.
- Introduced predators: rats, cats. Green iguanas Iguana iguana may take eggs.
- *Human impact:* despite legal protection, persistent illegal hunting as a crop pest (high impact from a limited number of individuals) and illegal trapping (for the pet trade) continues, both on Grand Cayman, and to a lesser extent, on Cayman Brac. Removal of chicks often involves the permanent destruction of the nest cavity. Deliberate and incidental poisoning are largely unknown quantities.
- Limited fecundity: it is likely that only a fraction of the adult population is actively breeding, due in part to limited nest site availability. Nest site limitation is likely especially acute on Cayman Brac.
- Road traffic: collision with cars is a significant cause of mortality for this direct, low-flying species.
- Legislation: originally listed as a game bird under Section 69 of the Animals Law (1976), the parrot, along with several other bird species, was removed from the game bird list and given full protection under Section 2 of The Animals (Protection) Regulations (1989). Grand-fathering in of pre-existing captive pet parrots prior to introduction of the Law contributed to the Law becoming largely unenforceable in its current form, facilitating continuation of the illegal capture, pet trade, and shooting of parrots, most especially by fruit-farmers for whom the parrot represents a crop pest.
- Contention: of all species (with the possible exception of Weeping willow) conservation issues associated with the Cayman parrot are perhaps the most contentious. Being both a crop-pest and a National Symbol for conservation, legally protected and exploited with impunity, conservation efforts geared towards the preservation of Cayman parrots will be subject to highly polarized public opinion.
- Shifting baselines: a feral population of invasive Monk parakeets Myiopsitta monachus is becoming increasingly well-established in Grand Cayman. This crop-pest is a competitor for food with the Cayman parrot, and despite its looking remarkably different, apparently a confusion species. "Tour-guides" point out Monk parakeets to visitors, identifying them as Cayman parrots. The Yellow-naped Amazon Amazona auropalliata is also establishing on Grand Cayman, with approximately 20 pairs breeding in the wild, mostly in the Savannah district.

Opportunities and Current Local Action for the Cayman parrot

In a National Symbols campaign spearheaded by the National Trust for the Cayman Islands (1995), the Cayman parrot was voted the National Bird of the Cayman Islands. (The Silver Thatch palm was chosen as the National Tree and the Wild Banana orchid as the National Flower). An interpretative folder was produced for schools, containing information and activities centred on the National Symbols. The Trust plans to update the National Symbols campaign in 2006.

Proposed Important Bird Areas (IBAs) for the Cayman Islands (Bradley et al. 2006) identifies areas of habitat sufficient to sustain the Cayman parrot. Sites include the Mastic Reserve, Botanic Park and Salina, eastern forests in Grand Cayman, and the Brac Parrot Reserve and the Splits in Cayman Brac.

In 2004, the National Trust purchased additional land in the Mastic Reserve, Grand Cayman. In 2005, the National Trust, with funding from DoE CIG and USFWS NMBCA, purchased additional land in the Brac Parrot Reserve, consolidating this protected area. Also in conjunction with this grant, a series of bird lectures (*Do You Know Me?*) and bird ID cards are delivered to local schools.

A Checklist of Birds of the Cayman Islands published (Bradley 2006).

Training of nature guides in bird identification on Cayman Brac and Little Cayman as part of the Nature Tourism Initiative on the Sister Islands, has been completed, however a structured monitoring and reporting programme for the islands' birdlife is not in place.

Surveys by the Bird Club, include monitoring of the parrot on Grand Cayman since hurricane Ivan. A comprehensive study is underway by DoE / USFWS, with the objective of developing an annual survey methodology incorporating Distance Sampling protocol.

SPECIES ACTION PLAN for the Cayman parrot

OBJECTIVES	TARGET
1. Purchase and protect essential feeding and breeding habitat in Grand Cayman and	2015
Cayman Brac, toward sustaining parrot populations in perpetuity.	
2. Increase cavity availability for nesting.	2010
3. Conduct annual population estimates and map distribution of nest sites .	2008
4. Maintain and improve the profile of the Cayman parrot as a flagship for local	ongoing
biodiversity conservation.	
5. Encourage adherence to local laws prohibiting trade and transport, illegal shooting	2006
and trapping of parrots, and active enforcement of these laws when contravened.	
6. Maintain wildlife corridors through protection of woodland in suburban areas, and	2010
planting mini-woodlands of local species to serve as foraging habitat.	
7. Reduce impacts from introduced predators.	2010

Cayman parrot PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Policy & Legislation				
PL1. Pass and implement the National Conservation Law.	CIG	DoE	2006	1-7
PL2. Implement the Endangered Species (Trade & Transport) Law.	DoE	CIG	2006	5,7
PL3. Protect <i>Amazona leucocephala</i> under Schedule I of the National Conservation Law , through establishment of conservation regulations.	DoE	CIG	2006	1-7
PL4. Secure Cayman Islands Important Birds Areas (IBAs) - once accepted by Birdlife.	DoE	CIG NT	2010	1
PL5. Implement mandatory registration of all captive breeding sources for parrots, combined with ringing / microchipping and recording of all captive bred chicks.	DoE	DoA	2009	5
PL6. Implement a six-month amnesty on captive parrots, to enable ringing/microchipping and recording of all individuals.	DoE	DoA	2009	5
PL7. Conservation Officers to commence active prosecution for infractions of protective laws, including illegal killing, collection and keeping of unregistered / unringed / un-microchipped birds.	DoE	DoA CIG	2010	5
PL8. Promote amendment of the Planning Law, to facilitate rapid imposition of stop-orders on illegal developments and provide a responsive and effective enforcement mechanism.	DoP	DoE CIG	2010	1,6
PL9. Strengthen the <i>Development Plan</i> on Grand Cayman, incorporating a long-term vision for the environmental, social, and economic development of the Islands.	DoP CPA	CIG MP DoE	ongoing	1,6
PL10. Promote establishment of a <i>Development Plan</i> for the Sister Islands, incorporating a long-term vision for the environmental, social, and economic development of the Islands.	DoP DCB	CIG MP DoE	ongoing	1,6
PL11. Enable DoE Conservation Officers to implement legal eradication of invasive species, as necessary to ensure the survival of endangered native species.	DoE	CIG	2008	7

Safaguarda & Managament				
Safeguards & Management SM1 Priorities land acquisition antions to actablish	DoE CC	MD NIT	2000	1.6
SM1. Prioritise land acquisition options to establish	DoE CC	MP NT	2009	1,6
sufficient breeding and foraging reserves on Grand Cayman and Cayman Brac to sustain the species, with				
special attention to the Mastic Reserve, Grand Cayman,				
and Hemmington Forest and the Brac Parrot reserve,				
Cayman Brac. SM2. Use the Environmental Protection Fund to protect	CC	DoE MP	2009	1
key IBA areas: consolidation of the Mastic Reserve,	CC	NT	2009	1
protection of eastern shrubland, and Central Mangrove		IN I		
Wetland, Grand Cayman, and dry forest in Cayman Brac				
(including Salt Water Pond Walk, Hemmington Forest				
and expansion of the Brac Parrot reserve).				
SM3. Establish strategic woodland patches in <i>urban and</i>	DoE	MP NT	2006	6
man-modified areas, including LPP, to act as refugia, to	DOL	CIG DoP	2000	O
maintain wildlife corridors.		CPA		
manitani wildine comdois.		DCB		
SM4. Restore damaged habitat where possible.	DoE NT	MP	2010	126
SM4. Restore damaged naonal where possible. SM5. Develop and implement sustainable management	DoE N1	DoT NT	2010	1,2,6 1,5
strategies for parrot conservation, which reasonably	DOE	CIG MP	2013	1,3
mitigate local farmers for damage to their fruit crops.		DoA AS		
SM6. Reduce predation by introduced species.	DEH	HS	2010	7
Sivio. Reduce predation by introduced species.	Den DoE	пъ	2010	/
	DoE			
CM7 Englisate Monte manufacts Mulengitts were always		MP	2009	7
SM7. Eradicate Monk parakeets Myiopsitta monachus	DoE	MP	2009	/
from the Cayman Islands, towards removing this croppest and confusion species.				
SM8. Conservation propagation of Cedar <i>Cedrela</i>	DoE	NT MP	2010	2,6
odorata in Growing Stations on Cayman Brac, for	DOE	QEIIBP	2010	2,0
restoration of depauperate natural habitat and		IntC		
improvement of suburban areas.		IIIC		
SM9. Develop and expand artificial nest box	DoE	NT MP	2010	2,6
programme to increase capacity of degraded habitats.	DOL	IntC	2010	2,0
SM10. Establish a full-time DoE field conservation	DoE	mic	2012	1-7
officer on Cayman Brac and Little Cayman to implement	DOL		2012	1-/
conservation actions.				
SM11. Implement ringing and recording programme for	DoE	DoA	2009	5
all captive parrots.	DOL	DUA	2009	3
SM12. Commence active enforcement of non-	DoE	CIG	2009	5
compliance with laws protecting parrots.	DOL		2009	
SM13. Implement associated HAPs.	DoE		2015	1-7
Advisory	DOL	<u> </u>	2013	1-/
Advisory A1. Secure amendment of gazetted road corridors in	DoE	NT	ongoing	1,6
order that they no pass through (i) critical east interior	NRA	DoP	ongoing	1,0
habitat, Grand Cayman (ii) the Nature Trail, Little	MINA	CPA		
Cayman and (iii) the parrot Reserve, Cayman Brac.		DCB		
A2. Establish management strategy to develop nature	NT	DoE	2006	4
tourism in reserves with sustainable financial planning.	SIDA	DoE	ongoing	+
tourism in reserves with sustainable imanetal pidiffillig.	CITA	DUA	ongoing	
	SITA			
A3. Develop and recommend guidelines for native	DoE DoP	SIDA	2009	6
vegetation maintenance / landscaping, particularly for	DOD DOP	SIDA	2007	0
developments in littoral areas.				
A4. Promote use of native food plants in landscaping,	DoP	DoE	2009	6
through maintenance of existing vegetation and use of	DOF	DOE	2009	0
amough mannenance of existing vegetation and use of	I	l	l	1

Recommended Planting Palette in new developments.				
A5. Targeted awareness of the need for the National	DoE	CIG NT	2006	1-7
Conservation Law and the Endangered Species (Trade &				
Transport) Law.				

Cayman parrot PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Research & Monitoring				
RM1. Investigate feasibility of artificial nest box	NT	DoE	2009	2,6
installation in protected areas.				
RM2 . Determine genetic status of race <i>hesterna</i> .	DoE NT		2015	4
RM3. Develop and implement predator control in	DoE	HS NT	2007	7
managed parrot habitats.	DoA			
RM4. Assess the ecological impact of <i>Iguana iguana</i> on	DoE	NT	2007	7
A. l. caymanensis.				
RM5. Undertake population dynamics study - improve	DoE	NT BC	ongoing	3
annual population estimates and map distribution of nest				
sites.				
RM6. Investigate feasibility of implementing <i>Parrot Jam</i>	DoE MP	DoT NT	2012	4,5
<i>Project</i> – a financial / PR incentive scheme to offset crop	DoA AS	CIG		
damages suffered by local fruit farmers.				
RM7. Construct quarters for visiting scientists in	DoE		2012	3
Cayman Brac, and support research initiatives				
complimentary to the objectives of the NBAP.				
Communication & Publicity				
CP1. Targeted awareness of this flagship species and its	NT DoT	CIG DE	2007	4,5
international importance to key sectors: tourism,	DoE	SITA		
business, Government, local community.		CITA		
CP2. Update National Symbols campaign.	NT		2006	4,5
CP3. Raise public awareness of Parrots and other birds	NT	DoE BC	2006	4,5
through local media (e.g. Know Your Islands), special		DE	ongoing	
events (e.g. Birds stamp issue), public talks and schools				
presentations (e.g. Do You Know Me?) and natural				
history websites.				
CP3. REPORT: DoE and NMBCA jointly fund development of Bird ID of		o You Know M	e?" programme	, and Virtual
Bird Guide for the Cayman Islands through CaymanBiodiversity.com, 20		I	2007	1.5
CP4. Development of National Trust's interpretative	NT		2007	4,5
centre for conservation education.	NT	DoE	2006	4,5
CP5. Install interpretative signage on National Trust	NI	DOE	2006	4,3
owned nature trails.	DoE	CIG	2008	5
CP6. Promote island wide awareness of the illegality	DOE	CIG	2008	3
and undesirability of moving parrots between islands,				
outside of managed transfers. CP7. Raise awareness of the value of native landscaping	DoE DoD	MD CN	2010	6
	DoE DoP NT	MP CN GC OS	2010	6
for wildlife.	QEIIBP			
CD9 Hilling native flore and forms and accordated		SB LCN	2010	1
CP8. Utilise native flora and fauna, and associated	CIG	DoE DoT	2010	4
preservation efforts, in the international promotion of the Cayman Islands.		NT MP		
Cayman Islanus.	Ĭ	QEIIBP		1

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Cayman Pygmy Blue butterfly Brephidium exilis thompsoni

INSERT IMAGE

Taxonomy and Range

Kingdom: Animalia, Phylum: Arthropoda, Class: Insecta, Order: Lepidoptera, Family: Lycaenidae Genus: Brephidium, Species: exilis, Subspecies: thompsoni

Status

Distribution: Subspecies endemic to the Cayman Islands.

Conservation: Data deficient.

Legal: *Brephidium exilis* currently has no legal protection. Pending legislation, it would be protected under the National Conservation Law (Schedule I). The Department of Environment would be the lead body for legal protection.

Natural history

The Cayman Pygmy Blue butterfly *Brephidium exilis thompsoni* is one of the smallest butterflies in the Western hemisphere – possibly in the world. It is highly dependent on *salt-tolerant succulents* for all stages of its life-cycle. In its larva form, the caterpillars feed on *Salicornia perennis*. Adults depend on *Sesuvium portulacastrum* for nectar.

Associated Habitats and Species for Cayman Pygmy Blue

ASSOCIATED HABITAT PLANS	ASSOCIATED SPECIES PLANS
12. Salt-tolerant succulents	West Indian Whistling-duck Dendrocygna arborea
13. Pools, ponds and mangrove lagoons	

Current Factors Affecting Cayman Pygmy Blue

- Range limitation: this tiny butterfly is endemic to the Cayman Islands.
- Population fragmentation: highly dependent upon salt-tolerant succulents for all stages of its life-cycle. Salt-tolerant succulents habitats are generally highly fragmented in the Cayman Islands. Habitatable areas are generally small; some constitute only a few square metres.
- Insecticide: susceptibly of populations to insecticide spraying is unknown.
- Species reliance: in its larva form, the caterpillars of the Cayman Pygmy Blue feed on Salicornia perennis. Adults depend on Sesuvium portulacastrum for nectar.
- Capacity for protection: given the small size of areas which appear capable of supporting populations of this butterfly, conservation should be potentially achievable.
- Recovery potential: given appropriate baseline conditions and management, artificially created salt-tolerant succulents habitat will have a tendency to rapidly accrue a natural complement of species. This makes salt-tolerant succulents potentially attractive candidates for artificial creation, and restoration projects. The r-selected nature of many butterfly populations should aid rapid establishment, given suitable habitat.
- *Drainage:* water regime is critical to the functioning of *salt-tolerant succulent* habitat. Elevation or reduction in water level is likely to result in a change in vegetation, and the loss of typifying species, such as *Salicornia perennis* and *Sesuvium portulacastrum*.

Opportunities and Current Local Action for Cayman Pygmy Blue

None.

SPECIES ACTION PLAN for Cayman Pygmy Blue

OBJECTIVES	TARGET
1. Survey and improve understanding of <i>Brephidium exilis thompsoni</i> , and incorporate	2015
30% of known habitat into protected areas.	
2. Promote preservation of <i>insitu</i> populations of <i>Brephidium exilis thompsoni</i> .	2015
3. Promote establishment of contingency populations of <i>Brephidium exilis thompsoni</i> .	2010

Cayman Pygmy Blue	LEAD	PARTNERS	TARGET	MEETS
PROPOSED ACTION	LLAD	FARTNERS	TANGLI	OBJECTIVE
Policy & Legislation				
PL1. Pass and implement the National Conservation	CIG	DoE	2006	1,2,3
Law.				
PL2. Implement the Endangered Species (Trade &	DoE	CIG	2006	1,2
Transport) Law.				
PL3. Protect Brephidium exilis thompsoni under	DoE	CIG	2006	1,2,3
Schedule I of the National Conservation Law, through				
establishment of conservation regulations.				_
PL4. Promote amendment of the Planning Law, to	DoP	DoE CIG	2010	2
facilitate rapid imposition of stop-orders on illegal				
developments and provide a responsive and effective				
enforcement mechanism.	D D	CIC M		1.0
PL5. Strengthen the Development Plan on Grand	DoP	CIG MP	ongoing	1,2
Cayman, incorporating a long-term vision for the	CPA	DoE		
environmental, social, and economic development of the Islands.				
PL6. Promote establishment of a <i>Development Plan</i> for	DoP	CIG MP	ongoing	1,2
the Sister Islands, incorporating a long-term vision for	DCB	DoE	oligonig	1,2
the environmental, social, and economic development of	БСБ	DOL		
the Islands.				
Safeguards & Management		-L	l	l.
SM1. Use the Environmental Protection Fund to	CC	NT, MP	2012	1,2
establish a protected area / management agreement with		DoE CIG		ĺ
landowners to protect natural salt-tolerant succulents				
habitat for Brephidium exilis thompsoni.				
SM2. Use the <i>Environmental Protection Fund</i> to	CC	DoE NT	2010	1,2
purchase and protect salt-tolerant succulents areas in		CIG		
Barkers, and manage access on site, towards maximising				
visitor experience / minimising impact.				
SM3. Use the <i>Environmental Protection Fund</i> to extend	CC	DoE NT	2012	1,2
Meagre Bay Pond Animal Sanctuary, to incorporate		CIG		
areas of <i>salt-tolerant succulents</i> along the eastern shore,				
and prevent dumping in this area.	D F	T. C	2012	1.0
SM4. Establish experimental site for the design and	DoE	IntC	2012	1,3
testing of techniques to restore artificial <i>salt-tolerant</i>				
succulents, and determine the feasibility of a restoration				
programme. SM5. Subject to successful conclusion of SM4, embark	DoE		2015	1,3
upon a programme of restoration of salt-tolerant	DOL		2013	1,5
succulents habitat to suitable man-modified areas.				
SM6. Implement associated HAPs.	DoE		2015	1,2,3
Advisory	202	1		1,2,5
A1. Work with <i>Department of Planning</i> to formalize	DoE	DoP	2012	3
1220 OIR WILL Department of I turning to Iolinalize	DUL	201	_012	1 -

restoration protocol for quarry applications, incorporate		CPA		
adherence to salt-tolerant succulents guidelines where				
appropriate, and promote establishment of an escrow				
fund to cover costs of implementation.				
A2. Targeted awareness of the need for the National	DoE	CIG NT	2006	1,2,3
Conservation Law and the Endangered Species (Trade &				
Transport) Law.				

Cayman Pygmy Blue PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Research & Monitoring				
RM1. Survey and map remaining populations of <i>Brephidium exilis thompsoni</i> , towards determining conservation status.	DoE	NT	2012	1,2
RM2. Identify and prioritise most significant pools, ponds and mangrove lagoons and salt-tolerant succulents areas in the Cayman Islands	DoE	NT	2012	1,2,3
RM3. Instigate the design and testing of experimental techniques to establish and restore <i>salt-tolerant</i> succulents areas and pools, ponds and mangrove lagoons, including seed collection, propagation and planting, and the ecology of key fauna, such as Brephidium exilis, to determine the feasibility and factors affecting potential restoration programmes.	DoE		2012	1,3
RM4. Investigate potential for artificial relocation and rearing / head-starting of <i>Brephidium exilis</i> larvae to facilitate population establishment in suitable areas.	DoE	IntC	2012	1,3
RM5. Establish experimental site for the design and testing of artificial restoration techniques for <i>salt-tolerant succulents</i> .	DoE	IntC	2012	1,3
RM6. Facilitate and promote research into terrestrial invertebrates in the Cayman Islands.	DoE	IntC	2010	1
RM7. Establish and develop a national invertebrates collection, with searchable online facility.	DoE		2012	1
Communication & Publicity		T	1	1
CP1. Raise public awareness of the unique nature of <i>Brephidium exilis thompsoni</i> and other endemic flora and fauna.	DoE NT QEIIBP	MP CN GC OS SB LCN	2008	1,2,3
CP2. Promote establishment of "study ponds" in schools.	DoE	NT MP DE	2012	1,2,3
CP3. Utilise native flora and fauna, and associated preservation efforts, in the international promotion of the Cayman Islands.	CIG	DoE DoT NT MP QEIIBP	2010	1,2,3

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Grand Cayman Blue iguana Cyclura lewisi

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Taxonomy and Range

Kingdom: Animalia, Phylum: Chordata, Class: Sauropsida, Order: Squamata, Family: Iguanidae Genus: Cyclura, Species: lewisi

The Grand Cayman Blue iguana, *Cyclura lewisi*, is endemic to the island of Grand Cayman. Closest relatives are *Cyclura nubila* (Cuba), and *Cyclura cychlura* (Bahamas); all three having apparently diverged from a common ancestor some three million years ago.

Status

Distribution: Species endemic to Grand Cayman.

Conservation: Critically endangered (IUCN Red List). In 2002 surveys indicated a wild population of 10-25 individuals. By 2005 any young being born into the unmanaged wild population were not surviving to breeding age, making the population functionally extinct. *Cyclura lewisi* is now the most endangered iguana on Earth.

Legal: The Grand Cayman Blue iguana *Cyclura lewisi* is protected under the Animals Law (1976). Pending legislation, it would be protected under the National Conservation Law (Schedule I). The Department of Environment is the lead body for legal protection. The Blue Iguana Recovery Programme BIRP operates under an exemption to the Animals Law, granted to the National Trust for the Cayman Islands.

Natural history

While it is likely that the original population included many animals living in *coastal shrubland* environments, the Blue iguana now only occurs inland, in natural *dry shrubland*, and along the margins of *dry forest*. Adults are primarily terrestrial, occupying rock holes and low tree cavities. Younger individuals tend to be more arboreal. Like all *Cyclura* species the Blue iguana is primarily herbivorous, consuming leaves, flowers and fruits. This diet is very rarely supplemented with insect larvae, crabs, slugs, dead birds and fungi. Hatchlings are preyed upon by the native Racer snake *Alsophis cantherigerus*. Adults have no natural predators. The age of sexual maturity is typically three years. Natural longevity in the wild is unknown, but is presumed to be many decades. One captive individual, in the USA, lived to 67 years-of-age.

The present-day population is restricted to the eastern interior of Grand Cayman, where it was reduced to a critically low density prior to the first survey, 1938. Their range has contracted significantly over the last 25 years, with many sites once populated now showing no signs of wild iguanas.

Associated Habitats and Species for Blue iguana

ASSOCIATED HABITAT PLANS	ASSOCIATED SPECIES PLANS
11. Coastal shrubland	Century plant Agave caymanensis
14. Dry shrubland	Cocoplum Chrysobalanus icaco
17. Farm and grassland	Broadleaf Cordia sebestena caymanensis
	Banana orchid Myrmecophila thompsoni
	Silver Thatch palm Coccothrinax proctorii
	Sister Islands Rock iguana Cyclura nubila caymanensis

Current Factors Affecting Blue iguana

- *Traditional habitat loss:* fossil records indicate that beach-ridge habitat was, historically, a favoured habitat for *C. lewisi*. This area has been a primary focus for development since the 1960s, and intersected by a busy coastal road since the 1980s.
- Remnant habitat fragmentation: interior habitat has been degraded through land conversion, change in agricultural practice (grazing replacing traditional fruit farming), and proliferation of the roads network.
- *Hunting:* historically, iguanas were hunted for food, and occasionally mistaken and persecuted as a crop-pest.
- *Poaching:* endangered status of *C. lewisi.* may have encouraged recent incidents of theft. In 2008, seven individuals were killed in what appeared to a deliberate act of vandalism.
- Non-native species: predation of youngsters by rats and cats, and adults by dogs is a growing
 problem, exacerbated by habitat fragmentation and increasing ingress of residential areas into
 remnants of natural habitat.
- Road kill: iguanas are attracted to roads surface for thermo-regulation, and many are killed on the roads each year.
- Shifting baseline: confusion with Green iguana Iguana iguana.
- Legal: DoE staff are not currently legally enabled to use firearms to effect lethal control of invasive species. This has resulted in situations in which immediate control of feral cats and dogs to preserve endangered native species has not been possible, likely resulting in the loss of individuals through reliance on less immediate control mechanisms.

Opportunities and Current Local Action for Blue iguana

The National Trust for the Cayman Islands established the Blue Iguana Recovery Programme. Based at the QEII Botanic Park, Grand Cayman, this incorporates a successful captive breeding / release programme.

The Recovery Programme currently employs three full-time staff (two salaried), and delivers ca. 100 hatchlings per year. Directed by Fred Burton, the programme is assisted by a consortium of local and international specialists. Management strategy is implemented through a *Species Recovery Plan*, updated on a three-yearly basis.

The restored, free-roaming QE II Botanic Park subpopulation, breeding since 2001, now numbers ca. 40 individuals (as of Dec 2007). The restored free-roaming Salina Reserve subpopulation numbered over 200 in 2008, and began breeding in 2006.

Expanding education and merchandising programme, with strong internet support through www.BlueIguana.ky. Development of a self-financing strategy to cover core programme costs, through revenue-generating nature tours of the captive breeding facility.

SPECIES ACTION PLAN for Blue iguana

Objectives and targets of this Species Action Plan are based on formulations of the *Species Recovery Plan* for the Grand Cayman Blue iguana, Cyclura lewisi 2009-2011.

OBJECTIVES	TARGET
1. Acquire and protect xerophytic shrubland in eastern Grand Cayman sufficient to	2009
support one thousand Blue iguanas (requirement 300 – 500 acres).	
2. Restore, maintain and protect free-roaming Blue iguanas in natural habitats.	ongoing
3. Provide genetically optimal animals for reintroduction through the existing on-island	ongoing
captive breeding and head-starting programme.	
4. Safeguard against catastrophic loss of Grand Cayman Blue iguana populations by	ongoing
maintaining the off-island captive breeding population.	
5. Ensure sustained support for the conservation of the Blue iguana through targeted	ongoing
education and awareness programmes.	
6. Secure sufficient financial, technical and human resources for the long-term	ongoing
sustainability of the Blue Iguana Recovery Programme.	

Grand Cayman Blue iguana PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Policy & Legislation		·		
PL1. Pass and implement the National Conservation Law.	CIG	DoE	2006	1-6
PL2. Implement the Endangered Species (Trade & Transport) Law.	DoE	CIG	2006	2
PL3. Protect <i>Cyclura lewisi</i> under Schedule I of the National Conservation Law, through establishment of conservation regulations.	DoE	CIG	2006	1-6
PL4 . Implementation of Species Recovery Plan for <i>Cyclura lewisi</i> .	BIRP	DoE NT QEIIBP	ongoing - 2008	1-6
PL5. Maintain local and international volunteer support for captive facility and field work.	BIRP	NT	ongoing	6
PL6. Develop a business plan to develop revenue lines and ensure long-term financial sustainability of the Recovery Programme, including core staff salaries.	BIRP	NT DoE IRCF DWCT	2006	6
PL7. Promote amendment of the Planning Law, to facilitate rapid imposition of stop-orders on illegal developments and provide a responsive and effective enforcement mechanism.	DoP	DoE CIG	2010	1,2
PL8. Enable DoE Conservation Officers to implement legal eradication of invasive species, as necessary to ensure the survival of endangered native species.	DoE	CIG	2008	2,6
PL9. Strengthen the <i>Development Plan</i> on Grand Cayman, incorporating a long-term vision for the environmental, social, and economic development of the Islands.	DoP CPA	CIG MP DoE	ongoing	1,2
Safeguards & Management		•		
SM1. Identify land acquisition options and prioritise for the establishment of a shrubland reserve. SM1. REPORT: Completed. From a half-dozen candidate sites, the two	NT	EAC	2006	1,2

SM1. REPORT: Completed. From a half-dozen candidate sites, the two most suitable areas of shrubland were identified in the East End of Grand Cayman, 2007. Both incorporate areas of Crown land: one abutting the southern boundary of the East End quarry, the other located approximately midway between the Salina Reserve and Colliers Pond.

SM2. Use Crown land protection and the <i>Environmental Protection Fund</i> to negotiate and purchase a shrubland	CC	DoE NT MP	2009	1,2
reserve with Government and local landowners.		IVII		
SM3. Request international contributions and matched	DoE		2009-	1,2
Crown contributions of land / funds for reserve			2010	,
establishment.				
SM4. Establish an inalienable protected shrubland area	DoE	NT	2010	1,2
of ca. 500 acres.				
SM5. Joint management agreement and nature tourism	DoE NT		ongoing -	1,2
strategy for sustainable financing of a reserve.			2010	
SM6. Suitable habitat in the Salina and Botanic Park to	BIRP	NT	2007 -	2
be stocked to capacity.			2010	
SM7. Optimize genetic diversity of worldwide breeding	BIRP	SDZ	ongoing -	3,4
strategy and expand to 225 individuals / 20 founder lines.			2007	
SM8. Acquire and protect parcel of shrubland (65A / 37)	NT	DoE	2009	1,2
to consolidate Salina Reserve and increase its carrying				
capacity for Blue Iguanas.				
SM9. Improve dietary supply, content and diversity.	BIRP	NT	2008	2
SM9. REPORT: Completed. Diet of pelleted iguana food replaced by wh	olly fresh diet o	of leaves, flower	s and fruit, colle	cted daily.
Dietary change is accompanied by a significant increase in fecundity.	DIDD	1	2000 0	
SM10. Security improvements at the breeding facility.	BIRP	NT	2008-9	2
SM10. REPORT: Seven adult iguanas were killed inside the captive bree 2008. RCIP investigations have, as yet, failed to identify perpetrators. In				
the Park by feral dogs, 2008. DoE Conservation Officers were halted from				
trapped, however, at least one remains at large.				U
SM11. Implement associated HAPs.	DoE		2015	1-6
Advisory				
A1. Secure amendment of gazetted road corridors	DoE	NT	2009	1,2
through the critical east interior habitat.				
A2. Train Government officers / key personnel in	BIRP	DoE	2006	6
identification of Iguana iguana and Cyclura lewisi.				
A3. Targeted awareness of the need for the National	DoE	CIG NT	2006	1-6
Conservation Law and the Endangered Species (Trade &				
Transport) Law.				

Grand Cayman Blue iguana PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Research & Monitoring				
RM1. Identify capacity of additional areas for restocking (Barkers, Mastic, Wilderness Farm etc.).	BIRP	NT DoE CIG	2006	2
RM1. REPORT: Completed. Barkers and Wilderness Farm would support management issues. The Mastic grassland pockets are now reverting to see identified as two shrubland areas in East End, 2007.				
RM2. Develop and test methods of non-native predator control for managed iguana habitats.	BIRP	DoE	2007	2,6
RM3. Assess the ecological impact of <i>Iguana iguana</i> on <i>Cyclura lewisi</i> .	BIRP	DWCT ISG DoE	2010	2,6
RM4. Quantify genetic structure of wild and captive populations.	BIRP	DWCT	2008-9	3
RM5. Publish existing data on Blue iguana diet.	BIRP		2010	2,3
RM6. Regular health screening of captive and QEIIBP wild populations.	BIRP	WCS DoA	ongoing	2
RM7. Construct quarters for visiting scientists.	BIRP	DoE	2009	6
Communication & Publicity				
CP1. Targeted awareness campaign to key sectors of Government and the local community	NT	DoE	2006 ongoing	5
CP2. Local and international media campaign.	NT	DoE BIRP	ongoing - 2006	5
CP3. Launch of educational DVD / schools packs.	BIRP	NT DE	2006- 2009	5
CP4. Island wide awareness of the differences between <i>Iguana iguana</i> and <i>Cyclura lewisi</i> .	BIRP	NT IRCF DoE	ongoing - 2007	5
CP5. Construction of a <i>Blue iguana shrublands</i> interpretative centre / classroom.	BIRP	DoE CIG NT IntC	2009	5
CP6. Develop and expand merchandising lines.	BIRP	NT IRCF	ongoing	5,6
CP7. Use Cyclura lewisi as a flagship for dry shrubland	DoE NT	CIG	2008	1-6
preservation.			ongoing	
CP8. Utilise native flora and fauna, and associated preservation efforts, in the international promotion of the Cayman Islands.	CIG	DoE DoT NT MP QEIIBP	2010	1-6

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335

Mosquito fish Limia caymanensis & Gambusia xanthosoma

INSERT IMAGE

Taxonomy and Range

Kingdom: Animalia, Phylum: Chordata, Class: Actinopterygii, Order: Cyprinodontiformes, Family: Poeciliidae Genus: Limia, Species: caymanensis

Kingdom: Animalia, Phylum: Chordata, Class: Actinopterygii, Order: Cyprinodontiformes, Family: Poeciliidae Genus: Gambusia, Species: xanthosoma

The genus *Limia* is endemic to the Greater Antilles. Some 22 species are to be found on Hispaniola, with single endemic species on Cuba, Jamaica, and Grand Cayman, Cayman Islands.

The genus *Gambusia* consists of over 40 species, with a single endemic species in Grand Cayman, Cayman Islands.

Status

Distribution: Both species are endemic to Grand Cayman.

Conservation: Both species are data deficient.

Legal: *Limia caymanensis* and *Gambusia xanthosoma* currently have no legal protection. Pending legislation, they would be protected under the National Conservation Law (Schedule II). The Department of Environment would be the lead body for legal protection.

Natural history

"Mosquito fish" is a generic term, covering many different species of fish. *Limia caymanensis & Gambusia xanthosoma* are live-bearing fish, the former growing to 2.8 cm SL (male/unsexed), 3.18 cm SL (female), the latter to about 3.4cm SL (male/unsexed), 3.58cm SL (female).

Limia caymanensis is associated with freshwater and brackish water, and is to be found in *pools*, *ponds and mangrove lagoons*, rock hollows, especially in the vicinity of *mangroves*. They are generally demersal, feeding towards the bottom of the water column, coexisting with *Gambusia affinis*.

Gambusia xanthosoma is a *mangrove* species preferring more saline water. It is restricted to the tidal Rhizophora zones close to North Sound.

Associated Habitats and Species for the Mosquito fish

ASSOCIATED HABITAT PLANS	ASSOCIATED SPECIES PLANS
9. Mangrove	Bats
13. Pools, ponds and mangrove lagoons	West Indian Whistling-duck Dendrocygna arborea

Current Factors Affecting Mosquito fish

- Habitat loss: pools, ponds and mangrove lagoons are a limited and threatened habitat in the Cayman Islands. Loss of mangroves fringing North Sound especially impacts Gambusia xanthosoma.
- Quarrying: modification of natural structure, including deepening, and removal of aquatic and peripheral vegetation, may render artificial pools and marl pits less suitable as habitat for Mosquito fish.
- *Non-native species:* Tilapia have been characterized as a threat to native freshwater fish in the US. Tilapia reproduce quickly, and eat the eggs and juveniles of other fish species (Fitzsimmons 2001).
- *Resilience*: with a minimum population doubling time probably less than 15 months, these small fish should be able to quickly establish, given suitable habitat conditions.

Opportunities and Current Local Action for Mosquito fish

None.

SPECIES ACTION PLAN for Mosquito fish

OBJECTIVES	TARGET
1. Improve knowledge of <i>Mosquito fish</i> , survey and determine Red List status.	2015
2. Promote preservation of <i>insitu</i> populations of <i>Mosquito fish</i> .	2015
3. Promote establishment of contingency populations of <i>Mosquito fish</i> in modified	2015
pools and environments.	

Mosquito fish PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Policy & Legislation				
PL1. Pass and implement the National Conservation Law.	CIG	DoE	2006	1,2,3
PL2. Implement the Endangered Species (Trade & Transport) Law.	DoE	CIG	2006	1,2
PL3. Protect <i>Limia caymanensis</i> and <i>Gambusia xanthosoma</i> under Schedule II of the National Conservation Law, through establishment of conservation regulations.	DoE	CIG	2006	1,2,3
PL4. Promote amendment of the Planning Law, to facilitate rapid imposition of stop-orders on illegal developments and provide a responsive and effective enforcement mechanism.	DoP	DoE CIG	2010	2
PL5. Establish guidelines for form and function of artificial excavations and marl pits, and for restoration of flooded quarries, toward maintaining and maximizing value for biodiversity.	DoP DoE	AAC	2012	2,3
PL6. Strengthen the <i>Development Plan</i> on Grand Cayman, incorporating a long-term vision for the environmental, social, and economic development of the Islands.	DoP CPA	CIG MP DoE	ongoing	2,3
Safeguards & Management		•	•	
SM1. Use the <i>Environmental Protection Fund</i> to establish a protected area / management agreement with landowners to protect <i>Mosquito fish</i> populations.	CC	NT, MP DoE CIG	2010	2
SM2. Incorporate habitat requirements for <i>Mosquito fish</i> into restoration of <i>pools</i> , <i>ponds and mangrove lagoons</i> .	DoE	MP	2015	2
SM3. Encourage introduction of <i>Mosquito fish</i> into suitable <i>pools</i> , <i>ponds and mangrove lagoons</i> and other habitats.	DoE	MP	2015	3
SM4. Implement associated HAPs.	DoE		2015	1,2,3
Advisory		3 rm 3	2012	
A1. Provide advice for landowners on the effective management <i>pools</i> , <i>ponds and mangrove lagoons</i> , to conserve <i>Mosquito fish</i> .	DoE	NT MP	2012	2
A2. Targeted awareness of the need for the National Conservation Law and the Endangered Species (Trade & Transport) Law.	DoE	CIG NT	2006	1,2

Mosquito fish PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Research & Monitoring				
RM1. Survey and map populations of <i>Mosquito fish</i> .	DoE		2012	1
RM2. Determine local IUCN status of <i>Mosquito fish</i> .	DoE		2012	1
RM3. Identify habitat requirements and key areas of natural habitat for <i>Mosquito fish</i> .	DoE	MRCU	2012	1,2,3
RM4. Investigate potential for artificial rearing to	DoE	IntC	2012	1,3
facilitate improved survivorship, and establishment of contingency populations in suitable sites.				
Communication & Publicity		•		
CP1. Raise awareness of the unique nature of <i>Mosquito</i> fish and other endemic flora and fauna.	DoE NT QEIIBP	MP, CN GC, OS SB, LCN	2008	1,2,3
CP2. Raise awareness of <i>Mosquito fish</i> with a children's competition to think of a "common name" for each, and promotion of establishment of "study ponds" in schools.	DoE	NT MP DE	2012	1,2,3
CP3. Utilise native flora and fauna, and associated preservation efforts, in the international promotion of the Cayman Islands.	CIG	DoE DoT NT MP QEIIBP	2010	1,2,3

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Red-footed booby Sula sula

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Taxonomy and Range

Kingdom: Animalia, Phylum: Chordata, Class: Aves, Order: Pelecaniformes, Family: Sulidae Genus: Sula, Species: sula

The Red-footed booby *Sula sula* has a large range, with an estimated global breeding Extent of Occurrence of 50,000-100,000 km². The Red-footed booby is pan tropical, breeding off the Yucatan Peninsula, cays and small islands off Belize, Venezuela and Tobago. Also in the West Indies: Little Cayman, Puerto Rico, Hispaniola, the US Virgin Islands, Redonda and the Grenadines in the Lesser Antilles, and a few pairs in the Bahamas. It is one of the Cayman Islands' six species of breeding seabirds.

Status

Distribution: The Red-footed booby *Sula sula* is resident in the Cayman Islands, but breeds only on Little Cayman.

Conservation: The global population is estimated to be 600,000 individuals (M. Crosby in litt. 2003). Global population trends have not been quantified, but the species is not believed to approach the thresholds for the population decline criterion of the IUCN Red List (i.e. declining more than 30% in ten years or three generations). For these reasons, the species is evaluated as Least Concern. Local population trends, however, may be significantly different.

Legal: The Red-footed booby is protected under the Animals Law (1976). The Booby Pond and associated breeding colony came under full legal protection with the Animals (Sanctuaries) Regulations (1982) as amended by Gazette No. 24 of 1993. Management responsibility for the colony was assigned to the National Trust for the Cayman Islands in 1995. The Booby Pond Reserve has since been expanded to a total area of 135 ha. All National Trust properties fall under the protection of the National Trust for the Cayman Islands Law (1987). The reserve is also a designated Ramsar site, and is listed as an Important Bird Area (IBA) by Birdlife International. Pending legislation, the Red-footed booby would be protected under the National Conservation Law (Schedule I). The Department of Environment is the lead body for legal protection.

Natural history

The Red-footed booby *Sula sula* is named for its feet, which are distinctly red. Adults appear in two plumage colour phases: "brown phase" (predominantly brown, with distinct white hind parts and tail) and "white phase" (almost completely white). Sexes appear alike, with no seasonal variation in plumage, however, immature birds are a sooty brown colour, paler below, and may display a dark band across the breast.

Boobies forage for fish in coastal areas, and further out to sea, plunging into the water from a height. Courtship between prospective mates comprises pair flights, territorial displays, and symbolic nesting building. Red-footed boobies typically nest in colonies on remote islands. This is the only booby in the Caribbean that nests in trees. Nest areas may be tightly packed, but are strongly defended, usually through a display of ritualised head movements. Birds breed September-June, laying one egg.

The Booby Pond is a 43ha brackish to hypersaline lagoon located on the south coast of Little Cayman. Once open to the sea, it is now separated by a coastal road. The seabird rookery is located in the mangrove and shrubland along the northern edge of the pond. Covering an area of approximately 16.5 ha, the area includes a colony of up to ca. 800 Magnificent frigatebirds *Fregata magnificens*, (1997, Bradley 2000). The associated Red-footed booby colony is globally significant - one of the four largest colonies in the Caribbean (Bradley and Norton 2009).

The colony was first reported on Owen Island, a cay in the South Hole Sound, Little Cayman. In 1859 it moved to the littoral Sea grape *Coccoloba uvifera* on Little Cayman, as a result of fire, and later settled in

the *mangrove* swamp behind the coastal ridge. After the Hurricanes of 1932 and 1935, the breeding colony moved to its present site (Bradley 2000). Since 1986 it has generally expanded, moving north into the woodland. Immature birds are thought to disperse to other colonies in the region, but return to their natal colony to breed. The colony was first described in August 1975, surveyed for the first time in 1986, and subsequently, in 1997 (Burton *et al.* 1997).

The colony has seen an increase in size from the mid 1980s through the 1990s. However, a significant decline in nesting birds was noted in 2008 (Betty Anne Schreiber, 2008 *pers comm.*)

Year	Nesting Pairs	Type of Count
1986	2,600	Transect
1997	4,849	Transect
2008	670-700	Colony count

Associated Habitats and Species for Red-footed booby

ASSOCIATED HABITAT PLANS	ASSOCIATED SPECIES PLANS
1. Open sea	Sister Islands Rock iguana Cyclura nubila caymanensis
9. Mangrove	Little Cayman Green anole Anolis maynardi
13. Pools, ponds and mangrove lagoons	Little Cayman snail Cerion nanus
14. Dry shrubland	West Indian Whistling-duck Dendrocygna arborea
15. Forest and woodland	Vitelline warbler Dendroica vitellina crawfordii

Current Factors Affecting Red-footed booby

- *Illegal development:* despite legal protection, the southern side of the Booby Pond has been subject to encroachment by the construction and clearance of land as recently as 2008. These issues remain currently unresolved.
- Development: an increase in commercial and residential construction in the vicinity of Blossom Village will likely impact the colony through increased light pollution, and ingress of invasive species, most especially rats and cats. Seepage from sewage systems is suggested to contribute to offensive odour arising from the pond, and requires investigation.
- Airport: a new airport, possibly one that can accommodate jets, is planned to the north of the
 colony. This has the potential to inflict significant disturbance on the colony through light and
 noise pollution. Presently collision of boobies with aircraft is infrequent, however, if the airport is
 relocated, sensitive pre-emptive planning will be required if potentially serious accidents are to be
 avoided.
- *Natural predators:* birds of prey, especially wintering Peregrine falcons *Falco peregrinus*.
- Introduced predators: rats and cats. Unwanted kittens are brought over to Little Cayman from Cayman Brac, and dumped.
- Historic exploitation:, though now much reduced, collection of eggs is reported as recently as 1987
- Commercial fisheries: a potential source of conflict, this may not represent a significant issue in Cayman. Local fisheries are of a subsistence / recreational nature, non-the-less, boobies are known to range widely on individual fishing expeditions, and it would be expected that regional fisheries trends may effect local populations of the birds. Entanglement in fishing line has resulted in the death of some individuals.

- Maritime pollution: Little Cayman lies close to major shipping lanes. Birds oiled or covered in bilge wash are occasionally collected along the shore.
- Storms: Little Cayman is a small (28km²) low-lying island. No point is more than 1.5 km from the
 sea. This makes Little Cayman especially vulnerable to storm surge. The nesting habitat of along
 the Booby Pond has suffered damage in successive hurricanes, most recently Ivan, Gustav and
 Paloma.
- *Climate change:* the low lying nature of Little Cayman would make it especially vulnerable to sealevel rise, and increasingly severe storms: both current predications associated with climate change.
- Colonial nature: the colonial nature of the boobies will mean that, if the breeding site becomes overly-disturbed, polluted, or in any other way unsuitable, the colony is likely to shift *en-mass*. If the colony remains in the Cayman Islands, it would likely re-establish in an area which is completely unprotected.
- *Tourism:* the Booby Pond Reserve is a major tourist attraction for Little Cayman.
- Offensive odours: since land-locking of the Booby Pond altered the natural drainage and flushing dynamics of the pond, issues associated with foul odours arising from the sediments have arisen occasionally. It is believed that the odour is related to bacterial action, and the smell appears to worsen when the sediments are exposed and drying, or when exposed sediments are rehydrated. While some bacteria and algae may be potentially harmful to the birds, the boobies do not generally enter the water in the pond, and the potential threat of this phenomenon remains undetermined. Suggested flushing of the pond by re-establishing culverts beneath the coastal road may have serious consequences for the adjacent marine environment.

Opportunities and Current Local Action for Red-footed booby

Training of nature guides in bird identification on Cayman Brac and Little Cayman as part of the Nature Tourism Initiative on the Sister Islands, has been completed, however a structured monitoring and reporting programme for the islands' birdlife is not in place.

A Checklist of Birds of the Cayman Islands was published (Bradley 2006).

A National Trust interpretation centre on the south-west corner of the Booby Pond provides tourists with information about the site. This centre has a raised observation platform with telescopes.

Local residents take an interest in the fauna of their island, and are often pleased to talk to tourists who pause to enjoy the Booby Pond Reserve.

SPECIES ACTION PLAN for Red-footed booby

OBJECTIVES	TARGET
1. Ensure no reduction in Red-footed booby <i>Sula sula</i> due to anthropogenic	ongoing
influence, and encourage population stability and / or expansion, through	
appropriate conservation management.	
2. Establish a regular, long-term, minimum-disturbance monitoring programme for	2010
the booby colony.	
3. Reduce predation of Red-footed boobies by non-native species.	2010
4. Improve media profile and public understanding of the Red-footed booby.	2009

Red-footed booby	Red-footed booby	LEAD	PARTNERS	TARGET	MEETS
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PROPOSED ACTION				OBJECTIVE
Policy & Legislation				
PL1. Pass and implement the National Conservation	CIG	DoE	2006	1,2,3,4
Law.	CIG	DOL	2000	1,2,3,4
PL2. Implement the Endangered Species (Trade &	DoE	CIG	2006	1
Transport) Law.	DOE	CIG	2000	1
PL3. Protect <i>Sula sula</i> under Schedule I of the National	DoE	CIG	2006	1,2,3,4
Conservation Law, through establishment of	DOE	CIG	2000	1,2,3,1
conservation regulations.				
PL4. Promote amendment of the Planning Law, to	DoP	DoE CIG	2010	1
facilitate rapid imposition of stop-orders on illegal				
developments and provide a responsive and effective				
enforcement mechanism.				
PL5. Promote establishment of a <i>Development Plan</i> for	DoP	CIG MP	ongoing	1
the Sister Islands, incorporating a long-term vision for	DCB	DoE		
the environmental, social, and economic development of				
the Islands.				
PL6. Promote sympathetic management of current	DoE NT	CIG	ongoing	1
airport facilities, and appropriate siting and management				
of proposed airport facilities, to ensure minimal risk to				
aircraft passengers from birdstrike, and minimal impact				
on local birdlife.				
PL7. Enable DoE Conservation Officers to implement	DoE	CIG	2008	1,3
legal eradication of invasive species, as necessary to				
ensure the survival of endangered native species.	D E	GTG	2000	
PL8. Commence prosecution for offences involving	DoE	CIG	2009	1
damage to existing Animal Sanctuaries and Ramsar sites,				
and associated buffer zones, and update and upgrade				
penalties for transgression of associated regulations.				
Safeguards & Management SM1. Continue protection and reserves management.	NT	DoE	ongoing	1,2,3,4
SM2. Demarcation of the northern boundary of the	DoE	NT	2010	1,2,3,4
reserve, using DoE's GPS capability.	DOL	11 1	2010	1
SM3. Subject to RM3, eradicate feral cats in Little	DEH	SIDA HS	2012	4
Cayman, and spay all domestic cats.	DoA	SIDITIIS	2012	-
Cayman, and spay an domestic cats.	DoE			
SM4. Subject to RM3, develop and implement long-term	DEH NT	SIDA HS	2012	4
non-native predator control on site.	DoA	51571115	2012	'
F	DoE			
SM5. Establish a full-time DoE field conservation officer	DoE		2012	1,2,3,4
on Cayman Brac and Little Cayman to implement				
conservation actions.				
SM6. Update the 1995 Management Plan for the Booby	NT DoE	IntC	2012	1,2,3,4
Pond Nature Reserve.				
SM7. Implement associated HAPs.	DoE		2015	1,2,3,4
Advisory				
A1. Recommend replanting of old landfill site, with	NT DoE		2012	1
native species congruent with the native vegetation of the				
Booby Pond reserve.				
A2. Recommend restrictive guidelines for artificial	DoE	CIG	2010	1
lighting in this area.				1
A3. Targeted awareness of the need for the National	DoE	CIG NT	2006	1,2,3,4
Conservation Law and the Endangered Species (Trade &				
Transport) Law.				

Red-footed booby PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Research & Monitoring				
RM1. Develop and implement regular, minimum disturbance aerial monitoring programme for the booby colony, to determine population size, incorporating occasional ground survey, to calibrate accuracy of aerial observations and determine breeding success.	NT DoE MRCU	RSPB IntC	2010	2
RM1. REPORT: DoE, with support of RSPB, purchases gyroscopic-mou	nt camera system	n for high quali	ty aerial photog	raphy, 2009.
RM2. Construct quarters for visiting scientists in Little Cayman and Cayman Brac, and support research initiatives complimentary to the objectives of the NBAP.	DoE	IntC	2012	1,2,3,4
RM2. REPORT: Accommodation for up to four individuals on Little Cay	1			
RM3. Conduct pilot project towards eradication of feral cats in Little Cayman. RM3. REPORT: Pilot project completed by DoE and DoA, 2008. All pet were removed through trapping, however, more remain. Trap-shy individ				1,3 enty eight cats
RM4. Monitor the rookery area, ensuring the buffer protection zone is adequate.	NT DoÉ		2010	1,2
Communication & Publicity		•	•	•
CP1. Produce brochure guides to the area.	DoT NT SIDA	DoE	ongoing	4
CP2. Establish of a dedicated warden / nature tour guide, responsible for site maintenance.	NT	DoE DoT SIDA	2012	1,2,3,4
CP3. Improve interpretative facilities at key areas.	NT	DoE DoT SIDA	ongoing	4
CP4. Raise public awareness of the Red-footed booby and other birds through local media (e.g. <i>Know your Islands column</i>), public talks and schools presentations (e.g. <i>Do You Know Me?</i>), and natural history websites.	NT	DoE DE	ongoing	4
CP4. REPORT: DoE and NMBCA jointly fund development of Bird ID of Bird Guide for the Cayman Islands through CaymanBiodiversity.com, 20		o rou Know M	e: programme	, and Virtual

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Vitelline warbler Dendroica vitellina (Cory.)

INSERT IMAGES

Taxonomy and Range

Kingdom: Animalia, Phylum: Chordata, Class: Aves, Order: Passeriformes, Family: Parulidae Genus: Dendroica, Species: vitellina

The Vitelline warbler *Dendroica vitellina* is a restricted range neotropical species confined to the Cayman Islands and Swan Islands. There are three endemic races: *D. v. vitellina* on Grand Cayman, *D. v. crawfordi* on Cayman Brac and Little Cayman and *D. v. nelsoni* on the Swan Islands. It is similar to and closely related to the migrant Prairie warbler, *D.* discolour, and often considered part of a superspecies. Preliminary genetic analysis by Irby Lovatt at Cornell University indicates that the Vitelline warbler is a full species.

Status

Distribution: Subspecies endemic to each of Grand Cayman and Cayman Brac.

Conservation: The Vitelline warbler is listed as near-threatened (IUCN), with a decreasing population trend.

Legal: The Vitelline warbler *Dendroica vitellina* is protected under the Animals Law (1976). Pending legislation, it would be protected under the National Conservation Law (Schedule I). The Department of Environment is the lead body for legal protection.

Natural history

The Vitelline warbler *Dendroica vitellina* breeds primarily in *forest and woodland* and *dry shrubland* (infrequently in xerophytic shrubland), and also in disturbed edge habitat bordering shrubland and dry forest. It will forage, but seldom breeds, in edge wetland and littoral habitats on Grand Cayman. On Cayman Brac and Little Cayman, birds forage in edge wetland habitats but seldom breed there, whilst they forage and occasionally breed in littoral habitats. Species of the genus *Dendroica sp.* have been recovered from 12,000 year-old fossil deposits (owl pellets) from caves on Cayman Brac, but have not yet been identified to the species level.

The Vitelline warbler is insectivorous, and occasionally frugivorous. No full life history study has been made of this species, but observations indicate that it exhibits similarities to that of the Prairie warbler (Nolan 1978). Vitelline warblers construct a small woven cup nest in the outer branches of trees, in the fork of a low shrub, or hidden in bromeliads. Nest elevation varies from 1-7m. Clutches of two eggs are normal, incubated for 14 days. The young are fed by both parents; fledging by 14 days. Predators include rats, snakes, Smooth-billed ani *Crotophaga ani*, Greater Antillean grackle *Quiscalus niger*, and Barn owl *Tyto alba*.

Associated Habitats and Species for Vitelline warbler

ASSOCIATED HABITAT PLANS	ASSOCIATED SPECIES PLANS
14. Dry shrubland	Century plant Agave caymanensis
15. Dry forest	Silver Thatch palm Coccothrinax proctorii
18. Urban and man-modified areas	Cayman parrot <i>Amazona leucocephala</i>

Current Factors Affecting Vitelline warbler

- Restricted range: D. v. vitellina on Grand Cayman is restricted to the eastern interior. In the early 1980s, it was fairly common throughout preferred habitat on Grand Cayman but, from the mid-1980s to mid-1990s, a steady population decline related to loss of habitat began in western Grand Cayman, spreading to developed areas further east, to Bodden Town and beyond. The decline speeded up in the late-1990s and, following hurricane Ivan, resulted in only a few relictual individuals remaining in the western half of Grand Cayman, 2006. D. v. crawfordi is common on Cayman Brac and fairly common on Little Cayman.
- *Traditional habitat loss: dry forest, dry shrubland*, and secondary habitats have been targets for development since the 1980s, especially in the western half of Grand Cayman.
- Remnant habitat fragmentation: interior habitat has been degraded through land clearing for urban and suburban development, agricultural and expansion of the roads network.
- *Introduced predators:* rats, cats, and potentially Green iguana *Iguana iguana*. The parasitic Shiny cowbird *Molothrus bonariensis*, while not currently a problem, should not be allowed to establish in the Cayman Islands.

Opportunities and Current Local Action for Vitelline warbler

Surveys by Bradley (2000) and the Bird Club, include monitoring of all endemic land birds on Grand Cayman. Frequency has increased since hurricane Ivan.

Proposed Important Bird Areas (IBAs) for the Cayman Islands (Bradley et al. 2006) identifies areas of habitat sufficient to sustain the Vitelline warbler in perpetuity. In Grand Cayman, key areas are the Mastic Reserve, Botanic Park, Salina Reserve, and eastern forests. In Cayman Brac, key areas are the Brac Parrot Reserve and the Splits. In Little Cayman, the key area is the Central Forest.

In 2004, the National Trust purchased additional land in the Mastic Reserve, Grand Cayman. In 2005, the National Trust, with funding from DoE CIG and USFWS NMBCA, purchased additional land in the Brac Parrot Reserve, consolidating this protected area. Also in conjunction with this grant, a series of bird lectures (*Do You Know Me?*) and bird ID cards are delivered to local schools.

A Checklist of Birds of the Cayman Islands (Bradley 2006) was published this year.

Training of nature guides in bird identification on Cayman Brac and Little Cayman as part of the Nature Tourism Initiative on the Sister Islands, has been completed, however a structured monitoring and reporting programme for the islands' birdlife is not in place.

SPECIES ACTION PLAN for Vitelline warbler

OBJECTIVES	TARGET
1. Purchase and protect key areas of habitat to sustain <i>Dendroica vitellina</i> in	2015
perpetuity.	
2. Map the distribution of <i>Dendroica vitellina</i> and continue to monitor numbers.	2006
3. Ensure sustained support for <i>Dendroica vitellina</i> and local bird conservation through	ongoing
targeted education.	
4. Maintain and enhance relictual populations.	2009
5. Reduce predation by non-native species.	2008

Vitelline warbler	LEAD	PARTNERS	TARGET	MEETS
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PROPOSED ACTION				OBJECTIVE
Policy & Legislation				
PL1. Pass and implement the National Conservation	CIG	DoE	2006	1-5
Law.	010	202	2000	
PL2. Implement the Endangered Species (Trade &	DoE	CIG	2006	5
Transport) Law.				
PL3. Protect <i>Dendroica vitellina</i> under Schedule I of the	DoE	CIG	2006	1-5
National Conservation Law, through establishment of				
conservation regulations.				
PL4. Secure Cayman Islands Important Birds Areas	DoE	CIG NT	2007	1
(IBAs) - once accepted by Birdlife.		IntC		
DV 7 D	D D	D. E. GIG	2010	
PL5. Promote amendment of the Planning Law, to	DoP	DoE CIG	2010	1,4
facilitate rapid imposition of stop-orders on illegal				
developments and provide a responsive and effective				
enforcement mechanism.	D-D	CIC MD		1.4
PL6. Strengthen the <i>Development Plan</i> on Grand	DoP	CIG MP	ongoing	1,4
Cayman, incorporating a long-term vision for the environmental, social, and economic development of the	CPA	DoE		
Islands.				
PL7. Promote establishment of a <i>Development Plan</i> for	DoP	CIG MP	ongoing	1,4
the Sister Islands, incorporating a long-term vision for	DCB	DoE	ongoing	1,4
the environmental, social, and economic development of	БСБ	DOE		
the Islands.				
PL8. Enable DoE Conservation Officers to implement	DoE	CIG	2008	5
legal eradication of invasive species, as necessary to	DOL	CIG	2000	
ensure the survival of endangered native species.				
Safeguards & Management				1
SM1. Prioritise potential dry forest and shrubland	DoE NT	MP	2006	1
acquisition options, and undertake negotiations towards			ongoing	
establishing protected areas on the three islands				
sufficient to sustain the species in perpetuity.				
SM2. Use the <i>Environmental Protection Fund</i> to protect	CC	DoE MP	2006	1
/ establish management agreements with landowners of		NT		
key IBA areas, including consolidation of the Mastic				
Reserve, protection of eastern shrubland and Central				
Mangrove Wetland, Grand Cayman, and dry forest in				
Cayman Brac (including Salt Water Pond Walk), and the				
Central Forest, Little Cayman.				
SM3. Continue to request local / international funds and	DoE NT	IntC	ongoing	1
matched contributions to establish key reserves.				1
SM4. Purchase strategically important patches of	NT DoE	DoE MP	2010	1,4
woodland that act as refugia, including urban areas in				
West Bay and Ventnor's, East End.	D.E.	MDNE	2006	1.4
SM5. Establish strategic woodland patches in <i>urban and</i>	DoE	MP NT	2006	1,4
	ĺ	CIG DoP		
man-modified areas, including LPP, to act as refugia and		i .		<u> </u>
man-modified areas, including LPP, to act as refugia and maintain wildlife corridors.	DELL	NT HC	2007	5
man-modified areas, including LPP, to act as refugia and maintain wildlife corridors. SM6. Control predation by rats, cats, <i>Iguana iguana</i> , and	DEH	NT HS	2007	5
man-modified areas, including LPP, to act as refugia and maintain wildlife corridors. SM6. Control predation by rats, cats, <i>Iguana iguana</i> , and potential colonisation of the Shiny cowbird <i>Molothrus</i>	DoE	NT HS	2007	5
man-modified areas, including LPP, to act as refugia and maintain wildlife corridors. SM6. Control predation by rats, cats, <i>Iguana iguana</i> , and potential colonisation of the Shiny cowbird <i>Molothrus bonariensis</i> .	DoE DoA	NT HS		
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man-modified areas, including LPP, to act as refugia and maintain wildlife corridors. SM6. Control predation by rats, cats, <i>Iguana iguana</i> , and potential colonisation of the Shiny cowbird <i>Molothrus bonariensis</i> . SM7. Restore damaged habitat where possible.	DoE DoA DoE NT MP	NT HS	2010	1,4
man-modified areas, including LPP, to act as refugia and maintain wildlife corridors. SM6. Control predation by rats, cats, <i>Iguana iguana</i> , and potential colonisation of the Shiny cowbird <i>Molothrus bonariensis</i> .	DoE DoA DoE NT	NT HS		

conservation actions.				
SM9. Implement associated HAPs.	DoE		2015	1-5
Advisory				
A1. Secure amendment of gazetted road corridors in	DoE	NT	ongoing	1
order that they no pass through (i) critical east interior	NRA	DoP		
habitat, Grand Cayman (ii) the Nature Trail, Little		CPA		
Cayman and (iii) the parrot Reserve, Cayman Brac.		DCB		
A2. Establish management strategy to develop nature	NT	DoE	2006	3
tourism in reserves with sustainable financial planning.	SIDA	DoA	ongoing	
	CITA			
	SITA			
A3. Develop and recommend guidelines for native	DoE DoP	SIDA	2009	4
vegetation maintenance / landscaping, particularly for				
developments in littoral areas.				
A4. Promote use of native plants in landscaping, through	DoP	DoE	2009	4
maintenance of existing vegetation and use of				
Recommended Planting Palette in new developments.				
A5. Targeted awareness of the need for the National	DoE	CIG NT	2006	1-5
Conservation Law and the Endangered Species (Trade &				
Transport) Law.				

Vitelline warbler PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Research & Monitoring				
RM1. Develop and implement methods of non-native	DoE	NT	20010	5
predator control for managed warbler habitats.	DoA	HS		
RM2. Assess the ecological impact of <i>Iguana iguana</i> on	DoE	NT	2010	5
the Vitelline warbler.				
RM3. Continue monitoring and map distribution of the	DoE NT		ongoing	2
Vitelline warbler in the Cayman Islands.	BC MP			
RM4. Assess population status of Vitelline warblers in	DoE NT		ongoing	2
the Swan Islands, towards contextualising conservation	BC MP			
status of local populations.				
RM5. Monitor habitat for early stages of the colonisation	DoE NT		ongoing	5
by Molothrus bonariensis.	BC MP			
RM6. Construct quarters for visiting scientists in	DoE		2012	2,3
Cayman Brac, and support research initiatives				,
complimentary to the objectives of the NBAP.				
Communication & Publicity		•	•	•
CP1. Raise public awareness of Vitelline warblers and	NT	DoE BC	2006	3
other birds through local media (e.g. Know Your		DE	ongoing	
<i>Islands</i>), special events (e.g. <i>Birds</i> stamp issue), public				
talks and schools presentations (e.g. Do You Know Me?)				
and natural history websites.				
CP1. REPORT: DoE and NMBCA jointly fund development of Bird ID of		o You Know Mo	e?" programme,	and Virtual
Bird Guide for the Cayman Islands through CaymanBiodiversity.com, 20		1		_
CP2. Development of National Trust's interpretative	NT		2007	3
centre for conservation education.				
CP3. Install interpretative signs on National Trust nature	NT	DoE	2006	3
trails.				
CP4. Raise awareness of the value of native landscaping	DoE DoP	MP CN	2010	3,4
for wildlife.	NT	GC OS		
	QEIIBP	SB LCN		
CP5. Utilise native flora and fauna, and associated	CIG	DoE DoT	2010	3
preservation efforts, in the international promotion of the		NT MP		
Cayman Islands.		QEIIBP		

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West Indian Whistling-duck (Whistler) Dendrocygna arborea

INSERT IMAGES

Taxonomy and Range

Kingdom: Animalia, Phylum: Chordata, Class: Aves, Order: Anseriformes, Family: Anatidae Genus: Dendrocygna, Species: arborea

The West Indian Whistling-duck *Dendrocygna arborea* breeds in many countries throughout the Caribbean, locally ranging from common to very rare. This West Indian endemic species is generally of conservation concern over its range (Bradley 2000).

Status

Distribution: Resident year-round and breeding on all three Cayman Islands.

Conservation: The West Indian Whistling-duck *Dendrocygna arborea* is a species endemic to the West Indies, and is listed as vulnerable (IUCN Red List 3.1).

Legal: CITES Appendix II. CMS Appendix II. The West Indian Whistling-duck *Dendrocygna arborea* is protected under the Animals Law (1976). Pending legislation, it would be protected under the National Conservation Law (Schedule I). The Department of Environment is the lead body for legal protection.

Natural history

The West Indian Whistling-duck *Dendrocygna arborea* is Cayman's only breeding duck. They are non-migratory. Largely crepuscular or nocturnal by nature, they are mostly inactive during the day; roosting in mangroves, reed beds, and swampy areas. At dusk they tend to move to fresh and saltwater *pools*, *ponds and mangrove lagoons*, and temporary wetlands to feed. These behaviours are, however, only generally applicable, and in some places ducks will be seen feeding throughout the day.

Nest site choice is variable, though is generally on or near the ground. Preferred nest sites include rough pasture, bushes, and even hollow trees. The comparative safety of isolated *ironshore* outcrops and islands within *pools*, *ponds and mangrove lagoons*, and *lagoons*, contribute to their being amongst favoured nesting sites. Whistling-ducks breed all year round. Clutches generally contain 5-13 eggs.

In the 1980s, numbers fell as low as 180-220 individuals on Grand Cayman and Little Cayman. Numbers subsequently recovered to 1000-1200, 1996-97, with current estimates of approximately 2000 birds between the three Islands (Bradley *pers comm.*).

Associated Habitats and Species for West Indian Whistling-duck

ASSOCIATED HABITAT PLANS	ASSOCIATED SPECIES PLANS
3. Lagoons	Red-footed booby Sula sula
9. Mangrove	Cayman parrot Amazona leucocephala
12. Salt-tolerant succulents	Cayman Pygmy Blue butterfly Brephidium exilis thompsoni
13. Pools, ponds and mangrove lagoons	
17. Farm and grassland	
18. Urban and man-modified areas	

Current Factors Affecting West Indian Whistling-duck

- *Hunting pressure:* historic hunting pressure contributed in large part to the decline of this species in the Cayman Islands. Lows of 180-220 individuals were recorded on Grand Cayman and Little Cayman in the 1980s.
- Poaching: though protected under the Animals Law, a level of background hunting has remained persistent.
- *Habitat loss:* loss of habitat, including *mangrove* roosting habitat and *salt-tolerant succulents* feeding habitat, has contributed to the decline of the natural population.
- Supplementary feeding: supplementary feeding initiated by Willie Ebanks, and the late Jim
 Ebanks, North Side, Grand Cayman, 1992, and later supported by CIG, has contributed in large
 part to an increase in numbers locally. Currently several feeding stations are active on both Grand
 Cayman and Cayman Brac. While supplemental feeding has probably been a significant factor in
 the recovery of the wild population, feeding sites have a tendency to attract large numbers of birds,
 potentially encouraging dependency, and attracting predators.
- *Introduced predators:* predators such as rats, cats, and especially packs of feral dogs, inflict a significant toll on these ground / near-ground nesting birds.
- Flagship status: the Whistling-duck is being established as a flagship for wetland preservation, through the work of groups such as the West Indian Whistling-duck Working Group of the Society for the Conservation and Study of Caribbean Birds, SCSCB.
- Aesthetic appeal: these attractive birds invite the care and support of members of the public, many of whom enjoy feeding the birds.
- Adaptation: in the face of loss of their natural habitat, the West Indian Whistling-duck has proven adaptable, adjusting to suitable niches maintained within the built environment, and successfully establishing in *urban and man-modified areas*.

Opportunities and Current Local Action for West Indian Whistling-duck

Since 1997, the West Indian Whistling-duck Working Group, SCSCB, has conducted a region-wide public education and awareness programme that provides local teachers and educators with training and educational materials; working to raise awareness and appreciation for the value of local wetlands and wetland biodiversity: www.whistlingduck.org.

The Nature Tourism Project under development in Cayman Brac and Little Cayman, 2001, incorporated trails and observation platforms, established at points of natural interest, especially in association with *pools, ponds and mangrove lagoons*.

Training of nature guides in bird identification on Cayman Brac and Little Cayman as part of the Nature Tourism Initiative on the Sister Islands, has been completed, however a structured monitoring and reporting programme for the islands' birdlife is not in place.

A Checklist of Birds of the Cayman Islands was published (Bradley 2006).

The Cayman Islands Bird Club conducts an annual Bird Count in Grand Cayman, in March of each year, which incorporates an count of Whistling-duck.

SPECIES ACTION PLAN for West Indian Whistling-duck

OBJECTIVES	TARGET
1. Commence detailed studies of <i>Dendrocygna arborea</i> to determine status and dynamics of local populations.	2009
2. Implement planning and conservation action towards maintaining <i>Dendrocygna arborea</i> , and encouraging population stability, and recovery.	2012
arborea, and encouraging population stability, and recovery.	

West Indian Whistling-duck	LEAD	PARTNERS	TARGET	MEETS
PROPOSED ACTION				OBJECTIVE
Policy & Legislation				
PL1. Pass and implement the National Conservation	CIG	DoE	2006	1,2
Law.				·
PL2. Implement the Endangered Species (Trade &	DoE	CIG	2006	2
Transport) Law.				
PL3. Protect <i>Dendrocygna arborea</i> under Schedule I of	DoE	CIG	2006	1,2
the National Conservation Law, through establishment of				
conservation regulations.				
PL4. Promote amendment of the Planning Law, to	DoP	DoE CIG	2010	2
facilitate rapid imposition of stop-orders on illegal				
developments and provide a responsive and effective				
enforcement mechanism.				
PL5. Strengthen the <i>Development Plan</i> on Grand	DoP	CIG MP	ongoing	2
Cayman, incorporating a long-term vision for the	CPA	DoE		
environmental, social, and economic development of the				
Islands.				
PL6. Promote establishment of a <i>Development Plan</i> for	DoP	CIG MP	ongoing	2
the Sister Islands, incorporating a long-term vision for	DCB	DoE		
the environmental, social, and economic development of				
the Islands.				
PL7. Enable DoE Conservation Officers to implement	DoE	CIG	2008	2
legal eradication of invasive species, as necessary to				
ensure the survival of endangered native species.				
Safeguards & Management				
SM1. Use the <i>Environmental Protection Fund</i> to protect	CC	DoE MP	2006	2
key areas of habitat for <i>Dendrocygna arborea</i> .		NT		
SM2. Transfer Little Cayman Crown Wetlands to	CC	DoE CIG	2012	2
protected area status.		MP NT		
SM3. Subject to SM2, designate Little Cayman Crown	DoE	CC CIG	2012	2
Wetlands a Ramsar site.		MP NT		
SM4. Control predation by rats, cats, and deter potential	DEH	NT HS	2009	2
for predation by Iguana iguana.	DoE			
	DoA			
SM5. Restore damaged nesting habitat where possible.	DoE NT		2010	2
	MP			
SM6. Establish a full-time DoE field conservation officer	DoE		2012	1,2
on Cayman Brac and Little Cayman to implement				
conservation actions.				
SM7. Incorporate isolated islands into development	DoE	DoP	2012	1,2
guidelines for restoration of degraded pools, ponds and		CPA		
mangrove lagoons, to facilitate roosting and nesting		DCB MP		
habitat for Dendrocygna arborea.				
SM8. Implement associated HAPs.	DoE		2015	1,2

Advisory				
A1. Develop and recommend guidelines for native	DoE DoP	SIDA	2009	2
vegetation maintenance / landscaping, particularly for				
developments in wetland areas.				
A2. Promote use of native plants in landscaping, through	DoP	DoE	2009	2
maintenance of existing vegetation and use of				
Recommended Planting Palette in new developments.				
A3. Targeted awareness of the need for the National	DoE	CIG NT	2006	1,2
Conservation Law and the Endangered Species (Trade &				
Transport) Law.				

RM1. Develop and implement methods of non-native predator control in colony areas. RM2. Complete detailed mapping of nest sites to determine precise population distribution and numbers, and key areas of habitat. RM3. Undertake monitoring of artificial feeding sites to determine diet and nature of interactions, and need to develop guidelines. RM4. Collaborate with scientists from other Caribbean islands, to encourage work on projects complimentary to the conservation of Dendrocygna arborea. RM5. Investigate potential for artificial nest box programme to promote population sustainability. CP1. Raise public awareness of Dendrocygna arborea and other birds through local media (e.g. Know Your Islands), special events (e.g. Birds stamp issue), public talks and schools presentations (e.g. Do You Know Me?) and natural history websites. CP2. REPORT: DoE and NMBCA jointly fund development of Bird ID cards for NT "Do You Know Me?" programme, and Virtual Bird Guide for the Cayman Islands through CaymanBiodiversity.com, 2007. CP2. Install interpretative signs on nature trails. NT DoE 2006 2 CP2. REPORT: Informational signage featuring Whistling-ducks installed by NT, adjacent highways in Grand Cayman, 2008, toward discouraging roadside feeding, and encouraging traffic to slow down. CP3. Use Dendrocygna arborea as a flagship for the protection of key areas of mangrove and salt-tolerant succulents. CP4. Utilise native flora and fauna, and associated preservation efforts, in the international promotion of the Cayman Islands, in the international promotion of the Cayman Islands in the international promotion of the Cayman Islands in the internati	West Indian Whistling-duck PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
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White Land crab Cardisoma guanhumi

INSERT IMAGES

Taxonomy and Range

Kingdom: Animalia, Phylum: Arthropoda, Class: Malacostraca, Order: Decapoda, Family: Gecarcinidae Genus: Cardisoma, Species: guanhumi

The White Land crab *Cardisoma guanhumi* is a circumequatorial species found throughout estuarine regions of the Caribbean, Central and South America including Columbia, Venezuela, the Bahamas, the Gulf of Mexico, coastal Florida and Puerto Rico. It is found in greatest numbers on low lying ground, generally within five km of the ocean. Burrow concentrations in optimum habitat may exceed 7500 per acre. The population distribution of this species is heavily influenced by water temperature. In areas where water temperatures fall below 20 °C in winter larval survival is affected.

The White Land crab is found throughout the Cayman Islands due to the relatively close proximity of the coastline, however, no comprehensive distribution studies have been undertaken. Two similar, but smaller, species of Gecarcinidae land crabs are also found in the Cayman Islands; *Gecarcinus ruricola* and *Gecarcinus lateralis*. Conservation efforts made towards the preservation of *Cardisoma guanhumi* will likely be of value to these species also.

Status

Distribution: Circumequatorial.

Conservation: There are currently no local or regional conservation initiatives and the species is not listed on CITES or the IUCN Redlist. Local conservation status is unknown.

Legal: *Cardisoma guanhumi* currently has no legal protection. Pending legislation, it would be protected under the National Conservation Law (Schedule II). The Department of Environment would be the lead body for legal protection.

Natural history

The White Land crab *Cardisoma guanhumi*, is a large burrowing crab. Its distribution on land is generally limited to within five km of the ocean. Large individuals may exceed 11cm across, and weigh over 500g. The White Land crab is slow-growing compared to most other crabs, reaching sexual maturity after approximately four years, when it attains a mass of 40g. Adults of both sexes have carapaces which range in colour from dark blue to various shades of brown, grey and white. Males have one enlarged cheliped. Juveniles generally have brown carapaces and orange legs.

The reproductive cycle of the White Land crab is closely linked to seasonal weather patterns and lunar phases. Migrations are initiated by heavy rains. For the first few weeks of the migratory period, foraging intensity is increased, and the crabs gain weight rapidly. Males actively court ripe females during this period. Fertilization is internal, and throughout July and August most females carry external egg masses. Eggs are carried for approximately two weeks prior to hatching, and must be released into salt water in order for the larvae to survive. Females typically complete spawning migrations within 1-2 days and generally spawn within 1-2 days of a full moon. Thus, though *Cardisoma* and other terrestrial crabs have been successful invaders of the land, they are still dependent on the ocean for at least part of their life cycle.

Several spawns per year may occur, with spawning season varying with location. In Florida, spawning extends June-December, peaking in October and November. In the Bahamas the season extends July-September, and in Venezuela July-November. Eggs hatch into free-swimming larvae. Thereafter, the larvae pass through five zoeal stages and one postlarval, or "megalopal" stage. Typically, development time from hatching to the first adult form is 42 days under laboratory conditions; however, this time may be much reduced in nature. Fecundity in *Cardisoma* is related to body mass. A 300g female may produce 300,000-700,000 eggs per spawning.

Adult crabs colonise various habitats, however, they are limited to areas where they can burrow to intersect the water table, and maintain a 1-2 litre pool in the bottom of the burrow. Thus they are functionally limited to areas where the water table is within approximately two metres of the surface. In south Florida, burrow densities have been found to be highest in firm, muddy substrates. *Cardisoma* tolerate salinities from freshwater to hypersaline, however, larval development has been shown to be optimal at salinities of 20-40 ppt.

Cardisoma guanhumi is mostly herbivorous, feeding on leaves, fruits, and grasses collected in the vicinity of burrows. They will also eat insects, carrion, faeces and are sometimes cannibalistic; thus, they are functional omnivores. Preferred foods include the leaves of Red and White mangrove, and Buttonwood. They feed throughout the day in shaded areas; however, if exposed to direct sunlight for prolonged periods, they prefer to feed at night. Peak activity time is at dawn and dusk, though activity tends to increase under low light levels and with reduced food availability.

Associated Habitats and Species for White Land crab

ASSOCIATED HABITAT PLANS	ASSOCIATED SPECIES PLANS
1. Open sea	Whelks & Soldier crab Cittarium pica & Coenobita clypeatus
9. Mangrove	Cayman parrot Amazona leucocephala
18. Urban and man-modified areas	West Indian Whistling-duck Dendrocygna arborea
19. Roads	

Current Factors Affecting White Land crab

- *Economic significance*: economically important in the Caribbean and Bahamas. In the Cayman Islands *Cardisoma* is generally exploited for food, though not at a commercial level.
- Conflict situations: damage to lawns from burrow digging has resulted in some people regarding Land crabs as garden pests.
- Cultural significance: a culturally important local food source within the Cayman Islands, Cardisoma is probably subject to significant exploitation. Harvesting pressure is not known, in part due to the subsistence nature of the collection, but is likely intensive and increasing in step with the growing population of the Islands.
- *Habitat loss:* loss of mangrove habitat due to drainage, fragmentation and filling, is likely a significant factor influencing the population of *Cardisoma*, however, no quantitative data currently exist.
- Road kill: bisection of migration routes by roads is likely the most significant cause of decline in this species. Coastal roads, and road-widening projects, would be expected to have a disproportionate impact on populations returning to the sea to spawn.
- *Insecticide:* impacts associated with landscaping control, and the Mosquito Research and Control Unit's aerial and land-based spraying regime remain undetermined.

Opportunities and Current Local Action for White Land crab

There is currently no legal protection specific for this species, however National Trust for the Cayman Islands Law (1987) Section 19(a) makes it an offence to take any form of wildlife from a Trust Property.

The requirement of migratory movement to and from the sea limits the effectiveness of single site protection for all land crabs.

There is no local action geared towards preservation of this species.

SPECIES ACTION PLAN for White Land crab

OBJECTIVES	TARGET
1. Ensure that local populations are protected from extirpation, and maintain the long-	2015
term stability of stock for sustainable harvest.	
2. Determine status of, and threats to, local populations.	2009
3. Ensure sustained support for the conservation of Land crabs through targeted	2008
education and awareness programmes.	

White Land crab PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Policy & Legislation				
PL1. Pass and implement the National Conservation	CIG	DoE	2006	1,2,3
Law.				
PL2. Implement the Endangered Species (Trade &	DoE	CIG	2006	2
Transport) Law.				
PL3. Protect Cardisoma guanhumi under Schedule II of	DoE	CIG	2006	1,2,3
the National Conservation Law, through establishment				
of conservation regulations.				
PL4. Promote amendment of the Planning Law, to	DoP	DoE CIG	2010	2,3
facilitate rapid imposition of stop-orders on illegal				
developments and provide a responsive and effective				
enforcement mechanism.				
PL5. Develop, maintain and enforce regulations	DoE	CIG	2010	1
appropriate to maintenance of the long-term sustainable	MCB			
harvesting of Cardisoma guanhumi.				
PL6. Strengthen the <i>Development Plan</i> on Grand	DoP	CIG MP	ongoing	1,2
Cayman, incorporating a long-term vision for the	CPA	DoE		
environmental, social, and economic development of the				
Islands.				
PL7. Promote establishment of a <i>Development Plan</i> for	DoP	CIG MP	ongoing	1,2
the Sister Islands, incorporating a long-term vision for	DCB	DoE		
the environmental, social, and economic development of				
the Islands.				
Safeguards & Management		T = ==	T	
SM1. Establish a closed season and bag limits for	DoE	IntC	2012	1
collectors, incorporating minimum carapace size limit for				
collection (possibly to allow ca. 6-7 years worth of				
reproduction), as necessary to maintain population				
stability.	22.5		2012	
SM2. Utilise key habitat and migratory route data to	CC DoE	IntC	2012	1,2
establish a system of protected areas, from which				
collection is either regulated or banned, as necessary to				
maintain population stability of Cardisoma guanhumi				
and other migrating land crabs.	D-E	D-D	2012	1.0
SM3. Investigate potential for under road conduit /	DoE	DoP	2012	1,2
animal corridors at key road crossing sites.		NRA		
		CPA		
SM4. Consider ban on collection of berried females, and,	DoE	DCB	2012	1,2
	DOE		2012	1,2
subject to RM4, possibly all females as necessary to maintain population stability.				
mamam population stability.	I		<u> </u>	

SM5. Implement associated HAPs.	DoE	2015	1,2,3
Advisory			
None.			

White Land crab PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Research & Monitoring				
RM1. Map potential <i>Cardisoma guanhumi</i> habitat on all three islands.	DoE		2008	2
RM2. Survey existing population to determine baseline, immediate threats, and establish monitoring program.	DoE	MRCU	2010	1,2
RM3. Monitor biological aspects of catch through catchery sampling.	DoE		2010	1,2
RM4. Identification of local crab catchers, and potential crab processing and outlets.	DoE	MP	2011	1,2
RM5. Hold discussions with crab collectors to enlist their participation in the collection of catch information.	DoE	IntC MP	2011	1,2,3
RM6. Develop and conduct questionnaires, and field data-sheets for crab catchers to identify catch areas, quantities of catch, indicative effort, frequency of collection, timing and methods of collection, market price, destination of crab, processing etc.	DoE	IntC MP	2011	1,2
RM7. Determine peak spawning season and seasonal reproductive patterns.	DoE	IntC	2010	1,2
RM8. Determine critical migration routes, and influencing factors, towards implementing modification of road design to reduce mortality to <i>Cardisoma guanhumi</i> and other migrating Land crabs.	DoE	IntC	2012	1,2
RM9. Collaborate with international researchers to examine designs for under road conduits and animal corridors at key crossing sites along migratory routes for <i>Cardisoma guanhumi</i> and other migrating Land crabs.	DoE	IntC NRA MRCU	2012	1,2
Communication & Publicity		T		_
CP1. Targeted awareness campaign to key sectors of local community to inform groups that are prone to nonsustainable Land crab harvesting practices.	DoE	MP	2010	3
CP2. Targeted awareness campaign to key sectors of Government to assist in adopting management and legislation recommendations.	DoE	CIG	2015	3
CP3. Produce educational fact sheet detailing ecology and biology of Land crabs for schools and local public.	DoE	DE	2009	3
CP4. Utilise native flora and fauna, and associated preservation efforts, in the international promotion of the Cayman Islands.	CIG	DoE DoT NT MP QEIIBP	2010	3

REFERENCES and FURTHER READING for White Land crab

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TERRESTRIAL SPECIES

White-tailed tropicbird (Boatswain bird) Phaethon lepturus

INSERT IMAGES

Taxonomy and Range

Kingdom: Animalia, Phylum: Chordata, Class: Aves, Order: Pelecaniformes, Family: Phaethontidae Genus: Phaethon, Species: lepturus

The White-tailed tropicbird (Boatswain bird) *Phaeton lepturus* is widely dispersed throughout tropical and subtropical oceans. A summer breeding visitor to the Cayman Islands, they are known from a small colony (ca. 10 pairs – possibly now abandoned), nesting in holes on the coastal bluff from Bats Cave east of Bodden Town, Grand Cayman, and a larger colony (ca. 40 individuals), in caves and holes in the cliffs along the north and south coast of the eastern end of the Bluff, Cayman Brac (Bradley 2000). The tropicbird is one of the Cayman Islands' six breeding seabirds.

Status

Distribution: In the West Indies, the White-tailed tropicbird *Phaethon lepturus* breeds from the Bahamas, south to St. Vincent. It has a large range, with an estimated global breeding Extent of Occurrence of 50,000-100,000 km² (IUCN). In the Cayman Islands, breeding sites are confined to two areas of Bluff cliff, one each on Grand Cayman and Cayman Brac.

Conservation: The White-tailed tropicbird *Phaethon lepturus* has a large global population, estimated to be ca. 50,000 individuals. As a result, it is listed as least concern globally (IUCN), however, the Cayman Island's birds have undergone a population collapse during the past 30 years. Once an abundant breeder in the Islands, with ca. 800 individuals reported in the 1980s, Brac residents reported 1990s numbers to be the lowest in living memory, with just 28 pairs individuals observed in 1996 (Bradley 2000), with numbers increasing slightly 1999-2003, to about 50 pairs (Bradley *pers com*).

Legal: The White-tailed tropicbird *Phaethon lepturus* is protected under the Animals Law (1976). Pending legislation, it would be protected under the National Conservation Law (Schedule I). The Department of Environment is the lead body for legal protection.

Natural history

The most distinguishing feature of the White-tailed tropicbird *Phaethon lepturus* is its extraordinarily long central tail-feathers, or "streamers", which equal the length of its entire body. These are displayed to best effect by the tropicbird's characteristically aerobatic flight.

White-tailed tropicbirds disperse widely across the oceans when not breeding. These slender seabirds feed on fish and squid, diving from the air in a similar fashion to a booby. They breed late January–July, laying a single egg, in rock crevices and caves (Bradley 2000).

Associated Habitats and Species for White-tailed tropicbirds

ASSOCIATED HABITAT PLANS	ASSOCIATED SPECIES PLANS				
1. Open sea	Verbesina caymanensis				
7. Maritime cliffs and Ironshore	Brown booby Sula leucogaster				
16. Caves	Cayman parrot Amazona leucocephala				

Current Factors Affecting White-tailed tropicbirds

- El Niño Southern Oscillation (ENSO): commonly referred to as simply "El Niño", ENSO is a global ocean-atmosphere phenomenon. The precipitous decline of the White-tailed tropicbird in the Cayman Islands is largely linked to the effects of El Niño, reducing the accessibility of fish stocks to foraging birds.
- *Disease:* the carcass of a White-tailed tropicbird infected with avian pox was recovered from Cayman Brac, 2008.
- *Introduced predators:* predators such as rats and cats probably inflict a significant toll on these ground-nesting birds.
- Maritime pollution: Cayman Brac lies close to major shipping lanes.
- Aesthetic: the White-tailed tropicbird is one of our most attractive seabirds. If successful, conservation efforts would effectively preserve one of the most spectacular species in the natural complement of the Cayman Islands.
- Natural predators: birds of prey, especially wintering Peregrine falcons Falco peregrinus.

Opportunities and Current Local Action for White-tailed tropicbirds

Training of nature guides in bird identification on Cayman Brac and Little Cayman as part of the Nature Tourism Initiative on the Sister Islands has been completed, however a structured monitoring and reporting programme for the islands' birdlife is not in place.

A Checklist of Birds of the Cayman Islands was published (Bradley 2006).

SPECIES ACTION PLAN for White-tailed tropicbirds

OBJECTIVES	TARGET
1. Commence detailed studies of <i>Phaethon lepturus</i> to determine status of local	2009
populations, and the nature of their decline.	
2. Implement conservation action towards halting the decline of <i>Phaethon lepturus</i> ,	2012
and encouraging a population recovery.	
3. Increase nesting population of <i>Phaethon lepturus</i> by 100%.	2015

White-tailed tropicbirds PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Policy & Legislation				
PL1. Pass and implement the National Conservation	CIG	DoE	2006	1,2,3
Law.				
PL2. Implement the Endangered Species (Trade &	DoE	CIG	2006	2
Transport) Law.				
PL3. Protect <i>Phaethon lepturus</i> under Schedule I of the	DoE	CIG	2006	1,2,3
National Conservation Law, through establishment of				
conservation regulations.				
PL4. Promote amendment of the Planning Law, to	DoP	DoE CIG	2010	2
facilitate rapid imposition of stop-orders on illegal				
developments and provide a responsive and effective				
enforcement mechanism.				
PL5. Strengthen the Development Plan on Grand	DoP	CIG MP	ongoing	2

Cayman, incorporating a long-term vision for the environmental, social, and economic development of the Islands.	СРА	DoE		
PL6. Promote establishment of a <i>Development Plan</i> for the Sister Islands, incorporating a long-term vision for the environmental, social, and economic development of the Islands.	DoP DCB	CIG MP DoE	ongoing	2
PL7. Enable DoE Conservation Officers to implement legal eradication of invasive species, as necessary to ensure the survival of endangered native species.	DoE	CIG	2008	2,3
Safeguards & Management				
SM1. Establish the bluff face Crown lands as protected areas, and use the <i>Environmental Protection Fund</i> to protect key areas of the lip of the Bluff edge, to provide a buffer from disturbance for breeding colonies.	CC	DoE MP NT	2009	2,3
SM2. Control predation by rats, cats, and deter potential for predation by <i>Iguana iguana</i> .	DEH DoE HS DoA	NT	2009	2,3
SM3. Restore damaged nesting habitat where possible, and utilise artificial cavities as appropriate, towards recovering 1980s population levels.	DoE NT MP		2012	2,3
SM4. Establish a full-time DoE field conservation officer on Cayman Brac and Little Cayman to implement conservation actions.	DoE		2012	1,2,3
SM5. Implement associated HAPs.	DoE		2015	2
Advisory				
A1. Develop and recommend guidelines for native vegetation maintenance / landscaping, particularly for developments in littoral areas.	DoE DoP	SIDA	2009	2
A2. Promote use of native plants in landscaping, through maintenance of existing vegetation and use of <i>Recommended Planting Palette</i> in new developments.	DoP	DoE	2009	2
A3. Targeted awareness of the need for the National Conservation Law and the Endangered Species (Trade & Transport) Law.	DoE	CIG NT	2006	1,2,3

White-tailed tropicbirds PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Research & Monitoring				
RM1. Develop and implement methods of non-native	DoE	NT HS	2009	1,2,3
predator control in colony areas.	DoA	IntC		
RM2. Complete detailed mapping of nest sites to	DoE	NT IntC	2012	1
determine precise colony distribution and numbers.				
RM3. Undertake nest site monitoring, to determine	DoE	IntC	2012	1
feeding regimes, diet selection and breeding success,				
towards elucidating factors influencing fecundity.				
RM4. Assess population for possible effects of pollution	DoE	DoA MP	2012	1
and/or disease.		IntC		
RM5. Collaborate with scientists from other Caribbean	DoE	IntC	2012	1
islands, with previous experience of artificial nesting				
cavity construction for <i>Phaethon lepturus</i> .				
RM6. Construct quarters for visiting scientists in	DoE		2012	1,2,3
Cayman Brac, and support research initiatives				
complimentary to the objectives of the NBAP.				
Communication & Publicity				
CP1. Raise public awareness of <i>Phaethon lepturus</i> and	NT	DoE BC	2006	2
other birds through local media (e.g. Know Your		DE	ongoing	
<i>Islands</i>), special events (e.g. <i>Birds</i> stamp issue), public				
talks and schools presentations (e.g. Do You Know Me?)				
and natural history websites.				
CP1. REPORT: DoE and NMBCA jointly fund development of Bird ID o			ou Know Me?"	' programme,
and Virtual Bird Guide for the Cayman Islands launched through Cayman CP2. Install interpretative signs on nature trails and areas	NT DoE	om, 2007.	2006	2
of interest.	NI DOE		2000	2
CP3. Use <i>Phaethon lepturus</i> as a flagship for the	DoE NT	CIG	2009	2
protection of key areas of <i>Marine cliffs and Ironshore</i> as	DOENT	CIO	2009	<u> </u>
areas of outstanding natural beauty.				
CP4. Utilise native flora and fauna, and associated	CIG	DoE DoT	2010	2
preservation efforts, in the international promotion of the	CIO	NT MP	2010	<u> </u>
Cayman Islands.		QEIIBP		
Cayman Islanus.		GEHDL		

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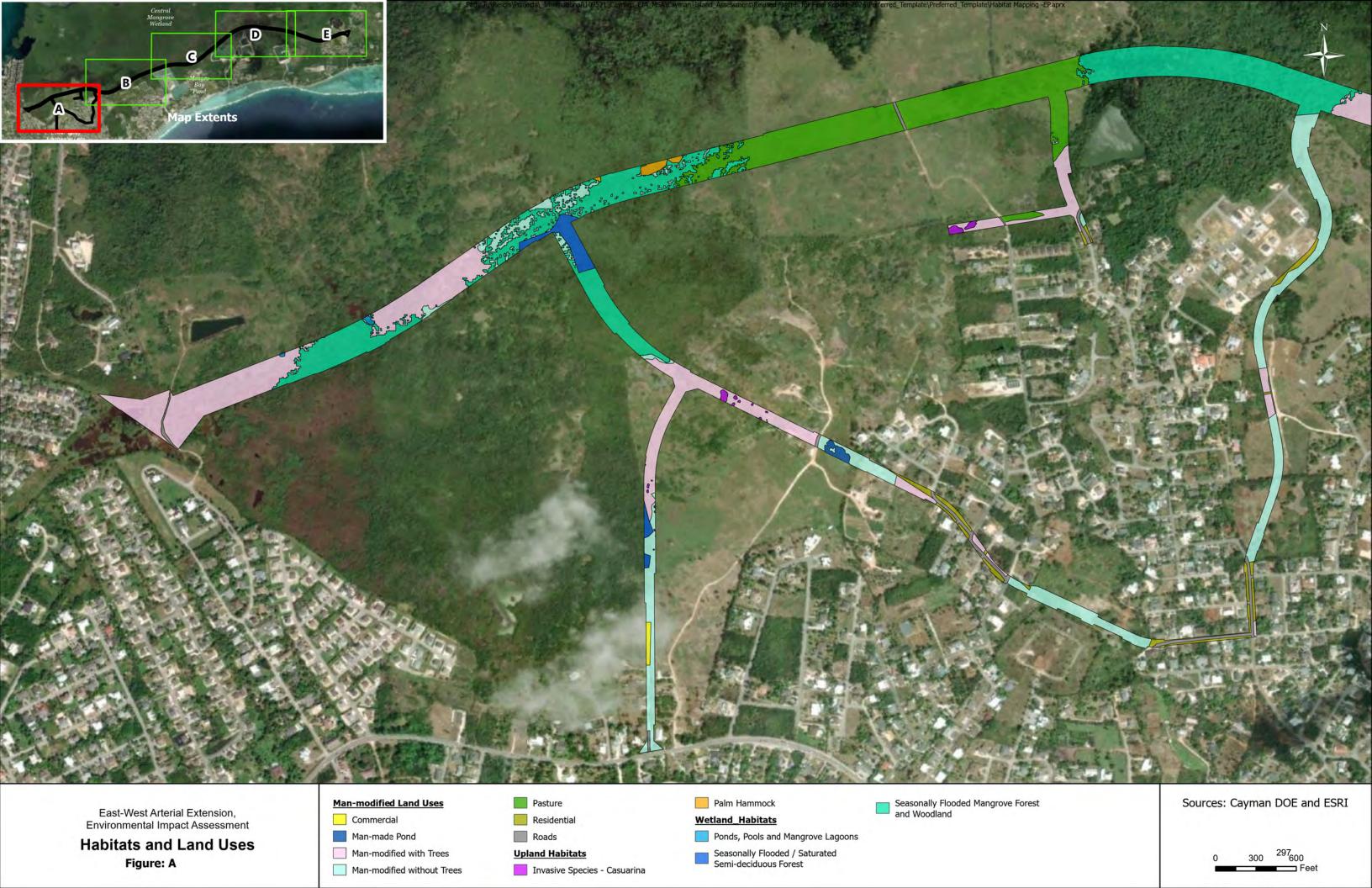
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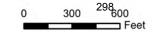
Appendix K.4 Proposed Project Habitats and Land Uses Map

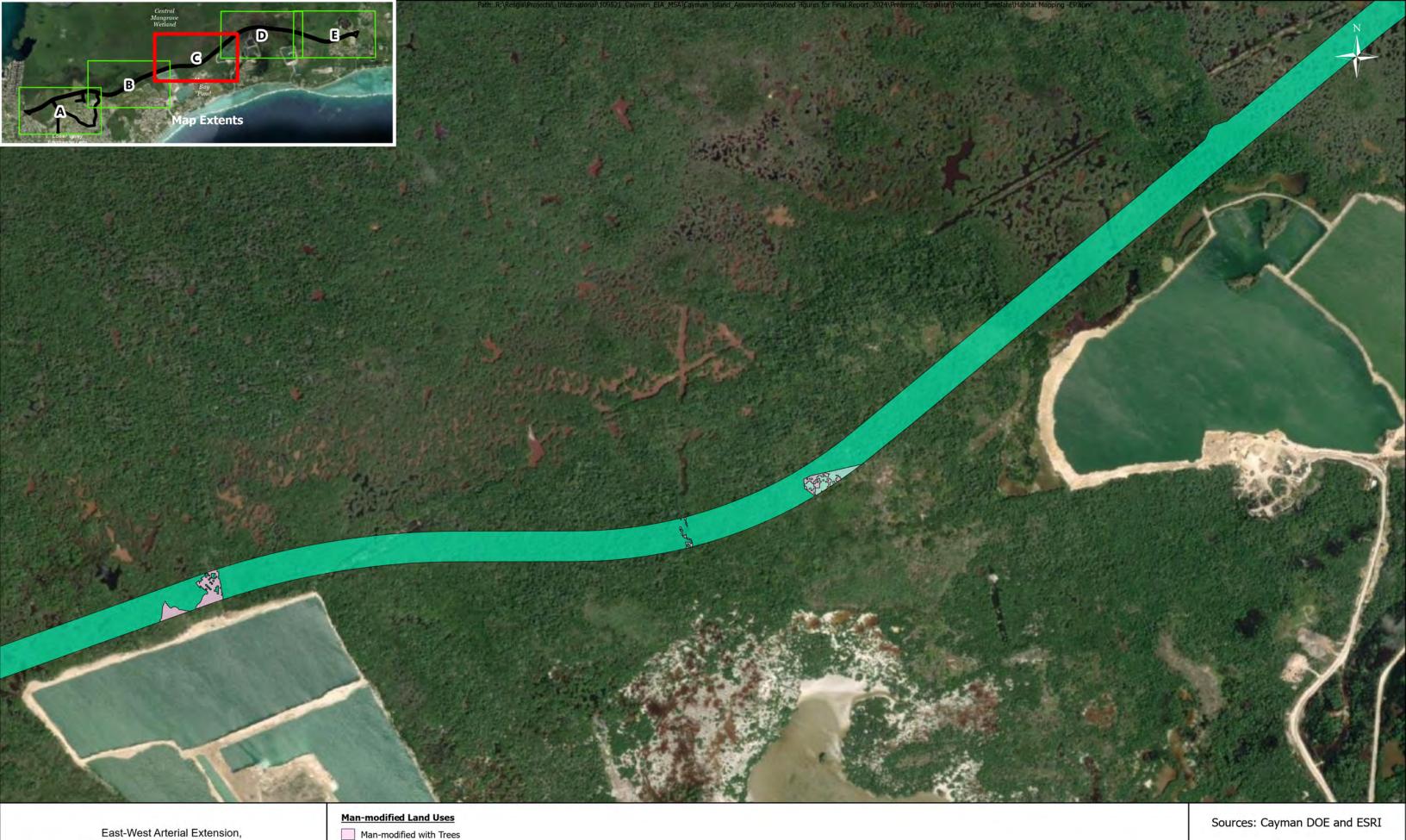




Habitats and Land Uses

Figure: B





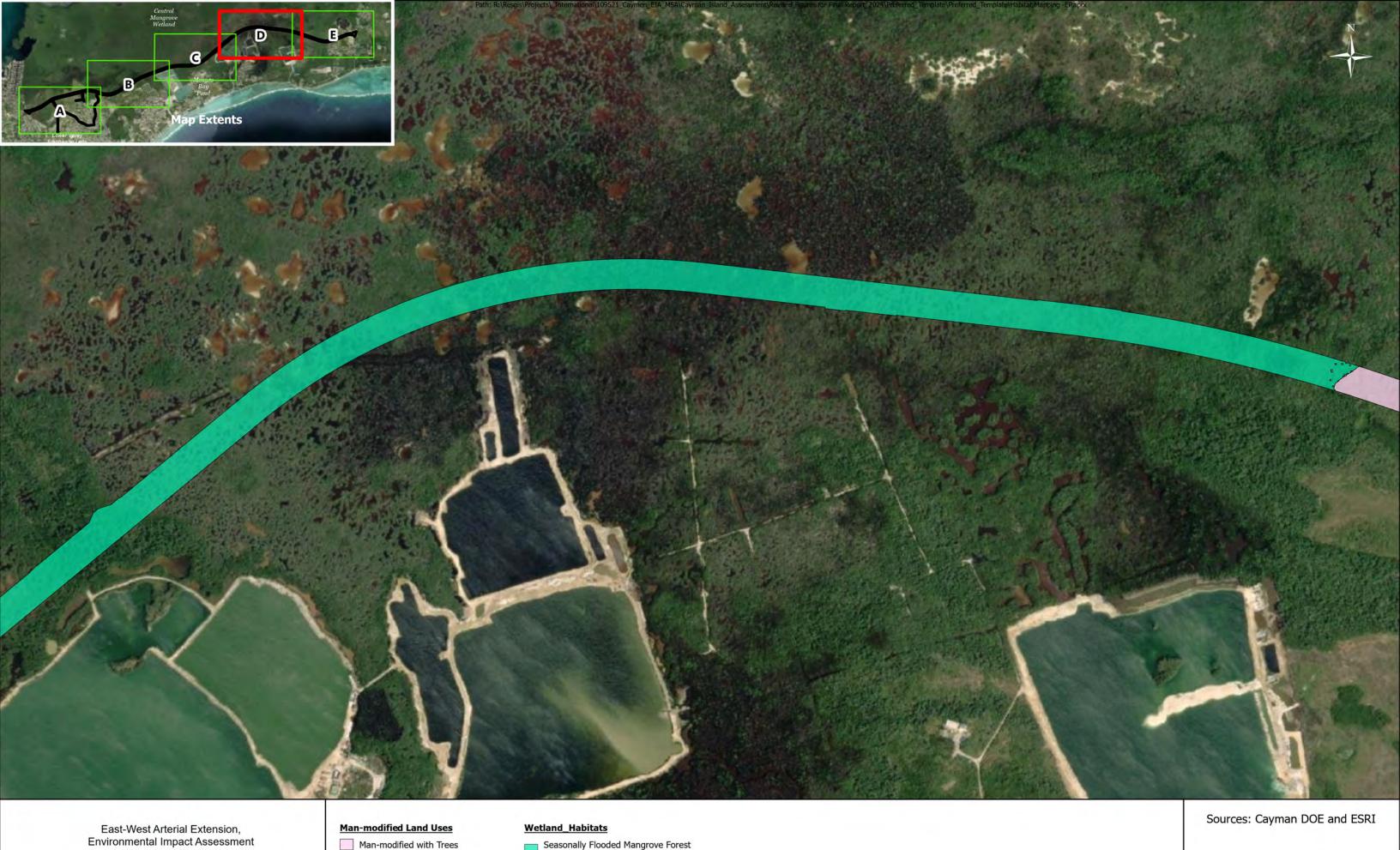
East-West Arterial Extension, Environmental Impact Assessment

Habitats and Land Uses Figure: C

Man-modified without Trees

Wetland_Habitats





Habitats and Land Uses Figure: D

Man-modified with Trees

Upland Habitats

Dry Forest and Woodland





Habitats and Land Uses

Figure: E

Man-modified with Trees

Wetland_Habitats



Appendix K.5 - 2020 Cayman Islands Ecosystem Accounting







2020 Ecosystem Account

February 2022





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Disclaimer

Whilst eftec has endeavoured to provide accurate and reliable information, eftec is reliant on the accuracy of underlying data provided and those readily available in the public domain. eftec will not be responsible for any loss or damage caused by relying on the content contained in this report.

Document evolution

Final report	01/2022	Reviewed by Jake Kuyer

This report is based on eftec's Version 2 – January 2020 report template.



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2020 Ecosystem Account

At 264 square kilometres with a population of 65,786 in 2020 (Economics and Statistics Office, 2021), the Cayman Islands is dependent on its wealth of environmental assets, in fact the environment contributes at least an estimated **CI\$ 62 million** in value to the Cayman Islands in 2020 (Table 2). These environmental assets provide an abundance of benefit to the people across the Cayman Islands including the: value added to the tourism industry (CI\$21 million per year); carbon sequestered by coastal and forest habitats (CI\$12 million per year); amenity value due to mangroves (CI\$1.3 billion); and other more difficult to measure values such as local recreation and the biodiversity that makes life richer to both local inhabitants and visitors. The economic prosperity and wellbeing of the people of the Cayman Islands are fundamentally linked to effective management of the environment, and an understanding of the value that it provides.

Ecosystem accounts provide economic evidence that supports the delivery of sustainable value from environmental assets¹. Effective management of the environment must consider the extent and underlying condition of ecosystems over time, as well as the range of benefits they provide and the economic value of those benefits to different stakeholder groups. Specifically, the data in ecosystem accounts can help address several fundamental questions for policy and planning:

- What environmental assets are present and what state are they in? How does this change over time?
- What benefits does the environment provide? How are these received by beneficiaries?
- What is the economic value of these benefits? How is this value distributed across the population?

The environmental and socioeconomic data produced within Ecosystem Accounts provide a basis for answering these questions. Their importance is reflected in the development of the System of Environmental Economic Accounting – Ecosystem Accounts (SEEA-EA)², by the United Nations (UN). Officially adopted by the UN as a Statistics standard in March 2021, the SEEA-EA supports the implementation of ecosystem accounting as a part of National Accounts by National Statistics Offices around the world (see Box 1).

Development of ecosystem accounts provide indicators that compliment national economic and social indicators (such as GDP and demographic trends), and this evidence can support policy development and decision making, such as:

- Effective decision-making which impacts on the environment and the benefits it provides;
- Action on climate change, including mitigation, adaptation and resilience to impact;
- Delivery of international initiatives, such as the UN Sustainable Development Goals (SDGs)3; and
- A green post-COVID economic recovery, and in particular a sustainable tourism sector.

For ecosystem accounts to be a valuable addition to government and organisational policy and planning strategy, they should be embedded into the decision-making process, and updated on an annual basis both

¹ See Box 1 for more detail.

² See: <u>https://seea.un.org/ecosystem-accounting</u>

³ More information is available at: https://sdgs.un.org/goals 2020 Ecosystem Account | February 2022

to provide current data and to monitor trends over time. A partnership of eftec, the UK Joint Nature Conservation Committee (JNCC), the New Economics Foundation, and the Cayman Islands Department of Environment (DoE), with funding from the UK Government via the Darwin Initiative, have continued developing the ecosystem accounting process in the Cayman Islands. The aim is to embed the consistent production of national environmental statistic through ecosystem accounting within the Cayman Islands Government.

Physical flow and monetary flow

A range of benefits have been assessed within the Ecosystem Account, with estimated annual physical flow and monetary values given a confidence rating, as described in Table 1. The confidence rating is based on the robustness of the evidence and assumptions used. The Ecosystem Service Flow and Asset Accounts are presented in Table 2. The supplementary information is presented in Table 3. Note that the evidence presented in the summary table should be interpreted as a partial valuation of the total contribution of the environment to the Cayman Islands. The Cayman Islands environment provides additional benefits, such beach erosion protection and local recreation, which cannot be accurately quantified or valued at this time due to data limitations. Future iterations of the accounts should seek to address these gaps to provide a fuller valuation (see Appendix A of the Technical Report).

Table 1: Description of confidence

Confidence	Symbol	Description
Low	•	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	•	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	•	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	•	Not assessed

Table 2: Ecosystem Service Flow and Asset Accounts

	Ecosystem Service Flow Accounts					Ecosystem	
Produced at: January, 2022	Physical flow (unit/yr.)				Asset Account		
2022	Reporting	Confidence	Physical indicator	Reporting	Confidence	Valuation metric	(PV* CI\$m)
Fisheries	702,000	•	Volume of reef fish caught in the Cayman Islands (lbs/yr.)	3	•	Net benefit value of recreation, subsistence and small-scale commercial fishing on coral reefs	51
A mai a cultura a	5,061	•	Total livestock production (no./yr.)	2	•	Total value of livestock production	25
Agriculture	-	•	Total arable production (t/yr.)	18	•	Total value of arable production	272
Carlos a sassas traction	68,500	•	Total tonnes of CO ₂ e sequestered by coastal ecosystems (tCO ₂ e/yr.)	11	•	Total value of CO₂e sequestered by coastal ecosystems	272
Carbon sequestration	9,393	•	Total tonnes of CO ₂ e sequestered by forest ecosystems (tCO ₂ e/yr.)	1	•	Total value of CO₂e sequestered by forest ecosystems	37
Coastal protection	-	•	Area of coral reef (km²)	7	•	Coastal protection value by coral reefs	112
Tourism	598,263	•	Total visitor arrivals (stay-over and cruise ships) (visitors/yr.)	21	•	Total tourism added value attributed to marine ecosystems	943
Amenity value	26,197	•	Number of houses (no.)	-	•	Amenity value of mangroves	1,306
			Total value	62	•	Mix of values	3,020

^{*} The present value (PV) is the sum over 25-years. It is the total monetary value of a stream of benefits profiled over time, accounting for greater worth being placed on nearer term values than those further in the future.

Table 3: Supplementary information

Produced at: January, 2022	Ecosystem Service Flow Accounts						Ecosystem
	Physical flow (unit/yr.)			Monetary value (CI\$m/yr.)			Asset Account
	2022	Reporting	Confidence	Physical indicator	Reporting	Confidence	Valuation metric
Other exchange values							
Tourism	598,263	•	Total visitor arrivals (stay-over and cruise ships) (visitors/yr.)	59	•	Remaining tourism expenditure not attributed to ecosystems	2,706
Welfare values							
Tourism	598,263	•	Total visitor arrivals (stay-over and cruise ships) (visitors/yr.)	35	•	Total WTP to prevent decline in quality of coral reefs from medium to low levels	1,873
Non-monetised benefits							
Water supply		•			•		
Renewable energy		•			•		
Beach erosion protection		•			•		
Local recreation	378	•	Total number of diving spots (no.).		•		

^{*} The present value (PV) is the sum over 25-years. It is the total monetary value of a stream of benefits profiled over time, accounting for greater worth being placed on nearer term values than those further in the future.

Ecosystem Extent and Condition Accounts

Spatial analysis was conducted to assess the ecosystems present within the Cayman Islands. The quantity (i.e., extent) and quality (i.e., condition) of the present ecosystems are recorded in the Ecosystem Extent Account (**Table 4**) and Ecosystem Condition Account (**Table 5**), respectively. Beyond the extent and condition of ecosystems, other indicators for spatial configuration and other forms of capital are also included in the assessment (**Table 6**). The accounts can be used to monitor changes in the environmental assets over time. The terrestrial and marine ecosystem of the Cayman Islands are mapped in **Figure 1**, **Figure 2** and **Figure 3**.

Table 4: Ecosystem Extent Account

IIICNI Cada	Faceretore	Grand	Cayman	Little	Cayman			
IUCN Code	Ecosystem	Cayman	Brac	Cayman	Islands			
	Terrestrial							
Total area (km²)	200	38	29	267			
F2.7	Permanent salt and soda lakes	-	0.1	-	0.1			
MFT1.2	Intertidal forests and shrublands	62	0.1	2	64			
MT1	Shorelines biome	-	0.9	0.6	2			
MT2.1	Coastal shrublands and grasslands	1	1	1	4			
T1.2	Tropical-subtropical dry forests and scrubs	15	12	1	29			
T3.1	Seasonally dry tropical shrublands	25	7	16	47			
T5.3	Sclerophyll hot deserts and semi-deserts	0.9	-	-	0.9			
T7.4	Urban and industrial ecosystems	10	1	0.4	11			
T7.5	Derived semi-natural pastures and old fields	17	-	-	17			
TF1.1	Tropical flooded forests and peat forests	13	0.4	4	19			
TF1.2	Subtropical/temperate forested wetlands	0.8	-	-	0.8			
TF1.3	Permanent marshes	0.2	-	0.04	0.3			
TF1.4	Seasonal floodplain marshes	0.4	0.01	0.1	0.5			
	Marine (benthic and lagoon shelf)							
Total area (km2)		658	21	209	893			
M1.1	Seagrass meadows	80	0.2	3.2	83			
M1.3	Photic coral reefs	282	13	111	406			
M1.6	Subtidal rocky reefs	269	8	95	373			
M1.7	Subtidal sand beds	18	0.1	0.5	21			
M1.8	Subtidal mud plains	10	-	-	10			

Source: See Appendix A.1 for input data sources.

Table Notes: See Appendix C for DoE and IUCN ecosystem typology comparison.

Table 5: Ecosystem Condition Account

Category	Sub-category	Grand Cayman	Cayman Brac	Little Cayman	Cayman Islands
	Ecological com	munities and s	pecies		
Area of dry for	est above 20 feet elevation (km²)	38	-	-	38
Area of protec	ted land (km²)	14	1	2	17
Area of propos	sed protected land (km²)	44	10	15	69
Marine protected area (km²)		88	7	15	110
Carbon stock in habitats (MgC)	Inside MPAs	446,100	100	12,600	458,800
	Outside MPAs	2,616,800	8,200	192,000	2,817,000
Total area of species-specific habitat (km²)		5	15	2	22

2020 Ecosystem Account | February 2022

Category	Sub-category	Grand Cayman	Cayman Brac	Little Cayman	Cayman Islands
Charios	Aegiphilia caymanensis	2	-	-	2
Species points by type (#)	Pisonia margaratae	119	-	-	119
	Sister Islands Rock Iguana Cyclura nubila caymanensis - nest locations	-	-	238	238
Land					
Total land area owned by the Crown (km²)		162	29	84	275
Total land area owned by the National Trust (km²)		123	15	19	157

Source: See Appendix A.2 for input data sources.

Table 6: Other indicators

Category	Sub-category	Grand Cayman	Cayman Brac	Little Cayman	Cayman Islands		
	Spatial configuration						
Number of ca	aves (#)	31	25	2	58		
Area of sinkh	oles (km²)				0.04		
Other forms of capital							
Number of public moorings (#)	Inside MPAs	88	20	40	148		
	Outside MPAs	155	48	26	229		

Source: See Appendix A.3 for input data sources.

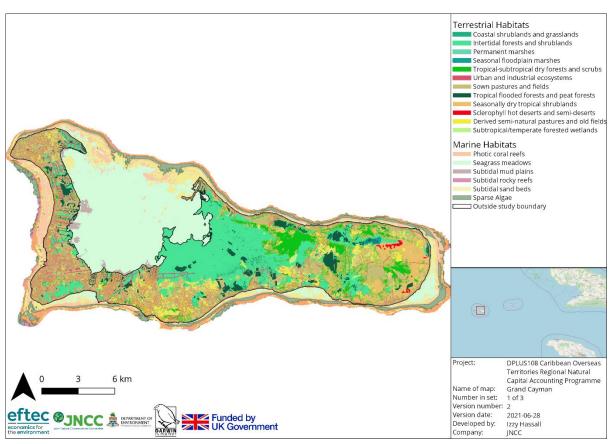


Figure 1: Grand Cayman terrestrial and marine ecosystems

Source: JNCC GIS analysis of Landcover 2013, Benthic Shelf 2008 and Lagoon Shelf (2008) from Cayman Islands DoE



Source: JNCC GIS analysis of Landcover 2013, Benthic Shelf 2008 and Lagoon Shelf (2008) from Cayman Islands DoE



Figure 3: Little Cayman terrestrial and marine ecosystems

Source: JNCC GIS analysis of Landcover 2013, Benthic Shelf 2008 and Lagoon Shelf (2008) from Cayman Islands DoE

2020 Ecosystem Account | February 2022

Box 1: Ecosystem accounts

The ecosystem accounting approach helps frame the interconnection between humans and the environment in economic terms. The environment can be viewed as an asset, or natural capital, that provides a revenue of ecosystem goods and services, which benefit people. This includes provisioning services, such as agricultural produce or fisheries, regulating services, such as protection from natural hazards and carbon sequestration, and cultural services, such as tourism and local recreation. These benefits can be measured and valued in a consistent and structured manner, and compiled into an accounting framework, called ecosystem accounts. Ecosystem accounts produce environmental statistics which provide an evidence base on the benefits provided by the environment.

An ecosystem account is structured as a set of component accounts, each of which require data to be consistently collected and collated in a systematic way. The main components of an ecosystem account are:

- **Ecosystem Extent and Condition Accounts** an inventory that holds details on the state of all the ecosystem assets that are present, including their extent and condition (quality and other relevant factors). For example, the spatial area of a reef system, and its health in terms of suitable indicators.
- Ecosystem Services Flow Account (physical terms) contains the flow of goods and services which are dependent on the ecosystem assets that are identified in the extent and condition accounts. This includes benefits related to the provisioning, regulating and cultural goods and services provided by ecosystems.
- Ecosystem Services Flow Account (monetary terms) calculates the annual value of the estimated flow of benefits that are captured in the Ecosystem Services Flow Account (physical terms).
- **Ecosystem Asset Account** records the net present value approach to obtain values in monetary terms for ecosystem assets based on the monetary valuation of ecosystem services.

This set of accounts therefore monitor the presence and state of different habitats, the benefits these provide, and the value that humans receive from them. When updated year on year they provide a useful means to monitor and evaluate growth or decline in any of these contributing elements, while also helping to understand the relationship between the environment, the services it provides, and how humans use and value them.

The data collection and analysis for the Cayman Islands 2020 Ecosystem Account occurred in parallel to the development and publication of the SEEA-EA standard. As such while the Cayman Islands 2020 Ecosystem Account is generally aligned with the direction and intention of the SEEA-EA standard, full compatibility should be worked towards as the implementation of the SEEA standard continues to evolve globally over time.

Contents

1. Introduction	1
2. Natural Capital and Ecosystem Accounts	2
2.1 Concepts	2
2.2 The ecosystem accounting process	3
2.3 Structure of ecosystem accounts	4
3. Implementation of ecosystem accounting	7
3.1 Current progress and next steps	7
3.2 Use of ecosystem accounts	8
4. Conclusion	9
References	10
Appendix A - Methodology	12
Appendix B - Changes in account values	30
Appendix C - Ecosystem service classification comparison	32
Appendix D - Ecosystem classification comparison	33

1.Introduction

eftec, with project partner Joint Nature Conservation Committee (JNCC) and funding from the UK Government, have initiated *natural capital accounting* with the environment and statistics departments of the local governments of five UK Overseas Territories (OTs)⁴. The purpose is to build initial *ecosystem accounts* and to provide a foundation for data collection and processing to produce national environmental statistics in support of better decision making.

As far as possible, the ecosystem accounting work is aligned to producing UN SEEA-EA compatible accounts. The UN adopted the SEEA-EA as an internationally recognised statistical standard in March 2021. This is an important step supporting the development and integration of ecosystem accounts into national accounts, and thereby forming a basis of environmental economic evidence for policy makers. The SEEA-EA standard is new, much work is yet to be done on practical implementation. It will take time before a comprehensive and broadly applicable guidance is developed and consistently put into practice. Therefore, the accounts can be expected to evolve over time, becoming more robust and complete through subsequent iterations. The current project establishes the groundwork from which this can occur.

Ecosystem accounts are a structured way to measure and monitor the benefits provided by the natural environment. They can be produced alongside other national accounts as a basis for understanding human dependence and impact on the environment, and to inform policy and planning decisions. They should be updated annually to build up the available evidence base, to demonstrate change over time, and to improve on the methods applied.

This report gives an overview of the concepts, process and structure of ecosystem accounts, and current progress on their implementation. It provides additional context for the Ecosystem Account summarised above. The remaining sections are structured as follows:

- Section 1: Introduction
- Section 2: Background on natural capital and ecosystem accounts
- Section 3: Implementation of ecosystem accounting
- Section 4: Conclusion

2020 Ecosystem Account | February 2022

⁴ The OTs included in this project are: Anguilla, British Virgin Islands, Cayman Island, Montserrat and Turks and Caicos Islands.

2. Natural Capital and Ecosystem Accounts

This section presents the background and concepts of natural capital and ecosystem services, also describing the process which produces ecosystem accounts and the structure of the accounts. As the SEEA-EA is recently published, the relationship with natural capital accounting is still evolving. As applied in this report, the SEEA-EA standard for ecosystem accounting can be thought of as a subset of the broader process of natural capital accounting. They generally apply the same concepts and methods. SEEA-EA does so in a more specific way to align with the System of National Accounts (which is the internationally agreed standard set of recommendations on how to compile measures of economic activity, such as GDP).

2.1 Concepts

Natural capital is defined by the UK Natural Capital Committee as: "the elements of nature that directly and indirectly produce value or benefits to people, including ecosystems, species, freshwater, land, minerals, the air and oceans, as well as natural processes and functions". Natural capital, or ecosystem assets, provide benefits to people, through ecosystem services. The focus of ecosystem accounting is to measure and value the benefits from ecosystem services and the underlying ecosystem assets, and to present this evidence in a structured format called ecosystem accounts.

In the Common International Classification of Ecosystem Services (CICES), ecosystem services are defined as 'the contributions that ecosystems make to human well-being'. They are seen as arising from the interaction of biotic and abiotic processes and refer specifically to the 'final' outputs or products from ecological systems, specifically the things directly consumed or used by people. Ecosystem services are therefore the flows of benefits which people gain from natural ecosystems, and natural capital is the stock of ecosystems from which these benefits flow (**Figure 2.1**). Ecosystem services can be subdivided into provisioning, regulating, cultural and supporting services (**Box 2.1**).

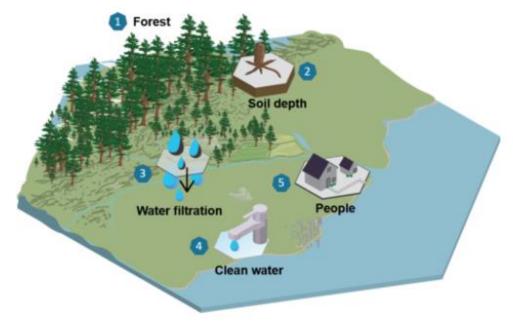


Figure 2.1: How ecosystem assets generate ecosystem services to beneficiaries in a spatial relationship

Source: UN (2021)

2020 Ecosystem Account | February 2022

Viewing the environment through the lens of natural capital is an effective means to consider its value in the language of economics. Using the concept of capital and expressing the value of ecosystem services in monetary terms helps to integrate the natural environment into decision-making, in which it can otherwise be invisible.

Box 2.1: Types of ecosystem services

The most widely used definition of ecosystem services is from the Millennium Ecosystem Assessment: "the benefits people obtain from ecosystems". It further categorised ecosystem services into four types:

- **Provisioning services**: material outputs from nature (e.g., seafood, water, fibre, genetic material).
- Regulating services: indirect benefits from nature generated through regulation of ecosystem
 processes (e.g., mitigation of climate change through carbon sequestration, water filtration by
 wetlands, erosion control and protection from storm surges by vegetation, crop pollination by
 insects).
- **Cultural services:** non-material benefits from nature (e.g., spiritual, aesthetic, recreational, and others)
- Provisioning, regulating and cultural services are referred to as final ecosystem services and are
 underpinned by **Supporting services**. These are the fundamental ecological processes that
 support the delivery of other ecosystem services (e.g., nutrient cycling, primary production, soil
 formation).
- Analysis of benefits from natural capital also includes **abiotic services**, the benefits arising from fundamental geological processes (e.g., the supply of minerals, metals, oil and gas, geothermal heat, wind, tides, and the annual seasons).

2.2 The ecosystem accounting process

Ecosystem accounting is a process of compiling and linking data on the quantity and quality of ecosystem assets and physical and monetary data on the benefits they provide. The data are presented in a consistent framework, which should as far as possible align with the SEEA-EA standards for producing ecosystem accounts. These accounts present evidence to measure and monitor benefits from ecosystems consistently over time to inform policy and planning decisions. In the same way that the structured recording of other national statistics in conventional national accounts informs and improves a country's economic and social decisions, ecosystem accounts can inform better management of a country's ecosystem assets.

Ecosystem accounts are structured as a set of interrelated component accounts that record the value that is provided by a country's ecosystem assets. The aim of these accounts is to answer the following key questions:

• What ecosystem assets do we have? -> An Ecosystem Extent and Condition Account (together sometimes referred to as an *asset register*) is an inventory that holds details of the stocks of ecosystem assets that are present within the geographical boundary of the country. For example, a coral reef may contain a variety of species and the quality of this diversity may be measured by the number of species recorded on the site for a few selected taxa (e.g., fish, coral). The asset

register helps track trends in the quantity and quality of ecosystems.

- What benefits do these assets provide? -> An Ecosystem Services Flow Accounts (physical terms) contains the flow of goods and services which are dependent on the ecosystems that are identified in the extent and condition accounts. This account provides information on the benefits provided by ecosystems, with the flows measured in different physical units (e.g., number of recreational visits or visitors, weight of produce).
- What is the value of these benefits? -> An Ecosystem Services Flow Accounts (monetary terms)
 calculates the annual value of the estimated flow of goods and services that are captured in the
 Ecosystem Services Flow Accounts (physical terms). The Ecosystem Asset Account measures the
 aggregate value of flows of goods and services into the future.

2.2.1 Data collection

Some relevant data will already exist, such as economic data for natural resources, the tourism sector, and utilities and infrastructure data. Additional data can be collected through social research including surveying, economic and econometric analysis, and monitoring of environmental outputs and levels of usage. Geo-referenced socio-economic data along with infrastructure maps can be compared with habitat maps to help identify and measure location specific use.

In practice, secondary data in a readily useable format may be limited, especially with regards to regulating services. Resource and time constraints can further limit primary data collection. This may require an innovative approach with what is available, clearly caveated with assumptions and further inferences to fill remaining gaps and making use of modelling where possible. In such cases, it is important to prioritise the most material benefits in the given context and to focus on where the most value is being provided.

2.3 Structure of ecosystem accounts

This section provides more detail on the component accounts which together make up the ecosystem account. **Figure 2.2** presents the links between the components of ecosystem accounts.

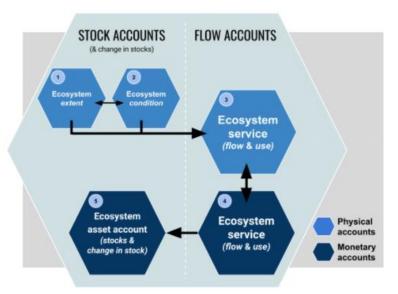


Figure 2.2: Ecosystem accounts and how they relate to each other

Source: UN (2021)

2.3.1 Ecosystem Extent and Condition Accounts

The extent and condition accounts (or asset register) record the quantity and quality of all of the ecosystem assets in a given area. The asset register therefore acts as an inventory that holds details of the stocks of ecosystem assets that are relevant to the accounts, along with information on their quality, functionality, and other relevant factors.

The foundation for an asset register is the distribution and condition of ecosystems which are present within the accounting area. Ecosystem extent can be determined and mapped by desk-based analysis, such as with data available from existing surveys and obtained through existing remote sensing techniques such as Earth Observation (EO) and processed using Geographic Information Systems (GIS). The combination of remote sensing and on-the-ground techniques provides a strong evidence base from which to build the spatial basis for an asset register.

2.3.2 Ecosystem Service Flow Accounts - Physical Terms

The Ecosystem Service Flow Accounts - Physical Terms account records the flow of goods and services from ecosystems in the asset register. They provide a physical measure of the quantity of benefits provided on an annual basis and include information on the variety of ways that the environment provides value to people. These benefits include the provisioning, regulating and cultural services provided by ecosystems, such as fisheries, sea surge protection and locations for tourism.

Not all physical flows from ecosystems will be significant or material for evaluating. The most relevant flows of benefits should be identified and prioritised for inclusion in an account. Once the prioritised benefits that are possible to quantify are identified, the annual flows should be measured. The approach to measuring the benefits provided within the OTs will vary between territories by type of ecosystem service and benefit.

2.3.3 Ecosystem Service Flow Accounts – Monetary Terms and Ecosystem Asset Accounts

The Ecosystem Service Flow Accounts - Monetary Terms measures the monetary value of the flows of benefits that are captured in the Ecosystem Service Flow Accounts - Physical Terms. It aims to measure the exchange value of both market and non-market ecosystem services through different economic valuation techniques. This applies to both the annual value of ecosystem services and the ecosystem asset value, measured as the aggregate value of the expected annual stream of benefits over the defined assessment period (set out in the Ecosystem Asset Account).

As the monetary accounts measures value in a common metric, money, it allows for comparison between different benefits within the accounts, and between different accounts. Importantly, it also allows for comparison across many other factors which may act as inputs to decision making, such as: national economic accounts; the financial cost of an intervention; replacement costs for critical infrastructure; the price paid for public provision of alternative services; and income revenue streams from traditional capital assets. Monetary values help assess trade-offs across these factors, and to justify allocation of resources to environmental management and protection.

2020 Ecosystem Account | February 2022

2.3.4 Account summary

Physical flows and monetary flows should be recorded separately, and then reported together. This creates added value by showing the links between ecosystems, ecosystem services and the value of benefits to people. Where monetary valuations are uncertain, but suggest certain benefits are important, physical flow indicators might be the best measure. In the context of the OTs, it may be likely in some cases that producing Ecosystem Service Flow Accounts - Physical Terms is more feasible than monetary valuations, but even so the aim should be to build monetary accounts to guide the collection of the most important data for the Ecosystem Service Flow Accounts - Physical Terms. Results should always be expressed with appropriate caveats to ensure that the monetary units applied reflect the value as accurately as possible. A traffic light system can be used to indicate uncertainties in data or methods applied in the Ecosystem Account (see **Table 1**).

Table 1: Presenting uncertainty in the physical and monetary terms of ecosystem services

Level of confidence	Symbol	Description of confidence
High	•	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions.
Medium	•	Science-based assumptions and published data are used but there is some uncertainty in combining them, reasonable confidence in using the data to guide decision.
Low	•	Evidence is partial and significant expert judgement-based assumptions are made so that the data provides only order of magnitude estimates of physical quantity or monetary value.

3.Implementation of ecosystem accounting

This section outlines the implementation of the ecosystem accounts, covering progress and next steps of the current ecosystem accounting activities, and areas to explore for applying the ecosystem accounts to policy and planning.

3.1 Current progress and next steps

The current project has initiated and developed ecosystem accounts in the five Caribbean UK OTs. Further embedding them involves engagement with government departments and other stakeholders to gain an understanding of key issues, discuss the concepts and uses of the accounts, and identify and collect available data.

Ideally, the process should be embedded in national statistics outputs through annual updates of the accounts, building more reliable data systems and methodologies with each iteration. Data collection and management systems will need to be developed further to ensure the quality of outputs is of an appropriate level to inform policy and planning. This may involve the use of standardised protocols and knowledge about data handling and processing; however, adoption of these broader protocols must also be applicable to the specific local context. These data collation processes should be led by the statistics departments of each OT, who have expertise in generating accurate and consistent data sets, and can align to the SEEA-EA statistics guidance.

While progress needs to be made, it does not necessarily have to be resource intensive once accounting systems are set up, which can then evolve over time rather than requiring significant investment in any one time period. Updates can be streamlined so that as new data is generated, it is fed into the ecosystem accounting system as a matter of routine. While the accounts should be produced on an annual basis, it is not necessary to update every element of them every year – so long as it is transparent what is updated and what is not.

The frequency of updates needs to take into account how sensitive different variables are to change, and aspects of the accounts which would not be expected to change much year on year, or for which resource intensive primary research is needed, may be updated less regularly. However, a significant benefit of the accounts is their ability to monitor trends and provide up to date information to decision makers, and as such they should be reproduced regularly. Any progress or improvement, even if incomplete, will add value to the overall process, and its ability to effectively feed into decision making. As the accounts become increasingly complete records of the value that ecosystems provide, they should become further embedded in the OTs policy and planning systems and a vital component of government statistics and public record.

In the context of sustained pressure to develop, and focus on economic growth in the OTs, it is especially critical to understand what impacts development has on the environment and its ability to provide ecosystem services which benefit people. By initiating and building on the Ecosystem Accounts in the OTs, it is hoped that additional information will be generated that will directly contribute to this understanding and improved management of the economy and environment for the sustainable prosperity and well-being of the People of the OTs.

2020 Ecosystem Account | February 2022

3.2 Use of ecosystem accounts

The ultimate purpose of ecosystem accounts is to facilitate improved management of the economy and environment. Better evidence leads to better informed decisions, but those decisions are reliant on understanding and interpretation of the evidence. A considerable advancement of ecosystem accounts is their ability to compile ecological, biophysical, socioeconomic, economic, and other diverse data and produce evidence in a readily useable format. The structure of ecosystem accounts provides a consistent means to present this evidence, but it can also be adapted to specific uses, producing indicators and other information fit for purpose.

There are many areas that the evidence from ecosystem accounts can contribute to, such as:

- Link to progress on the SDGs
- Link to progress on domestic policy
- Inform on land use planning
- Monitor progress (growth) / deterioration (decline) over time
- Engage with the private sector
- Understand distribution of benefits (sectoral, individuals)
- Understand proportion of economy dependent / at risk
- Understand scale of potential economic impact in from specific decisions
- Identify priority areas for value provision and maintenance
- Identify targets for investment and enhancement
- Information for public awareness campaigns

- Inform industrial and economic strategy
- Understand tax base effects
- Understand resident use and benefit of environment
- Investigate future impact and sustainability
- Conduct economic planning through scenario analysis
- Consider potential climate change impacts
- Target spending for a green economic recovery
- Create indicators to track success management / highlight areas for improvement
- Improve data management and flow across departments and sectors creating efficiencies
- *Many other specific uses are possible

Future work should aim to link the ecosystem accounts to relevant policy aims and initiatives. The next phase of the current project will begin to explore this by working with the local government departments to establish priority areas for further development.

4. Conclusion

The 2020 ecosystem accounts represent progress towards establishing an evidence base on the value that the environment provides. However, it should not be considered a one-off assessment, but rather a part of an ongoing process of data collection, methodological improvement and policy and planning implementation that should occur annually. As the SEEA-EA becomes more widely adopted, ecosystem accounts will increasingly inform government policy and planning internationally. The OTs are at the forefront of this process with the current set of accounts but will need to commit to their ongoing development and uptake to maintain this position as the practice evolves.

Specifically, future effort to further develop ecosystem accounting can focus on:

- **Stakeholder engagement** presenting the approach and results to a wide range of stakeholders to build awareness and support.
- **Capacity building** support for the continued development of the technical skills required to compile and update Ecosystem Accounts.
- National Statistics Offices working with government statisticians to embed the SEEA-EA in National Accounts.
- **Policy and planning implementation** develop and promote the use of Ecosystem Accounts to support policy and planning aims and objectives.
- **Draw on regional ecosystem accounting practitioners** share knowledge and experiences across the OTs, including data, methodologies and applications of Ecosystem Accounts.
- Link with regional and international organisations and initiatives make connections with Caribbean regional and international organisations with an environmental, national statistics, or ecosystem accounting focus.
- **Continued alignment with evolving SEEA guidance** update the accounts alongside the recommendations of SEEA on methodological development and emerging good practice.

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323

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Appendix A - Methodology

This annex sets out the input data and methods used to develop the Cayman Islands 2020 Ecosystem Account (Cayman-Island-EA-2020-January2022.xls) and provides guidance on how to update each component of the account.

For each component, a description of the input data, its source and a workbook reference for where it is applied are provided, along with how often the data should be updated (definitions for frequency are described in Table A.1).

Table A.1: Definitions of frequency of input data updates

Frequency	Definition		
Annually	The underlying source should be updated on an annual basis		
As source is updated	The underlying source is expected to be updated in the future (i.e., sources that are not updated annually). The accounts should be updated when new data from the same source is available.		
As new evidence becomes available	The underlying source is not expected to be updated; a new source would be required to update this input		

The remainder of this section is structured as follows:

- Ecosystem Extent Account (Section A.1)
- Ecosystem Condition Account (Section A.2)
- Ecosystem Service Flow and Asset Accounts and Supplementary Information (Section A.3); and
- Input tabs (Section A.4).

A.1 Ecosystem Extent Account

The Ecosystem Extent Account records information on the area of terrestrial and marine ecosystems within the ecosystem accounting area, i.e., the Cayman Islands' terrestrial and marine boundary. Table A.2 sets out the data sources used to estimate the terrestrial and marine ecosystem extent, which have been applied by GIS specialists at JNCC using GIS modelling software QGIS. The Ecosystem Extent Account should be updated when the source GIS layers are updated. The Ecosystem Extent Account is within the tab: 'A1. Asset Register' of the ecosystem accounting workbook.

Table A.2: Input data for the Ecosystem Extent Account

Description	Source	Frequency	Workbook reference
Terrestrial habitat map	Landcover 2013 (DoE, 2013).	As source is updated	A1. Asset register tab
Shelf benthic habitat map	Shelf Benthic classification	As source is updated	A1. Asset register tab
	2008 (DoE, 2008)		
	Lagoon Benthic		
Lagoon benthic habitat map	classification 2008 (DoE,	As source is updated	A1. Asset register tab
	2008)		

A.2 Ecosystem Condition Account

The Ecosystem Condition Account records information on the quality of ecosystems within the ecosystem accounting area. Condition indicators can be associated with ecological communities and species, freshwater, land or soil elements of ecosystems. Table A.3 provides an overview of the data used within the Ecosystem Condition Account of the Cayman Islands. The Ecosystem Condition Account is set within the tab: 'A1. Asset Register'.

Table A.3: Input data for the Ecosystem Condition Account

Description	Source	Frequency	Workbook reference	
	Ecological communities	s and species		
Area of dry forest above 20ft elevation	Derived from GC Dry Forest Above 20ft Elevation_WGS84UTM.shp	As source is updated	A1. Asset register tab	
Area of protected land	Combination of sources listed in workbook	As source is updated	A1. Asset register tab	
Area of proposed protected land	Combination of sources listed in workbook	As source is updated	A1. Asset register tab	
Area of Marine Protected Areas (MPAs)	Combination of sources listed in workbook	As source is updated	A1. Asset register tab	
Total carbon stock (in and outside MPAs)	Guzman et al. (2017)	As new evidence becomes available	A1. Asset register tab	
Area of species habitats by type	Combination of sources listed in workbook	As source is updated	A1. Asset register tab	
Species points	Combination of sources listed in workbook	As source is updated	A1. Asset register tab	
Land				
Land area owned by The Crown	Combination of sources listed in workbook	As source is updated	A1. Asset register tab	
Land area owned by the National Trust	Combination of sources listed in workbook	As source is updated	A1. Asset register tab	

A.1.1 Other indicators

Beyond extent and condition of ecosystems, other details on environmental assets have been included in the Cayman Islands 2020 account. These reflect details of spatial configuration which could reflect sinkholes and caves, as well as other forms of capital such as renewable energy generation sites, areas of accessible greenspace as well as public moorings. Table A.4 provides an overview of the data sources used to generate these other indicators for the Cayman Islands, which are set within the tab: 'A1. Asset Register'.

Table A.4: Input data for other indicators

Description	Source	Frequency	Workbook reference
Spatial configuration			
Number of caves		As source is updated	A1. Asset register tab
Area of sinkholes		As source is updated	A1. Asset register tab
Other forms of capital			
Number of public moorings (inside and outside MPAs)		As source is updated	A1. Asset register tab

A.3 Ecosystem Service Flow and Asset Accounts

This section covers the ten benefits included in the 2020 Ecosystem Account. For quantified and monetised benefits, it outlines the methods used to value each benefit and the input data that needs to be updated for future accounts. For unquantified or non-monetised benefits, a summary of the existing data, sources and next steps are outlined.

A scope and materiality⁵ assessment was conducted to show which benefits are likely to be provided by these ecosystems, and which have been possible to include in this account and which not. The scope and materiality assessment should be updated as new benefit are added or when new ecosystems are included in the Ecosystem Account. This assessment is set within the tab: 'Scope & materiality assessment.'

Within the accompanying Excel workbook (Cayman-Island-NCA-2020-January2022.xls), each benefit has a separate calculation tab, with all estimates of annual flows summarised within the Ecosystem Service Flow Account – Physical Terms (tab 'A2. Physical terms') and the Ecosystem Service Flow Account – Monetary Terms (tab 'A3. Monetary terms'). The monetary account tab also presents an estimate of the monetary ecosystem asset value⁶ (Ecosystem Asset Account) expressed as a present value of the estimated flow of benefits over the accounting period (25 years).

This section starts with an overview of the physical flow and monetary valuation metrics and the profiling assumptions applied for each benefit.

A.1.2 Overview

An overview of the physical flow and monetary valuation metrics and methods are provided in Table A.5. The benefits are split into the following sections:

- **Ecosystem Service Flow Account and Asset Accounts** –approach to monetary valuation aligns with the System of Environmental Economic Accounting- Ecosystem Accounting (SEEA-EA) standard which applies exchange values⁷ to be comparable to other national accounts (e.g., as applied in the System of National Accounts (SNA)).
 - Monetary values based on data from previous years have been inflated to 2020 prices (Economics and Statistics Office, 2021; U.S. BEA, 2021; HM Treasury, 2022). The monetary values of benefits are calculated per year and summed and discounted over time to estimate present value of benefits using a declining discount rate (starting at 3.5%) (HM Treasury, 2020) and a 25-year study period. **Table A.6** describes the assumptions used to estimate the future flows of benefits over this assessment period. These assumptions should be revisited as new evidence becomes available.
- **Supplementary information** The SEEA-EA guidance recognises that exchange values do not capture all information useful for decision makers. This section includes additional information outside the scope of the Ecosystem Account, under the following categories:
 - o **Other exchange values** Additional monetary benefits based on exchange values but are outside the scope of the Ecosystem account, e.g., remaining visitor expenditure attributed to

327

⁵ An impact or dependency on natural capital is material if considering it, as part of the set of information used for decision making, has the potential to alter that decision.

⁶ One of the five core accounts in SEEA EA, this account records information on stocks and changes in stocks (additions and reductions) of ecosystem assets, as well as accounting for ecosystem degradation and enhancement (UN, 2021).

Exchange values are equivalent to the price as set by a market (i.e., the price at which supply equals demand) or the price at which an exchange would occur in a hypothetical market. Notably this differs from welfare values which include the surplus value created in addition to the exchange value (i.e., the consumer surplus).
2020 Ecosystem Account | February 2022
Page 14

ecosystems. This includes economic values which is dependent on ecosystems, but which might not be entirely attributable to ecosystems within the SEEA-EA framework. For example, expenditure on some activities may not be feasible without the support of ecosystem assets, but only a subset of this expenditure would be attributable to ecosystems within SEEA-EA, as labour and other capitals might also contribute to the production of the good or service

- Welfare values Monetary benefits that are based on welfare value metrics such as willingness
 to pay values. Note that this value includes the consumer surplus that is additional to the
 exchange value as adopted in the SEEA-EA framework, which also makes it an extension of the
 value reported with the SNA.
- Non-monetised benefit There are two types of non-monetised benefits. Firstly, where data
 for quantifying the physical flow is available and is useful to monitor over time, but there is
 currently insufficient data nor an appropriate methodological approach to conduct monetary
 valuation. Secondly, where material benefits exist that are not feasible or not desirable to
 monetise (e.g., biodiversity, spiritual value, iconic species).

Table A.5: Overview of benefits

Benefit	Physical indicator	Monetary valuation metric and method		
Ecosystem Service Flow and Asset Accounts				
Fisheries	Volume of output	Market prices		
Agriculture	Volume of output	Value added by production		
Carbon	Tonnes of CO₂e sequestered	Non-traded central carbon value BEIS (2019), £/tCO ₂ e		
sequestration	Toffiles of CO2e sequestered	Notificial delical delibori value BEIS (2019), EtCO2e		
Coastal protection	-	Coastal protection value by coral reefs		
Local recreation	Recreational visits	Recreational expenditure		
Tourism	Tourist visits	Tourist expenditure (value added to tourism industry		
Tourisiii	Tourist visits	attributed to ecosystems)		
Amenity value	Number of houses	Property uplift value attributed to mangroves		
	Supplementa	ry information		
	Other exch	ange values		
Tourism	Tourist visits	Remaining visitor expenditure attributed to		
100113111	Tourist visits	ecosystems		
	Welfar	e values		
Tourism	Tourist visits	Willingness to pay to prevent decline in quality of coral		
TOUTISTT	Tourist visits	reefs		
Non-monetised benefits				
Water supply	-	-		
Renewable energy	-	-		
Beach erosion	-	-		
Local recreation	Number of diving spots	-		

Table A.6: Benefit profile assumptions over time

Benefit	Physical terms	Monetary terms
	Ecosystem Service Flow and Asse	et Accounts
Fisheries	No change in volume of fish caught compared to the baseline year.	Assumed constant economic value of benefit over time.
Agriculture	Average number of goats, cattle, pigs and poultry (2015-2020).	Average detailed value added by livestock production (2015-2019) ¹ .
	-	Average detailed value added by arable production (2015-2019).

Benefit	Physical terms	Monetary terms	
Carbon	No change in sequestration rates over time.	Value of carbon emissions increase over time	
sequestration	No change in sequestration rates over time.	in line with BEIS (2019).	
Coastal protection	_	Assumed constant economic value of benefit	
Coastal protection	-	over time.	
Tourism	Average number of tourists (2016-2020).	Average expenditure per person per night	
TOUTISTIT	Average number of tourists (2010-2020).	(2016-2020).	
Amenity value	No change in number of houses compared to	Assumed constant economic value of benefit	
Afficility value	the baseline year.	over time.	

Supplementary information			
	Other exchange value	s	
Tourism	Average number of tourists (2016-2020).	Assumed constant economic value of benefit	
Tourisiii	Average number of tourists (2010-2020).	over time.	
	Welfare values		
Tourism	Average number of tourists (2016-2020).	Assumed constant economic value of benefit	
Tourisiii	Average number of tourists (2010-2020).	over time.	
	Non-monetised benefi	ts	
Water supply	-	-	
Renewable energy	-	-	
Beach erosion	-	-	
Local recreation	-	-	

Table notes:

A.1.3 Fisheries

The marine ecosystems surrounding the Cayman Islands provide habitat for a variety of species of fish and other sea life. This in turn supports commercial, subsistence and recreational fishing activities across the Cayman Islands. It should be noted that within the context of the Cayman Islands commercial fishing is small-scale⁸. The inclusion of fisheries in the accounts helps to track the annual value that marine natural capital contributes through this benefit.

Method overview

Guzman et al. (2017) produce estimates of the economic value of reef fish, as this is attributed to local marine ecosystems. Catch of pelagic species was beyond the scope of the study, as these species "rely on foreign ecosystems for most of their lives" (p.18). The study estimates that in 2016, the number of reef fish caught was 390,000. To produce an estimate of weight (lbs), this is multiplied by the assumed average weight of reef fish of 1.8 lbs/fish (Williams and Ma, 2013) to generate an estimated annual volume of reef fish landings. Recent records of fish landings are not available for the Cayman Islands, therefore the 2016 estimated in Guzman et al. (2017) is assumed to be representative of current and future years.

The study estimates the value of artisanal fishing for recreation, subsistence and small-scale commercial purposes using a net factor income approach⁹. As such, the value of reef fish is treated as a production factor, and Guzman et al. (2017) also include labor costs in the total value as they are a benefit to the Cayman Islands economy.

¹ Updated figure not available. Will be available as part of SNA update.

⁸ This is based on evidence from Meier et al. (2011) and Henshall (2009) cited in the Guzman et al., 2017).

⁹ Market-based valuation method that estimates the net benefit of fishing by taking into account costs of other production factors and revenue generated.

Following the approach set out in Guzman et al. (2017), total annual revenue from the relevant fishing activities is estimated by multiplying the estimated volume of reef fish caught by the average price, CI\$7.5/lbs. Resulting in an estimate of total annual revenue of recreation, subsistence and small-scale commercial fishing equal to CI\$5.3 million, in 2020 prices. Total annual costs are estimated as 44%¹⁰ of total revenue which is CI\$2.3 million. The annual net benefit is estimated as the difference between total revenue and total cost, just below CI\$3 million in 2020 prices. After 2020, it is assumed that revenues and costs remain constant therefore the 2020 value is representative of future years. Note that this is an estimate for the Cayman Islands and has not been disaggregated to the three Islands.

How to update the account

The benefits are estimated in the tab: **'S1. Fisheries'**. Table A.7 provides an overview of the input data for the benefit, including the frequency data should be updated and the workbook reference in the account.

Table A.7: Input data for the fisheries benefits

Description	Source	Frequency	Workbook reference	
Physical terms				
Estimated number of reef fish caught in the Cayman Islands	Guzman et al. (2017)	As new evidence becomes available	1.1a	
Average weight of reef fish, lbs/fish	Williams and Ma (2013)	As new evidence becomes available	1.1b	
	Monetary t	erms	'	
Average price of reef fish species in the Cayman Islands, US\$/lbs	Guzman et al. (2017)	As new evidence becomes available	1.2a	
Estimated total annual value of recreational, subsistence and small-scale commercial fishing on coral reefs	Guzman et al. (2017)	As new evidence becomes available	1.2b	
US GDP deflator	US BEA (2021)	Annually	1.2c	
Exchange rate: US\$ to CI\$	Economics and Statistics Office (2021)	As source is updated	1.2d	
Fishing costs as proportion of total annual revenue	Schep et al. (2012) in Guzman et al. (2017)	As new evidence becomes available	1.2e	

The method applied in the 2020 account can be refined using up to date data on the quantity of landings across the three Islands, as an understanding of the breakdown of catch by purpose (i.e., recreational vs commercial vs subsistence). This would help identify beneficiaries more clearly within the account. In addition to the catch, updated evidence on average price as well as costs would allow for monitoring of changes in the fishing industry in the Cayman Islands. Finally, accurate data and approaches to estimation of the contribution of other factors of production (e.g., physical capital and labour) to the overall economic value would allow for a more refined estimation of the contribution that is directly attributable to ecosystems.

¹⁰ Based on evidence in Schep et al. (2012) looking at artisanal fishing in Caribbean coral reef ecosystems. ²⁰²⁰ Ecosystem Account | February 2022

A.1.4 Agriculture

Agricultural activities in the Cayman Islands include livestock (goats, pigs, cattle and poultry) and non-livestock production. A break down of non-livestock production is not reflected in the 2020 account, as this data was not available.

Method overview

For each livestock type, the Department of Agriculture records total count for various age groups (e.g., kids <2months, calf 6-12 months). The number of goats, pigs, cattle and poultry are included in the Statistics Compendium (Economics and Statistics Office, 2021). For each livestock type, annual production is set equal to the 2020 figures in these evidence bases. Future production levels for goats, pigs, cattle and poultry are estimated as a five-year average (2015-2020). Note that poultry production is an estimate for the Cayman Islands and has not been disaggregated to the three Islands, whilst remaining livestock production can be disaggregated to Grand Cayman and Cayman Brac.

Farm gate prices for agricultural outputs were not readily available to be included in the 2020 account. As an alternative measure, the detailed value added for 'growing of agricultural crops' and 'farming of animals' in the Cayman Islands latest National Accounts (Economics and Statistics Office, 2020) has been used. For each category, the accounting year is set equal to the 2019 detailed value inflated to 2020 prices, with the future monetary value estimated as a five-year average (2015-2020) (Economics and Statistics Office, 2020). Once the detailed value for 2020 is available it can be added to the Ecosystem Account.

How to update the account

The benefits are estimated in the tab: **'S2. Agriculture'**. Table A.8 provides an overview of the input data for the benefit, including the frequency data should be updated and the workbook reference in the account.

Table A.8: Input data for agricultural benefits

Description	Source	Frequency	Workbook reference	
	Physical terms			
Grand Cayman total number	Economics and Statistics	As source is updated	2.1a	
of goats	Office (2021)	As source is apaated	2.10	
Grand Cayman total number	Economics and Statistics	As source is updated	2.1b	
of pigs	Office (2021)	As source is apaated	2.10	
Grand Cayman total number	Economics and Statistics	As source is updated	2.1c	
of cattle	Office (2021)	As source is apaated	2.10	
Cayman Brac total number of	Economics and Statistics	As source is updated	2.1e	
goats	Office (2021)	7.5 30di ce is apadeca	2.10	
Cayman Brac total number of	Economics and Statistics	As source is updated	2.1f	
pigs	Office (2021)	7.5 source is apaated	2.11	
Cayman Brac total number of	Economics and Statistics	As source is updated	2.1g	
cattle	Office (2021)	·	2.18	
Sister Islands total poultry	Department of Environment	Source has been superseded	2.1h	
Sister islands total poultry	(2020)	by updated source	2.111	
Cayman Islands total poultry	Economics and Statistics	As source is updated	2.1i	
production	Office (2021)	, is source is aparated	2	
Monetary terms				
Detailed value added by	Economics and Statistics	As source is updated	2.2a	
industry - Agriculture	Office (2020)	, is so at the list appeared	2.20	

The Cayman Islands GHG inventory (Department of Environment, 2020) does indicate that there is non-livestock farming. Production (e.g., tonnes of crops) and the value (e.g., farmgate price) should be included in the next iteration of the account. The monetary value of non-livestock or arable production is currently captured within the detailed value added of the industry for growing of agricultural crops (Economics and Statistics Office, 2020). A better understanding of data collected through agricultural surveys that feed into the Cayman Islands annual national accounts is necessary.

Future iterations of the account could estimate the contribution of other factors of production (e.g., physical capital and labour) to the overall economic value to allow for a more refined estimation of the contribution that is directly attributable to ecosystems.

A.1.5 Water supply

Based on Cayman Islands 2010 census, the main source of water supply to households in the Cayman Islands (approx. 88%) is from mains (city water or desalinated water), this is followed by cistern, rain or trucks (7%) and wells (5%) (Economics and Statistics Office, 2021). Production of potable water is from desalination and groundwater abstractions, with non-potable water being distributed through trucks and pipelines. It is therefore dependent on natural capital stocks.

Method overview

Water Authority Cayman and Cayman Water Company have provided statistics on production in Grand Cayman, supply in Cayman Brac as well as desalinated water consumption by consumer group over time (Economics and Statistics Office, 2021). A monetary value has not been identified, which is a data gap in the 2020 account.

How to update the account

The benefits are estimated in the tab: **'S3. Water supply'**. Table A.9 provides an overview of the input data for the benefit, including the frequency data should be updated and the workbook reference in the account.

Table A.9: Input data for water supply

Description	Source	Frequency	Workbook reference
	Physical te	erms	
Water production in Grand Cayman, 2015-2020	Economics and Statistics Office (2021)	As source is updated	3.1a
Water supply in Cayman Brac, 2015-2020	Economics and Statistics Office (2021)	As source is updated	3.1b
Desalinated water consumption by consumer group, 2015-2020	Economics and Statistics Office (2021)	As source is updated	3.1d
Main source of water supply	Economics and Statistics Office (2021)	As source is updated	3.1e

The 2020 account does not provide a quantified estimate for water supply. Further research is required to determine available data on the Cayman Islands to develop an appropriate valuation approach. For example, on the difference in costs associated with desalination and purification of groundwater could be as an estimate of the value of water supply dependent on the water filtration provision of the ecosystem

service.

A.1.6 Renewable energy

With increasing pressure to move towards a low carbon society, renewable energy is an ever-growing sector. On the Cayman Islands, the Caribbean Utilities Company Itd launched the Consumer Owned Renewable Energy (CORE) programme in 2009 (Department of Environment, 2020). The programme allows consumers in Grand Cayman to connect private solar systems or wind turbines to the national grid system. In doing so, consumers generate their own electricity whilst also reducing their own energy bills.

Method overview

The CUC CORE programme is divided into two sub-groups: Feed-in-Tariffs (FIT) structure and the distributed energy resources (DER) programme. The number of customers and kilowatt rated capacity is reported in the Cayman Islands Greenhouse Gas Inventory data (Department of Environment, 2020). The GHG inventory data does include the CUC's CORE Programme tier rate systems as CI\$/kW for residential and commercial instalments.

The Cayman Islands GHG inventory (Department of Environment, 2020) does also provide a count of the number of approved applications and number of planning permit applications for the instalment of solar panels or solar farms. Further disaggregation of this data would be useful to include in the account, in order to establish how many approved applications for solar farms there are across the Cayman Islands. Solar panels on buildings would not be included in the Ecosystem Account.

How to update the account

The benefits are estimated in the tab: **'S4. Renewable energy'**. Table A.10 provides an overview of the input data for the benefit, including the frequency data should be updated and the workbook reference in the account.

Table A.10: Input data for renewable energy

Description	Source	Frequency	Workbook reference
	Physical te	rms	
Summary of CUC CORE FIT programme	Department of Environment (2020)	As source is updated	4.1a
Summary of CUC DER programme	Department of Environment (2020)	As source is updated	4.1b
Solar panel or solar farms applications	Department of Environment (2020)	As source is updated	4.1c
Monetary terms			
CUC's Core programme rate tier	Department of Environment (2020)	As source is updated	4.2a

The data presented within the 2020 account provides a starting point for the next iteration of the account, where energy generated from these renewable energy sources can be valued using the CUC's core programme rate tier system. This would require additional data on distinguishing residential and commercial generation, as well as the correct application of the tier system rates.

A.1.7 Carbon sequestration

Carbon sequestration refers to the ability of the natural environment (both terrestrial and marine) to remove carbon from the atmosphere. This benefit contributes towards global climate regulation. It is estimated using the sequestration rates for each habitat (tonnes CO_2 equivalent per hectare), the extent of each habitat, and the non-traded price of carbon.

Method overview

Guzman et al. (2017) estimated carbon sequestration (Megagram carbon per year) potential in seagrass and mangroves in the Cayman Islands as part of the economic analysis for the expansion of marine protected areas (MPAs). These estimates have been converted to tonnes of carbon dioxide equivalent using a tC^{11} to tCO_2 e conversion factor of 3.67 (IPCC, 2018). These estimates of coastal ecosystem carbon sequestration are used in the 2020 account. For mangroves, an average rate of approximately 10.2 tCO_2 per hectare has been used in Guzman et al. (2017), which is slightly higher than the estimated midpoint rate applied in the other Caribbean overseas territories (6.3 tCO_2 e/ha/yr) as shown in Table A.11.

Table A.11 shows the global average per hectare carbon sequestration rates for terrestrial and marine habitats. Two main sources are used as the basis of the carbon sequestration rate estimates – Murray et al. (2011); as cited in IUCN (2017) and Alongi (2014). The midpoint sequestration rates between the two sources are used in the analysis.

Table A.11: Carbon sequestration rates by habitat type (tCO₂e/ha/yr)

Habitat	Murray et al. (2011); IUCN (2017)	Midpoint						
Terrestrial								
Mature tropical forest	re tropical forest 2.3 -		2.3					
Marine								
Seagrass	4.4	2.0	3.2					
Saltmarsh	8.0	5.5	6.8					
Mangroves	6.3	6.4	6.3					
Estuaries	-	1.7	1.7					
Shelves	-	0.6	0.6					

Table notes:

The total amount of CO_2 equivalent sequestered is estimated by multiplying these per hectare rates with the total hectare area of the respective habitat type, as recorded in the Ecosystem Extent Account. For the Cayman Islands, the tCO_2 e sequestered by forest ecosystems is considered additional to the figures produced by Guzman et al. (2017). Table A.12 summarises the assumed carbon sequestration rate for each ecosystem type.

Table A.12: Assumed carbon sequestration rate for each ecosystem type

Ecosystems in the Ecosystem Extent Account	Applied sequestration rate		
Seagrass beds	Seagrass		
Seasonally flooded mangrove shrubland	Mangroves		
Seasonally flooded mangrove forest and woodland	Mangroves		

 $^{^{1}}$ The values reported were converted from gC/m 2 /yr to tCO $_{2}$ e/ha/yr using the IPCC (2018) tC to tCO2e conversion factor of 3.67, gram to tonne and m2 to ha conversion factors.

Tidally flooded mangrove forest and woodland	Mangroves
Tidally flooded mangrove and shrubland	Mangroves
Ponds, pools and mangrove lagoons	Mangroves
Seasonally flooded/saturated semi-deciduous forest	Forest
Xeromorphic semi-deciduous forest	Forest
Dry forest and woodland	Forest
Invasive species – casuarina	Forest
Coastal mahogany forest	Forest

The amount of CO_2e sequestered by coastal and forest ecosystems is then valued following the BEIS (2019) guidance. The economic value of carbon sequestration is estimated using the non-traded central price, £75 per tonne of CO_2e in 2020. The UK carbon prices were multiplied by the relative GDP per capita in the Cayman Islands as compared to the UK (Economics and Statistics Office, 2021; ONS, 2021) and then converted to Cayman Island dollars (HMRC, 2021). The carbon price is then multiplied by the estimated tonnes of CO_2e sequestered by coastal and forest ecosystems.

How to update the account

The benefits are estimated in the tab: **'S5. Carbon sequestration'**. Table A.13 provides an overview of the input data for the benefit, including the frequency data should be updated and the workbook reference in the account.

Table A.13: Input data for carbon sequestration benefits

Description	Source	Frequency	Workbook reference					
Physical terms								
Ecosystem extent	Asset register tab (A1)	As new evidence becomes available	5.1a					
Carbon sequestration potential in coastal ecosystems in the Cayman Islands	Guzman et al. (2017)	As new evidence becomes available	5.1b					
Terrestrial and marine carbon sequestration rates	Murray et al. (2011), as cited in IUCN (2017); Alongi (2014)	As new evidence becomes available	5.1d, 5.1e					
	Monetary t	erms						
Cayman Islands GDP per capita at current basic prices	Economics and Statistics Office (2021)	As source is updated	5.2c					
UK GDP per capita at current market prices	ONS (2021)	Annually	5.2d					
UK Carbon prices	BEIS (2019)	As source is updated	5.2e; UK Carbon prices full tab					
GBP to CI\$ exchange rate	HMRC (2020)	Annually	5.2i;					
UK GDP deflator	HM Treasury (2021)	Annually	UK GDP deflators tab					

Data inputs for the physical flow can be updated as science and understanding of carbon sequestration rates of ecosystems improves. The 2020 Ecosystem Account for the Cayman Islands applies UK carbon values as per BEIS (2018). The UK carbon values were updated in September 2021 to reflect the UK's net zero policy commitment. Future iterations of the account could be aligned to the updated UK values and/or to voluntary carbon market exchange values. The values used should reflect Cayman Islands climate policy, abatement technologies and other context from the accounting year.

A.1.8 Coastal protection

The natural capital of the Cayman Islands marine coastal habitats provides protection to the Cayman Islands from damage and flooding due to sea surge from storms and other adverse weather events. Reefs, sand bars, mangrove stands, dunes and even seagrass beds all help to absorb energy and mitigate the impact of waves and rising waters. This can have the significant effect of defending vulnerable built infrastructure on the Cayman Islands.

Method overview

Guzman et al. (2017) estimated the coastal protection value of coral reefs in the marine protected areas of the Cayman Islands using an avoided damage approach. GIS is used to determine the flood damages that occur during a 1-in-25-year return time storm event¹², as well as modelling the proportion¹³ of these damages that are prevented by nearby coral reefs. Coastal protection value can be assessed both through direct effects (e.g., property damage) and indirect effects (e.g., infrastructure damage, business interruption). The indirect avoided damages are not included in this analysis.

Based on the values estimated by Guzman et al. (2017), the total annual coastal protection value by coral reefs in the Cayman Islands of approximately CI\$6.6 million, in 2020 prices. This was attributed across the Cayman Islands based on proportions in Guzman et al. (2017)¹⁴. As the estimates only reflect the direct avoided damages to properties it is a "lower-bound estimate of the actual economic value of this service" (Guzman et al., 2017, p,24).

How to update the account

The benefits are estimated in the tab: **'S6. Coastal protection'**. Table A.14 provides an overview of the input data for the benefit, including the frequency data should be updated and the workbook reference in the account.

Table A.14: Input data for coastal protection benefits

Description	Source	Frequency	Workbook reference						
Monetary terms									
Estimated annual coastal protection value by coral reefs in the Cayman Islands	Guzman et al. (2017)	As new evidence becomes available	6.2a						
Estimated attribution of coastal protection value to coral reefs by island	Guzman et al. (2017)	As new evidence becomes available	6.2b						
US GDP deflator	US BEA (2021)	Annually	6.2c						
Exchange rate: US\$ to CI\$	Economics and Statistics Office (2021)	Annually	6.2d						
Relative reef contribution	Guzman et al. (2017)	As new evidence becomes available	6.2e						

The approach requires GIS analysis and the specified data inputs with which to model the impact. The

2020 Ecosystem Account | February 2022 Page 23

¹² The characteristics of this event are based on data from Hurricane Ivan (Category 4) in 2004. This was provided by the Cayman Island DoE.

¹³ This represents the relative reef contribution (RRC) that mitigates damage and is calculated for each coastal transect. See Burke et al. (2008) for more detail on this method.

¹⁴ Should be noted that the estimated attribution proportions do not sum to 100%. This needs to be investigated further to refine the calculation.

modelling can be updated with the most up-to-date infrastructure and habitat maps as they are produced. Doing so on a regular basis will track changes in development and vegetative cover which can help monitor the change in the risk of damage from sea surge due to changing land use, as well as to identify high risk flooding areas for future development planning. Property value and damage cost estimates should also be updated as available.

A.1.9 Beach erosion prevention

Coastal vegetation, such as seagrass, coral reefs, mangroves and other shoreline habitats, prevents sand loss as a result of wave backwash both during storm events and high-water levels. Some beach movement is normal over time, however in the absence of the existing coastal habitats dunes. Coastal erosion poses a significant threat to beaches in the Cayman Islands, particularly the important tourist hotspot Seven Mile Beach, Grand Cayman.

The prevention of erosion contributes to benefits in marine ecosystems and maintaining the aesthetic quality of coastal habitats that attract tourists and recreational users. However, the tourism aspects of this service are captured in the assessment of the tourism benefit (see Section A.1.11). The focus here would be more specifically on the avoidance of beach erosion as a benefit to infrastructure protection.

How to update the account

The quantification and monetisation of avoided beach erosion attributed to coastal ecosystems across the Cayman Islands requires an understanding of the current rate of erosion. The Cayman Islands DoE have access to satellite imagery that could be used to generate an average rate of beach area loss. As well as the rate of erosion in the absence of ecosystems, such as reefs and mangroves, that provide protection to beach erosion (akin to modelling coastal protection or surface flooding).

Beach erosion risk depends on many factors, including sea level rise, wave energy, coastal slope, beach width and height among others. Understanding wave dynamics is key to identifying vulnerable areas and potential mitigation strategies. Evidence will be available in the future to align with ongoing work by Wood Group UK Limited generating storm surge risk estimates by using the same model to produce beach erosion risk outputs. The SWAN model is a third-generation wave model developed by Delft University of Technology that simulates wave parameters in coastal areas. SWAN accounts for many physical processes such as wave generation, propagation, dissipation, whitecapping, and bottom friction.

The proposed beach erosion modelling will use outputs from the SWAN model, such as wave height and wave force, to estimate beach erosion risk. A baseline model will be compared to different bottom roughness and depth scenarios to predict the impact of historical coral reefs and potential areas of coral restoration on beach erosion risk, with a focus on Seven Mile Beach.

Further research is required to identify an appropriate monetary unit value, as there is a risk of double-counting with other benefits such as tourism and local recreation which rely on the beach as an ecosystem to support use. As such, avoiding beach erosion can be viewed as an intermediary regulating service, which is 'capitalised' as a benefit to people in other benefits.

A.1.10 Local recreation

'Local recreation' is a relatively broad term and encompasses a wide variety of cultural activities that natural capital provides to local residents. This can include opportunities for physical interaction with the natural environment such as recreation. However, while evidence exists on tourist use of the environment, local recreational use of the environment is less well understood.

Method overview

The natural environmental is important for recreational use by residents on the Caymans Islands. Existing evidence on recreational activities undertaken by locals has been assessed as part of Schutter et al. (2014) which through a survey identified the types of activities undertaken by residents (born on the Cayman Islands and born elsewhere). In addition, there are approximately 378 diving spots across the Cayman Islands (Guzman et al., 2017) utilised by both residents and tourists¹⁵, although the number of divers has not been identified. The total number of diving spots is reported as a non-monetised benefit.

How to update the account

The benefits are estimated in the tab: 'S9. Local recreation'. Table A.15 provides an overview of the input data for the benefit, including the frequency data should be updated and the workbook reference in the account.

Table A.15: Input data for local recreation benefits

Description	Source	Frequency	Workbook reference
	Physical te	erms	
Recreational activities undertaken by local residents	Schutter et al. (2014)	As new evidence becomes available	8.1a
Number of dives spots per area	Guzman et al. (2017)	As new evidence becomes available	8.1b

Further research into and the collection of more data, such as via surveys, on local recreation use (e.g., number of divers) and expenditure patterns is required to assess the value of this benefit across the Cayman Islands.

A.1.11 **Tourism**

Tourism is a major contributor to the economic prosperity of the Cayman Islands. Popular attractions include the pristine beaches across the Cayman Islands, sting rays, caving, and diving tours amongst other elements of the marine and coastal environment of the Cayman Islands. The tourism value of the Cayman Islands was one of the ecosystem services assessed as part of the Guzman et al. (2017) analysis. For the purposes of this study, the same general approach 16 has been applied, but using updated figures for visitor numbers and expenditure.

Method overview

The Caymans Islands Immigration Department and the Department of Tourism record visitor arrivals (stayover and cruise ship) to the Cayman Islands, with annual figures by mode of travel (air or sea) reported in

¹⁵ Diving activities by tourists is captured under the Tourism in tab S9 (see A.1.11).

¹⁶ Note that Guzman et al. (2017) estimated consumer and producer surplus to generate a net benefit of tourism activities. In this study, consumer and producer surplus are kept separate, where consumer surplus is reported as supplementary information and the producer surplus is included in the ecosystem account. 2020 Ecosystem Account | February 2022 Page 25

the Cayman Islands' Compendium of Statistics (Economics and Statistics Office, 2021). Visitor arrivals are adjusted to exclude air arrivals visiting the Cayman Islands for business, this is done by multiplying the proportion of air arrivals visiting for business (7% in 2020) by the current year's recorded air arrivals, with the product subtracted from the 2020 total stay-over arrivals (Economics and Statistics Office, 2021). Cruise ship visitors are set equal to the latest total figures of number of landed visitors (Economics and Statistics Office, 2021). Landed cruise ship in 2020 is currently not available, therefore has been estimated using the ratio between actual cruise ship arrivals to landed visitors multiplied by the 2020 actual arrivals (Economics and Statistics Office, 2021). Note when this information is available it can be used to update the 2020 account. Future number of arrivals are estimated as a five-year average (2016-2020) for each visitor type (Economics and Statistics Office, 2021).

Guzman et al. (2017) further sub-divided visitors into divers and non-divers using the estimated proportion of stay-over tourists that are divers (13%) from 2016 data provided by the Cayman Islands Department of Tourism. This proportion is assumed to remain constant over time and visitor type and is therefore applied to the annual number of tourist arrivals (stay-over and cruise ship) and the five-year average.

The value of arrivals in the account is estimated using the reported average expenditure per visitor per night (i.e., no distinction between visitor types) (Economics and Statistics Office, 2021), multiplied by the estimated proportion of expenditure across 11 categories¹⁷ for each visitor type (stay-over or cruise ship) and diver/non-diver (Guzman et al., 2017). For each visitor type and spend category, total annual tourism expenditure is estimated using average daily tourist spend, the assumed average length of stay¹⁸ and the annual estimated number of visitors. Following the approach set out in Guzman et al. (2017), total annual tourism expenditure in each category for each visitor is multiplied by the assumed proportion (100% for donations and 25% for all other categories) of total spend that corresponds to added value of the tourism industry (Schep et al., 2012). The value added is then multiplied by an assumed factor of ecosystem dependence for each expenditure category (Guzman et al., 2017). This produces the total annual tourism added value attributed to marine ecosystems. For the future monetary flow, the five-year average (2016-2020) total tourism expenditure is estimated (Economics and Statistics Department, 2021), and the same approach is followed where the proportions applied remain constant and the five-year average length of stay-over tourist is estimated (Economics and Statistics Office, 2021).

The remaining annual and five-year visitor expenditure by visitor type (i.e., remaining 75% of total expenditure) is adjusted for ecosystem dependence as well (Guzman et al., 2017). These values are reported as supplementary information to the Ecosystem Account.

The benefit of tourism activities can also be captured in welfare value terms. Guzman et al. (2017) estimate consumer surplus of local ecosystems in the Cayman Islands based on the willingness to pay (WTP) of tourists to prevent the decline in quality of coral reefs from medium to low levels. This uses a value transfer of average WTP per tourist per day of CI\$30, in 2020 prices, derived through a choice experiment (Van Beukering et al., 2014). This was applied to the number of stay-over and cruise ship visitors in 2020. In future years, the average WTP to prevent reef quality decline remains constant with the value varying in line with future visitor assumptions (i.e., estimated four-year average). As the ecosystem accounting

¹⁷ Expenditure categories identified by Guzman et al. (2017) include: airfare, accommodation, local transportation, diving, snorkelling, fishing, other water-based activities, land-based activities, food and beverage, shopping and donations.

¹⁸ Stay-over visitors' average length of stay is reported as number of nights in the Cayman Islands' Compendium of Statistics (Economics and Statistics Office, 2020a), whilst cruise ship visitors are assumed to not stay beyond one day (Guzman et al., 2017).
2020 Ecosystem Account | February 2022

framework prefers the use of exchange values, this welfare value is included as a supplementary indicator.

How to update the account

The benefits are estimated in the tab: **'S9. Tourism'**. Table A.16 provides an overview of the input data for the benefit, including the frequency data should be updated and the workbook reference in the account.

Table A.16: Input data for tourism benefits

Description	Source	Workbook reference			
	Physical to	erms			
Visitor arrivals in the Cayman Islands	Economics and Statistics Office (2021)	Annually	9.1a		
Cruise ship visitor arrivals	Economics and Statistics Office (2021)	Annually	9.1b		
Visitor air arrivals by purpose of visit	Economics and Statistics Office (2021)	Annually	9.1c		
Visitor air arrivals by accommodation type	Economics and Statistics Office (2021)	Annually	9.1d		
Tourist accommodation	Economics and Statistics Office (2021)	Annually	9.1e		
% of stay-over tourists that are divers	Guzman et al. (2017)	As new evidence becomes available	9.1f		
	Monetary t	erms			
Stay over visitor expenditure	Economics and Statistics Office (2021)	Annually	9.2a		
Cruise ship visitor expenditure	Economics and Statistics Office (2021)	Annually			
Average willingness-to-pay per tourist per day to prevent decline in quality of coral reefs from medium to low levels	Van Beukering et al. (2014)	As new evidence becomes available	9.2c		
Proportion of expenditure on each category	Guzman et al. (2017)	As new evidence becomes available	9.2d		
Factors of ecosystem dependence by expenditure category	Guzman et al. (2017)	As new evidence becomes available	9.2e		
Net ecosystem benefits in the tourism industry	Guzman et al. (2017)	As new evidence becomes available	9.2f		
Total annual value of local ecosystems for tourism in the Cayman Islands	Guzman et al. (2017)	As new evidence becomes available	9.2g		
US GDP deflators	US BEA (2021)	Annually	9.2h		
Exchange rate: US\$ to CI\$	Economics and Statistics Office (2021)	Annually	9.2i		
Average length of stay of cruise ship visitors (days)	Guzman et al. (2017)	As new evidence becomes available	9.2j		
% of total spend that corresponds to added value of tourism industry	Guzman et al. (2017)	As new evidence becomes available	9.2k		

Tourism data should be updated annually in regard to tourist numbers for each type of visit, while average

2020 Ecosystem Account | February 2022 Page 2

expenditure data should be updated when relevant survey data is published in order to capture trends, and no more than every five years to capture changing patterns of use and perceived value. Other data inputs should be updated as new evidence becomes available (e.g., dependence factors).

A.1.12 Amenity value

Accessibility and proximity to green and blue space can be capitalised into real estate prices (see Nafilyan and Lorenzi (2019) for UK example). In the context of the Cayman Islands this could refer to the value that ecosystems such as coral reefs and mangroves potentially add to real estate prices.

Method overview

Guzman et al. (2017) undertook a hedonic pricing analysis to assess the effect that proximity to coral reefs and mangroves, in comparison to other attributes of residential properties, has on real estate prices. This was only applied to houses on Grand Cayman, as usable observations from the CIREBA database were only available for Grand Cayman. The study¹⁹ found that marine ecosystems contribute to higher property values and provides a framework for extrapolating the mean amenity value per house in the study sample to the total number of residential buildings in Grand Cayman.

Average amenity value per house is estimated by dividing the modelled amenity value of mangroves (US\$26 million, in 2016 prices) by the number of usable observations in the CIREBA dataset (686). The unit amenity value is inflated to 2020 prices and converted to Cayman Island dollars, as it is assumed that property prices in 2016 (and therefore the monetary unit value) are representative of the current year. As an approximation of the overall value, the average amenity value per house is extrapolated to Grand Cayman by multiplying by the total number of residential properties on the Island, approximately 26,200 on Grand Cayman in 2020 (Economics and Statistics Office, 2021). The estimated amenity value of mangroves represents a stock value and is therefore not recorded as an annual flow.

How to update the account

The benefits are estimated in the tab: **'S10. Amenity value'**. Table A.17 provides an overview of the input data for the benefit, including the frequency data should be updated and the workbook reference in the account.

Table A.17: Input data for amenity value

Description	Source	Frequency	Workbook reference						
Physical terms									
Number of households on	Economics and Statistics	Economics and Statistics As source is updated							
the Cayman Islands	Office (2021)	As source is aparated	10.1a						
Modelled amenity value of mangroves for houses in the dataset following the hedonic pricing function	Guzman et al. (2017)	As new evidence becomes available	10.2a						
CIREBA dataset sample	Guzman et al. (2017)	As new evidence becomes available	10.2b						
US GDP Deflator	US BEA (2021)	Annually	10.2c; US GDP deflators tab						

¹⁹ For more details on the hedonic pricing analysis used please see Guzman et al. (2017). ²⁰²⁰ Ecosystem Account | February 2022

US\$ to CI\$ exchange rate

Economics and Statistics
Office (2021)

As source is updated
10.2d

A.4 Input data tabs

There are several input tabs that are linked throughout the workbook as background information (e.g., ecosystem classification) and as inputs to calculations (e.g., CPI index, discount factors) across multiple benefits. Table A.18 provides an overview of these input tabs and the frequency that these data sources should be updated.

Table A.18: Input data tabs

Tab name	Description	Source	Frequency		
Cayman Islands ecosystem classification	Ecosystem classification alignment between Cayman Islands extent layers and IUCN Global Ecosystem typology	Ecosystem Extent Account data (Table A.2); IUCN GET (v1.01)	As account is updated		
UK Discount Factors	UK discount factors used throughout the workbook.	oughout HM Treasury (2020)			
Cayman Islands CPI	Cayman Islands annual CPI used throughout workbook	I used Economics and Statistics Office (2021)			
US GDP deflators	US GDP deflators used throughout the workbook.	US BEA (2021)	Annually		
UK GDP deflators	UK GDP deflators used throughout the workbook.	HM Treasury (2021)	As source is updated ¹		
UK Carbon prices full	BEIS modelled carbon prices (£) used throughout the workbook.	BEIS (2019)	As source is updated ²		
Cayman Islands population statistics	Cayman Islands population statistics (people, households, average household size) used throughout the workbook.	Economics and Statistics Office (2021)	Annually		

Table notes:

¹ The HM Treasury released updated UK GDP deflators every quarter as well as part of the Spring or Autumn budget.

² The UK carbon values were updated in September 2021 to reflect the UK's net zero policy commitment. Future iterations of the account could be aligned to the updated UK values and/or to voluntary carbon market exchange values. The values used should reflect Cayman Islands climate policy, abatement technologies and other context from the accounting year.

Appendix B - Changes in account values

Table B.1 and Table B.2 sets out the value estimated in the previous Cayman Islands Ecosystem Accounts and notes key reasons for the changes in values. All monetary values are presented in the reporting year price year, e.g., 2020/21 account values are reported in 2020. Sources GDP deflators in the Cayman Islands and the UK have been updated, which impacts the monetary value across all benefits.

Table B.1: Changes in Ecosystem Service Flow and Asset Account values

		2019/20			2020/21				
Produced at: January	Ecosystem Serv	Ecosystem Service Flow Account Ecosystem		osystem Service Flow Account Ecosystem E		Ecosystem Serv	ice Flow Account	Ecosystem	
2022	Physical terms	Monetary terms (CI\$m)	Asset Account (PV25 CI\$m)	Physical terms	Monetary terms (CI\$m)	Asset Account (PV25 CI\$m)	Notes on changes		
Fisheries	702,000	3	50	702,000	3	51	Data inputs have remained the same, with monetary unit value inflated to current price year.		
Agriculture	26,204	2	22	5,061	2	25	Monetary unit value inflated to current price year. Input data change: Poultry production (physical flow) reported for Cayman Islands within the latest Statistics Compendium (2021). However, similar figures are not available disaggregated.		
	-	16	244	-	18	275	Data inputs have remained the same, with monetary unit value inflated to current price year.		
Carbon sequestration	68,500	11	257	68,500	11	272	Data inputs have remained the same, with monetary unit value inflated to current price		
	9,393	1	35	9,393	1	37	year.		
Coastal hazard protection	-	6	111		7	112	Data inputs have remained the same, with monetary unit value inflated to current price year.		
Tourism	2,119,533	71	1,089	598,263	21	943	Data inputs have remained the same, with monetary unit value inflated to current price		

		2019/20			2020/21			
Produced at: January	Ecosystem Serv	rice Flow Account	Ecosystem	Ecosystem Serv	rice Flow Account	Ecosystem		
2022	Physical terms	Monetary terms (CI\$m)	Asset Account (PV25 CI\$m)	Physical terms	Monetary terms (CI\$m)	Asset Account (PV25 CI\$m)	Notes on changes	
							year. Note 2020 expenditure data is currently not available.	
Amenity value	27,667	-	1,362	26,197	-	1,306	Data inputs have remained the same, with monetary unit value inflated to current price year.	
	Total	110	3,170	Total	62	3,020		

Table B.2: Changes in Supplementary Information

		2019/20			2020/21		
Produced at: January 2022	Physical terms	Monetary terms (CI\$m)	Ecosystem Asset Account (PV25 CI\$m	Physical terms	Monetary terms (CI\$m)	Ecosystem Asset Account (PV25 CI\$m	Notes on changes
Other monetary value	es						
Tourism	2,119,533	206	3,140	598,263	59	2,706	Data inputs have remained the same, with monetary unit value inflated to current price year. Note 2020 expenditure data is currently not available.
Welfare values							
Tourism	2,119,533	134	127	598,263	35	1,873	Data inputs have remained the same, with monetary unit value inflated to current price year.
Non-monetised benef	its						
Water supply	-	-	-	-	-	-	
Renewable energy	-	-	-	-	-	-	
Beach erosion	-	-	-	-	-	-	
Local recreation	378	-	-	378	-	-	Data inputs have remained the same.

Appendix C - Ecosystem service classification comparison

The Common International Classification of Ecosystem Services (CICES) was chosen as a reference point for ecosystem service typology to enable comparison of ecosystem services between accounts (EEA, 2018). CICES is a globally recognised classification of ecosystem services and referenced within the SEEA EA guidance (UN, 2021). The typology structure consists of four levels – section, division, group and class. See EEA (2018) for more guidance on using CICES.

Table C.1 compares the benefit typology used in this account with the CICES class.

Table C.1: Ecosystem services typology comparison

Shorthand	CICES Class					
Fisheries	Animals reared by in-situ aquaculture for nutritional purposes					
Agriculture	Animals reared for nutritional purposes; Cultivated terrestrial plants (including fungi, algae)					
	grown for nutritional purposes					
Water supply	Surface water for drinking					
Renewable energy	Wind energy, Solar energy; Geothermal energy					
Carbon sequestration	Regulation of temperature and humidity, including ventilation and transpiration					
Coastal protection	Hydrological cycle and water flow regulation (Including flood control, and coastal protection)					
Beach erosion	Control of erosion rates					
protection	Control of erosion rates					
Local recreation	Characteristics of living systems that that enable activities promoting health, recuperation or					
	enjoyment through active or immersive interactions					
Tourism	Characteristics of living systems that that enable activities promoting health, recuperation or					
	enjoyment through active or immersive interactions					
Amenity value	Characteristics of living systems that enable aesthetic experiences					
Water quality	Filtration/sequestration/storage/accumulation by micro-organisms, algae, plants, and animals					

Appendix D - Ecosystem classification comparison

To allow the national accounts to be aggregated with other Overseas Territory accounts and compared between countries, the International Union for Conservation of Nature (IUCN) Global Ecosystem Typology (GET) Ecosystem Functional Groups (EFG) was cross-referenced with the terrestrial and marine ecosystem typology used within the Department of Environment (DoE). The IUCN GET is a global typological framework that applies an ecosystem process-based approach to ecosystem classification for all ecosystems around the world. The typology structure consists of six levels. The top three levels - realm, biome and ecosystem functional group - are aligned with the System of Environmental Economic Accounting (SEEA) Ecosystem Type reference (UN, 2021, see Section 3.4 -Classifying ecosystem assets for more guidance).

Table D.1 sets out the alignment between the habitat classifications completed by eftec and JNCC. Note that all lagoon benthic habitats have been classified as marine shelf biome habitats, as there are no intertidal equivalents, and while the lagoon will have a brackish influence, the areas neighbour the marine shelf.

Table D.1: Ecosystem classification comparison

Terrestrial/	Cayman Islands classifications	IUCN GET			N
benthic		Realm	Biome	Ecosystem functional group	Notes on alignment
Terrestrial	Xeromorphic semi- deciduous forest	Terrestrial	T1 Tropical– subtropical forests	T1.2 Tropical-subtropical dry forests and scrubs	
Terrestrial	Coastal shrubland	Marine-Terrestrial	MT2 Supralittoral coastal systems	MT2.1 Coastal shrublands and grasslands	
Terrestrial	Seasonally flooded mangrove shrubland	Terrestrial- Freshwater	TF1 Palustrine wetlands	TF1.1 Tropical flooded forests and peat forests	Deep peat is characteristic of these communities. They are not intertidal; however, despite being dominated by mangroves.
Terrestrial	Dry shrubland	Terrestrial	T3 Shrublands & shrubby woodlands	T3.1 Seasonally dry tropical shrublands	This is at 0.5-5m height.
Terrestrial	Dwarf vegetation and vines	Marine-Terrestrial	MT2 Supralittoral coastal systems	MT2.1 Coastal shrublands and grasslands	
Terrestrial	Seasonally flooded grasslands V.A.1.N.g	Terrestrial- Freshwater	TF1 Palustrine wetlands	TF1.4 Seasonal floodplain marshes	Not intertidal and not near coast.
Terrestrial	Semi-permanently flooded grasslands V.A.1.N.h	Terrestrial- Freshwater	TF1 Palustrine wetlands	TF1.3 Permanent marshes	Refers to standing water near urban areas (not coastal or intertidal)

Terrestrial/	Cayman Islands		IUCN GET	T	Notes on alignment
benthic	classifications	Realm	Biome	Ecosystem functional group	
Terrestrial	Ponds, pools, and mangrove lagoons	Terrestrial- Freshwater	TF1 Palustrine wetlands	TF1.1 Tropical flooded forests and peat forests	Note mangrove lagoons have highly organic (peat rich) sediments and probably store and sequester carbon. Area-wise they probably dominate this class, so perhaps we should lump them in TF1.1?
Terrestrial	Urban	Terrestrial	T7 Intensive land-use	T7.4 Urban and industrial ecosystems	
Terrestrial	Dry lakebed	Freshwater	F2 Lakes	F2.7 Permanent salt and soda lakes	This is rarely dry Only on Cayman Brac - looks to be (possibly seasonally) dry part of mangrove lagoon
Terrestrial	Shoreline	Marine-Terrestrial	MT1 Shorelines biome	n/a	Classified as Biome rather than Group as Cayman Islands classification relates to all shoreline.
Terrestrial	Man-modified	Terrestrial	T7 Intensive land-use	T7.2 Sown pastures and fields	
Terrestrial	Seasonally flooded mangrove forest and woodland	Marine-Freshwater- Terrestrial	MFT1 Brackish tidal	MFT1.2 Intertidal forests and shrublands	Not on the coast, buffered by tidally flooded mangroves. Classified these areas as "MFT1.2 Intertidal forests and shrublands" after confirming mangrove cover roughly matched Global Mangrove Watch.
Terrestrial	Man-modified with trees	Terrestrial	T7 Intensive land-use	T7.5 Derived semi-natural pastures and old fields	
Terrestrial	Tidally flooded mangrove forest and woodland	Marine-Freshwater- Terrestrial	MFT1 Brackish tidal	MFT1.2 Intertidal forests and shrublands	
Terrestrial	Dry forest and woodland	Terrestrial	T1 Tropical– subtropical forests	T1.2 Tropical-subtropical dry forests and scrubs	
Terrestrial	Seasonally flooded / saturated semi- deciduous forest	Terrestrial- Freshwater	TF1 Palustrine wetlands	TF1.2 Subtropical/temperate forested wetlands	Not intertidal, but directly next to mangroves not mangrove vegetation. This is under the 'Forest and Woodland' section of habitat classes.
Terrestrial	Invasive species - casuarina	Terrestrial	T1 Tropical– subtropical forests	T1.2 Tropical-subtropical dry forests and scrubs	In carbon terms it is a forest, even though invasive. Casuarina is an evergreen tree.
Terrestrial	Tidally flooded mangrove shrubland	Marine-Freshwater- Terrestrial	MFT1 Brackish tidal	MFT1.2 Intertidal forests and shrublands	
Terrestrial	Salt tolerant succulents	Marine-Terrestrial	MT2 Supralittoral coastal systems	MT2.1 Coastal shrublands and grasslands	Succulent forb veg, coastal/tidal areas, edges of wetlands/mangroves
Terrestrial	Sparsely vegetated rock	Terrestrial	T5 Deserts and semi- deserts	T5.3 Sclerophyll hot deserts and semi-deserts	
Terrestrial	Black candlewood	Terrestrial	T3 Shrublands & shrubby woodlands	T3.1 Seasonally dry tropical shrublands	This is a flowering evergreen, drought and salt tolerant

2020 Ecosystem Account | February 2022 Page 34

Terrestrial/	Cayman Islands	IUCN GET			Nicker or all more and
benthic	classifications	Realm	Biome	Ecosystem functional group	Notes on alignment
Terrestrial	Man-modified without trees	Terrestrial	T7 Intensive land-use	T7.2 Sown pastures and fields	
Terrestrial	Coastal mohagany forest	Terrestrial	T1 Tropical– subtropical forests	T1.2 Tropical-subtropical dry forests and scrubs	Only on Little Cayman, not intertidal
Terrestrial	Tidal tropical or subtropical annual forb vegetation	Marine-Freshwater- Terrestrial	MFT1 Brackish tidal	MFT1.2 Intertidal forests and shrublands	Succulent forb veg, coastal/tidal areas, edges of wetlands/mangroves
Shelf benthic	Aggregated patch reef	Marine	M1 Marine Shelfs	M1.3 Photic coral reefs	
Shelf benthic	Uncolonised hardbottom	Marine	M1 Marine Shelfs	M1.6 Subtidal rocky reefs	Pavement, dominated by algae with coral/sponge cover <10%
Shelf benthic	Spur and groove	Marine	M1 Marine Shelfs	M1.3 Photic coral reefs	Hard coral cover (dead and alive), grooves - sand/hardbottom
Shelf benthic	Sand	Marine	M1 Marine Shelfs	M1.7 Subtidal sand beds	Uncolonised sand
Shelf benthic	Rubble	Marine	M1 Marine Shelfs	M1.6 Subtidal rocky reefs	Dead unstable coral rubble and rocks, colonised often by algae
Shelf benthic	Reef crest	Marine	M1 Marine Shelfs	M1.3 Photic coral reefs	
Shelf benthic	Individual patch reef	Marine	M1 Marine Shelfs	M1.3 Photic coral reefs	
Shelf benthic	Colonised hardbottom	Marine	M1 Marine Shelfs	M1.6 Subtidal rocky reefs	Pavement coral cover 10-70%, rock colonised by algae/soft corals
Shelf benthic	Beach rock	Marine	M1 Marine Shelfs	M1.7 Subtidal sand beds	Cemented sand, flat rock-like substrate *Unsure what else to classify as, but could be M1 Marine shelf biome if wanted wider
Shelf benthic	Aggregate reef	Marine	M1 Marine Shelfs	M1.3 Photic coral reefs	
Lagoon benthic	Beach rock	Marine	M1 Marine Shelfs	M1.7 Subtidal sand beds	This refers to cemented sand, flat rock-like substrate. Closest match to the IUCN habitat classification is M1.7 Subtidal sand beds.
Lagoon benthic	Backreef	Marine	M1 Marine Shelfs	M1.3 Photic coral reefs	Dead unstable coral rubble/rocks landward of reef crest, colonised by algae
Lagoon benthic	Vegetated sand	Marine	M1 Marine Shelfs	M1.1 Seagrass meadows	Vegetated sediment - assigned if algae is dominant over seagrass beds - however "seagrass meadows" does include algae in description
Lagoon benthic	Hardbottom	Marine	M1 Marine Shelfs	M1.6 Subtidal rocky reefs	Low relief pavement/rubble, colonised by algae
Lagoon benthic	Seagrass beds	Marine	M1 Marine Shelfs	M1.1 Seagrass meadows	
Lagoon benthic	Sediment	Marine	M1 Marine Shelfs	M1.7 Subtidal sand beds	Unvegetated sand

2020 Ecosystem Account | February 2022
Page 35

Terrestrial/	Cayman Islands classifications	IUCN GET			Notes en alignment
benthic		Realm	Biome	Ecosystem functional group	Notes on alignment
Lagoon benthic	Lagoonal coral	Marine	M1 Marine Shelfs	M1.3 Photic coral reefs	
Lagoon benthic	Vegetated peat	Marine	M1 Marine Shelfs	M1.8 Subtidal mud plains	Vegetated sediment
Lagoon benthic	Silt	Marine	M1 Marine Shelfs	M1.8 Subtidal mud plains	Bare or sparsely vegetated sediment





Appendix K.6 Proposed
Project and
Gazetted
Corridor
Mapping

