APPENDIX M
Wetland Value Assessment

IHNC New Lock Graving and Stockpile Sites WVA Assumptions

General Assumptions

Project Area acres – The project area acres were determined by the Corps based on the area needed for the graving site and stockpile area. The only loss applied was do to the potential of some development to the surrounding area over 50 years. The only other loss would be due to subsidence which wont show in the assessed time. All areas are assumed to continue supporting trees even with some subsidence with in the time period evaluated.

The graving site will be excavated to -31feet. The material excavated (664,000 cy) will be stockpiled adjacent to the graving site. Suitable material may be brought in to relocate the hurricane protection levee. After project completion the hurricane protection levee will be replaced to its original location and the material used to create the berms that protect the graving and stockpile site from the GIWW will be used along with the stockpiled material to restore the graving site to its previous grade. Its likely the stockpiled and berm material wont be enough to refill the entire graving site to its previous elevation as that volume would likely be reduced due to dewatering and loss of organic material and 7 years of weathering. We assume forested wetlands will begin to be supported on a portion (half) of the graving site and all of the stockpile site after TY7. In addition the hydrology is assumed to return to FWOP conditions for the portions that return to existing elevation after TY7.

Project footprint for the graving site is 19.26 acres and for the stockpile site is 14.56 acres. Of the graving site acres, 10.76 acres is on the protected side of the levee and 8.54 acres on the flood-side of the existing hurricane protection levee.

Bottomland Hardwood Assumptions

<u>V1 – Tree Species Association</u>
FWOP – class 1, Less than 25% of overstory consists of mast or other edible-seed producing trees. The Graving and stockpile sites are dominated by Chinese tallow which provides low- to no- quality mast. The mid- and understory regeneration was also dominated by tallow but had some (very little) dogwoods, red maple, hackberry and willow regenerating (see V2 below). Thus this variable remained class 1 for all TYs.
FWP –class 1 for TY1-50 assume no mast while graving and stockpile site are being used. After construction the graving and stockpile sites are expected to revert back to tallow dominated BLH.

<u>V2 – Stand maturity of dominant and codominant trees</u>
FWOP – field data collected and spreadsheets were used to determine baseline and all TY dbh. Topped trees were assumed dead and not used. Tallow typically are not seen in nature above a 20” dbh. As tallow increased in size assumed the dbh maxed out at 20”dbh. Therefore 13 trees at TY50 where listed as 20” and remained in the data set. Twelve Red Maple, 4 boxelder, 4 dogwood, 1 willow, and 4 hackberry were grown in

from TY10 to TY50. Seven hackberry were combined with the predominantly tallow site at TY0.

FWP – Construction at the graving site is expected to take 8.75 years. From TY1 to TY10 the ground would have been cleared for use during construction. After completion of construction the graving and stockpile sites would grow in predominately tallow from natural recruitment from TY10 to TY50.

V3 – Understory/midstory

FWOP – Baseline taken from data sheets and remained the same for TY1. TY5 thru TY50 adjusted to reflect a reduction in understory and a slighter increase in midstory over time. The understory is expected to decrease as the forest grows and blocks out light.

FWP – TY1 thru TY10 there is no understory/midstory as the area would have been cleared for disposal. At the graving and stockpile sites TY10 to TY50 adjusted to show a high amount of understory/midstory in the beginning and reduced over time as the forest grows.

V4 – Hydrology

FWOP – Majority of the graving and stockpile sites are on the flood-side of the levee open to the GIWW but some of the graving site is on the protected-side of the levee. These sites contain some areas of standing water, some moist soil, and some dry areas based on the site visit.

The class choices in the BLH model for this variable aren't reflective what is actually occurring. On the protected side the hydrology is altered but not to the extent that class 2 describes, either extensively dry or extensively inundated/impounded. A more appropriate suitability index for the hydrology of this community is used in the WVA swamp models variable 3 for water regime. Assuming the flood-side (10.76 acres graving site plus 14.56 acres stockpile site, total 25.32 acres) would be seasonally flooded and the protected-side (8.54 acres graving site) is temporarily flooded. The flood-side would have high water flow/exchange being open to the GIWW and the protected-side would have a low or limited water exchange. The project area has a flood duration that is about 75% (open to GIWW) seasonally flooded with a high flow/exchange (1.00 HSI) and 25% is temporarily flooded with a low flow/exchange (0.65 HSI), giving a weighted average of (0.75*1 + 0.25*.65) = 0.91 HSI for the project area.

FWP –The graving and stockpile sites are expected to be behind a 7 foot berm/sheetpile system during construction (TY1-TY7 = 0.1HSI). After construction part of the sites is assumed to revert back to its existing hydrology. It is most likely the material available (664,000 cy of stockpile and berm material after 7 years of weathering and compaction) to refill the graving site wont be enough to refill the site completely back to existing elevations. We assumed what material is available will be concentrated at the levee location to ensure the levee is at appropriate elevation, result in a portion of the graving site remaining below existing elevation. We assumed half of the graving site (19.26ac/2

= 9.63ac) is expected to be inundated. We assumed half of the 9.63 (1/4 of the area – 4.82 acres) inundated acres are taken from in protected side (8.54 acres acres) of the levee and half taken from floodside (25.28 acres), leaving 3.72 (11%) that is temporarily flooded with a low flow/exchange (0.65 HSI) and 20.46 (60.5%) acres that is seasonally flooded with a high flow/exchange (1.00 HSI), respectively, and 28.5% that is inundated (0.01 HIS). Therefore the weighted average is (0.605*1+0.11*0.65+0.285*0.01) = 0.68 HSI.

V5 – Size of contiguous forested area

FWOP - The project area plus the adjacent forested wetlands accounts for between 20.1 and 100 acres of continuous forested wetlands. This is a class 3 for all TYs. The forested wetland area is not expected to change.

FWP – TY0-TY10 Once the forested wetlands are removed from the graving and stockpile sites there will be less than 5miles (class 1) of continuous forested wetlands. TY20 – TY50 after the graving and stockpile sites reestablish forested wetlands there will again be over 20 acres of continuous forested wetlands (class 3).

V6 – Suitability and traversability of surrounding land use

FWOP - We based this variable on site visits and delineating an areal map (see attached map) of the area separating the acres for each category type. Based on the map the following area was calculated:

	Acres	FWOP TY0 %
Total Area	849.3	
Development	27.4	3%
Water	221.4	26%
Pasture	77.0	9%
Forest/marsh	523.5	62%

The forested wetlands of the project area are predominately surrounded by wetlands. This area may develop further with Paris road adjacent to those areas. We assumed development over 50 years in some of the wetlands (primarily south of the GIWW and south of the levee near Paris road and some on the north shore of the GIWW). Therefore by TY50 this variable shifted to about 30 less wetlands which were distributed between development and pastures.

FWP – Same as FWOP.

V7 – Disturbance

FWP – For the Distance Class between 50 and 500 feet (Class 2) from the perimeter of the project area there is the GIWW and Paris road. The category type of the waterway and road is a Class 1 constant/major (major highways, industrial, commercial, major navigation) disturbance. We assumed no change thru TY50 because we assumed no new development less than 50 feet of the perimeter of the project area and the type class is already the most it can be.

FWP – same as FWOP.

IHNC New Lock WVA Assumptions for Contaminated Disposal Facility (CDF)

General Assumptions

Project Area acres – The project area acres were determined by the Corps based on the area needed for disposal of contaminated material. Development rate was not applied to this area. No other loss is shown for 50 years. The only other loss would be due to subsidence which wont show in the assessed time. All areas are assumed to continue supporting trees even with some subsidence with in the time period evaluated.

TY1-TY7 there will be various years of disposal of contaminated sediments. TY1-TY7 some material will be used for backfill behind the lock to fill in the created by-pass channel to land elevation. After the final lift the disposal site will be capped with clean material and then seeded for dust control. Its most likely the area after construction will revert to a scrub/shrub habitat dominated by tallow.

Bottomland Hardwood Assumptions

V1 – Tree Species Association
FWOP – class 1, Less than 25% of overstory consists of mast or other edible-seed producing trees. The CDS is dominated by Chinese tallow which provides low- to no-quality mast. The mid- and understory regeneration was also dominated by tallow but had some dogwoods regenerating (see V2 below). Thus this variable remained class 1 for all TYs.
FWP –class 1 for TY1-50 assume tallow will naturally recruit and dominate the new site as seen in FWOP.

V2 – Stand maturity of dominant and codominant trees
FWOP – field data collected and spreadsheets were used to determine baseline and all TY dbh. Topped trees were assumed dead and removed from the spreadsheets at TY5. Tallow typically are not seen in nature above a 20" dbh. As tallow increased in size assumed the dbh maxed out at 20"dbh. Therefore 12 trees at TY50 where listed as 20" and remained in the data set. Dogwoods were grown in and lived to TY20 but most were removed by TY30 with only a few remaining. This is representative of the dogwood lifecycle. They stop growing after 20-30 years. We left a few dogwood in to represent the few trees that made it to the overstory, though most would eventually be overtopped by other species.

FWP – TY1-TY7 ground would have been cleared and seeded with grass but trees will not be allowed to grow. TY8 to TY50 grow scrub/shrub and tallow from natural recruitment.

V3 – Understory/midstory
FWOP – Baseline taken from data sheets and remained the same for TY1. TY5 thru TY50 adjusted to reflect a reduction in understory and a slighter increase in midstory

over time. The understory is expected to decrease as the forest grows and blocks out light.

FWP – TY1-TY7 there is no understory/midstory through the construction years. TY8 to TY50 adjusted to show a high amount of understory/midstory in the beginning and reduced over time as the forest grows.

V4 – Hydrology

FWOP - Stormwater discharge from the nearby urban area is pumped into the origin of Bayou Bienvenue. The north bank of Bayou Bienvenue forms the southern border of the confined disposal site (CDS). Rainwater runoff from the CDS flows through cuts in the bank into Bayou Bienvenue though at times, depending on rainfall and tidal stage, the exchange can be reversed. Bayou Bienvenue is tidally influenced, with a connection to the Mississippi River Gulf Outlet through a floodgate. The CDS is higher in elevation than the open water area to the south, though elevations in the CDS vary and there is a series of containment dikes and associated borrow-ditches within the CDS which retain rainwater. The CDS contains some standing water, some moist soil, and a few dry areas.

The class choices in the BLH model for this variable aren't reflective what is actually occurring. The hydrology is altered but not to the extent that class 2 describes, either extensively dry or extensively inundated/impounded. A more appropriate suitability index for the hydrology of this community is used in the WVA swamp models variable 3 for water regime. The project area has a flood duration that is temporarily flooded with a low flow/exchange (0.65 HSI).

FWP – TY1-TY7 assume no hydrology through the construction years (0.1 HSI). TY8 - TY50 assume the portion (66%) that will be used temporarily (material stockpiled for backfill) will return to the previous 0.65 HSI. The portion that will be permanently filled (34%) is expected to have no fow/exchange and permanently dry 0.01 HSI. The weighted average is (0.66*0.65 + 0.34*0.1) = 0.46 HSI.

V5 – Size of contiguous forested area

FWOP - The project area plus the adjacent forested wetlands accounts for around 1,200 acres of continuous forested wetlands. This is a class 5 (>500 acres) for all TYs. The forested wetland area is not expected to change.

FWP – Same as FWOP.

V6 – Suitability and traversability of surrounding land use

FWOP - We based this variable on site visits and delineating an areal map (see attached map) of the area separating the acres for each category type. Based on the map the following area was calculated:

	Acres	FWOP TY0 %	FWP Acers	FWP TY1 %
Total Area	2326.3			
Development	198.4	9%	198.4	9%
Water	1122.6	48%	1122.6	48%

Pasture	287.6	12%	287.6	12%
Forest/marsh	717.7	31%	717.7	31%

The forested wetlands of the project area are surrounded by an already extensively developed area. This area is not expected to develop much further. We assumed minor development over 50 years in some of the forested wetlands (near the dump and on the north shore of the GIWW). Therefore by TY50 this variable shifted to about 10 less forested wetlands which were evenly distributed between development and pastures.

FWP – Same as FWOP (see table above).

V7 – Disturbance

FWP – Greater than 500 feet from the perimeter of the project area there is the GIWW and the active dump site. Both are to be in the category constant/major (major highways, industrial, commercial, major navigation) disturbance. We assumed no change thru TY50 because we assumed no new development within the 500 foot buffer zone (see attached map). Or this variable could be considered to have class 4 (insignificant/lightly used roads or levees) between 50.1 to 500 feet from the perimeter of the project area. Either way the SI value (1) is the same.

FWP – same as FWOP.

Land Loss Spreadsheet

To calculate land loss, a loss rate for the marsh must be obtained from historical data.

Project:										
						Oldest Year	Recent Year	Oldest Year Acreage	Recent Year Acreage	Loss Rate
Total Acres		TYO Marsh Acres		TY0 Water Acres		1988	2005	17,915	15,318	-0.00917003
85		0		85						

FWOP

TY	Loss Rate	Marsh (acres)	% Marsh	Water (acres)	% Water
0	-0.00917	0	0%	85	100%
1	-0.00917	0	0%	85	100%
2	-0.00917	0	0%	85	100%
3	-0.00917	0	0%	85	100%
4	-0.00917	0	0%	85	100%
5	-0.00917	0	0%	85	100%
6	-0.00917	0	0%	85	100%
7	-0.00917	0	0%	85	100%
8	-0.00917	0	0%	85	100%
9	-0.00917	0	0%	85	100%
10	-0.00917	0	0%	85	100%
11	-0.00917	0	0%	85	100%
12	-0.00917	0	0%	85	100%
13	-0.00917	0	0%	85	100%
14	-0.00917	0	0%	85	100%
15	-0.00917	0	0%	85	100%
16	-0.00917	0	0%	85	100%
17	-0.00917	0	0%	85	100%
18	-0.00917	0	0%	85	100%
19	-0.00917	0	0%	85	100%
20	-0.00917	0	0%	85	100%
21	-0.00917	0	0%	85	100%
22	-0.00917	0	0%	85	100%
23	-0.00917	0	0%	85	100%
24	-0.00917	0	0%	85	100%
25	-0.00917	0	0%	85	100%
26	-0.00917	0	0%	85	100%
27	-0.00917	0	0%	85	100%
28	-0.00917	0	0%	85	100%
29	-0.00917	0	0%	85	100%
30	-0.00917	0	0%	85	100%
31	-0.00917	0	0%	85	100%
32	-0.00917	0	0%	85	100%
33	-0.00917	0	0%	85	100%
34	-0.00917	0	0%	85	100%
35	-0.00917	0	0%	85	100%
36	-0.00917	0	0%	85	100%
37	-0.00917	0	0%	85	100%
38	-0.00917	0	0%	85	100%
39	-0.00917	0	0%	85	100%
40	-0.00917	0	0%	85	100%
41	-0.00917	0	0%	85	100%
42	-0.00917	0	0%	85	100%
43	-0.00917	0	0%	85	100%
44	-0.00917	0	0%	85	100%
45	-0.00917	0	0%	85	100%
46	-0.00917	0	0%	85	100%
47	-0.00917	0	0%	85	100%
48	-0.00917	0	0%	85	100%
49	-0.00917	0	0%	85	100%
50	-0.00917	0	0%	85	100%

FWP

TY	Loss Rate	Marsh (acres)	% Marsh	Water (acres)	% Water		NET ACRES MARSH
0	-0.00459	0	0%	85	100%		0
1	-0.00459	85	100%	0	0%	10%	9
2	-0.00459	85	100%	0	0%		85
3	-0.00459	84	99%	1	1%	30%	25
4	-0.00459	84	99%	1	1%		84
5	-0.00459	83	98%	2	2%	100%	83
6	-0.00459	83	98%	2	2%		83
7	-0.00459	83	97%	2	3%		83
8	-0.00459	82	97%	3	3%		82
9	-0.00459	82	96%	3	4%		82
10	-0.00459	82	96%	3	4%		82
11	-0.00459	81	96%	4	4%		81
12	-0.00459	81	95%	4	5%		81
13	-0.00459	80	95%	5	5%		80
14	-0.00459	80	94%	5	6%		80
15	-0.00459	80	94%	5	6%		80
16	-0.00459	79	93%	6	7%		79
17	-0.00459	79	93%	6	7%		79
18	-0.00459	79	92%	6	8%		79
19	-0.00459	78	92%	7	8%		78
20	-0.00459	78	92%	7	8%		78
21	-0.00459	78	91%	7	9%		78
22	-0.00459	77	91%	8	9%		77
23	-0.00459	77	90%	8	10%		77
24	-0.00459	76	90%	9	10%		76
25	-0.00459	76	90%	9	10%		76
26	-0.00459	76	89%	9	11%		76
27	-0.00459	75	89%	10	11%		75
28	-0.00459	75	88%	10	12%		75
29	-0.00459	75	88%	10	12%		75
30	-0.00459	74	88%	11	12%		74
31	-0.00459	74	87%	11	13%		74
32	-0.00459	74	87%	11	13%		74
33	-0.00459	73	86%	12	14%		73
34	-0.00459	73	86%	12	14%		73
35	-0.00459	73	86%	12	14%		73
36	-0.00459	72	85%	13	15%		72
37	-0.00459	72	85%	13	15%		72
38	-0.00459	72	84%	13	16%		72
39	-0.00459	71	84%	14	16%		71
40	-0.00459	71	84%	14	16%		71
41	-0.00459	71	83%	14	17%		71
42	-0.00459	70	83%	15	17%		70
43	-0.00459	70	82%	15	18%		70
44	-0.00459	70	82%	15	18%		70
45	-0.00459	69	82%	16	18%		69
46	-0.00459	69	81%	16	19%		69
47	-0.00459	69	81%	16	19%		69
48	-0.00459	68	81%	17	19%		68
49	-0.00459	68	80%	17	20%		68
50	-0.00459	68	80%	17	20%		68

COMMUNITY HABITAT SUITABILITY MODEL
Bottomland Hardwoods

Project..... IHNC New Lock CDF BLH WVA Acres: 209

Condition: Future Without Project

Variable		TY 0 Class/Value	TY 0 SI	TY 1 Class/Value	TY 1 SI	TY 8 Class/Value	TY 8 SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class 1	0.20
V2	Maturity (input age or dbh, not both)	Age / dbh 10.51	0.27	Age / dbh 10.77	0.29	Age / dbh 11.23	0.32
V3	Understory / Midstory	Understory % 49 / Midstory % 58	0.96	Understory % 49 / Midstory % 58	0.96	Understory % 45 / Midstory % 60	0.95
V4	Hyrology	Class	0.65	Class	0.65	Class	0.65
V5	Forest Size	Class 5	1.00	Class 5	1.00	Class 5	1.00
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	31	0.45	31	0.45	31	0.45
	Abandoned Ag	0		0		0	
	Pasture / Hay	12		12		12	
	Active Ag	48		48		48	
	Development	9		9		9	
V7	Disturbance Type	Class 1	1.00	Class 1	1.00	Class 1	1.00
	Distance	Class 3		Class 3		Class 3	
		HSI =	0.41	HSI =	0.42	HSI =	0.43

Project..... IHNC New Lock CDF BLH WVA
FWOP

Variable		TY 20 Class/Value	TY 20 SI	TY 50 Class/Value	TY 50 SI	TY Class/Value	TY SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class	
V2	Maturity (input age or dbh, not both)	Age / dbh 7.57	0.09	Age / dbh 16.29	0.75	Age / dbh	0.00
V3	Understory / Midstory	Understory % 30 / Midstory % 70	0.90	Understory % 20 / Midstory % 70	0.75	Understory % / Midstory %	
V4	Hyrology	Class	0.65	Class	0.65	Class	
V5	Forest Size	Class 5	1.00	Class 5	1.00	Class	
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	25	0.41	20	0.36		
	Abandoned Ag	0		0			
	Pasture / Hay	15		17			
	Active Ag	48		48			
	Development	12		15			
V7	Disturbance Type	Class 1	1.00	Class 1	1.00	Class	
	Distance	Class 3		Class 3		Class	
		HSI =	0.30	HSI =	0.51	HSI =	

COMMUNITY HABITAT SUITABILITY MODEL

Bottomland Hardwoods

Project..... IHNC New Lock CDF BLH WVA Acres:

Condition: Future With Project

Variable		TY 0		TY 1		TY 8	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class 1	0.20
V2	Maturity (input age or dbh, not both)	Age / dbh 10.51	0.27	Age / dbh 0.1	0.00	Age / dbh 1	0.01
V3	Understory / Midstory	Understory % 49 / Midstory % 58	0.96	Understory % 0 / Midstory % 0	0.10	Understory % 50 / Midstory % 0	0.55
V4	Hyrology	Class	0.65	Class	0.10	Class	0.46
V5	Forest Size	Class 5	1.00	Class 5	1.00	Class 5	1.00
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	31	0.45	31	0.45	31	0.45
	Abandoned Ag	0		0		0	
	Pasture / Hay	12		12		12	
	Active Ag	48		48		48	
	Development	9		9		9	
V7	Disturbance						
	Type	Class 1	1.00	Class 1	1.00	Class 1	1.00
	Distance	Class 3		Class 3		Class 3	
		HSI =	0.41	HSI =	0.05	HSI =	0.15

Project..... IHNC New Lock CDF BLH WVA
FWP

Variable		TY 20		TY 50		TY	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class	
V2	Maturity (input age or dbh, not both)	Age / dbh 4.6	0.05	Age / dbh 11.3	0.33	Age / dbh	0.00
V3	Understory / Midstory	Understory % 40 / Midstory % 75	0.88	Understory % 30 / Midstory % 40	1.00	Understory % / Midstory %	
V4	Hyrology	Class	0.46	Class	0.46	Class	
V5	Forest Size	Class 5	1.00	Class 5	1.00	Class	
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	28	0.43	25	0.41		
	Abandoned Ag	0		0			
	Pasture / Hay	13		15			
	Active Ag	48		48			
	Development	11		12			
V7	Disturbance						
	Type	Class 1	1.00	Class 1	1.00	Class	
	Distance	Class 3		Class 3		Class	
		HSI =	0.24	HSI =	0.41	HSI =	

AAHU CALCULATION, Bottomland Hardwoods

Project: IHNC New Lock CDF BLH WVA

Future Without Project			Total	Cummulative
TY	Acres	x HSI	HUs	HUs
0	209	0.41	85.34	
1	209	0.42	86.79	86.06
8	209	0.43	89.56	617.20
20	209	0.30	63.44	918.01
50	209	0.51	107.18	2559.33
#REF!		#REF!		
#REF!		#REF!		
#REF!		#REF!		
			Total CHUs =	4180.59
			AAHUs =	83.61

Future With Project			Total	Cummulative
TY	Acres	x HSI	HUs	HUs
0	209	0.41	85.34	
1	209	0.05	11.07	48.21
8	209	0.15	31.48	148.92
20	209	0.24	50.11	489.49
50	209	0.41	85.96	2040.98
#REF!		#REF!		
#REF!		#REF!		
#REF!		#REF!		
			Total CHUs =	2727.59
			AAHUs =	54.55

NET CHANGE IN CHUs DUE TO PROJECT	
A. Future Without Project CHUs =	2727.59
B. Future With Project CHUs =	4180.59
Net Change (FWP - FWOP) =	-1453.00

NET CHANGE IN AAHUs DUE TO PROJECT	
A. Future Without Project AAHUs =	54.55
B. Future With Project AAHUs =	83.61
Net Change (FWP - FWOP) =	-29.06

COMMUNITY HABITAT SUITABILITY MODEL

Bottomland Hardwoods

Project..... IHNC New Lock CDF BLH WVA Acres: 240

Condition: Future Without Project

Variable		TY 0		TY 1		TY 8	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class 1	0.20
V2	Maturity (input age or dbh, not both)	Age dbh 10.51	0.27	Age dbh 10.77	0.29	Age dbh 11.23	0.32
V3	Understory / Midstory	Understory % 49 Midstory % 58	0.96	Understory % 49 Midstory % 58	0.96	Understory % 45 Midstory % 60	0.95
V4	Hyrology	Class	0.65	Class	0.65	Class	0.65
V5	Forest Size	Class 5	1.00	Class 5	1.00	Class 5	1.00
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	31	0.45	31	0.45	31	0.45
	Abandoned Ag	0		0		0	
	Pasture / Hay	12		12		12	
	Active Ag	48		48		48	
	Development	9		9		9	
V7	Disturbance						
	Type	Class 1	1.00	Class 1	1.00	Class 1	1.00
	Distance	Class 3		Class 3		Class 3	
		HSI =	0.41	HSI =	0.42	HSI =	0.43

Project..... IHNC New Lock CDF BLH WVA
FWOP

Variable		TY 20		TY 50		TY	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class	
V2	Maturity (input age or dbh, not both)	Age dbh 7.57	0.09	Age dbh 16.29	0.75	Age dbh	0.00
V3	Understory / Midstory	Understory % 30 Midstory % 70	0.90	Understory % 20 Midstory % 70	0.75	Understory % Midstory %	
V4	Hyrology	Class	0.65	Class	0.65	Class	
V5	Forest Size	Class 5	1.00	Class 5	1.00	Class	
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	25	0.41	20	0.36		
	Abandoned Ag	0		0			
	Pasture / Hay	15		17			
	Active Ag	48		48			
	Development	12		15			
V7	Disturbance						
	Type	Class 1	1.00	Class 1	1.00	Class	
	Distance	Class 3		Class 3		Class	
		HSI =	0.30	HSI =	0.51	HSI =	

COMMUNITY HABITAT SUITABILITY MODEL

Bottomland Hardwoods

Project..... IHNC New Lock CDF BLH WVA Acres:

Condition: Future With Project

Variable		TY 0		TY 1		TY 8	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class 1	0.20
V2	Maturity (input age or dbh, not both)	Age / dbh 10.51	0.27	Age / dbh 0.1	0.00	Age / dbh 1	0.01
V3	Understory / Midstory	Understory % 49 / Midstory % 58	0.96	Understory % 0 / Midstory % 0	0.10	Understory % 50 / Midstory % 0	0.55
V4	Hyrology	Class	0.65	Class	0.10	Class	0.46
V5	Forest Size	Class 5	1.00	Class 5	1.00	Class 5	1.00
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	31	0.45	31	0.45	31	0.45
	Abandoned Ag	0		0		0	
	Pasture / Hay	12		12		12	
	Active Ag	48		48		48	
	Development	9		9		9	
V7	Disturbance						
	Type	Class 1	1.00	Class 1	1.00	Class 1	1.00
	Distance	Class 3		Class 3		Class 3	
		HSI =	0.41	HSI =	0.05	HSI =	0.15

Project..... IHNC New Lock CDF BLH WVA
FWP

Variable		TY 20		TY 50		TY	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class	
V2	Maturity (input age or dbh, not both)	Age / dbh 4.6	0.05	Age / dbh 11.3	0.33	Age / dbh	0.00
V3	Understory / Midstory	Understory % 40 / Midstory % 75	0.88	Understory % 30 / Midstory % 40	1.00	Understory % / Midstory %	
V4	Hyrology	Class	0.46	Class	0.46	Class	
V5	Forest Size	Class 5	1.00	Class 5	1.00	Class	
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	28	0.43	25	0.41		
	Abandoned Ag	0		0			
	Pasture / Hay	13		15			
	Active Ag	48		48			
	Development	11		12			
V7	Disturbance						
	Type	Class 1	1.00	Class 1	1.00	Class	
	Distance	Class 3		Class 3		Class	
		HSI =	0.24	HSI =	0.41	HSI =	

AAHU CALCULATION, Bottomland Hardwoods

Project: IHNC New Lock CDF BLH WVA

Future Without Project			Total	Cummulative
TY	Acres	x HSI	HUs	HUs
0	240	0.41	98.00	
1	240	0.42	99.66	98.83
8	240	0.43	102.84	708.74
20	240	0.30	72.86	1054.17
50	240	0.51	123.07	2938.94
#REF!		#REF!		
#REF!		#REF!		
#REF!		#REF!		
			Total CHUs =	4800.68
			AAHUs =	96.01

Future With Project			Total	Cummulative
TY	Acres	x HSI	HUs	HUs
0	240	0.41	98.00	
1	240	0.05	12.71	55.36
8	240	0.15	36.14	171.00
20	240	0.24	57.54	562.09
50	240	0.41	98.71	2343.71
#REF!		#REF!		
#REF!		#REF!		
#REF!		#REF!		
			Total CHUs =	3132.16
			AAHUs =	62.64

NET CHANGE IN CHUs DUE TO PROJECT	
A. Future Without Project CHUs =	3132.16
B. Future With Project CHUs =	4800.68
Net Change (FWP - FWOP) =	-1668.52

NET CHANGE IN AAHUs DUE TO PROJECT	
A. Future Without Project AAHUs =	62.64
B. Future With Project AAHUs =	96.01
Net Change (FWP - FWOP) =	-33.37

COMMUNITY HABITAT SUITABILITY MODEL

Bottomland Hardwoods

Project..... IHNC New Lock CDF BLH WVA Acres: 266

Condition: Future Without Project

Variable		TY 0		TY 1		TY 8	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class 1	0.20
V2	Maturity (input age or dbh, not both)	Age dbh 10.51	0.27	Age dbh 10.77	0.29	Age dbh 11.23	0.32
V3	Understory / Midstory	Understory % 49 Midstory % 58	0.96	Understory % 49 Midstory % 58	0.96	Understory % 45 Midstory % 60	0.95
V4	Hyrology	Class	0.65	Class	0.65	Class	0.65
V5	Forest Size	Class 5	1.00	Class 5	1.00	Class 5	1.00
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	31	0.45	31	0.45	31	0.45
	Abandoned Ag	0		0		0	
	Pasture / Hay	12		12		12	
	Active Ag	48		48		48	
	Development	9		9		9	
V7	Disturbance						
	Type	Class 1	1.00	Class 1	1.00	Class 1	1.00
	Distance	Class 3		Class 3		Class 3	
		HSI =	0.41	HSI =	0.42	HSI =	0.43

Project..... IHNC New Lock CDF BLH WVA
FWOP

Variable		TY 20		TY 50		TY	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class	
V2	Maturity (input age or dbh, not both)	Age dbh 7.57	0.09	Age dbh 16.29	0.75	Age dbh	0.00
V3	Understory / Midstory	Understory % 30 Midstory % 70	0.90	Understory % 20 Midstory % 70	0.75	Understory % Midstory %	
V4	Hyrology	Class	0.65	Class	0.65	Class	
V5	Forest Size	Class 5	1.00	Class 5	1.00	Class	
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	25	0.41	20	0.36		
	Abandoned Ag	0		0			
	Pasture / Hay	15		17			
	Active Ag	48		48			
	Development	12		15			
V7	Disturbance						
	Type	Class 1	1.00	Class 1	1.00	Class	
	Distance	Class 3		Class 3		Class	
		HSI =	0.30	HSI =	0.51	HSI =	

COMMUNITY HABITAT SUITABILITY MODEL

Bottomland Hardwoods

Project..... IHNC New Lock CDF BLH WVA Acres:

Condition: Future With Project

Variable		TY 0		TY 1		TY 8	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class 1	0.20
V2	Maturity (input age or dbh, not both)	Age / dbh 10.51	0.27	Age / dbh 0.1	0.00	Age / dbh 1	0.01
V3	Understory / Midstory	Understory % 49 / Midstory % 58	0.96	Understory % 0 / Midstory % 0	0.10	Understory % 50 / Midstory % 0	0.55
V4	Hyrology	Class	0.65	Class	0.10	Class	0.46
V5	Forest Size	Class 5	1.00	Class 5	1.00	Class 5	1.00
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	31	0.45	31	0.45	31	0.45
	Abandoned Ag	0		0		0	
	Pasture / Hay	12		12		12	
	Active Ag	48		48		48	
	Development	9		9		9	
V7	Disturbance						
	Type	Class 1	1.00	Class 1	1.00	Class 1	1.00
	Distance	Class 3		Class 3		Class 3	
		HSI =	0.41	HSI =	0.05	HSI =	0.15

Project..... IHNC New Lock CDF BLH WVA
FWP

Variable		TY 20		TY 50		TY	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class	
V2	Maturity (input age or dbh, not both)	Age / dbh 4.6	0.05	Age / dbh 11.3	0.33	Age / dbh	0.00
V3	Understory / Midstory	Understory % 40 / Midstory % 75	0.88	Understory % 30 / Midstory % 40	1.00	Understory % / Midstory %	
V4	Hyrology	Class	0.46	Class	0.46	Class	
V5	Forest Size	Class 5	1.00	Class 5	1.00	Class	
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	28	0.43	25	0.41		
	Abandoned Ag	0		0			
	Pasture / Hay	13		15			
	Active Ag	48		48			
	Development	11		12			
V7	Disturbance						
	Type	Class 1	1.00	Class 1	1.00	Class	
	Distance	Class 3		Class 3		Class	
		HSI =	0.24	HSI =	0.41	HSI =	

AAHU CALCULATION, Bottomland Hardwoods

Project: IHNC New Lock CDF BLH WVA

Future Without Project			Total	Cummulative
TY	Acres	x HSI	HUs	HUs
0	266	0.41	108.62	
1	266	0.42	110.45	109.54
8	266	0.43	113.98	785.52
20	266	0.30	80.75	1168.37
50	266	0.51	136.41	3257.33
#REF!		#REF!		
#REF!		#REF!		
#REF!		#REF!		
			Total CHUs =	5320.76
			AAHUs =	106.42

Future With Project			Total	Cummulative
TY	Acres	x HSI	HUs	HUs
0	266	0.41	108.62	
1	266	0.05	14.09	61.35
8	266	0.15	40.06	189.53
20	266	0.24	63.77	622.99
50	266	0.41	109.40	2597.61
#REF!		#REF!		
#REF!		#REF!		
#REF!		#REF!		
			Total CHUs =	3471.48
			AAHUs =	69.43

NET CHANGE IN CHUs DUE TO PROJECT	
A. Future Without Project CHUs =	3471.48
B. Future With Project CHUs =	5320.76
Net Change (FWP - FWOP) =	-1849.28

NET CHANGE IN AAHUs DUE TO PROJECT	
A. Future Without Project AAHUs =	69.43
B. Future With Project AAHUs =	106.42
Net Change (FWP - FWOP) =	-36.99

COMMUNITY HABITAT SUITABILITY MODEL

Bottomland Hardwoods

Project.....IHNC Graving and Stockpile Site WVA Acres: 33.82

Condition: Future Without Project

Variable		TY 0		TY 1		TY 10	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class 1	0.20
V2	Maturity (input age or dbh, not both)	Age dbh 8.88	0.16	Age dbh 9.14	0.18	Age dbh 8.79	0.15
V3	Understory / Midstory	Understory % 71 Midstory % 39.5	0.95	Understory % 71 Midstory % 39.5	0.95	Understory % 60 Midstory % 50	1.00
V4	Hyrology	Class	0.91	Class	0.91	Class	0.91
V5	Forest Size	Class 3	0.60	Class 3	0.60	Class 3	0.60
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	62	0.71	62	0.71	54	0.64
	Abandoned Ag	0		0		0	
	Pasture / Hay	9		9		12	
	Active Ag	26		26		26	
	Development	3		3		8	
V7	Disturbance						
	Type	Class 1	0.26	Class 1	0.26	Class 1	0.26
	Distance	Class 2		Class 2		Class 2	
		HSI = 0.34		**HSI = 0.35**		**HSI = 0.33**	

Project.....IHNC Graving and Stockpile Site WVA
FWOP

Variable		TY 20		TY 50		TY	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class	
V2	Maturity (input age or dbh, not both)	Age dbh 8.03	0.10	Age dbh 16.9	0.79	Age dbh	0.00
V3	Understory / Midstory	Understory % 50 Midstory % 55	0.98	Understory % 35 Midstory % 60	0.95	Understory % Midstory %	
V4	Hyrology	Class	0.91	Class	0.91	Class	
V5	Forest Size	Class 3	0.60	Class 3	0.60	Class	
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	47	0.58	32	0.45		
	Abandoned Ag	0		0			
	Pasture / Hay	14		19			
	Active Ag	26		26			
	Development	13		23			
V7	Disturbance						
	Type	Class 1	0.26	Class 1	0.26	Class	
	Distance	Class 2		Class 2		Class	
		HSI =	**0.30**	**HSI =**	**0.50**	**HSI =**	

COMMUNITY HABITAT SUITABILITY MODEL

Bottomland Hardwoods

Project.....IHNC Graving and Stockpile Site WVA Acres:

Condition: Future With Project

Variable		TY 0		TY 1		TY 10	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class 1	0.20
V2	Maturity (input age or dbh, not both)	Age dbh 8.88	0.16	Age dbh 0.1	0.00	Age dbh 0.1	0.00
V3	Understory / Midstory	Understory % 71 Midstory % 39.5	0.95	Understory % 0 Midstory % 0	0.10	Understory % 50 Midstory % 0	0.55
V4	Hyrology	Class	0.91	Class	0.10	Class	0.10
V5	Forest Size	Class 3	0.60	Class 1	0.20	Class 1	0.20
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	62	0.71	62	0.71	54	0.64
	Abandoned Ag	0		0		0	
	Pasture / Hay	9		9		12	
	Active Ag	26		26		26	
	Development	3		3		8	
V7	Disturbance						
	Type	Class 1	0.26	Class 1	0.26	Class 1	0.26
	Distance	Class 2		Class 2		Class 2	
		HSI =	0.34	HSI =	0.04	HSI =	0.06

Project..... IHNC Graving and Stockpile Site WVA
FWP

Variable		TY 20		TY 50		TY	
		Class/Value	SI	Class/Value	SI	Class/Value	SI
V1	Species Assoc.	Class 1	0.20	Class 1	0.20	Class	
V2	Maturity (input age or dbh, not both)	Age dbh 3.6	0.04	Age dbh 11.3	0.33	Age dbh	0.00
V3	Understory / Midstory	Understory % 33 Midstory % 75	0.88	Understory % 30 Midstory % 40	1.00	Understory % Midstory %	
V4	Hyrology	Class	0.68	Class	0.68	Class	
V5	Forest Size	Class 3	0.60	Class 3	0.60	Class	
V6	Surrounding Land Use	Values %		Values %		Values %	
	Forest / marsh	47	0.58	32	0.45		
	Abandoned Ag	0		0			
	Pasture / Hay	14		19			
	Active Ag	26		26			
	Development	13		23			
V7	Disturbance						
	Type	Class 1	0.26	Class 1	0.26	Class	
	Distance	Class 2		Class 2		Class	
		HSI =	0.21	HSI =	0.39	HSI =	

AAHU CALCULATION, Bottomland Hardwoods

Project: IHNC Graving and Stockpile Site WVA

Future Without Project			Total	Cummulative
TY	Acres	x HSI	HUs	HUs
0	33.82	0.34	11.41	
1	33.82	0.35	11.73	11.57
10	33.82	0.33	11.30	103.64
20	33.82	0.30	10.04	106.72
50	33.82	0.50	17.01	405.75
#REF!		#REF!		
#REF!		#REF!		
#REF!		#REF!		
			Total CHUs =	627.68
			AAHUs =	12.55

Future With Project			Total	Cummulative
TY	Acres	x HSI	HUs	HUs
0	33.82	0.34	11.41	
1	24.19	0.04	1.08	5.78
10	24.19	0.06	1.35	10.96
20	24.19	0.21	5.16	32.55
50	24.19	0.39	9.32	217.20
#REF!		#REF!		
#REF!		#REF!		
#REF!		#REF!		
			Total CHUs =	266.48
			AAHUs =	5.33

NET CHANGE IN CHUs DUE TO PROJECT	
A. Future Without Project CHUs =	266.48
B. Future With Project CHUs =	627.68
Net Change (FWP - FWOP) =	-361.19

NET CHANGE IN AAHUs DUE TO PROJECT	
A. Future Without Project AAHUs =	5.33
B. Future With Project AAHUs =	12.55
Net Change (FWP - FWOP) =	-7.22

WETLAND VALUE ASSESSMENT COMMUNITY MODEL
Brackish Marsh

Project: IHNC Lock Replacement Marsh Creation Project Area: 85

Condition: Future Without Project

Variable		TY 0		TY 1		TY 5	
		Value	SI	Value	SI	Value	SI
V1	% Emergent	0	0.10	0	0.10	0	0.10
V2	% Aquatic	5	0.15	5	0.15	6	0.15
V3	Interspersion	%		%		%	
	Class 1	0	0.10	0	0.10	0	0.10
	Class 2	0		0		0	
	Class 3	0		0		0	
	Class 4	0		0		0	
	Class 5	100		100		100	
V4	%OW <= 1.5ft	85	0.90	80	1.00	75	1.00
V5	Salinity (ppt)	12	0.70	12	0.70	12	0.70
V6	Access Value	1.00	1.00	1.00	1.00	1.00	1.00
	Emergent Marsh HSI =		**0.22**	**EM HSI =**	**0.22**	**EM HSI =**	**0.22**
	Open Water HSI =		**0.37**	**OW HSI =**	**0.38**	**OW HSI =**	**0.39**

Project:
FWOP

Variable		TY 50					
		Value	SI	Value	SI	Value	SI
V1	% Emergent	0	0.10				
V2	% Aquatic	10	0.19				
V3	Interspersion	%		%		%	
	Class 1		0.10				
	Class 2						
	Class 3						
	Class 4						
	Class 5	100					
V4	%OW <= 1.5ft	50	0.74				
V5	Salinity (ppt)	12	0.70				
V6	Access Value	1.00	1.00				
	EM HSI =		**0.22**	**EM HSI =**		**EM HSI =**	
	OW HSI =		**0.40**	**OW HSI =**		**OW HSI =**	

WETLAND VALUE ASSESSMENT COMMUNITY MODEL
Brackish Marsh

Project: Inner Harbor Navigation Canal Lock Replacement Project Area: 85

Condition: Future With Project

Variable		TY 0		TY 1		TY 3	
		Value	SI	Value	SI	Value	SI
V1	% Emergent	0	0.10	10	0.19	30	0.37
V2	% Aquatic	5	0.15	0	0.10	0	0.10
V3	Interspersion	%		%		%	
	Class 1	0	0.10	100	1.00	100	1.00
	Class 2	0		0		0	
	Class 3	0		0		0	
	Class 4	0		0		0	
	Class 5	100					
V4	%OW <= 1.5ft	85	0.90	0	0.10	100	0.60
V5	Salinity (ppt)	12	0.70	12	0.70	12	0.70
V6	Access Value	1.00	1.00	0.00	0.10	1.00	1.00
	Emergent Marsh HSI =		**0.22**	**EM HSI =**	**0.32**	**EM HSI =**	**0.55**
	Open Water HSI =		**0.37**	**OW HSI =**	**0.21**	**OW HSI =**	**0.37**

Project:
FWP

Variable		TY 5		TY50			
		Value	SI	Value	SI	Value	SI
V1	% Emergent	98	0.98	80	0.82		
V2	% Aquatic	0	0.10	5	0.15		
V3	Interspersion	%		%		%	
	Class 1	100	1.00		0.53		
	Class 2	0		65			
	Class 3	0		35			
	Class 4	0		0			
	Class 5						
V4	%OW <= 1.5ft	90	1.00	80	1.00		
V5	Salinity (ppt)	12	0.70	12	0.70		
V6	Access Value	1.00	1.00	1.00	1.00		
	EM HSI =		**0.96**	**EM HSI =**	**0.80**	**EM HSI =**	
	OW HSI =		**0.40**	**OW HSI =**	**0.41**	**OW HSI =**	

AAHU CALCULATION - EMERGENT MARSH

Project:

Future Without Project			Total	Cummulative
TY	Marsh Acres	x HSI	HUs	HUs
0	0	0.22	0.00	
1	0	0.22	0.00	0.00
5	0	0.22	0.00	0.00
50	0	0.22	0.00	0.00
		#REF!		
		#REF!		
		#REF!		
			AAHUs =	**0.00**

Future With Project			Total	Cummulative
TY	Marsh Acres	x HSI	HUs	HUs
0	0	0.22	0.00	
1	9	0.32	2.85	1.28
3	25	0.55	13.77	15.37
5	83	0.96	79.34	85.28
50	68	0.80	54.69	2998.67
		#REF!		
		#REF!		
		#REF!		
			AAHUs	**62.01**

NET CHANGE IN AAHUs DUE TO PROJECT		
A. Future With Project Emergent Marsh AAHUs	=	62.01
B. Future Without Project Emergent Marsh AAHUs	=	0.00
Net Change (FWP - FWOP) =		**62.01**

AAHU CALCULATION - OPEN WATER

Project:

Future Without Project			Total	Cummulative
TY	Water Acres	x HSI	HUs	HUs
0	85	0.37	31.46	
1	85	0.38	32.09	31.77
5	85	0.39	32.85	129.88
50	85	0.40	34.12	1506.90
		#REF!		
		#REF!		
		#REF!		
			AAHUs =	**33.37**

Future With Project			Total	Cummulative
TY	Water Acres	x HSI	HUs	HUs
0	85	0.37	31.46	
1	0	0.21	0.00	13.48
3	1	0.37	0.37	0.31
5	2	0.40	0.79	1.15
50	17	0.41	6.96	172.79
		#REF!		
		#REF!		
		#REF!		
			AAHUs	**3.75**

NET CHANGE IN AAHUs DUE TO PROJECT		
A. Future With Project Open Water AAHUs	=	3.75
B. Future Without Project Open Water AAHUs	=	33.37
Net Change (FWP - FWOP) =		**-29.62**

TOTAL BENEFITS IN AAHUs DUE TO PROJECT		
A. Emergent Marsh Habitat Net AAHUs	=	62.01
B. Open Water Habitat Net AAHUs	=	-29.62
Net Benefits= (2.6xEMAAHUs+OWAAHUs)/3.6		**36.56**

WETLAND VALUE ASSESSMENT COMMUNITY MODEL
Brackish Marsh

Project: IHNC Lock Replacement Marsh Creation Project Area: 100

Condition: Future Without Project

Variable		TY 0		TY 1		TY 5	
		Value	SI	Value	SI	Value	SI
V1	% Emergent	0	0.10	0	0.10	0	0.10
V2	% Aquatic	5	0.15	5	0.15	6	0.15
V3	Interspersion	%		%		%	
	Class 1	0	0.10	0	0.10	0	0.10
	Class 2	0		0		0	
	Class 3	0		0		0	
	Class 4	0		0		0	
	Class 5	100		100		100	
V4	%OW <= 1.5ft	85	0.90	80	1.00	75	1.00
V5	Salinity (ppt)	12	0.70	12	0.70	12	0.70
V6	Access Value	1.00	1.00	1.00	1.00	1.00	1.00
	Emergent Marsh HSI =		**0.22**	**EM HSI =**	**0.22**	**EM HSI =**	**0.22**
	Open Water HSI =		**0.37**	**OW HSI =**	**0.38**	**OW HSI =**	**0.39**

Project:
FWOP

Variable		TY 50					
		Value	SI	Value	SI	Value	SI
V1	% Emergent	0	0.10				
V2	% Aquatic	10	0.19				
V3	Interspersion	%		%		%	
	Class 1		0.10				
	Class 2						
	Class 3						
	Class 4						
	Class 5	100					
V4	%OW <= 1.5ft	50	0.74				
V5	Salinity (ppt)	12	0.70				
V6	Access Value	1.00	1.00				
	EM HSI =		**0.22**	**EM HSI =**		**EM HSI =**	
	OW HSI =		**0.40**	**OW HSI =**		**OW HSI =**	

WETLAND VALUE ASSESSMENT COMMUNITY MODEL
Brackish Marsh

Project: Inner Harbor Navigation Canal Lock Replacement Project Area: 100

Condition: Future With Project

Variable		TY 0		TY 1		TY 3	
		Value	SI	Value	SI	Value	SI
V1	% Emergent	0	0.10	10	0.19	30	0.37
V2	% Aquatic	5	0.15	0	0.10	0	0.10
V3	Interspersion	%		%		%	
	Class 1	0	0.10	100	1.00	100	1.00
	Class 2	0		0		0	
	Class 3	0		0		0	
	Class 4	0		0		0	
	Class 5	100					
V4	%OW <= 1.5ft	85	0.90	0	0.10	100	0.60
V5	Salinity (ppt)	12	0.70	12	0.70	12	0.70
V6	Access Value	1.00	1.00	0.00	0.10	1.00	1.00
	Emergent Marsh HSI =		**0.22**	**EM HSI =**	**0.32**	**EM HSI =**	**0.55**
	Open Water HSI =		**0.37**	**OW HSI =**	**0.21**	**OW HSI =**	**0.37**

Project:
FWP

Variable		TY 5		TY50			
		Value	SI	Value	SI	Value	SI
V1	% Emergent	98	0.98	80	0.82		
V2	% Aquatic	0	0.10	5	0.15		
V3	Interspersion	%		%		%	
	Class 1	100	1.00		0.53		
	Class 2	0		65			
	Class 3	0		35			
	Class 4	0		0			
	Class 5						
V4	%OW <= 1.5ft	90	1.00	80	1.00		
V5	Salinity (ppt)	12	0.70	12	0.70		
V6	Access Value	1.00	1.00	1.00	1.00		
	EM HSI =		**0.96**	**EM HSI =**	**0.80**	**EM HSI =**	
	OW HSI =		**0.40**	**OW HSI =**	**0.41**	**OW HSI =**	

AAHU CALCULATION - EMERGENT MARSH

Project:

Future Without Project			Total	Cummulative
TY	Marsh Acres	x HSI	HUs	HUs
0	0	0.22	0.00	
1	0	0.22	0.00	0.00
5	0	0.22	0.00	0.00
50	0	0.22	0.00	0.00
		#REF!		
		#REF!		
		#REF!		
			AAHUs =	**0.00**

Future With Project			Total	Cummulative
TY	Marsh Acres	x HSI	HUs	HUs
0	0	0.22	0.00	
1	10	0.32	3.16	1.42
3	32	0.55	17.63	19.07
5	96	0.96	91.76	100.75
50	80	0.80	64.35	3494.30
		#REF!		
		#REF!		
		#REF!		
			AAHUs	**72.31**

NET CHANGE IN AAHUs DUE TO PROJECT		
A. Future With Project Emergent Marsh AAHUs	=	72.31
B. Future Without Project Emergent Marsh AAHUs	=	0.00
Net Change (FWP - FWOP) =		**72.31**

AAHU CALCULATION - OPEN WATER

Project:

Future Without Project			Total	Cummulative
TY	Water Acres	x HSI	HUs	HUs
0	100	0.37	37.01	
1	100	0.38	37.75	37.38
5	100	0.39	38.65	152.79
50	100	0.40	40.14	1772.83
		#REF!		
		#REF!		
		#REF!		
			AAHUs =	**39.26**

Future With Project			Total	Cummulative
TY	Water Acres	x HSI	HUs	HUs
0	100	0.37	37.01	
1	0	0.21	0.00	15.86
3	1	0.37	0.37	0.31
5	3	0.40	1.19	1.53
50	20	0.41	8.19	209.11
		#REF!		
		#REF!		
		#REF!		
			AAHUs	**4.54**

NET CHANGE IN AAHUs DUE TO PROJECT		
A. Future With Project Open Water AAHUs	=	4.54
B. Future Without Project Open Water AAHUs	=	39.26
Net Change (FWP - FWOP) =		**-34.72**

TOTAL BENEFITS IN AAHUs DUE TO PROJECT		
A. Emergent Marsh Habitat Net AAHUs	=	72.31
B. Open Water Habitat Net AAHUs	=	-34.72
Net Benefits= (2.6xEMAAHUs+OWAAHUs)/3.6		**42.58**

IHNC Lock Replacement
Wetland Value Assessment – Marsh Creation Area

The marsh creation area is 439 acres in area; however it is assumed that there is only an adequate volume of sediments dredged during lock construction to create between 80 and 104 acres of marsh. Of that are 85 acre area to be used for dredged material disposal for marsh creation to cover mitigation requirements and if the remaining acres are filled (to 104 acres) the additional 19 acres will be considered beneficial use. Currently in the 85 acre area 0 acres are vegetated wetlands and 85 acres are open water.

Variable V1 – Emergent Marsh
Assumption: At TY0 there is 0 percent of the marsh creation area is classified as marsh and is entirely shallow open water with dead cypress trees and stumps. Marsh loss rates were supplied by USGS, and those rates (0.92%/year) used in the model. A 50% reduction in the land loss rate (0.46%/year) was applied to FWP for the marsh creation area. It is assumed that the marsh creation area will not be planted with vegetation but will instead be allowed to naturally revegetate.

Future Without Project
TY0 – 0 acres (0 percent)
TY1 – 0 acres (0 percent)
TY5 – 0 acres (0 percent)
TY50 – 0 acres (0 percent)

Future With Project
TY0 – 0 acres (0 percent)
TY1 – 9 acres (10 percent)
TY3 – 25 acres (30 percent)
TY5 – 83 acres (98 percent)
TY50 – 68 acres (80 percent)

Variable V2 – Submerged Aquatic Vegetation

SAV coverage for TY0 is estimated to be 5 percent of the open water. Based upon surveys conducted by NMFS, much of the marsh creation area is too shallow to support SAV (less than 1 foot deep based upon 2001 spot elevation survey) and water clarity is also likely not adequate to support SAV. Under the FWOP it is assumed that the project area will deepen due to continued subsidence and the area supporting SAV will gradually increase. However with the continued urban runoff exposed to the area it is not expected that the SAVs will increase much. TY50 is 10%. Under the FWP it is assumed that the placement of dredged material will initially make the entire project area unsuitable for SAV.

Future Without Project
TY0 – 5 percent
TY1 – 5 percent

TY5 – 6 percent
TY50 – 10 percent

Future With Project
TY0 – 5 percent
TY1 – 0 percent
TY3 – 0 percent
TY5 – 0 percent
TY50 – 5 percent

Variable V3 – Interspersion
For TY0 it is assumed that the entire project area is interspersion Class 5 because the marsh area is less than 5 percent. Furthermore under the FWOP, the interspersion would remain entire Class 5 through TY50. For the FWP, most of the interspersion would be Class 1 following the placement of dredged material and would remain with very few open water bodies until TY5. By TY50, the interspersion is assumed to be 65 percent Class 2 and 35 percent Class 3.

Variable V4 – Water Depth

Based upon 2001 spot elevation survey information most of the open water in the project area is less than 1.5 feet deep (85 percent). It is assumed that under FWOP, water depth increases over time. Furthermore it is assumed that after the placement of dredged material under FWP, all of the open water in the project area would be less than 1.5 deep and that water depth would increase over time.

Future Without Project
TY0 – 85 percent
TY1 – 80 percent
TY5 – 75 percent
TY50 – 50 percent

Future With Project
TY0 – 85 percent
TY1 – 0 percent
TY3 – 100 percent
TY5 – 90 percent
TY50 – 80 percent

Variable V5 – Salinity

Based upon salinity data from 2001, emergent vegetation in the project area and salinity data from continuous recorders located near Bayou Bienvenue and the MRGO, the average salinity in the project area is 12 ppt. Under both FWOP and FWP it is assumed that salinities would remain the same in the future through TY50.

Variable V6 – Fishery Access

Fishery access is currently open and would remain so under FWP, except for TY1 when containment dikes would limit fisheries access. Therefore fishery access is 0.0001 in TY1 and then 1.0 in TY3 – 50 after the containment dikes are breached.

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