To: Assistant Attorney General,
U.S. DOJ—ENRD
P.O. Box 7611
Washington, DC 20044–7611

From: John Lee Marshall
Citizen Activist
2215 SE Miller Street, Apt 11
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Re: U.S. Department of Justice
Environment and Natural Resources Division
CONSENT DECREE U.S. et al. v. ACF Industries, LLC. et al.[1]

Assistant Attorney General, Environment and Natural Resources Division, United States of America et al. v. ACF Industries LLC, et al., D.J. Ref. No. 90– 11–2–06787/2.

Delta HEA vs Annual Return Dividend for Calculating DSAYs

I strongly suspect the method used by Portland Harbor mitigation banks (banks) and the Trustee Council to calculate debits and credits (DSAYs) may have a fundamental logic error and subsequently the number of DSAYs may be significantly overestimated. The logic error is in the dividend variable used for their DSAY formula (see Figure 1 for definitions and Figure 2 for formula comparison):

Bank's DSAY Formula: DSAYs = (RS – DS) / DR x A

The dividend highlighted in yellow above in the bank's formula is termed Delta HEA. Alternatively, I suspect that the dividend that should have been used is the Annual Recovery highlighted in yellow in my interpretation of the correct DSAY formula below:

My Interpretation of the Correct DSAY Formula: DSAYs = AR / DR x A

Under the assumption DSAYs are intended to represent the present values of Portland Harbor

DSAYs - Discounted-Service-Acre-Years
A – Habitat Acres
RS – Recovered Services Value Score
DS – Damaged Services Value Score
AR – Annual Recovery
DR – Discount Rate

Figure 1. DSAY Formula Term Variable Definitions.

[1] Comment period: *Updated December 22, 2023*
11/14/2023 - 1/28/2024

credits and debits, I employed an Excel spreadsheet (Figure 3) using data extracted from the Linnton Mill Mitigation Bank Prospectus (Prospectus). This allowed me to reproduce the same DSAY numbers for the bank as displayed in the Prospectus. The results using the bank's formula yielded ~ 318-DSAYs (Figures 3 and 5). This number of DSAYs is significantly greater than the ~ 12-DSAYs yielded by my interpretation of the correct formula (Figures 3 and 4).

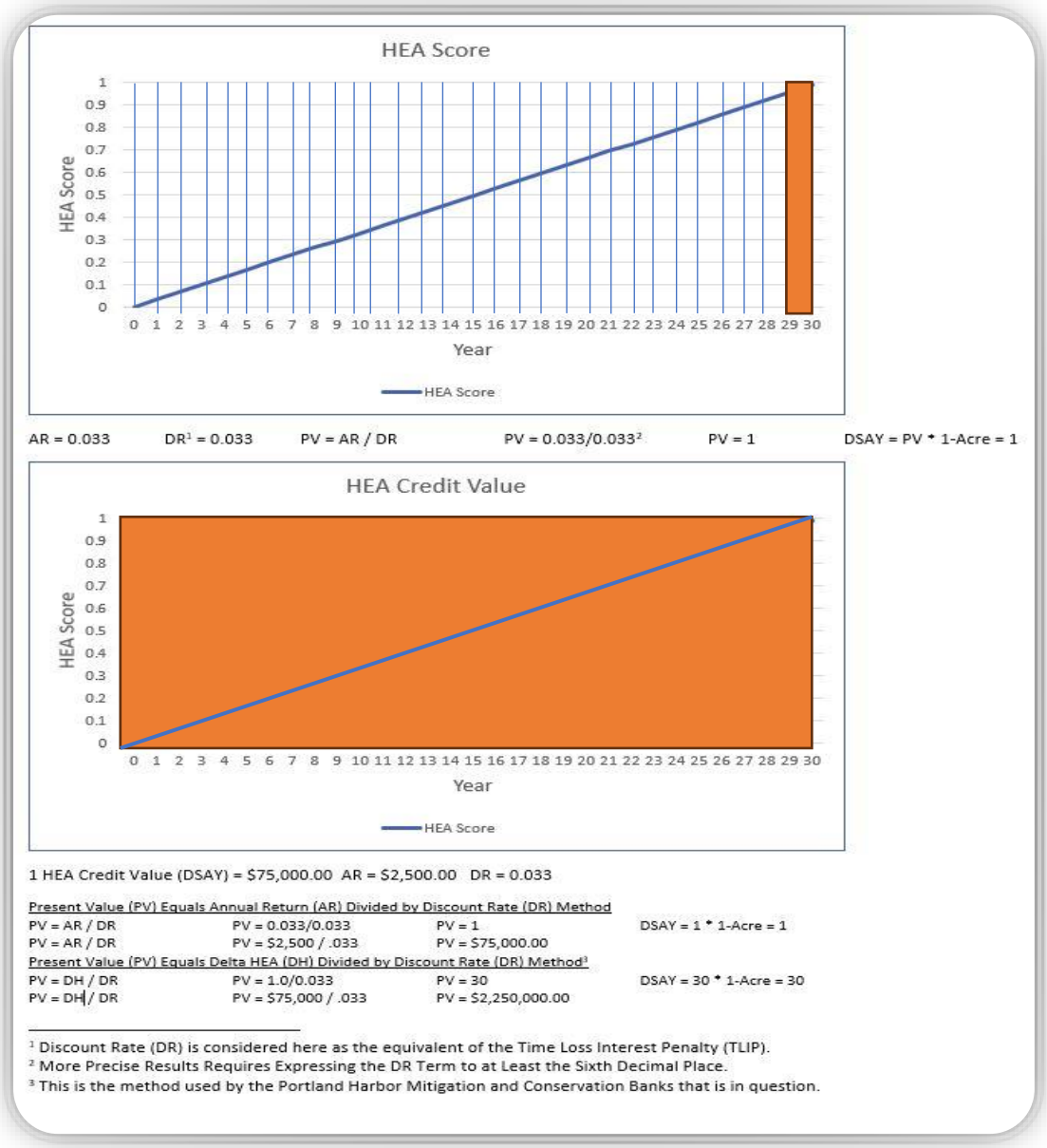


Figure 2. Comparison of Dividends (Delta HEA vs Annual Return) to Calculate DSAYs.

Logic suggests that:

1. if the range of DSAY value is between 0 and 1,
2. if all 12 acres had 0-value post impact (debit) or pre-recovery (credit),

3. and if the mitigation bank subsequently reached full functional value (1.0),
4. then the most the present value (DSAYs) could possibly be is: 12-acres x (1.0 – 0) x 1-year = 12-DSAYs.

The problem lies in the fact that Delta HEA currently used in the dividend does not reflect the habitat function annual recovery, but rather the entire functional recovery over the entire life of the bank. The arithmetic used by the Portland Harbor mitigation banks and the Trustee Council may treat this much larger figure as the additive annual accrual of function at their respective locations, thereby erroneously magnifying their true overall functional value.

For example, if the bank reached its full credit value from 0 to 1 in 1-year, then the annual accrual would be 100% or 1.00. The annual accrual total (1) would be divided by the percent annual accrual (1) to derive a present value of 1. Likewise if it took 30 years for the bank to reach full value then the annual accrual total (0.033) [*Not say 0.875*] would be divided by the percent annual accrual (0.033) to derive a present value of 1. In both cases the value 1.0 is multiplied by acres (12) multiplied by 1-year to derive 12-DSAYs, much lower than 318-DSAYs derived in the Prospectus. This suggests a serious flaw in the logic used to calculate DSAYs at the banks. The Trustee Council should look into this further and the results of their investigation should be reported to the Portland Harbor stakeholders as well as the general public. For a more in-depth analysis of this potential problem, including a series of investigative amortization tests, go to:

Logic Testing for Portland Harbor Mitigation and Conservation Bank Credits and Debits (DSAYs)

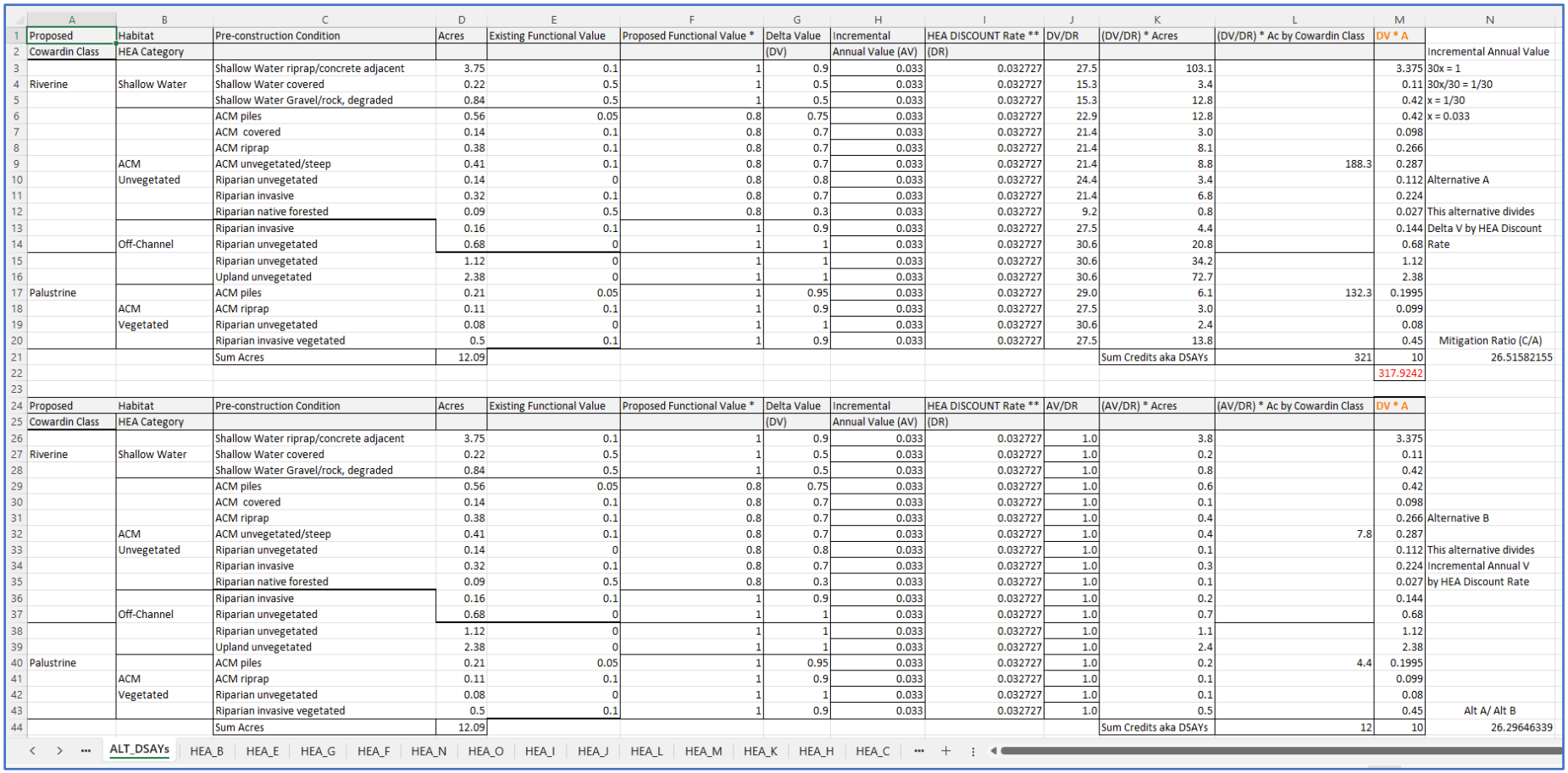
Why are the Dividends Used in the DSAY Calculation Formula Important?

In order to meet the natural resource recovery goals established during the CERCLA and CWA related Natural Resources Damage Assessment (NRDA) negotiations it is necessary to:

1. Maintain competitive mitigation bank credit and debit values in the region,
2. Maintain affordable credits for the regulated public (polluters), and
3. Maintain reasonably profitable credits for the mitigation bank sponsors.
4. Verify the banks are meeting their recovery targets.

A balance should assure adequate mitigation bank sponsor profit in a competitive credit market while the regulated public (polluters) can meet their regulatory obligations and still remain solvent. All the while the regulatory agencies need assurances the region's overall mitigation banking program is adequately meeting the public trust requirements.

The foundation for balance is contingent on the credit/debit evaluation methods being logically defensible as verified by transparent accounting. Illogical methods that significantly overvalue credits can lead to an amelioration strategy that underserves and possibly even subjugates its intended purpose. In other words, the ecological recovery of the Portland Harbor superfund site, in terms of both acreage and function, may be severely compromised. The credit/debit evaluation methods are not the only elements affecting Portland Harbor recovery goals, but they are nevertheless extremely important and therefore deserve careful consideration.



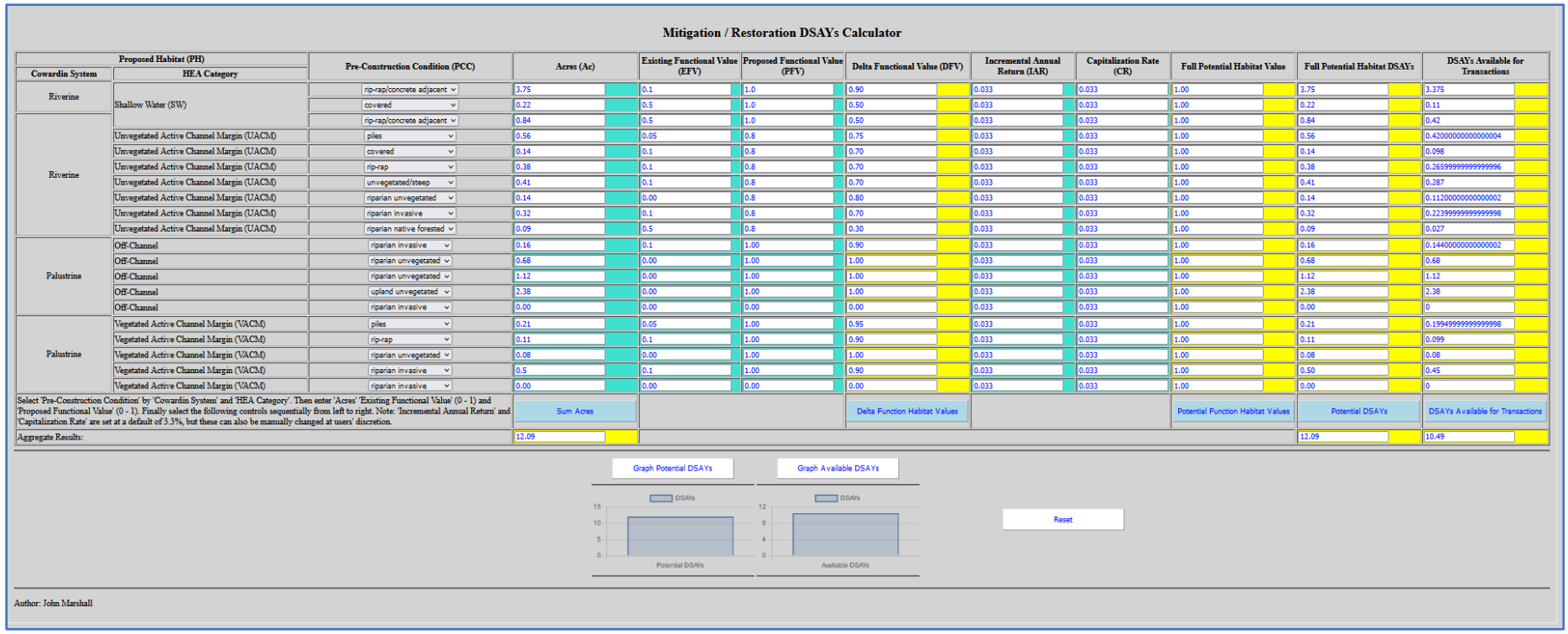
Proposed	Habitat	Pre-construction Condition	Acres	Existing Functional Value	Proposed Functional Value *	Delta Value	Incremental	HEA DISCOUNT Rate **	DV/DR	(DV/DR) * Acres	(DV/DR) * Ac by Cowardin Class	DV * A	
Cowardin Class	HEA Category					(DV)	Annual Value (AV)	(DR)					Incremental Annual Value
		Shallow Water riprap/concrete adjacent	3.75	0.1	1	0.9	0.033	0.032727	27.5	103.1		3.375	30x = 1
Riverine	Shallow Water	Shallow Water covered	0.22	0.5	1	0.5	0.033	0.032727	15.3	3.4		0.11	30x/30 = 1/30
		Shallow Water Gravel/rock, degraded	0.84	0.5	1	0.5	0.033	0.032727	15.3	12.8		0.42	x = 1/30
		ACM piles	0.56	0.05	0.8	0.75	0.033	0.032727	22.9	12.8		0.42	x = 0.033
		ACM covered	0.14	0.1	0.8	0.7	0.033	0.032727	21.4	3.0		0.098	
		ACM riprap	0.38	0.1	0.8	0.7	0.033	0.032727	21.4	8.1		0.266	
	ACM	ACM unvegetated/steep	0.41	0.1	0.8	0.7	0.033	0.032727	21.4	8.8	188.3	0.287	
	Unvegetated	Riparian unvegetated	0.14	0	0.8	0.8	0.033	0.032727	24.4	3.4		0.112	Alternative A
		Riparian invasive	0.32	0.1	0.8	0.7	0.033	0.032727	21.4	6.8		0.224	
		Riparian native forested	0.09	0.5	0.8	0.3	0.033	0.032727	9.2	0.8		0.027	This alternative divides
		Riparian invasive	0.16	0.1	1	0.9	0.033	0.032727	27.5	4.4		0.144	Delta V by HEA Discount
	Off-Channel	Riparian unvegetated	0.68	0	1	1	0.033	0.032727	30.6	20.8		0.68	Rate
		Riparian unvegetated	1.12	0	1	1	0.033	0.032727	30.6	34.2		1.12	
		Upland unvegetated	2.38	0	1	1	0.033	0.032727	30.6	72.7		2.38	
Palustrine		ACM piles	0.21	0.05	1	0.95	0.033	0.032727	29.0	6.1	132.3	0.1995	
	ACM	ACM riprap	0.11	0.1	1	0.9	0.033	0.032727	27.5	3.0		0.099	
	Vegetated	Riparian unvegetated	0.08	0	1	1	0.033	0.032727	30.6	2.4		0.08	
		Riparian invasive vegetated	0.5	0.1	1	0.9	0.033	0.032727	27.5	13.8		0.45	Mitigation Ratio (C/A)
		Sum Acres	12.09							Sum Credits aka DSAYs	321	10	26.51582155
												317.9242	

Proposed	Habitat	Pre-construction Condition	Acres	Existing Functional Value	Proposed Functional Value *	Delta Value	Incremental	HEA DISCOUNT Rate **	AV/DR	(AV/DR) * Acres	(AV/DR) * Ac by Cowardin Class	DV * A	
Cowardin Class	HEA Category					(DV)	Annual Value (AV)	(DR)					
		Shallow Water riprap/concrete adjacent	3.75	0.1	1	0.9	0.033	0.032727	1.0	3.8		3.375	
Riverine	Shallow Water	Shallow Water covered	0.22	0.5	1	0.5	0.033	0.032727	1.0	0.2		0.11	
		Shallow Water Gravel/rock, degraded	0.84	0.5	1	0.5	0.033	0.032727	1.0	0.8		0.42	
		ACM piles	0.56	0.05	0.8	0.75	0.033	0.032727	1.0	0.6		0.42	
		ACM covered	0.14	0.1	0.8	0.7	0.033	0.032727	1.0	0.1		0.098	
		ACM riprap	0.38	0.1	0.8	0.7	0.033	0.032727	1.0	0.4		0.266	Alternative B
	ACM	ACM unvegetated/steep	0.41	0.1	0.8	0.7	0.033	0.032727	1.0	0.4	7.8	0.287	
	Unvegetated	Riparian unvegetated	0.14	0	0.8	0.8	0.033	0.032727	1.0	0.1		0.112	This alternative divides
		Riparian invasive	0.32	0.1	0.8	0.7	0.033	0.032727	1.0	0.3		0.224	Incremental Annual V
		Riparian native forested	0.09	0.5	0.8	0.3	0.033	0.032727	1.0	0.1		0.027	by HEA Discount Rate
		Riparian invasive	0.16	0.1	1	0.9	0.033	0.032727	1.0	0.2		0.144	
	Off-Channel	Riparian unvegetated	0.68	0	1	1	0.033	0.032727	1.0	0.7		0.68	
		Riparian unvegetated	1.12	0	1	1	0.033	0.032727	1.0	1.1		1.12	
		Upland unvegetated	2.38	0	1	1	0.033	0.032727	1.0	2.4		2.38	
Palustrine		ACM piles	0.21	0.05	1	0.95	0.033	0.032727	1.0	0.2	4.4	0.1995	
	ACM	ACM riprap	0.11	0.1	1	0.9	0.033	0.032727	1.0	0.1		0.099	
	Vegetated	Riparian unvegetated	0.08	0	1	1	0.033	0.032727	1.0	0.1		0.08	
		Riparian invasive vegetated	0.5	0.1	1	0.9	0.033	0.032727	1.0	0.5		0.45	Alt A/ Alt B
		Sum Acres	12.09							Sum Credits aka DSAYs	12	10	26.29646339

ALT_DSAYs | HEA_B | HEA_E | HEA_G | HEA_F | HEA_N | HEA_O | HEA_I | HEA_J | HEA_L | HEA_M | HEA_K | HEA_H | HEA_C

Figure 3. Delta HEA vs Annual Return HEA Derived DSAYs.

https://www.mitigationcreditdebit.com/HEA_ALT_DSAYS.xlsx



Mitigation / Restoration DSAYs Calculator

Proposed Habitat (PH)		Pre-Construction Condition (PCC)	Acres (Ac)	Existing Functional Value (EFV)	Proposed Functional Value (PFV)	Delta Functional Value (DFV)	Incremental Annual Return (IAR)	Capitalization Rate (CR)	Full Potential Habitat Value	Full Potential Habitat DSAYs	DSAYs Available for Transactions
Cowardin System	HEA Category										
Riverine	Shallow Water (SW)	rip-rap/concrete adjacent	3.75	0.1	1.0	0.90	0.033	0.033	1.00	3.75	3.375
		covered	0.22	0.5	1.0	0.50	0.033	0.033	1.00	0.22	0.11
		rip-rap/concrete adjacent	0.84	0.5	1.0	0.50	0.033	0.033	1.00	0.84	0.42
Riverine	Unvegetated Active Channel Margin (UACM)	piles	0.56	0.05	0.8	0.75	0.033	0.033	1.00	0.56	0.42000000000000004
	Unvegetated Active Channel Margin (UACM)	covered	0.14	0.1	0.8	0.70	0.033	0.033	1.00	0.14	0.098
	Unvegetated Active Channel Margin (UACM)	rip-rap	0.38	0.1	0.8	0.70	0.033	0.033	1.00	0.38	0.26599999999999996
	Unvegetated Active Channel Margin (UACM)	unvegetated/steep	0.41	0.1	0.8	0.70	0.033	0.033	1.00	0.41	0.287
	Unvegetated Active Channel Margin (UACM)	riparian unvegetated	0.14	0.00	0.8	0.80	0.033	0.033	1.00	0.14	0.11200000000000002
	Unvegetated Active Channel Margin (UACM)	riparian invasive	0.32	0.1	0.8	0.70	0.033	0.033	1.00	0.32	0.22399999999999998
	Unvegetated Active Channel Margin (UACM)	riparian native forested	0.09	0.5	0.8	0.30	0.033	0.033	1.00	0.09	0.027
Palustrine	Off-Channel	riparian invasive	0.16	0.1	1.00	0.90	0.033	0.033	1.00	0.16	0.14400000000000002
	Off-Channel	riparian unvegetated	0.68	0.00	1.00	1.00	0.033	0.033	1.00	0.68	0.68
	Off-Channel	riparian unvegetated	1.12	0.00	1.00	1.00	0.033	0.033	1.00	1.12	1.12
	Off-Channel	upland unvegetated	2.38	0.00	1.00	1.00	0.033	0.033	1.00	2.38	2.38
	Off-Channel	riparian invasive	0.00	0.00	0.00	0.00	0.033	0.033	1.00	0.00	0
Palustrine	Vegetated Active Channel Margin (VACM)	piles	0.21	0.05	1.00	0.95	0.033	0.033	1.00	0.21	0.19949999999999998
	Vegetated Active Channel Margin (VACM)	rip-rap	0.11	0.1	1.00	0.90	0.033	0.033	1.00	0.11	0.099
	Vegetated Active Channel Margin (VACM)	riparian unvegetated	0.08	0.00	1.00	1.00	0.033	0.033	1.00	0.08	0.08
	Vegetated Active Channel Margin (VACM)	riparian invasive	0.5	0.1	1.00	0.90	0.033	0.033	1.00	0.50	0.45
	Vegetated Active Channel Margin (VACM)	riparian invasive	0.00	0.00	0.00	0.00	0.033	0.033	1.00	0.00	0
Select 'Pre-Construction Condition' by 'Cowardin System' and 'HEA Category'. Then enter 'Acres' 'Existing Functional Value' (0 - 1) and 'Proposed Functional Value' (0 - 1). Finally select the following controls sequentially from left to right. Note: 'Incremental Annual Return' and 'Capitalization Rate' are set at a default of 3.3%, but these can also be manually changed at users' discretion.			Sum Acres			Delta Function Habitat Values			Potential Function Habitat Values	Potential DSAYs	DSAYs Available for Transactions
Aggregate Results:			12.09							12.09	10.49

Graph Potential DSAYs

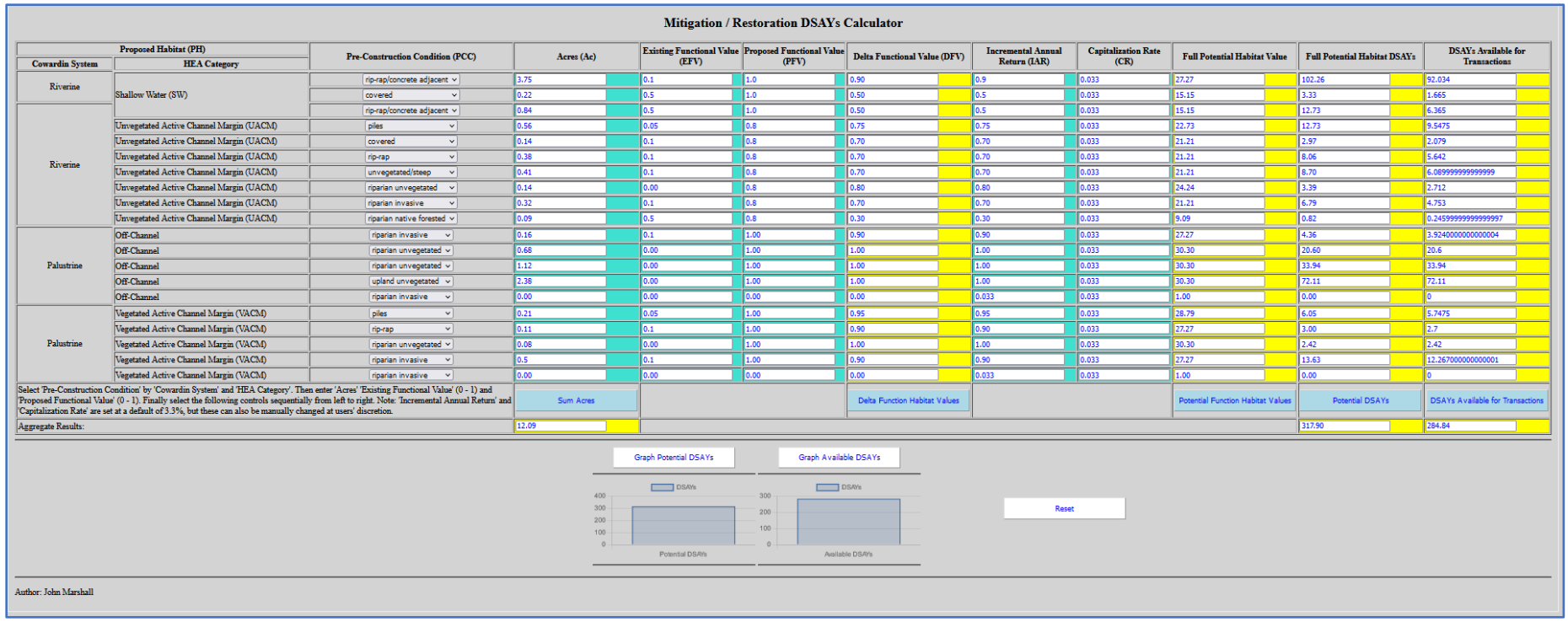
Graph Available DSAYs

Reset

Author: John Marshall

Figure 4. DSAYs Calculator Results Using Annual Return / Rate of Annual Return

https://www.mitigationcreditdebit.com/EcoServCalculator.html



Mitigation / Restoration DSAYs Calculator

Proposed Habitat (PH)		Pre-Construction Condition (PCC)	Acres (Ac)	Existing Functional Value (EFV)	Proposed Functional Value (PFV)	Delta Functional Value (DFV)	Incremental Annual Return (IAR)	Capitalization Rate (CR)	Full Potential Habitat Value	Full Potential Habitat DSAYs	DSAYs Available for Transactions
Cowardin System	HEA Category										
Riverine	Shallow Water (SW)	rip-rap/concrete adjacent	3.75	0.1	1.0	0.90	0.9	0.033	27.27	102.26	92.034
		covered	0.22	0.5	1.0	0.50	0.5	0.033	15.15	3.33	1.665
		rip-rap/concrete adjacent	0.84	0.5	1.0	0.50	0.5	0.033	15.15	12.73	6.365
Riverine	Unvegetated Active Channel Margin (UACM)	piles	0.56	0.05	0.8	0.75	0.75	0.033	22.73	12.73	9.5475
	Unvegetated Active Channel Margin (UACM)	covered	0.14	0.1	0.8	0.70	0.70	0.033	21.21	2.97	2.079
	Unvegetated Active Channel Margin (UACM)	rip-rap	0.38	0.1	0.8	0.70	0.70	0.033	21.21	8.06	5.642
	Unvegetated Active Channel Margin (UACM)	unvegetated/steep	0.41	0.1	0.8	0.70	0.70	0.033	21.21	8.70	6.089999999999999
	Unvegetated Active Channel Margin (UACM)	riparian unvegetated	0.14	0.00	0.8	0.80	0.80	0.033	24.24	3.39	2.712
	Unvegetated Active Channel Margin (UACM)	riparian invasive	0.32	0.1	0.8	0.70	0.70	0.033	21.21	6.79	4.753
	Unvegetated Active Channel Margin (UACM)	riparian native forested	0.09	0.5	0.8	0.30	0.30	0.033	9.09	0.82	0.24599999999999997
Palustrine	Off-Channel	riparian invasive	0.16	0.1	1.00	0.90	0.90	0.033	27.27	4.36	3.9240000000000004
	Off-Channel	riparian unvegetated	0.68	0.00	1.00	1.00	1.00	0.033	30.30	20.60	20.6
	Off-Channel	riparian unvegetated	1.12	0.00	1.00	1.00	1.00	0.033	30.30	33.94	33.94
	Off-Channel	upland unvegetated	2.38	0.00	1.00	1.00	1.00	0.033	30.30	72.11	72.11
	Off-Channel	riparian invasive	0.00	0.00	0.00	0.00	0.033	0.033	1.00	0.00	0
Palustrine	Vegetated Active Channel Margin (VACM)	piles	0.21	0.05	1.00	0.95	0.95	0.033	28.79	6.05	5.7475
	Vegetated Active Channel Margin (VACM)	rip-rap	0.11	0.1	1.00	0.90	0.90	0.033	27.27	3.00	2.7
	Vegetated Active Channel Margin (VACM)	riparian unvegetated	0.08	0.00	1.00	1.00	1.00	0.033	30.30	2.42	2.42
	Vegetated Active Channel Margin (VACM)	riparian invasive	0.5	0.1	1.00	0.90	0.90	0.033	27.27	13.63	12.267000000000001
	Vegetated Active Channel Margin (VACM)	riparian invasive	0.00	0.00	0.00	0.00	0.033	0.033	1.00	0.00	0
Select 'Pre-Construction Condition' by 'Cowardin System' and 'HEA Category'. Then enter 'Acres' 'Existing Functional Value' (0 - 1) and 'Proposed Functional Value' (0 - 1). Finally select the following controls sequentially from left to right. Note: 'Incremental Annual Return' and 'Capitalization Rate' are set at a default of 3.3%, but these can also be manually changed at users' discretion.			Sum Acres			Delta Function Habitat Values			Potential Function Habitat Values	Potential DSAYs	DSAYs Available for Transactions
Aggregate Results:			12.09							317.90	284.84

Graph Potential DSAYs

Graph Available DSAYs

Reset

Author: John Marshall

Figure 5. DSAYs Calculator Results Using Delta HEA / Rate of Annual Return

https://www.mitigationcreditdebit.com/EcoServCalculator.html