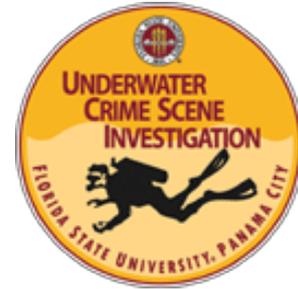
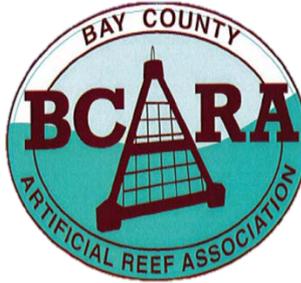


Restoring Bay County's Recreational Fishing Industry through Artificial Reef Construction and Monitoring



Submitted by
Allen Golden and Scott Jackson

Partners



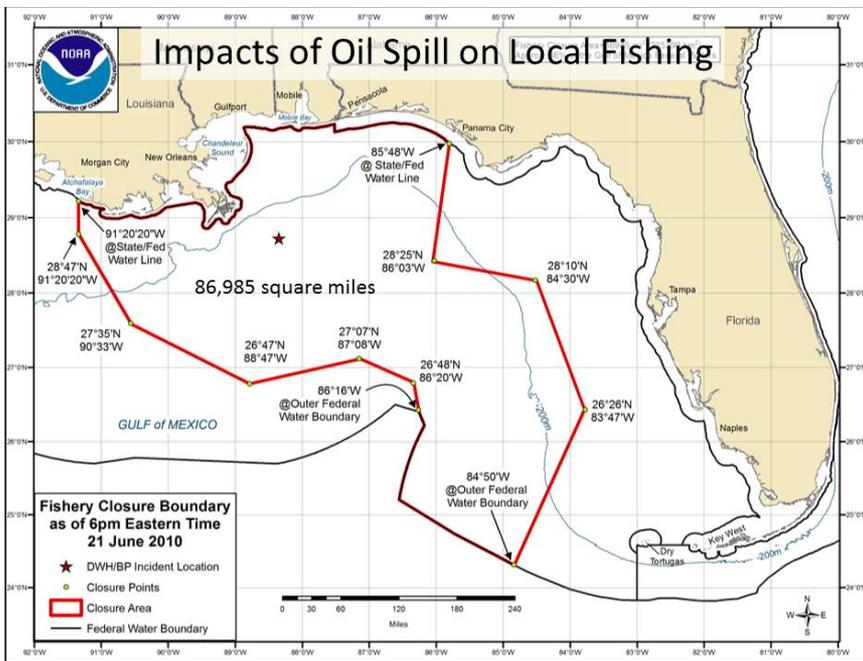
Bay County Purchasing
Bay County Planning and Zoning
Bay County Public Works
Bay County GIS
UF/IFAS Extension Bay County (FL Sea Grant)
Florida State University PC
Bay County Artificial Reef Association
Tyndall Dive Club
Bay County Tourist Development Council

Multi-year Implementation

Guiding Principles

Bay County RESTORE

- Use Gulf restoration funds on sustainable long-lasting projects or projects that will have positive long-lasting effects (2 year implementation with >30 year return)
- Avoid creating undue future burdens for taxpayers (maximum return on investment without future maintenance costs)
- Favor high impact projects, including environmental, economic and quality of life (Provides all these benefits to Bay County)

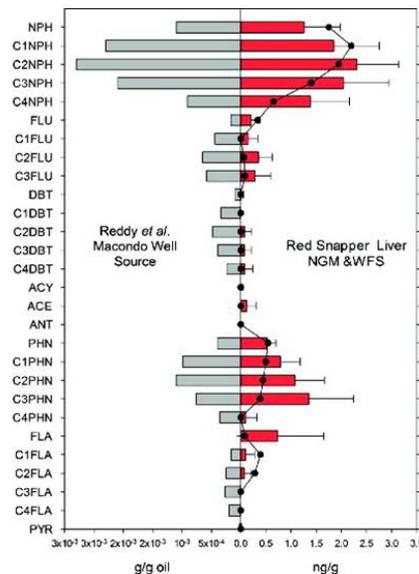


Impact of Fishery Closure

Journal of Environmental Management – UF/IFAS
 Food Resource Economic Department
 Alvarez et al (2014) Estimate Uncompensated Recreational Angler losses at \$585 million

Impact of Oil Spill

Transactions of the American Fisheries Society
 – USF College of Marine Science
 Murawski et al (2014)
 Documented External Skin Lesions & PAH



Economic Benefit of Artificial Reefs

“The benefit-to-cost ratio of the artificial reefs within the northwest Florida region was estimated to be 131 to 1, a value indicating an extremely high, positive return to the cost of developing and implementing the artificial reef programs within the five-county, northwest Florida region.”

- 12 month study (1997 – 1998)
 (Bell, Bonn, Leeworthy)

REMI Economic Impacts Florida Fishing and Diving

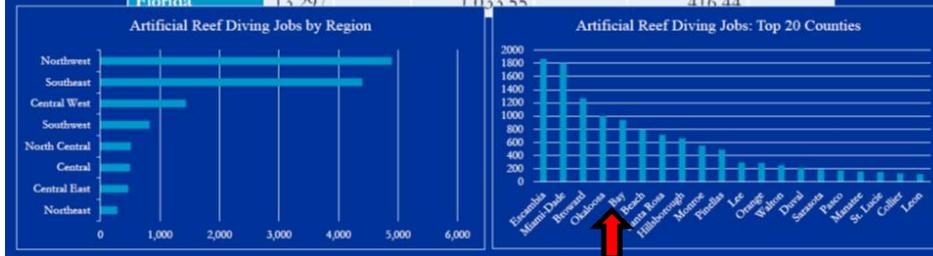
	Jobs	%	Output(\$M)	%	Income(\$M)	%	State Revenue (\$M)
Fishing	25,821	66	2,100.00	67	859.38	67	171.94
Diving	13,297	34	1,033.57	33	416.44	33	78.00
Total	39,118	100	3,133.57	100	1,275.82	100	249.94

Results from the modeling indicated that fishing and diving activity on Florida artificial reefs

- Provides 39,118 jobs for Floridians.
- Generates \$3.1 billion of economic output.
- Accrues \$1.3 billion in income to Floridians.
- Produces \$250 million in state revenues for Florida.
- Endows reef users with a use value or consumer surplus of over \$700 million.

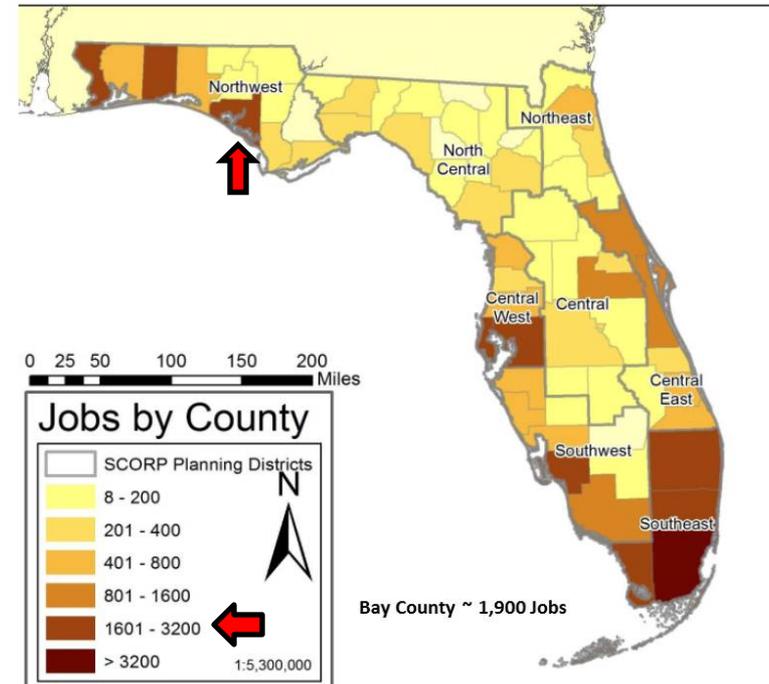
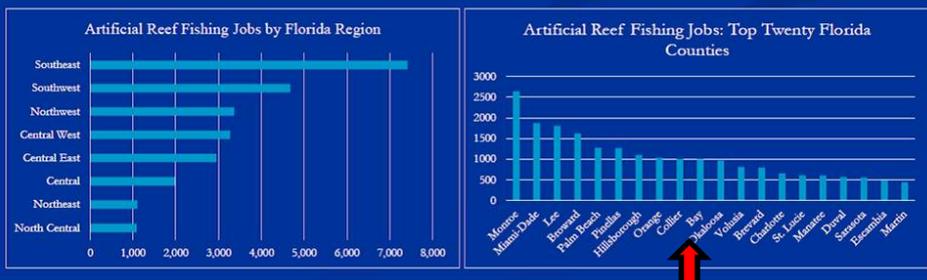
Artificial Reef Diving Economic Impact

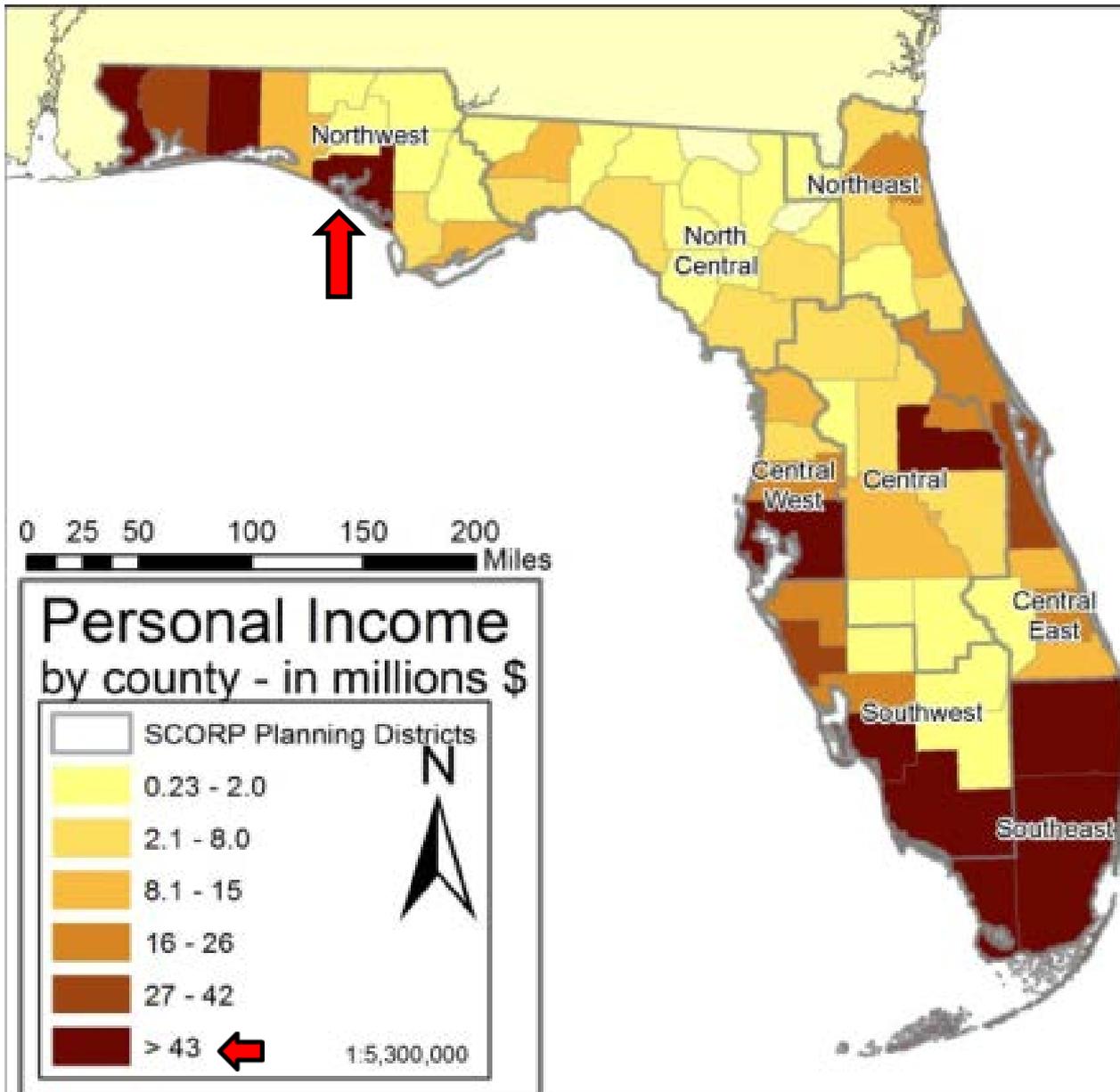
	Jobs	Percent	Output (\$m)	Percent	Income (\$m)	Percent
Northwest	4,893	36.80	311.53	30.14	116.07	27.87
North Central	510	3.84	31.12	3.01	11.45	2.75
Northeast	281	2.11	26.96	2.61	10.46	2.51
Central West	1,435	10.79	124.22	12.02	47.94	11.51
Central	493	3.71	51.90	5.02	20.79	4.99
Central East	464	3.49	35.96	3.48	14.92	3.58
Southwest	824	6.20	63.49	6.14	28.06	6.74
Southeast	4,397	33.07	388.37	37.58	166.75	40.04
Florida	13,297		1,033.55		416.44	



Artificial Reef Saltwater Fishing Economic Impact

	Jobs	Percent	Output (\$m)	Percent	Income (\$m)	Percent
Northwest	3,360	13.01	221.81	10.56	84.49	9.83
North Central	1,085	4.20	68.06	3.24	25.35	2.95
Northeast	1,100	4.26	99.99	4.76	38.89	4.53
Central West	3,270	12.66	282.63	13.46	105.35	12.26
Central	1,984	7.68	199.05	9.48	76.32	8.88
Central East	2,943	11.40	214.41	10.21	84.82	9.87
Southwest	4,671	18.09	352.61	16.79	153.69	17.88
Southeast	7,408	28.69	661.44	31.50	290.47	33.80
Florida	25,821		2,100.00		859.38	





Bay County > \$43M

Example: \$43M / 1,900 jobs = \$22,632 per job



Logistics



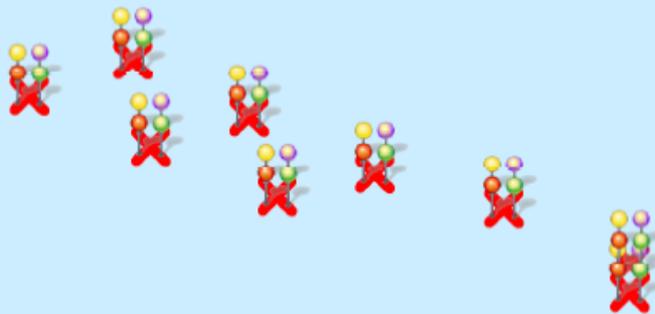
Marine Subcontractors



SAARS E - M

Small Area Artificial Reef Sites (SAARS)

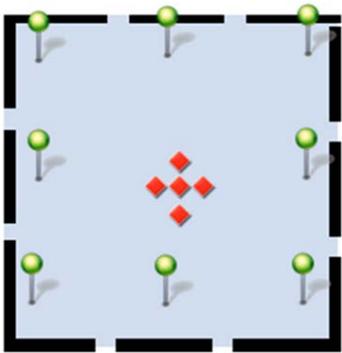
Located in State of Florida Waters



Legend

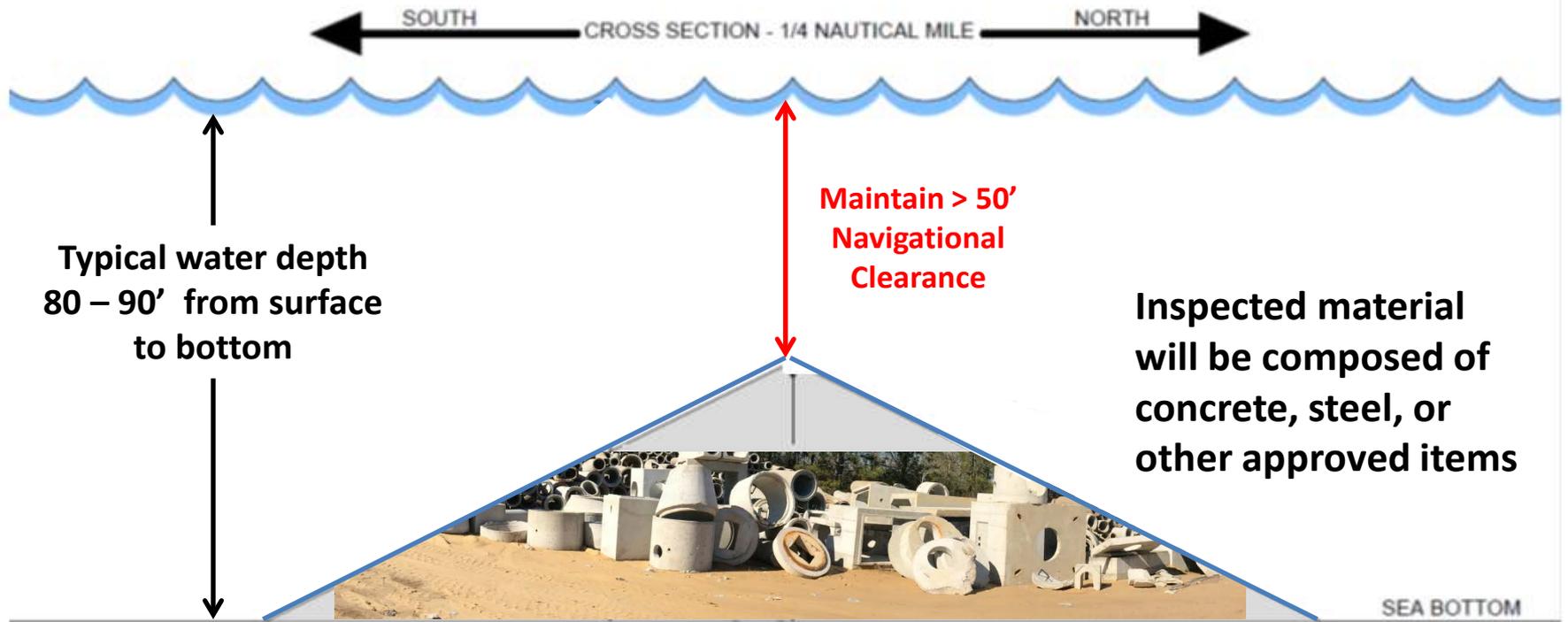
-  SE Corner for SAARS E - M
-  SW Corner for SAARS E - M
-  NW Corner for SAARS E - M
-  NE Corner for SAARS E - M
-  Centerpoints for SAARS E - M

ID	LATITUDE	LAT_DD	LONGITUDE	LON_DD	PASS BEARING	PASS DIST
SAARS E	3005.339	30.08898	8554.179	-85.90298	259.4	10.50
SAARS F	3005.046	30.08410	8554.189	-85.90315	257.9	10.57
SAARS G	3005.882	30.09803	8555.611	-85.92685	263.3	11.83
SAARS H	3006.221	30.10368	8557.068	-85.95113	265.5	13.25
SAARS I	3006.000	30.10000	8558.171	-85.96952	264.9	14.37
SAARS J	3006.996	30.11660	8600.977	-86.01628	269.1	17.12
SAARS K	3007.350	30.12250	8559.807	-85.99678	270.3	15.95
SAARS L	3006.499	30.10832	8559.602	-85.99337	267.2	15.76
SAARS M	3006.788	30.11313	8558.495	-85.97492	268.1	14.64

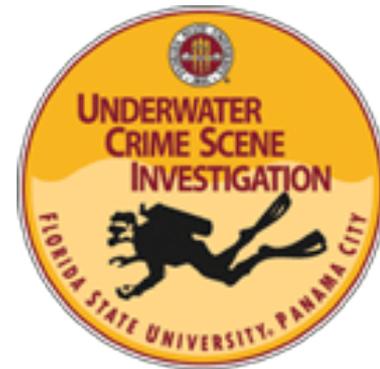


TYPICAL CROSS SECTION

NOT TO SCALE



Support / Monitoring





Recent Deployments / Experience

- \$65,000 artificial project using surplus concrete funded by Naval Support Activity - Panama City. (Feb 2014)
- \$70,000 artificial reef construction and monitoring grant from Florida Fish and Wildlife Conservation Commission (FWC). (June 2014)
- \$30,000 from the Bay County Tourist Development Council to deploy two F101 Voodoo Jets obtained from US General Services Administration / United States Air Force. (June 2014)



JUN 27 2014



Florida Artificial Reef Program

Scientists calculate the marine ecosystem associated with newly deployed structures takes between 3 to 5 years to fully develop. Our experience shows that the diving and fishing community and business start using new artificial reef resources almost immediately. The new reefs have an estimated lifespan of >30 years.



UF/IFAS Bay County @FLSEAGRANT_BAY · Jun 27

Open for business! Diving already #jetstoreefs thanks @PCBeach
@boccpio @MyFWC @diversdenpcb pic.twitter.com/tGMoW0w1Ta



Budget Detail

Description	Unit Cost	Units	Total Cost	Purpose
Pre-Deployment Permit & Siting				
- Permit Cost (per permit)	\$ 250.00	9	\$ 2,250.00	Required Permit
- Bottom Survey (per day)	\$ 1,950.00	3	\$ 5,850.00	Required for Permit
Cost of Deployment				
- Truck & Driver / Rigger (per hour) (90 Loads 4hrs each)	\$ 78.50	360	\$ 28,260.00	Logistics
- Loading Equipment (Tracking, Forklift, etc.) (120 hrs)	\$ 179.50	120	\$ 21,540.00	Logistics
Misc Supplies and Cabling	\$ 4,500.00	1	\$ 4,500.00	
Marine Contractor				
- Mobilization and Demobilization (per day)	\$ 11,000.00	2	\$ 22,000.00	Logistics
- Loading Reef Materials on Barge and Deck (2 days for Each Deployment)	\$ 12,500.00	10	\$ 125,000.00	Logistics
- Deployment of Reef Materials in Permitted Area	\$ 15,000.00	5	\$ 75,000.00	Logistics
One Year Post Deployment				
- Vessel Charter (per day) (includes Equipment, Divers, Captain)	\$ 1,575.00	3	\$ 4,725.00	Evaluation
Communication and Reports				
-Website / Social Media Development and Enhancement (per hour)	\$ 25.00	500	\$ 12,500.00	Publicity / Stewardship
- Reports (3 mo. Status Reports and Final Report)	\$ 1,500.00	1	\$ 1,500.00	Accountability
Total Tangibles Cost			\$ 303,125.00	
Administration of Project		0%	\$ -	Realistic Covering of True Costs
Contingency (weather delays and other unforeseen issues)			\$ 66,000.00	Realistic Covering of True Costs
Amount being Requested			\$ 369,125.00	

In-Kind

Description	Unit Cost	Units	Total Cost	Purpose
In-Kind (Storage and Staging of Materials)				
- Storage Area (3 acres for 2 years)	\$ 240.00	6	\$ 1,440.00	Owned Assets by County
- Purchase and Procurement of Materials (per Invoice)	\$ 10,000.00	1	\$ 10,000.00	Transportation Costs (30)
- Value of Donated Materials from Hanson Pipe	\$ 90.00	1,000	\$ 90,000.00	Hanson Pipe Donation
- Unloading into Staging Area (per Truckload)	\$ 200.00	50	\$ 10,000.00	Owned Assets by County
Personnel				
Salaries & Benefits Proj Coordinators (per hour)	\$ 74.00	500	\$ 37,000.00	Key Personnel Commitment
Equipment and Services				
In-Kind GPS, Computers, Cameras, Software, Webhosting			\$ 2,300.00	Equipment for Project
Total In-Kind			\$ 150,740.00	
Total Project Cost			\$ 519,865.00	
Amount being Requested			\$ 369,125.00	
			Percent In-Kind	29.00%

Budget Detail

Description	Unit Cost	Units	Total Cost	Purpose
Pre-Deployment Permit & Siting				
- Permit Cost (per permit)	\$ 250.00	9	\$ 2,250.00	Required Permit
- Bottom Survey (per day)	\$ 1,950.00	3	\$ 5,850.00	Required for Permit
Cost of Deployment				
- Truck & Driver / Rigger (per hour) (90 Loads 4hrs each)	\$ 78.50	360	\$ 28,260.00	Logistics
- Loading Equipment (Tracking, Forklift, etc.) (120 hrs)	\$ 179.50	120	\$ 21,540.00	Logistics
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Marine Contractor				
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Total Tangibles Cost			\$ 303,125.00	
Administration of Project		0%	\$ -	Realistic Covering of True Costs
Contingency (weather delays and other unforeseen issues)			\$ 66,000.00	Realistic Covering of True Costs
Amount being Requested			\$ 369,125.00	