Wastewater Article
Town of Wellfleet

Wastewater Planning Team

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

UMASS BOSTON

Cape Cod Cooperative Extension

Provincetown Center for Coastal Studies

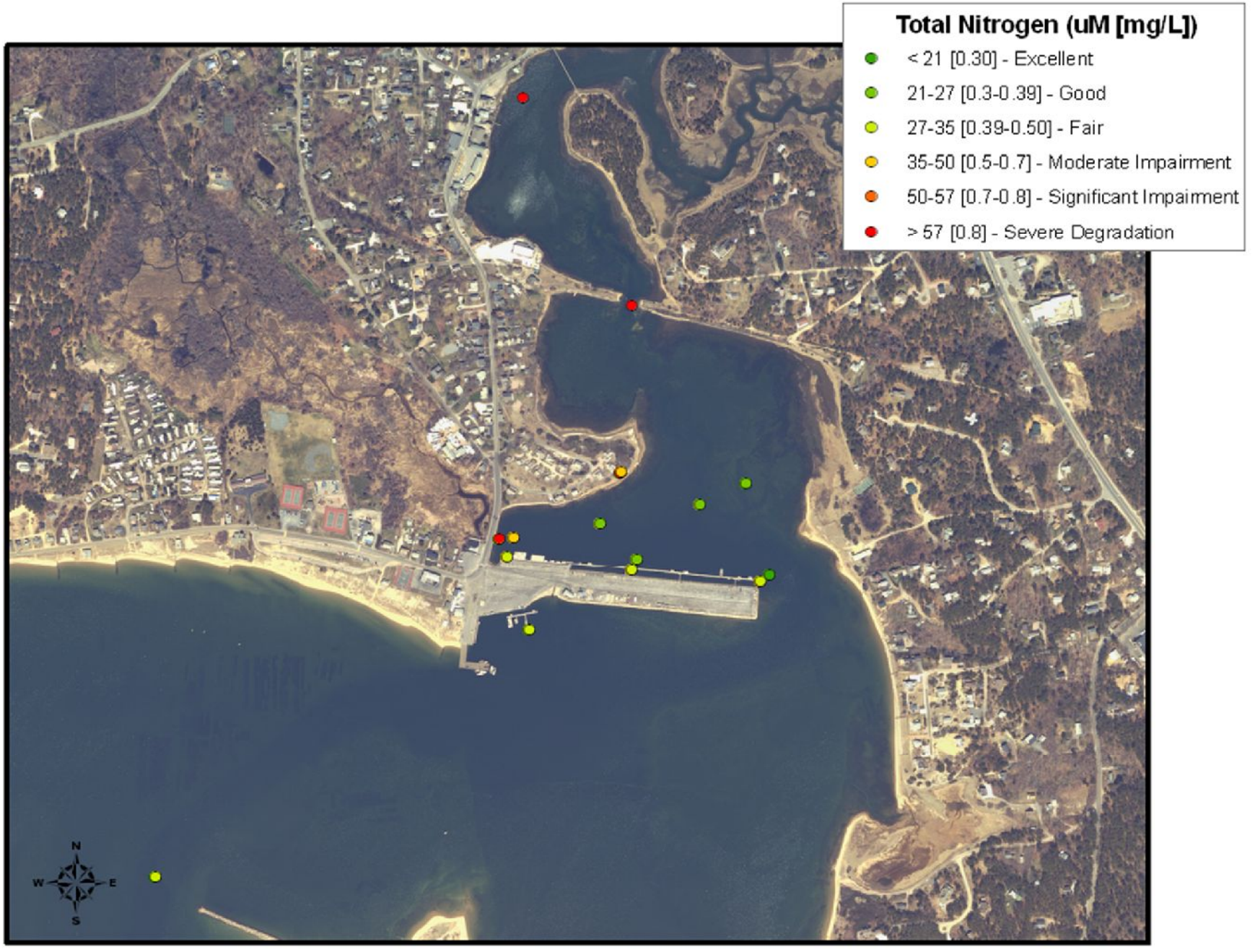
Environmental Partners GROUP
A partnership for engineering solutions.

Wellfleet OysterFest™
by Shellfish Promotion And Tasting

Massachusetts Oyster Project
www.massoyster.com

Public Health Problem:
Baker Field/Marina/Mayo Beach

- NO PLACE TO GO!
- Marina bathroom is often closed and is discharging in sensitive area
- Unfair burden on Pearl, Bookstore, Sol
- Woeful public image in intensively used area
- Must show progress toward Clean Water Act compliance


Total Nitrogen (uM [mg/L])
< 21 [0.30] - Excellent
21-27 [0.3-0.39] - Good
27-35 [0.39-0.50] - Fair
35-50 [0.5-0.7] - Moderate Impairment
50-57 [0.7-0.8] - Significant Impairment
> 57 [0.8] - Severe Degradation
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Solution

- Grant eligible composting toilets (pilot program)
- 4 Female
- 4 Male
- Pre-fab wood structure
- Waterproof poured foundation


Example Bathroom Facilities
Foam-Flush Toilet
Proposed Baker Field Restrooms
Graywater Zone
Composter Located in Basement
KENDRICK AVE
0 25 50 100 Feet
Conceptual Plan
Proposed Baker Field
Bathroom Facilities
Environmental Partners

Benefits

- Low cost innovative wastewater option
- Another tool for water quality improvement
- Shows Town progress toward comprehensive solutions
- Alleviates overloading at Marina and pressure on area restaurants
- Substantially lower cost than traditional wastewater and septic facilities
- No net increase in operating and maintenance costs

BAKER FIELD PROJECT ESTIMATE (3nd revision) 1/31/13

Construction Cost	
Building (approximately 500 sq ft) pre-fab wooden structure Shingled, roofed with basement (waterproofed), propane heat	$100,000
6 toilets, 2 urinals, 4 sinks and gray water system	$ 70,000
Graywater Zone	$ 22,000
Sub Total	$192,000
Overheads & Administration	
Permits	$ 15,000
Design and Engineering Costs	$ 45,000
Construction Administration	$ 24,000
Contingency	$ 48,000
Project Total	$324,000
Debt Service (2% SFR Loan 10 years)	$ 32,416
Grand Total (Full Cost without a Grant)	$356,416
Annual Operating Cost	$ 5,500

Cost Comparison

- **Conventional** restroom facilities = $750,000 **NOT** ELIGIBLE FOR GRANT
  - Operating and maintenance cost = $18,000/yr
  - Cleaning = $2,500/yr

- **Proposed** composting restrooms = $324,000 **80% GRANT ELIGIBLE**
  - Operation & maintenance cost = $3,000/yr (clivus service)
  - Cleaning cost = $2,500/yr

- **Borrowing Cost for Proposed alternative**
  (per FinCom; assumes max cost & no grant funding)
  - $31,610 @ 2% SRF Loan

  - Total = $356,416

Program Costs and Number of Human Nitrogen Equivalents Removed per Year

		$/lb Nitrogen Removed[1,2,3]	Project Cost
1.	Town Sea Clam Cultching '10 '11 '12	$ 0.75	$ 50,000
2.	Mayo Creek Salt Marsh Restoration	$ 1.78	$ 100,000
3.	Oysterfest Shell Recycling '11&'12	$ 2.01	$ 2,000
4.	Oyster Propagation Zone	$ 5.67	$ 50,000
5.	Herring River Salt Marsh Restoration	$23.98	$ 60 million
6.	Baker Field Bathrooms	$93.68	$ 324,000
7.	Sewering options (Cape Cod Commission)	$500-$1,000	$ 60 million

1. Costs only; economic benefits dwarf costs in most cases;
2. Merrill/Cornwell 2002 Role of Oligohaline Marshes in Estuarine Nutrient Cycling
3. M Rice “Environmental Impacts of Shellfish Aquaculture: Filter feeding to Control Eutrophication”