CITY OF NEWPORT, RHODE ISLAND
PURCHASING DIVISION

NOTICE TO BIDDERS

REQUEST FOR QUALIFICATIONS
12-001

The City of Newport is soliciting a **Statement of Qualifications** (QBS) for the creation of a Demonstration Project converting naturally occurring algae into a biodiesel for the City of Newport. Sealed qualifications will be received in the Purchasing Office, City Hall, 43 Broadway, Newport, R. I., 02840 until:

Two (2) O'clock PM, Local Time
24 August 2011

This is NOT a Public Opening

Qualifications must be submitted in sealed envelopes addressed to the Purchasing Office, City Hall, 43 Broadway, Newport, R. I. 02840, and must be plainly marked in the lower left hand corner, "**Algae Alternative Energy Demonstration Project # 12-001**".

RIGL §45-55-8 Qualification Based Selection Process shall apply to this project.

It is the Qualifiers responsibility to see that the bid is delivered within the time and at the place prescribed. Qualifications Statements received prior to the time of opening will be securely kept, unopened. Qualification Statements may be withdrawn on written request (on the letterhead of the bidder and signed by the person signing the bid) which must be received prior to the time fixed for opening. Bids may be modified in the same manner. No bid or modification thereof received after the time set for opening will be considered, even if it is determined by the City that such non-arrival before the time set for opening was due solely to the delay in the mails for which the bidder is not responsible.

Any Qualifier taking exception to, or questioning any of the provisions, procedures, conditions or specifications herein stated should make such exceptions known to the undersigned, in writing, not less than five (5) days before the bid opening.

Any change or interpretation made as a result thereof will be published in an addendum and mailed to all prospective bidders. Should a bidder still not be satisfied, he may, in the bid, set out and stipulate the exception, with enough explanation to be understood by the City and, within the stipulation, the INCREASE or DECREASE in the bid price because of the exception shall be stated. The City may, at its discretion, accept or reject any or all exceptions.

Federal Excise Taxes and/or Rhode Island Use Taxes are not to be included in the bid. The City will execute exemption certificates if furnished by the bidder when submitting his invoice.

Note: All bidders are responsible for insuring that no **addenda** have been made to the original bid package. All bid packages and addenda are located at www.cityofnewport.com under (Active Bids) within the Purchasing webpage using the above bid/proposal number or you can contact the Purchasing Department.

Prevailing Wage – *N/A for professional services*. However, if the City's requirement is a sealed bid, the DAVIS-BACON Wage Determination applies.

One copy of these papers is furnished to bidders. One complete copy must be attached to the proposal if a bid is tendered.

Buy American Provision

Important information about section 1605 of Title XVI of the Recovery Act (the Buy American provision) is available on a dedicated section of the website of RIDOE's Office of Energy Efficiency and Renewable Energy (EERE): http://www1.eere.energy.gov/recovery/buy_american_provision.html.

This section will be updated regularly with new documents pertaining to the Buy American provision (e.g., Frequently Asked Questions (FAQs), formal guidance, and waivers).

The Recovery Act Buy American provision provides that, subject to three listed exceptions, none of the funds appropriated or otherwise made available by the Act may be used for a project for the construction, alteration, maintenance, or repair of a public building or public work unless all the iron, steel, and manufactured goods used are produced in the United States. There is no requirement with regard to the origin of components or subcomponents in manufactured goods used in a project, as long as the final manufacturing occurs in the United States (see 2 CFR 176.70(a)(2)(ii)).

Grantees are accountable for ensuring that the Buy American requirements are met, and thus should include the requirements in all Requests for Proposals (RFPs) and contracts. Grantees are encouraged to ask contractors to verify their compliance with the Recovery Act Buy American provision, and contractors can solicit evidence of compliance from domestic manufacturers in cases of uncertainty. Additional guidance on documenting compliance with the Buy American provision is forthcoming, and will be available on the EERE Buy American website.

Additional Provisions may apply. Please see the PDF Documents at: http://www.energy.ri.gov/documents/eecbg_recovery_act_program_guidance_10-011.pdf

CITY OF NEWPORT, RHODE ISLAND

Marc P. Agin

Marc P. Agin, Purchasing Agent
(401) 845-5414

REQUEST FOR QUALIFICATIONS
FOR THE CREATION OF AN
Algae Alternative Energy Demonstration Project
#12-001

BACKGROUND

The City of Newport is a recipient of an Energy Efficiency and Conservation Block Grant (EECBG) awarded by the Rhode Island State Office of Energy Resources and funded by the American Recovery and Reinvestment Act (ARRA) through the United States Department of Energy (DOE).

In calendar year 2007 The City of Newport purchased an Algae Harvester specifically designed to collect (harvest) algae that grows naturally on reefs in Easton's Bay (see attachment A). Presently the City is harvesting approximately 260 cubic yards of seaweed annually, with minimal use (see attachment B). The original purpose of the algae harvesting system was to eliminate what is regarded a negative characteristic of the Newport shoreline. Thus, the project was designed to enhance the experience of the City's beachgoers.

However, the City of Newport is undertaking an exciting project to determine the feasibility of transforming what is now regarded as a nuisance, yet naturally growing and resilient resource, into a commercially viable process and products. In so doing providing a locally sourced supply of alternate biodiesel and biomass energy; a learning tool and educational opportunity for pupils; a business and employment opportunity for the community, businesses and residents. This project can have national and global import.

The first step of this process is complete, testing the algae for oil content has already tested and found to have very high oil content (see attachment C). The City is now prepared to move forward with the demonstration project.

PURPOSE OF THIS REQUEST FOR QUALIFICATIONS (QBS)

The purpose of this Request for Proposals is to solicit proposals for the process or processes, and the equipment needed to extract the oils from the algae that the City of Newport is harvesting along their coastline for eventual use as Biodiesel and other products. This is a demonstration project to assess the feasibility of the concept. The demonstration project is to be conducted at an appropriate scale to provide information that will be independently evaluated in determining the overall feasibility of pursuing and implementing the process and applications of the harvested algae for oil extraction.

The demonstration project is intended to use harvested algae quantities sufficient to provide the information and results needed to develop a commercial scale operation from the demonstration project. Furthermore, the project must identify appropriate uses of the remaining byproducts of the extraction process, including potential use as dried biomass fuel, feed stock, fertilizer, cosmetic/food ingredient, etc..

Finally, the project provides for the design and use of the refined biodiesel in an integrated demonstration project at the Newport Met School, that will be developed into a Net Zero Energy Building (NZEB) in the existing Gallagher Building facility and in the near future, a proposed new facility, (NZEDA – Net Zero Energy Design Application). The Met School plans to engage the students and faculty of the Crowley Met School to use the Algae to Biodiesel and Algae to Biomass Product as an educational tool and learning activity as part of the curriculum. In summary, very possibly this demonstration project becomes a transforming entrepreneurial venture for the community, including private partners, the City of Newport, the Newport Met School, local businesses and residents.

STATEMENT OF QUALIFICATIONS

The City of Newport is soliciting a statement of qualifications for a vendor to work with the City of Newport and the East Bay Met School to fully develop a demonstration level project for processing algae into a biofuel. The chosen vendor must meet the following conditions and parameters:

At a minimum, provide the following information with your company's response.

1. Submit: the official name of the organization/business/agency; the address; the telephone number; email; website; a statement indicating that the individual submitting the proposal is authorized to act in a legal and official capacity to bind the vendor to the proposal.

2. Submit: the Background history of the organization/business/agency submitting the RFQ including:

   • abbreviated financials or credit history;
   • customer/client satisfaction testimonials; and,
   • contact information for at least three (3) references.

3. Submit a detailed narrative of the process proposed to accomplish the demonstration project including:

   • a description of the process;
   • identify the specific equipment needed;

- any special conditions necessary for the proposed process and products to function properly.
- Also, any other details necessary for clarification requisite for evaluating the proposed process.

For example, does the algae have to be dried prior to the start of the extraction process? How "fresh" does the algae need to be to be processed; i.e., does it have to be immediately transferred from the harvester to the processor. What time frames are required between harvest and delivery? What size (footprint) of facility is needed to house/enclose the process and products proposed? What mechanical, electrical, plumbing and other requirements are needed to be supplied by the City of Newport? What environment conditions are necessary, i.e., if housed in a facility, does the facility have to be climate controlled? To what level of refinement is the final product of the extraction process? What is required of the processed algae oil product? Does the final product of the process require special housing or environmental conditions? Does the alga require special transportation provisions? If available, provide diagrams, illustrations and any other materials that convey an understanding of the process/product.

4. Submit a detailed narrative and description of the equipment that will be used in the process including: the actual type, manufacturer, of equipment to extract the oil from the algae; the equipment described must be in turn-key condition and delivered to the City of Newport; depending on the space requirements for the processing equipment the City will provide the space to house the equipment, and the necessary mechanical, electrical, and plumbing connections. The vendor must provide the complete system to operate as desired by the City to extract the oils from the harvested algae; provide detailed technical specifications of the equipment and the respective requirements of that equipment; provide production capacity information for the equipment; provide workforce requirements, by job classification, and the hours needed to process the algae; provide equipment performance history (if the proposed equipment is a prototype or proprietary, provide testing results and/or any other information that substantiates the reliability of the product and its performance); provide photographs of the equipment and technical diagrams.

5. Submit an outline for the program to identify appropriate uses of the remaining biomass of the algae, including its potential as dried biomass fuel, feed stock, fertilizer, cosmetics, etc.. Proposers should recognize the following and assist in outlining and furnishing of data for the following: the use of the refined biodiesel in an integrated demonstration project at the Newport Met School while engaging the students and faculty of the Newport Met School in utilizing the bio fuel and algae to biomass product as an educational tool and learning activity in the school; and, determining the feasibility of transforming this demonstration

project into a commercial scale process and entrepreneurial venture for the City of Newport, including the City of Newport itself, the Newport Met School, local businesses and residents.

6. In a separate sealed envelope, submit all pertinent cost information for the processing equipment including: a detailed pricing proposal for all necessary equipment; any transportation needs and costs; any housing needs and cost; any potential alternatives.

7. Submit schedules for: the delivery of equipment; the projected installation of equipment based upon past installations; and, **the City of Newport requires having this demonstration project fully operational no later than 1 April 2012. Therefore the vendor's detailed schedule for implementation must reflect timeline.**

If in the best interest of the City, the City of Newport reserves the right to accept, or reject, any or all qualifications received as a result of this request, and to negotiate with qualified proposers or to cancel in part or in its entirety this Request for Qualifications, at any time and for any reason.

All questions pertaining to this solicitation must be addressed in ***writing*** to Ed Green or Andrew DeIonno at City of Newport, 43 Broadway, Newport, RI, 02840; or, egreen@cityofnewport.com or adeionno@cityofnewport.com.

EVALUATION OF QUALIFICATIONS

1) The cost of the process and equipment
   Maximum Point Value (MPV) – 30 pts.

2) Capacity and capability of the vendor to perform the work and show poof that the proposed process works.
   Maximum Point Value (MPV) – 30 pts.

3) Past record of vendor performance, quality of work and ability to meet schedules.
   Maximum Point Value (MPV) – 30 pts.

4) Proximity to, or familiarity with, the City of Newport and State of Rhode Island, RI Office of Energy Resources, federal funding, etc..
   Maximum Point Value (MPV) – 10 pts.

The method of scoring the submissions will be as follows:

1. A point score for each of the criterion, based upon the strength of submittal is assigned and the total will be added to determine the top candidates (Finalists).

2. The top vendors, best meeting the qualifications as measured by these criteria, are selected for an interview. At the time of the interview selected companies should be prepared to identify similar work and references as well as answering follow-up questions that arise from the interview process.

All bidders are responsible for providing six (6) hard copy qualifiaction statement packages, one electronic copy and assuring that no **addenda** have been made to the original bid package.

All bid packages and addenda are located at
http://www.cityofnewport.com/departments/finance/purchasing/bids_active.cfm.

Bidders must register electronically here: http://www.cityofnewport.com/vendor/
or contact the Purchasing Department

Award can not be made without this attachment. List the Officers of your Corporation or Principals of your LLC.

Complete Company Name: _____

_____	_____
Principal (Name)	Title/Officer/Position
_____	_____
Name	Title/Officer/Position
_____	_____
Name	Title/Officer/Position
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Name	Title/Officer/Position

Attachment A

APPENDIX A

AQUAMARINE DIVISION OF ERECTOWELD, INC.

1444 S. West Ave., Waukesha, WI 53189

MODEL BH-12000 BEACH HARVESTER

Technical Specifications for Design Proposal

DIMENSIONS & WEIGHT

Length, overall	37'-6"	11,43 m
Height , operating	10'-0"	3,0 m
Height, shipping	9'-8"	2,95 m
Width, operating	10'-6"	3,2 m
Width, shipping	9'-6"	2,9 m
Weight, max	15,000 lbs	6800 kg

CARRYING CAPACITY

Maximum by	250 cu ft	7 cu m
Maximum by weight	12,000 lbs	5500 kg

DIESEL POWER TRAIN

Engine type	Diesel, liquid cooled	
Power output	120 HP/89.5 kW	
Hydraulic system	Variable volume pumps, load sensed valves, and cooler	
Hydraulic controls	Joysticks with electric & hydraulic-over-hydraulic actuation	
Hydraulic tank capacity	60 US gal	225 liter
Fuel tank capacity	50 US gal	190 liter
Control panel	Full instrumentation with hydraulic and engine monitoring gauges	
Electrical system	12 Volt, D.C.	

COLLECTING HEAD

Cutting swath width	9'-3"	2,35 m
Conveyor belt type	Plastic, modular	

STORAGE CONVEYOR

System type	Single stage	
Conveyor width	9'-3"	2,35 m
Conveyor overhang	6'-0"	1,8 m
Belting material	"Heavy Duty" stainless steel	
Unloading time	60 - 120 seconds	

DRIVE SYSTEM & STEERING

Transmission type	"8-wheeler", 4 per side: each side driven hydrostatically independently at variable speed
Steering method	Skid-steer operation
Tire size	Turf type, 44.6 x 22.9, 3730 lbs/1695 kg
Tire pressure	6 psi maximum
Rim size	12" x 18"

STRUCTURE MAT'L 303/304L Stainless steel

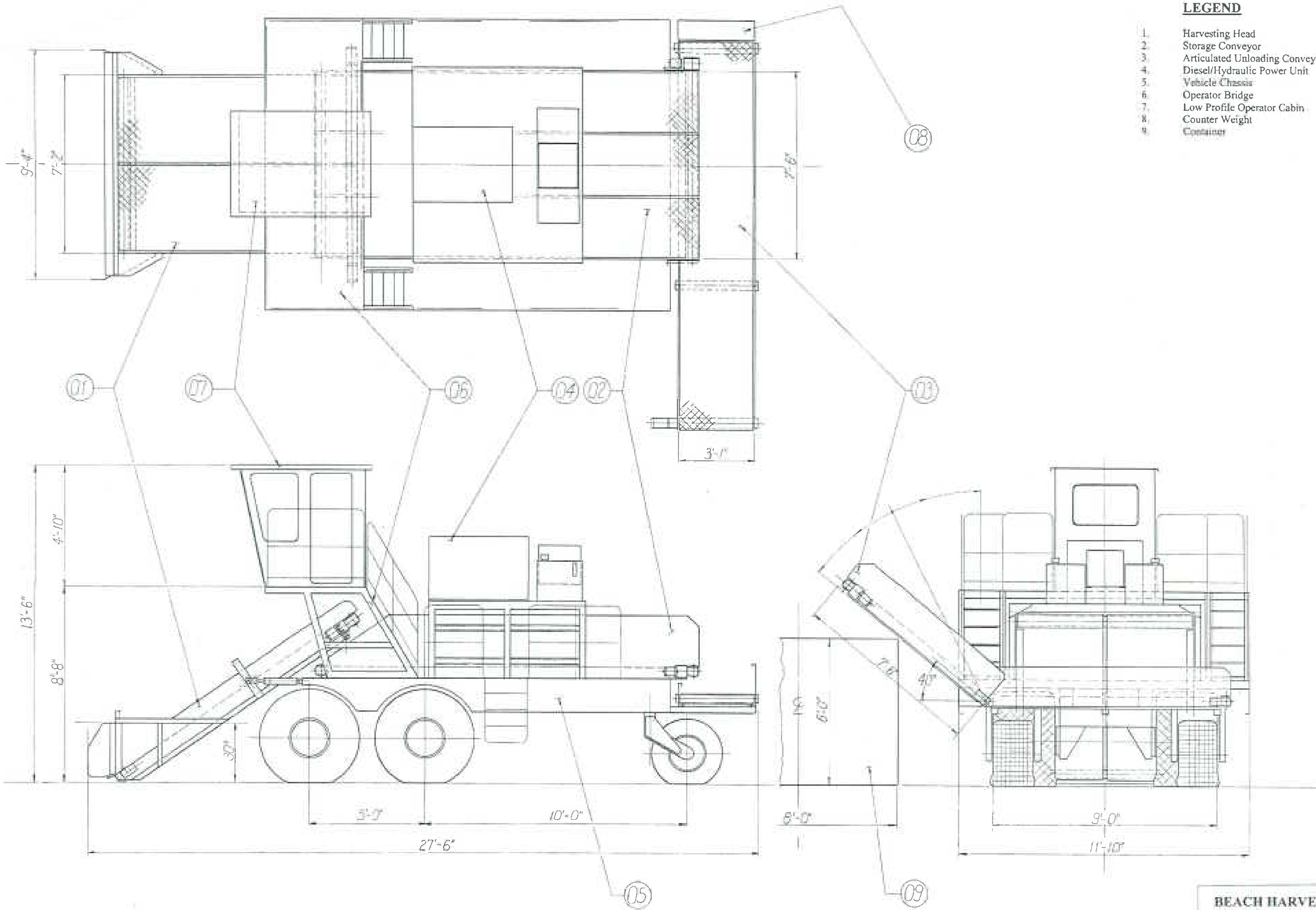
GENERAL

Fasteners	Stainless steel and high strength steel, where required
Hydraulic tubing	Stainless steel
Lighting	Typical lights for off-road vehicles

Note: The above is a basic design data for the BH-12000 Beach Harvester design proposal. Dimensions are approximate and other technical information is subject to change without notice.

LEGEND

1. Harvesting Head
2. Storage Conveyor
3. Articulated Unloading Conveyor
4. Diesel/Hydraulic Power Unit
5. Vehicle Chassis
6. Operator Bridge
7. Low Profile Operator Cabin
8. Counter Weight
9. Container



BEACH HARVESTER

MOD. BH-12000

APPENDIX C

AQUAMARINE DIVISION
OF ERECTOWELD INC. & ERECTOWELD COMPANY LIMITED

MODEL BH-12000 BEACH HARVESTER

TECHNICAL SPECIFICATIONS

1. **GENERAL DESCRIPTION:**

The Harvester shall be a self-contained system, based on a structural frame made of stainless steel, designated for collecting floating sea plants and small debris and shall be suitable for operation by one operator. The Harvester shall be capable of collecting, storing and unloading sea plant biomass and small debris using an onboard mechanical conveying system. The Harvester shall be self propelled for biomass collecting and mobilization purposes.

2. **HARVESTER DIMENSIONS:**

2.1.	Length	-	38'-0" / 11,43 m to 404-0"/ 12.20 m
2.2.	Height		
	• Overall	-	10'-0" / 3,05 m 13'-0"/4.0 approx c/w cab
	• Shipping	-	9'-8" / 2,95 m
2.3.	Width		
	• Operating	-	10'-6" / 3,20 m
	• Shipping	-	9'-6" / 2,90 m
2.4.	Weight	-	15,000 lbs / 5,500 kg (est)

3. **Main Frame**

3.1. The main frame shall be constructed of stainless steel and be sufficiently rigid to support the super structure , power plant , conveyor system, and drive system

3.2. Frame O/A Dimensions:

Length	-	25'–0" to 27'-0" / 7.62 to 8.23 m
Width	-	9'-6" / 2,90 m

Deck height above ground 4'-0" /1,25 m

3.3 Frame design shall be based on stainless steel materials such as tubing, formed profiles, channels and angles.

4. POWER SYSTEMS & CONTROL BRIDGE:

4.1. The engine shall be a Diesel unit with an output of approximately 120 HP / 89.5 kW. at sea level Continuous RPM shall be in the range of 1800 to 2200

4.2. The hydraulic system shall consist of one (1) variable volume pressure and flow compensated pump (load sensed) for all conveying and lifting functions, and(2) independent hydrostatic transmissions for the wheel drive system.

4.3. The hydraulic tank capacity shall be at least 60 US gal. / 225 L and shall be supplied with a combination oil level and temp. gauge, drain plug, hydraulic oil filter of at least 60 US gal. / 225 L per minute filtration capacity, magnet dipstick and lockable cap.

4.4. The fuel tank capacity shall be at least 50 US gal. / 190 L, and shall be supplied with an electric fuel gauge, drain plug, lockable cap and water separator. The fuel lines and tank shall comply with SAE / ISO marine standards.

4.5. The bridge shall be located symmetrically above the storage conveying system and shall provide access to the operator station and shall also provide enough space for the power train and good access for service. Its length shall be at least 11'-0 / 3,35 m. The platform shall be located at an adequate height in order to provide unobstructed visibility of the collecting head at all times. There shall be a cab for the operator shall be provided.

4.6. The control bridge frame shall be made of stainless steel structural material and shall be provided with two (2) access ladders (one on each side) of the operator's platform.

4.7. The power train shall be located on the rear end of the bridge and supplied with an engine hood and lockable battery box.

4.8. Hydraulic controls shall consist of a combination of pilot hand levers and foot pedals. The hydraulic directional valve shall be located away from the cab, near the engine and hydraulic tank.

4.9. The control panel shall be supplied with a full instrumentation package.

4.10. The electrical system shall be 12V D.C. supplied with a heavy duty battery / 650 cold crank amps and the electrical cables shall comply with SAE / ISO marine standards.

5.Collecting HEAD:

5.1. The collecting head shall be provided with (2) forward pointing retaining wings to assist the sea plant collection.

5.2. An adjustable guide shall be mounted under the collecting head to maintain constant distance to the ground while skimming sea plants.

5.3. The collecting head will be provided with provisions for possible future addition of vertical a cutter system.

5.4. The collecting head shall be capable of skimming at a minimum of7'-9"/ 2,36 m wide at a depth range of 10" to 24" " / 0,25 to 0,61

5.5. The harvesting head frame and side walls shall be made of structural and formed stainless steel profiles. The submerged portion of the side walls shall have openings covered with expanded sheet metal providing minimum restriction to the water flow during the harvesting operation.

5.6. The harvesting head shall be capable of being raised by hydraulic cylinders to approximately 36' / 0.91m above the ground. The hydraulic cylinders shall be equipped with stainless steel rods.

5.7. The harvesting head relief system shall consist of a swinging suspension which is integral with the head lifting unit.

5.8. The harvesting head lift crane shall be made of stainless steel tubing, and plate. All pivot and connecting pins shall be made of stainless steel with easily accessible grease zerks.

5.9. The conveyor drive shaft shall be driven by one (1) hydraulic motor through stainless steel a #40 chain couplings and drive journals. The main shaft shall be constructed of 3" / 76.2 mm dia. x 3/16" / 4.76 mm wall D.O.M. stainless steel tubing supplied with weldable cast iron flanged sprockets to prevent damage to the shaft tubing, and with a 4" / 101.6 mm pitch diameter.

5.10. The conveyor idler shafts shall be constructed of the same materials as the drive shaft and may be either smooth roller or supplied with sprockets.

5.11. The conveyor shafts shall be supported by 4 bolt flange stainless steel bearings bolted to take-up plates. The adjustable take-ups shall be provided with 3/4" / 19.05 mm diameter stainless steel threaded rods.

5.12. The head conveyor shall be supplied with two (2 or 3) standard duty stainless steel belting sections to a total width of approximately 90" / 2,28 m.

5. STORAGE CONVEYOR & UNLOADING SYSTEM:

6.1. For the storage conveyors support structure, bearings, shafts, take-up threaded rod material see Clauses 5.8, 5.9 and 5.10.

6.2. The front storage (stationary) conveyor and rear storage (unloading) conveyor shall be driven independently, each conveyor by two (2) Char-Lynn or equal hydraulic motors coupled to the drive shaft by #40 stainless steel chain coupling.

6.3. The storage conveyors shall be supplied with stainless steel heavy duty belting (flat wire mesh) consisting of three (3) widths of 30" / 0.76 m wide each.

6.4. The storage conveyor side walls shall be made of 14 ga. / 1.9 mm stainless steel steel sheet metal.

6.5. The rear storage conveyor shall be supplied with welded stainless steel tubular cross conveyor frame which is required for side wall reinforcement and for equalizing the lifting motion of the two (2) lifting cylinders. The cylinders shall be supplied with stainless steel rods.

6.6. The rear storage conveyor shall extend 6' to 8' / 1,83 m to 2,44 m beyond the main. Final length to be determined to suite dumpster box.

6.7 The rear conveyor lift (unloading height) shall be hydraulically adjustable to unload up to 8' above the ground level.

6.9. The storage conveying system volume capacity shall be 280 cu.ft. / 8 m^3 approx., load weight equivalent of approximately 12,000 lbs / 5450 kg minimum.

7. PROPULSION:

7.1. The Harvester shall be provided with (8) low ground pressure wheels, (4) on each side of the main frame. They shall be each side independently hydraulically driven, reversible and properly longitudinally positioned so as to allow maximum maneuverability.

7.2. The wheels shall be "balloon" type low pressure, approximately 42" to 45" / 1,02 to 1,14m diameter by 20" to 24" / 0,51 to 0,61 m wide.

7.3 The wheel drives shall be of heavy duty planetary torque units, driven hydraulically .

8. ANTI-CORROSION SYSTEM:

All materials that can not be supplied in inherently non-corrosive form, such as hydraulic and engine components as well as high strength fasteners, shall be primed and painted with two coats of high impact, high visibility, safety orange, thermally cured epoxy. The total thickness of coating shall be 8 to 10 mils. / 0.20 to 0.25 mm.

9. STANDARD SAFETY EQUIPMENT:

Fire extinguisher included.

0. ADDITIONAL INFORMATION:

10.1. All fasteners shall be made of 304/316 stainless steel.

10.2. All conveyors shall be provided with 1/4" / 6.35 mm thick by 1-3/8" / 40 mm minimum width UHMW plastic wear strips mounted on the top of the wire mesh support frame and return guides.. Solid plastic will be mounted to the exposed area of the top of the front conveyor.

10.3. The conveyors shall be fitted with heavy duty stainless steel belting 1" x 1" x 1/2" / 25.4 x 25.4 x 12.7 mm. Optional heavy duty stainless steel belting shall also be available.

10.4. The speed of operation of all hydraulically driven components shall be adjustable to maximum settings through lockable flow control valves.

10.5 Hydraulic wheel drives shall be protected with cross-over relief valves.

10.5. The main hydraulic system shall be protected by a relief valve.

10.6. All hydraulic hard lines, adaptors, and fittings, shall be made of stainless steel, shall be industrial quality – "Aeroquip" or equivalent.

1. SPARE PARTS

A recommended spare parts package shall be established at alater date.

2. OPTIONAL EQUIPMENT:

An operators cab shall be offered as an option, either as a light weight version or all weather. The all weather cab shall be suitable for heating and air conditioning.

3. WARRANTY:

One (2) seasons or 1000 hours warranty, whichever expires first, for fabricated parts and the structure. Three years warranty on workmanship and material fatigue. The standard manufacturer's warranty applies to all purchased parts.

4. MANUALS:

The equipment shall be provided with one (1) complete set of manuals consisting of at least one (1) Operation and one (1) Maintenance Manual, Parts Book and Engine Manual, with the delivery of the equipment.

5. OPERATOR & SERVICE TRAINING:

Operator and service training can be provided at the at Aquamarine as well as at customer's site as required.

Attachment B

City of Newport - Seaweed loads 2009 & 2010

date	tonnage	disposal site		
2009				
15-Jul	delivery			
9-Sep	10.25	earthcare		
14-Oct	7.96	earthcare		18.21
2010				
2-Jun	5.48	earthcare		
15-Jun	9.31	earthcare		
17-Jun	11.42	earthcare		26.21 total from earthcare
6-Jul	2.49	npt - contaminated load		2.49 total from npt transfer
23-Aug	8.53	ri nursery		
25-Aug	8.74	ri nursery		
26-Aug	8.2	ri nursery		
27-Aug	8.72	ri nursery		
28-Aug	9.71	ri nursery		
8-Sep	8.23	ri nursery		
9-Sep	11.2	ri nursery		
9-Sep	8.92	ri nursery		
11-Sep	8	ri nursery		
13-Sep	7	ri nursery		
14-Sep	9.46	ri nursery		
15-Sep	9.37	ri nursery		
27-Sep	8.55	ri nursery		114.63 total from ri nursery
	143.3 Tons/2010	= 260 Cubic Yards		

143.33 Grand Total 2010

Attachment C

Testing Requested by: City of Newport, RI

Purpose of Testing: Algae (Seaweed of Easton Beach) Testing & Analysis for the Production and Biodiesel Yield Potential

Samples: 2

Report Date: 11-08-2010

Reference #: Q091610

Oil (Lipid) Content and Other Elements Analysis

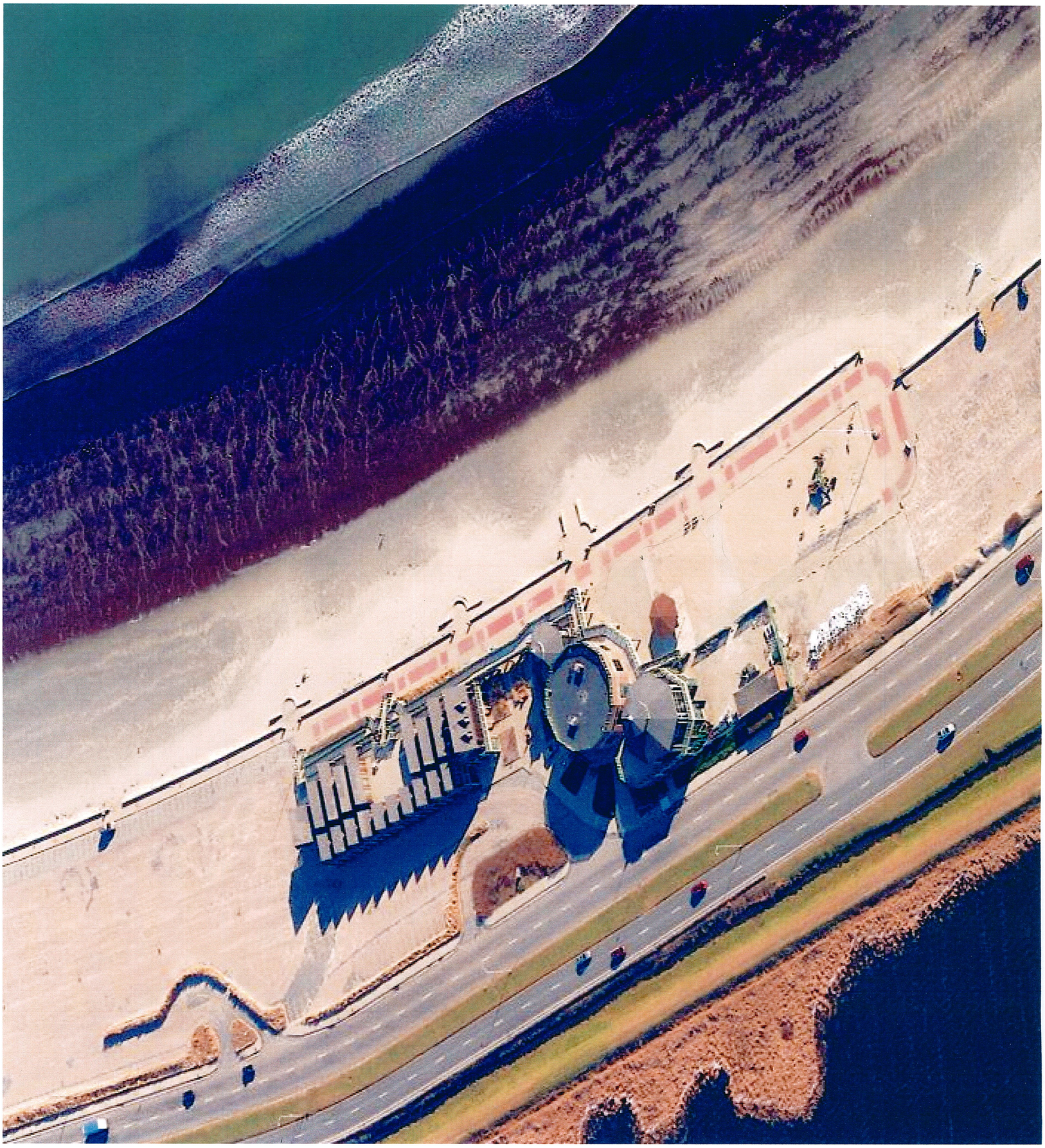
Sample ID 1: Dried Algae Feedstock	
Items	**Results**
Solid as Delivered (%)	81.33+- 0.66
Ash of Solids (%)	27.56+0.08
Carbon (%)	16.74
Hydrogen (%)	1.92
Nitrogen (%)	1.59
Crude Protein (%)	9.89
Crude Fat (%)	0.93
Lipid (%)	**10.81 +/- 1**
Sulfur (%)	1.73
Phosphorus (%)	0.23
Potassium (%)	1.64
Magnesium (%)	0.72
Calcium (%)	2.19
Sodium (%)	1.40
Iron (ppm)	2224
Manganese (ppm)	169
Copper (ppm)	5
Zinc (ppm)	450
Lignin (%)	25.3

Lab Bio-oil Conversion Testing

Sample ID 1: Dried Algae LBC Test	
Items	**Results**
Reaction Temperature (oC)	300
Reaction Time (min)	30
Raw Oil Yield (%)	**56.43**
Refined Oil Yield (%)	**13.36**

Elements Analysis

Sample ID 2: Wet Algae	
Items	**Results**
Solid after Rinsing(%)	15.61+-1.87
Ash of Solids (%) *	57.95+4.85
Carbon (%)	26.01
Hydrogen (%)	2.78
Nitrogen (%)	2.50
Phosphorus (%)	0.17



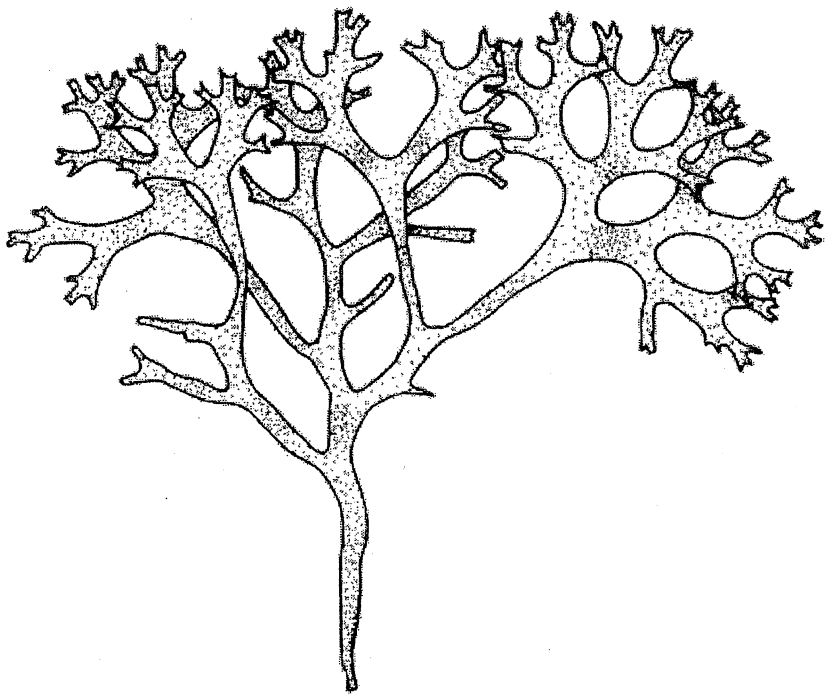
RED ALGAE on EASTON'S BEACH:

Red seaweed makes up the largest group of algae in the plant kingdom, with more species accounted for than brown and green seaweeds combined. Although generally found in shallow waters, these seaweeds are able to withstand deep water and low-light conditions.

Irish Moss ***Chondrus crispus***

Appearance: Reddish brown seaweed with flattened blades that fork off into rounded tips. Grows 2 to 6 inches tall and 4 inches wide.
Habitat: inlets, tide pools, lower intertidal zone
Seasonal Appearance: all year round

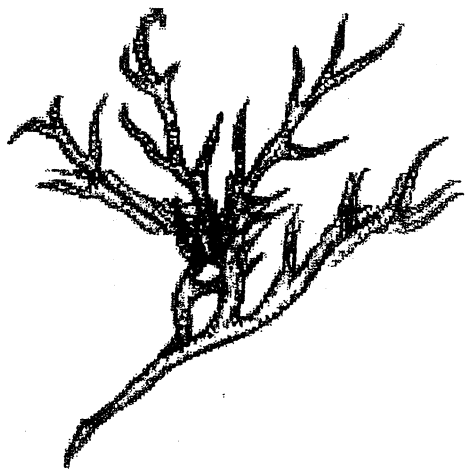
Notes: if washed ashore Irish moss will bleach white or a light green color. It can withstand extremely cold water temperatures and can survive being frozen during the winter months. Irish moss is used to produce an extract called Carrageenan, which is used as a thickener in soups, baked goods, dairy products and cosmetics.



Gracilaria

Appearance: can grow 5-10 inches high. Gracilaria is yellow green to brownish purple, with coarse, rubbery branches.
Habitat: tide pools, shallow coves, eelgrass beds
Seasonal Appearance: all year, most abundant in summer months

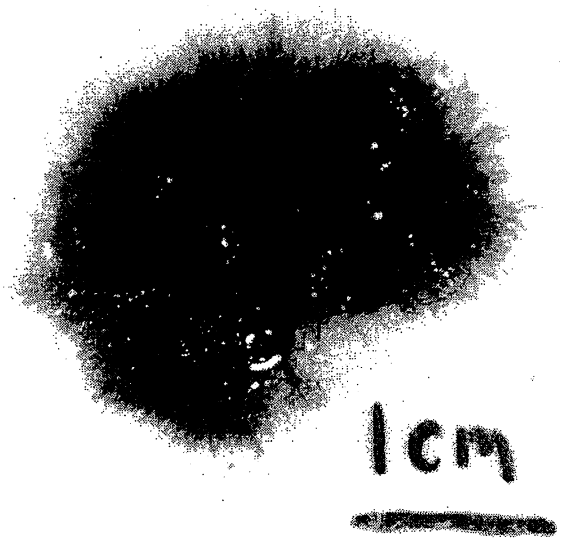
Notes: commonly found floating over muddy or sandy Bay bottoms. It is harvested to make agar, which is used in medical labs for growing bacteria and yeast.



Spermothamnion repens

Appearance: Red algae, grows in small tufts 1-4 cm in size.
Habitat: shallow waters, tide pools, shallow coves attached to hard substrates and other algae.
Seasonal Appearance: all year, more abundant in summer months

Notes: this is a native red algae species that can be found throughout RI.



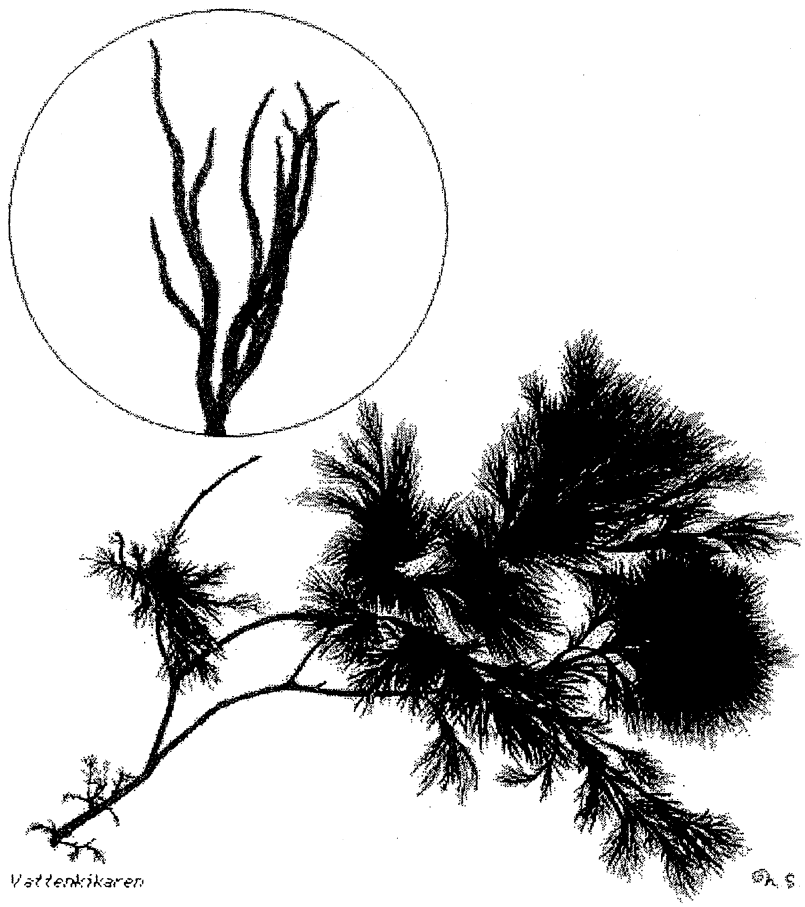
Why is there so much red algae at Easton's Beach?

The "red tide" that occurs at Easton's beach is actually a red marine algae called Spermothamnion repens. This algae is a native species that is completely safe to be in contact with, although many people find it gross.
The southwest winds that occur in the summer at Easton's Beach, along with the shape of the beach itself help to accumulate large amounts of the red algae. Easton's Beach is also relatively shallow, ideal for this particular species, and many other red marine algae species to grow. High levels of Nitrogen and other nutrients that come from sewage and runoff can also cause algae to grow in abundance.

Polysiphonia ***Polysiphonia ssp.***

Appearance: can grow 5-10 inches high. Yellow, pink or black, red, branched, bushy appearance.
Habitat: tide pools, shallow coves, eelgrass beds.
Seasonal Appearance: all year, more abundant in summer months

Notes: the most common genus of red seaweed. Also called "mermaids hair". It is a bushy seaweed growing in tufts that are soft to the touch. It occurs mainly in protected shallow waters, often attaching itself to stones, shells, and eelgrass with a holdfast.



Red Ceramium ***Ceramium***

Appearance: can grow 5-10 inches high. Red, branched, with terminal pincers on the end of the branches.
Habitat: Tide pools, shallow coves, eelgrass beds
Seasonal Appearance: all year, more abundant in summer months

Notes: this red seaweed will attach to almost any hard substrate, and is found in large tufts.