Oliver Stedman Government Center
4808 Tower Hill Road; Suite 116
Wakefield, RI 02879
401-783-3370

# NOTICE OF RESCHEDULING OF PUBLIC HEARING

The Coastal Resources Management Council, in accordance with and pursuant to the provisions of the "Administrative Procedures Act" (Section 42-35-3 of the General Laws of Rhode Island) and the Rules and Regulations of the Coastal Resources Management Council, gave notice signed and initially dated March 15, 2012 to change the management plans, policies, procedures and regulations of the agency regarding planning and management of the coastal resources of the State relative to Chapter 46-23 of the State of Rhode Island and specifically in regard to the development and adoption of proposed changes to the Coastal Resources Management Program Narrow River Special Area Management Plan (SAMP).

This Notice is being published to advertise that the Public Hearing on these proposed changes have been scheduled for Wednesday, June 13, 2012 in the **Department of Administration, Conference Room A, One Capitol Hill, Providence, RI** at 6:00 p.m.

Further information may be obtained by contacting the Coastal Resources Management Council offices at 783-3370.

Signed this 30th day of May, 2012.

Jeffrey M. Willis, Deputy Director
Coastal Resources Management Council

/JMW/lat

COASTAL RESOURCES MANAGEMENT COUNCIL

Oliver Stedman Government Center
4808 Tower Hill Road; Suite 116
Wakefield, RI 02879
401-783-3370

In accordance with and pursuant to the provisions of the "Administrative Procedures Act" (Section 42-35-3 of the General Laws of Rhode Island) and the Rule and Regulations of the Coastal Resources Management Council, notice is hereby given of the intention of the Coastal Resources Management Council to change the management plans, policies, procedures and regulations of the agency regarding planning and management of the coastal resources of the State relative to Chapter 46-23 of the State of Rhode Island.

The following change is proposed:

Narrow River Special Area Management Plan (SAMP)

The Council is considering amending Chapter 9 of the Narrow River SAMP in its entirety. Specifically, the prohibition in Section 940.C.1(b) is being amended to provide for development on parcels with available sewer line in cases where limited wetland filling is needed to gain access to the parcel. In addition, a number of technical corrections are proposed for outdated existing text. Because of the size of the document, interested parties can review the proposed changes in a PDF file accessible on the CRMC homepage at www.crmc.ri.gov.

The Council has complied with the requirements of R.I. Gen. Laws Section 42-35-3 by considering alternative approaches to the proposed regulation(s) and has determined that there is/are no alternative approach(es) that would be as effective and less burdensome. The Council has also determined that the proposed regulation(s) do(es) not overlap or duplicate any other state regulation. The Council has complied with the requirements of R.I. Gen. Laws Section 42-35-3.3 by submitting copies of the proposed regulation(s) to the Governor's Office and the Economic Development Corporation (EDC).

Parties interested in or concerned with the above proposed changes are invited to **submit written comments** by April 17, 2012. All such comments should be directed to Grover J. Fugate, Executive Director, at the above address.

A public hearing has been scheduled for these proposed changes to be held in Conference Room A, Administration Building, One Capitol Hill, Providence, RI on Tuesday, April 24, 2012 at 6:00 p.m.

Copies of the proposed regulations are also available from the Coastal Resources Management Council offices and its website – www.crmc.ri.gov.

Individuals requesting interpreter services for the hearing impaired must notify the Council office at 783-3370, 72 hours in advance of the hearing date.

Further information may be obtained by contacting the Coastal Resources Management Council offices at 783-3370.

Signed this 15th day of March, 2012.

Jeffrey M. Willis, Deputy Director
Coastal Resources Management Council

/lat

# Chapter 9
# Regulations

## 900. Introduction

### A. The Rhode Island Coastal Resources Management Program

1. The Rhode Island Coastal Resources Management Program (RICRMP) should be referred to for specific regulatory requirements on buffers, setbacks, subdivisions, recreational docks, barrier beach development, beach replenishment and any other activities which occur within the Narrow River SAMP.

### B. Application Process

1. The RICRMP has three categories of applications: Category A, B and A*:

(a) Category A activities are routine matters and activities of construction and maintenance work that do not require review of the full Council if four criteria are met: buffer zone compliance, abutter agreement, and proper state and local certifications.

(b) Category A* applications are put out to public notice for the benefit of the abutters to the affected property and local and state officials.

(c) Category B applications are reviewed by the full Council and the applicant must prepare in writing an environmental assessment of the proposal that addresses all of the items listed in Section 300.1 of the RICRMP and any additional requirements for Category B applications listed for the activity in question.

2. A Category A review may be permitted for A* activities provided that the Executive Director of CRMC determines that all criteria within Section 110.1 A of the RICRMP and the relevant SAMP requirements and prerequisites are met. The proposed activity shall not significantly conflict with the existing uses and activities and must be considered to be a minor alteration with respect to potential impacts to the waterway, coastal feature, and areas within RICRMP jurisdiction.

3. The following activities which occur within the Narrow River SAMP require a CRMC assent (application approval).

(a) Activities within 200 feet of a coastal feature (see RICRMP for specific category). (Category A, A*, B)

(b) Watershed Activities (specific activities taking place within the SAMP watershed).

(i) New subdivisions of 6 units or more, or re-subdivision for a sum total of 6 units or more on the property proposed after March 11, 1990 irrespective of ownership of the property or the length of time between when units are proposed. (Category B)

(ii) Development requiring or creating more than 40,000 square feet of total impervious surface. (Category A*/B)

(iii) Construction or extension of municipal, private residential hook-ups to existing lines, or industrial sewage facilities, conduits, or interceptors (excluding onsite sewage disposal systems outside the 200' zone). Any activity or facility which generates or is designed, installed, or operated as a single unit to treat more than 2,000 gallons per day, or any combination of systems owned or controlled by a common owner and having a total design capacity of 2,000 gallons per day. (Category A*/B)

(iv) Water distribution systems and supply line extensions (excluding private residential hook-ups to existing lines). (Category A*/B)

(c) All roadway construction and upgrading projects. (Category A*/B)

(d) Development affecting freshwater wetlands in the vicinity of the coast. (Category A/B)

4. For projects involving the following, refer to Section 320 of the RICRMP for the appropriate category.

(a) Construction or extension of public or privately owned sanitary landfills.

(b) New mineral or aggregate (sand/gravel) mining.

(c) Processing, transfer, or storage of chemical and hazardous materials.

(d) Electrical generating facilities of more than 40 megawatts capacity.

(e) All commercial in-ground petroleum storage tanks of more than 2,400 barrels capacity, all petroleum processing and transfer facilities [residential prohibited].

(f) Proposed new or enlarged discharges (velocity and/or volume) to tributaries, tidal waters, or 200' shoreline feature contiguous area.

(g) Solid waste disposal.

(h) Desalination plants.

In addition to the activities listed above, if the Council determines that there is a reasonable probability that the project may impact coastal resources or a conflict with the SAMP or RICRMP, a Council Assent will be required in accordance with all applicable sections of this program.

5. All applicants shall follow applicable requirements as contained in the RICRMP, including any specific requirements listed under water types in section 200 and additional Category B requirements in Section 300, the requirements and prerequisites in Section 320 for Inland Activities, and any regulations in this SAMP chapter.

6. Applicants proposing the above listed activities are required to submit the following with

their applications:

(a) A Stormwater Management Plan prepared in accordance with Section 300.6 and as described in the most recent version of the *Rhode Island Stormwater Design and Installation Manual*,

(b) An Erosion and Sediment Control Plan prepared in accordance with the standards contained in Section 300.2.

(c) An Existing Conditions Site Map and a Proposed Final Site Map as required in Section 320 of the RICRMP and as specified in ~~the section for Site Plan Requirements in~~ the most recent edition of the *Rhode Island Stormwater Design and Installation Standards Manual*.

7. Preliminary determinations may be filed for any project by the municipality or the applicant. Preliminary determinations provide advice as to the required steps in the approval process, and the pertinent ordinances, regulations, rules, procedures and standards which may be applied to the proposed development project. Any findings and recommendations resulting from this preliminary review shall be utilized if the applicant returns to file a full assent request for the project, and will be forwarded to the Council as part of the staff reports for major development plans. Applicants for Category B activities within the SAMP watershed are required to utilize the Council's Preliminary Determination process in accordance with applicable requirements of the Land Development and Subdivision Review Enabling Act (RIGL § 45-23-25 et seq.). Where the Council finds there is a potential to damage the coastal environment, the Council will require that suitable modification to the proposal be made.

**~~B~~C. Variances and Special Exceptions are granted by the Council under section 120 and 130 of the RICRMP respectively.**

1. Applicants desiring a variance from a standard must make the request in writing and address five criteria:

(a) The proposed alteration conforms with applicable goals and policies in Parts Two and Three if the RICRMP.

(b) The proposed alteration will not result in significant adverse environmental impacts or use conflicts.

(c) Due to conditions at the site in question, the standard will cause the applicant an undue hardship.

(d) The modification requested by the applicant is the minimum necessary to relieve an undue hardship.

(e) The undue hardship is not the result of any prior action of the applicant.

The application is only granted an assent if the Council finds that the above criteria are met.

2. Special exceptions may be granted to prohibited activities to permit alterations and activities that do not conform with a Council goal for the areas affected or which would otherwise be prohibited by the requirements of the RICRMP only when the applicant has demonstrated that:

(a) The proposed activity serves a compelling public purpose which provides benefits to the public as a whole as opposed to individual or private interests. The activity must be one or more of the following: (1) an activity associated with public infrastructure such as utility, energy, communications, transportation facilities; (2) a water-dependent activity that generates substantial economic gain to the state; and/or (3) an activity that provides access to the shore for broad segments of the public;

(b) All reasonable steps shall be taken to minimize environmental impacts and/or use conflict; and

(c) There is no reasonable alternative means of, or location for, serving the compelling public purpose cited.

**~~C~~D. Coordinated Review with Municipalities**

1. Under the Subdivision Review Act, one or more pre-application meetings shall be held for all major land developments or subdivision applications (Land Development and Subdivision Review Enabling Act, RIGL § 45-23-25 et seq.). Pre-application meetings may be held when a preliminary determination is filed with the CRMC, or informally when the municipality requests information from CRMC. All major land development projects as defined under the act and residential subdivisions of six (6) units or more shall be considered major land development plans and should file a preliminary determination request with CRMC. The purpose of these meetings is to:

X Identify and discuss major conflicts and possible design alterations or modifications to obviate conflicts.

X Discuss the likely onsite impacts of alternatives or modifications and on the ecosystem as a whole.

X Ensure that there is consensus among the regulatory agencies on any changes, and that conflicts with permit requirements do not arise.

### ~~D~~E. Federal Consistency

1. Activities involving a direct or indirect federal activity (includes activities that require a federal permit, such as an Army Corps of Engineers Permit) also require Council review in accordance with the Federal Consistency process contained in the Section 307 of the Coastal Zone Management Act. The Council has developed a handbook to assist those subject to Federal Consistency review. Persons proposing an activity involving a direct or indirect federal activity are referred to the most recent version of this handbook.

### ~~E~~F. Coastal Nonpoint Pollution Control Program

1. Section 6217 of the Coastal Zone Management Act amendments of 1990 required each coastal state with a federally approved coastal management program to develop and submit a Coastal Nonpoint Pollution Control Program (CNPCP) to the EPA and the National Oceanic and Atmospheric Administration (NOAA) by July 1995. Rhode Island's CNPCP, developed by the RIDEM, the Department of Administration and the CRMC, applies to four general land use activities: agriculture, urban (new development, septic systems, roads, bridges, highways, etc.), marinas, and hydromodifications. There are also management measures to protect wetlands and riparian areas, and to promote the use of vegetative treatment systems (EPA 1993).

## 910.1 Municipal Responsibility

**A. The Town officials and administration involved in construction, approval of construction and/or regulations regarding the zoning, density, and build-out of development are the municipal arm of this SAMP.**

1. Local authorities are responsible for applying the regulations and land use policies to ensure proper application of this plan. Towns should exercise particular consideration of subdivisions because of the potential impacts from stormwater, sewage disposal, infrastructure demands, and decreased open space.

CRMC evaluates projects that fall under this plan as referenced earlier, even if development is not completed all at once. A developer still falls under the CRMC major subdivision review conditions upon additional construction. Stormwater concerns, sewage disposal concerns, buffers, etc. may be difficult to accommodate with the addition of new lots. Therefore it is important for municipalities to apply SAMP regulations to initial development of a subdivision.

## 920. Water Quality

### A. Introduction

1. The evidence presented in Chapter 3 Water Quality indicates that water quality continues to be degraded in the Narrow River due to existing residential sources of nitrogen and bacteria. Although research conducted at the University of Rhode Island suggests a correlation between housing density and the symptoms of eutrophication in the salt ponds (See CRMC Salt Pond Region SAMP), there is no clear nitrogen loading threshold which CRMC can apply to each individual activity and development. Accordingly, CRMC addresses nitrogen loading through conservative land use regulations and nitrogen reducing technologies.

2. The installation and operation of nitrogen removal systems is permissible under the RIDEM *Rules ~~and Regulations~~ Establishing Minimum Standards Relating to Location, Design, Construction and Maintenance of ~~Individual Sewage Disposal~~Onsite Wastewater Treatment Systems.* CRMC requires nitrogen removal systems as noted in Table 9-1 and in Section 920.1.

3. In addition to the impacts of nitrogen, other nonpoint sources of pollution like sediment from erosion and road runoff, petroleum hydrocarbons from vessel engines and road salts are also a concern. As impervious areas increase within the Narrow River these pollutants have a greater potential to reach coastal waters.

4. Table 9-1 summarizes the Land Use Classification System, with the requirements for nitrogen reducing technologies, buffer zone and setbacks. The CRMC land use classification system which regulates land use densities and other activities in the SAMP region follow in Section 920.1. The following are the definitions, policies, regulations and recommendations which correspond to the three CRMC land use classifications.

**Table 9-1.** CRMC Land-Use Classification Requirements for Density, Setbacks, Buffer Zones and Nitrogen Reducing Technologies for activities within 200' of a coastal feature and all watershed activities as defined in Section 900.B.3 and 900.B.4.

| Land-Use Classification | Definition | Coastal Buffer Zone Requirement[1] | Construction Setback Requirement[1] | ~~ISDS~~OWTS Setback Requirement[1] | Nitrogen Reducing Technology Requirement[1,2] |
|---|---|---|---|---|---|
| **Developed Beyond Carrying Capacity** | Lands developed or undeveloped at < 80,000 square feet [SE or Var] | Coastal buffer based on RICRMP §150 [Var] | Coastal buffer plus 25' | Nitrogen reducing technology required [SE, Var] | New ~~ISDS~~OWTS installations, ~~or~~ alteration, or repairs [4] or when required by DEM OWTS Rules. [SE, Var] |
| **Critical Concern** | Lands developed or undeveloped at 120,000 square feet and have sensitive watershed resources [SE or Var] | 200' [SE or Var] | Coastal buffer plus 25' | 225' [SE, Var] | Lands subdivided after adoption of SAMP that do not meet the CRMC density requirement and substandard lots of record or when required by DEM OWTS Rules. [SE, Var] |
| **Self-Sustaining** | Lands developed, undeveloped at 80,000 square feet [SE or Var] | 150' [SE or Var] | Coastal buffer plus 25' | 200' [SE, Var] | Lands subdivided after adoption of SAMP that do not meet the CRMC density requirement and substandard lots of record or when required by DEM OWTS Rules. [SE, Var] |

[SE or Var] indicates if relief from the requirement or regulations requires a Special Exception, Variance or both.

1 CRMC Land-Use Classification Requirements for Density, Setbacks, Buffer Zones and Nitrogen Reducing Technologies are for activities within CRMC jurisdiction (See Section 900.B.3 and 900.B.4)

2 A Special Exception is required for relief from the density requirement, coastal buffer, construction setback, ~~ISDS~~OWTS setback or nitrogen reducing technology requirement unless the lot is pre-platted (see Section 920.1, Land Use Classification for Watershed Protection), and cannot accommodate the requirement.

3 Nitrogen reducing technologies are alternative wastewater systems which can reduce total nitrogen concentrations by at least 50%.

4 As defined by the Rhode Island Department of Environmental Management, Rules ~~and Regulations~~ establishing Minimum Standards Relating to Location, Design, Construction and Maintenance of ~~Individual Sewage Disposal~~Onsite Wastewater Treatment Systems, as amended.

~~* A grace period will be allowed for applicants who have ISDS applications pending and/or approved, with assigned ISDS file numbers, by the RIDEM Division of Water Resources ISDS Section prior to April 12, 1999. These applications will not be subject to the requirements contained herein. Applications accepted by RIDEM Division of Water Resources ISDS Section on or after April 12, 1999 shall be subject to the requirements contained herein.~~

## 920.1 Land Use Classification for Watershed Protection (See Figures 9-1, 9-2, 9-3 and 9-4)

### A. Self-Sustaining Lands

1. Definitions

(a) Self-Sustaining Lands are undeveloped or developed at a density of not more than one residential unit per 80,000 square feet. Within these areas, the nutrients discharged to groundwater by septic systems, fertilizers and other sources associated with residential activities may be sufficiently diluted to maintain on-site potable groundwater. However, the one residential unit per two acre standard is not considered sufficient to reduce groundwater nitrogen concentrations to levels which will prevent eutrophication, or mitigate for dense development in other portions of the watershed.

(b) A tributary is any flowing body of water or watercourse which provides intermittent or perennial flow to tidal waters, coastal ponds, coastal wetlands or other down-gradient watercourses which eventually discharge to tidal waters, coastal ponds or coastal wetlands.

(c) Tributary wetlands are freshwater wetlands within the watershed that are connected via a watercourse to a coastal wetland and/or tidal waters.

(d) Land suitable for development shall be defined as the net total acreage of the parcel, lot or tract remaining after exclusion of the areas containing, or on which occur the following protected resources: coastal features as defined within RIGL Chapter 46-23 and/or the CRMP Section 210; freshwater wetlands, as defined in the RIDEM Freshwater Wetlands Rules and Regulations, including the 50' Perimeter Wetland, and the CRMC *Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast*, and lands to be developed as streets and roads shall also be excluded from the calculated acreage of developable land. The division of a tract, lot or parcel not subject to municipal regulation under the provisions of Chapter 45-23 *et seq.*, for the reasons set forth therein, shall remain subject to the jurisdiction of the requirements of Chapter 46-23 *et seq.*, the RICRMP and this section.

(e) Nitrogen reducing technologies are alternative wastewater treatment systems which reduce total nitrogen concentrations by at least 50%. Total nitrogen reduction is the annual mean difference by percentage between total nitrogen concentrations in the effluent of the septic or primary settling tank and the concentrations taken at the end of the treatment zone as defined by the specific technology.

2. Policies and Regulations

(a) Subdivisions (as defined in Section 325 of the RICRMP) shall not exceed an average density of one residential unit per 80,000 square feet for Self-Sustaining Lands. For the purposes of this section, the allowable number of units in conformance with this standard shall be calculated on the basis of available land suitable for development. Land suitable for development shall be defined as the net total acreage of the parcel, lot or tract remaining after exclusion of the areas containing, or on which occur the following protected resources: coastal features as defined within RIGL Chapter 46-23 and/or the

CRMP Section 210; freshwater wetlands, as defined in the RIDEM Freshwater Wetlands Rules and Regulations, including the 50' Perimeter Wetland, and the CRMC *Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast*. The division of a tract, lot or parcel not subject to municipal regulation under the provisions of Chapter 45-23 *et seq.*, for the reasons set forth therein, shall remain subject to the jurisdiction of the requirements of Chapter 46-23 *et seq.*, the RICRMP and this section.

(b) The number of allowable units in a cluster shall be calculated on the basis of lands suitable for development within the subdivision as defined above in Section 920.1A.1.d and in accordance with all local ordinances.

(c) Any major land development project or any major subdivision of land (as defined in RIGL 45-23 *et seq.*) within Self-Sustaining Lands, occurring after December 8, 1986, must meet the minimum density requirement of one residential unit per 80,000 square feet. Relief from this regulation requires a Special Exception as defined in Section 130 of the RICRMP. Lands which were subdivided prior to December 8, 1986, and do not meet the CRMC density requirement as defined in Section 920.A.1, require a Variance as defined in Section 120 of the RICRMP.

(d) Nitrogen reducing technologies as defined in Section 920.1.A.1.e are required for any lands subdivided after April 12, 1999 that do not meet the CRMC density requirement (80,000 square feet) for activities within 200' of a coastal feature and all watershed activities as defined in Section 900.B.3 and 900.B.4. Relief from this regulation requires a Special Exception as defined in Section 130 of the RICRMP, unless the lands were subdivided prior to April 12, 1999 and cannot accommodate the requirement. A nitrogen reducing technology cannot be used as mitigation to increase dwelling densities on parcels which can support the density requirement.

(e) A minimum 200' setback from the Narrow River, its tributaries, and coastal wetlands, including tributary wetlands, is required for ~~ISDS~~ OWTS in Self Sustaining Lands for activities within 200' of a coastal feature and all watershed activities as defined in Section 900.B.3 and 900.B.4. Relief from this regulation requires a Special Exception as defined in Section 130 of the RICRMP, unless the lands were subdivided prior to April 12, 1999 and cannot accommodate the requirement.

(f) A 150' buffer zone from the Narrow River, its tributaries, and coastal wetlands, including tributary wetlands, is required for activities within 200' of a coastal feature and all watershed activities as defined in Section 900.B.3 and 900.B.4 in Self Sustaining Lands. Relief from this regulation requires a Special Exception as defined in Section 130 of the RICRMP, unless the lands were subdivided prior to December 8, 1986 and cannot accommodate the requirement.

(g) The installation of sewers is prohibited, unless all of the following conditions are met:

(i) the property meets the RIDEM regulatory ~~siting~~ requirements for the installation of a conventional ~~ISDS~~OWTS,

(ii) the proposal is agreeable to both the town and the CRMC,

(iii) a deed restriction is attached to the property ensuring no further subdivision, and

(iv) the properties to be sewered are within 500 feet of an existing sewer line or are within a subdivision which abuts the sewer easement.

(h) The Council recognizes that in areas abutting the Narrow River, its tributaries and other critical resource areas, existing nitrogen reducing technologies may not be sufficient to reduce groundwater nitrogen concentrations to levels which will prevent further eutrophication in the Narrow River. If new technology improves the nitrogen removal capability of these systems and new research indicates the need for further nitrogen removal, CRMC will reevaluate the need for increased nitrogen removal.

3. Recommendations

(a) Some lands, as presently zoned by the towns, may not meet the density requirements for Self Sustaining Lands (80,000 square feet) or Lands of Critical Concern (120,000 square feet). In such cases the CRMC will require the towns to be consistent with CRMC density requirements, where possible, during CRMC review of town zoning changes to the Comprehensive Plan.

(b) The Council recommends the use of cluster development as a means to preserve open space, agricultural lands and aesthetic qualities, reduce impervious surfaces and the costs of development, and minimize the environmental impacts of development.

(c) For activities outside CRMC jurisdiction but within the SAMP boundaries, CRMC strongly recommends that the towns adopt CRMC regulations for ~~ISDS~~ OWTS setbacks and nitrogen reducing technologies as identified in Table 9-1.

(d) The Council recommends the use of wastewater management districts and the protocols established in the Rhode Island Septic System Inspection Handbook for septic system inspection and pump-out to limit the occurrence of failed on-site sewage disposal systems.

## B. Lands of Critical Concern

1. Definitions

(a) Lands of Critical Concern are presently undeveloped or developed at densities of one residential unit per 120,000 square feet. These lands may be adjacent to or include one or more of the following:

- X sensitive areas of the Narrow River that are particularly susceptible to eutrophication and bacterial contamination;
- X overlie wellhead protection zones or aquifer recharge areas for existing or potential water supply wells;
- X areas designated as historical/archaeological sites;
- X open space;
- X areas where there is high erosion and runoff potential;
- X habitat for flora and fauna as identified through the Natural Heritage Program, large emergent wetland complexes, and U.S. Fish & Wildlife lands; and

X fisheries habitat.

(b) A tributary is any flowing body of water or watercourse which provides intermittent or perennial flow to tidal waters, coastal ponds, coastal wetlands or other down-gradient watercourses which eventually discharge to tidal waters, coastal ponds or coastal wetlands.

(c) Tributary wetlands are freshwater wetlands within the watershed that are connected via a watercourse to a coastal wetland and/or tidal waters.

(d) Land suitable for development shall be defined as the net total acreage of the parcel, lot or tract remaining after exclusion of the areas containing, or on which occur the following protected resources: coastal features as defined within RIGL Chapter 46-23 and/or the CRMP Section 210; freshwater wetlands, as defined in the RIDEM Freshwater Wetlands Rules and Regulations, including the 50' Perimeter Wetland, and the CRMC *Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast*, and lands to be developed as streets and roads shall also be excluded from the calculated acreage of developable land. The division of a tract, lot or parcel not subject to municipal regulation under the provisions of Chapter 45-23 *et seq.*, for the reasons set forth therein, shall remain subject to the jurisdiction of the requirements of Chapter 46-23 *et seq.*, the RICRMP and this section.

(e) Nitrogen reducing technologies are alternative wastewater treatment systems which reduce total nitrogen concentrations by at least 50%. Total nitrogen reduction is the annual mean difference by percentage between total nitrogen concentrations in the effluent of the septic or primary settling tank and the concentrations taken at the end of the treatment zone as defined by the specific technology.

2. Policies and Regulations

(a) Subdivisions (as defined in Section 325 of the RICRMP) shall not exceed an average density of one residential unit per 120,000 square feet for Lands of Critical Concern. For the purposes of this section, the allowable number of units in conformance with this standard shall be calculated on the basis of available land suitable for development. Land suitable for development shall be defined as the net total acreage of the parcel, lot or tract remaining after exclusion of the areas containing, or on which occur the following protected resources: coastal features as defined within RIGL Chapter 46-23 and/or the CRMP Section 210; freshwater wetlands, as defined in the RIDEM Freshwater Wetlands Rules and Regulations, including the 50' Perimeter Wetland, and the CRMC *Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast*. The division of a tract, lot or parcel not subject to municipal regulation under the provisions of Chapter 45-23 *et seq.*, for the reasons set forth therein, shall remain subject to the jurisdiction of the requirements of Chapter 46-23 *et seq.*, the RICRMP and this section.

(b) The number of allowable units in a cluster shall be calculated on the basis of lands suitable for development within the subdivision as defined above in Section 920.1.B.1.d and in accordance with all local ordinances.

(c) Any major land development project or any major subdivision of land (as defined in

RIGL § 45-23-25 et seq.) within Lands of Critical Concern, occurring after April 12, 1999, must meet the minimum density requirement of one residential unit per 120,000 square feet. Relief from this regulation requires a Special Exception as defined in Section 130 of the RICRMP. Lands which were subdivided prior to April 12, 1999, and do not meet the CRMC density requirement as defined in Section 920.A.1, require a Variance as defined in Section 120 of the RICRMP.

(d) Nitrogen reducing technologies as defined in Section 920.1.A.1.e are required for any lands subdivided after April 12, 1999 that do not meet the CRMC density requirement for Lands of Critical Concern (120,000 square feet) for activities within 200' of a coastal feature and all watershed activities as defined in Section 900.B.3 and 900.B.4. Relief from this regulation requires a Special Exception as defined in Section 130 of the RICRMP, unless the lands were subdivided prior to April 12, 1999 and cannot accommodate the requirement. A nitrogen reducing technology cannot be used as mitigation to increase dwelling densities on parcels which can support the density requirement.

(e) Lands of Critical Concern which are also zoned for 80,000 square feet by municipal zoning regulations, may be developed at densities of one residential unit per 80,000 square feet only if a nitrogen reducing technology is used as the method of sewage removal. [In the event that a property has frontage on a sewer line then hooking up to the sewer will be mandatory].

(f) A minimum 225' setback from the Narrow River, its tributaries, and coastal wetlands, including tributary wetlands, is required for ~~ISDS~~ OWTS in Lands of Critical Concern for activities within 200' of a coastal feature and all watershed activities as defined in Section 900.B.3 and 900.B.4. Relief from this regulation requires a Special Exception as defined in Section 130 of the RICRMP, unless the lands were subdivided prior to April 12, 1999 and cannot accommodate the requirement.

(g) A 200' buffer zone from the Narrow River, its tributaries, and coastal wetlands, including tributary wetlands, is required for all development activities within 200' of a coastal feature and all watershed activities as defined in Section 900.B.3 and 900.B.4 in Lands of Critical Concern. Relief from this regulation requires a Special Exception as defined in Section 130 of the RICRMP, unless the lands were subdivided prior to April 12, 1999 and cannot accommodate the requirement.

1. New individual or community docks are prohibited.

(h) The installation of sewers is prohibited, unless all of the following conditions are met:

(i) the property meets the RIDEM regulatory ~~siting~~ requirements for the installation of a conventional onsite sewage disposal system,

(ii) the proposal is agreeable to both the town and the CRMC,

(iii) a deed restriction is attached to the property ensuring no further subdivision; and

(iv) the properties to be sewered are within 500 feet of an existing sewer line or are within a subdivision which abuts the sewer easement.

(i) The Council recognizes that in areas abutting the Narrow River, its tributaries and other critical resource areas, existing nitrogen reducing technologies may not be

sufficient to reduce groundwater nitrogen concentrations to levels which will prevent further eutrophication in the Narrow River. If new technology improves the nitrogen removal capability of these systems and new research indicates the need for further nitrogen removal, CRMC will reevaluate the need for increased nitrogen removal.

3. Recommendations

(a) Some lands, as presently zoned by the towns, may not meet the density requirements for Lands of Critical Concern (120,000 square feet). In such cases the CRMC strongly encourages the towns to amend zoning in these areas to meet the density requirements.

(b) The Council recommends the use of cluster development as a means to preserve open space, agricultural lands and aesthetic qualities, reduce impervious surfaces and the costs of development, and minimize the environmental impacts of development.

(c) Lands of Critical Concern should be priority areas for additional measures to minimize pollution loadings from development through municipal, state or federal acquisition for open space and conservation easements and/or tax relief and aquifer protection ordinances.

(d) For activities outside CRMC jurisdiction but within the SAMP boundaries, CRMC strongly recommends that the towns adopt CRMC regulations for ~~ISDS~~ OWTS setbacks and nitrogen reducing technologies as identified in Table 9-1.

## C. Lands Developed Beyond Carrying Capacity

1. Definitions

(a) Lands Developed Beyond Carrying Capacity are developed at densities of one residential or commercial unit on parcels of less than 80,000 square feet, and frequently at higher densities of 10,000 square feet or 20,000 square feet. Intense development associated with Lands Developed Beyond Carrying Capacity is the result of poor land use planning and predates the formation of the Council. High nutrient loadings and contaminated runoff waters from dense development have resulted in a high incidence of polluted wells and increased evidence of eutrophic conditions and bacterial contamination in the Narrow River. Most of the ~~ISDS~~ OWTS in these areas predate RIDEM regulations pertaining to design and siting standards, and have exceeded their expected life span.

(b) A tributary is any flowing body of water or watercourse which provides intermittent or perennial flow to tidal waters, coastal ponds, coastal wetlands or other down-gradient watercourses which eventually discharge to tidal waters, coastal ponds or coastal wetlands.

(c) Tributary wetlands are freshwater wetlands within the watershed that are connected via a watercourse to a coastal wetland and/or tidal waters.

(d) Land suitable for development shall be defined as the net total acreage of the parcel, lot or tract remaining after exclusion of the areas containing, or on which occur the following protected resources: coastal features as defined within RIGL Chapter 46-23 and/or the CRMP Section 210; freshwater wetlands, as defined in the RIDEM Freshwater

Wetlands Rules and Regulations, including the 50' Perimeter Wetland, and the CRMC *Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast*, and lands to be developed as streets and roads shall also be excluded from the calculated acreage of developable land. The division of a tract, lot or parcel not subject to municipal regulation under the provisions of Chapter 45-23 *et seq.*, for the reasons set forth therein, shall remain subject to the jurisdiction of the requirements of Chapter 46-23 *et seq.*, the RICRMP and this section.

(e) Nitrogen reducing technologies are alternative wastewater treatment systems which reduce total nitrogen concentrations by at least 50%. Total nitrogen reduction is the annual mean difference by percentage between total nitrogen concentrations in the effluent of the septic or primary settling tank and the concentrations taken at the end of the treatment zone as defined by the specific technology.

2. Policies and Regulations

(a) Nitrogen reducing technologies as defined in Section 920.1.C.1.e are required for all new installations or replacement of existing ~~ISDS~~ OWTS for activities within 200' of a coastal feature and all watershed activities as defined in Section 900.B.3 and 900.B.4 in Lands Developed Beyond Carrying Capacity. Relief from this regulation requires a Special Exception as defined in Section 130 of the RICRMP, unless the lands were subdivided prior to April 12, 1999 and cannot accommodate the requirement.

(b) Regular maintenance and, when necessary, the upgrading of ~~ISDS~~OWTS are of the highest priority in unsewered densely developed areas.

(c) For existing development, buffer zones along the perimeter of Narrow River, tributaries and tributary wetlands, and other shoreline features shall be required in accordance with Section 150 of the RICRMP, as amended. For new development, buffers shall be an absolute minimum of 25' in width. Variances to the buffer standard shall be consistent with CRMC density requirements, where possible, during CRMC review of town zoning changes to the Comprehensive plan.

(d) The Council recognizes that in areas abutting the Narrow River, its tributaries and other critical resource areas, existing nitrogen reducing technologies may not be sufficient to reduce groundwater nitrogen concentrations to levels which will prevent further eutrophication in the Narrow River. If new technology improves the nitrogen removal capability of these systems and new research indicates the need for further nitrogen removal, CRMC will reevaluate the need for increased nitrogen removal.

3. Recommendations

(a) Undeveloped property within this land use designation should be developed at densities consistent with current town zoning requirements for the area in which the property is located.

(b) For activities outside CRMC jurisdiction but within the SAMP boundaries, CRMC strongly recommends that the towns adopt CRMC regulations for nitrogen reducing technologies as identified in Table 9-1.

## D. Research Needs

1. There needs to be an evaluation of the impacts to the Narrow River from transporting water from aquifers outside the watershed, specifically how it affects flushing in the estuary.

2. There is considerable concern at the town and public levels to address the existing impacts of stormwater runoff to the Narrow River. One issue which needs to be investigated is the removal or best management of stormwater pipes entering the Narrow River.

3. The URI Watershed Watch program sampling data is a vital source of information for the CRMC and RIDEM. Since the state only samples for bacterial contamination, expanding URI Watershed Watch sampling for all the species of nitrogen (inorganic - nitrate, nitrite, ammonia, and organic), and phosphorus (inorganic and organic) is necessary to assess water quality trends. There is little documentation of the impacts of waterfowl on bacteria levels in the Narrow River. URI Watershed Watch volunteers should also record the number of waterfowl present at the time of sampling for bacteria.

4. The Town of South Kingstown recently had their parcel maps digitized and the data put into a geographic information system. CRMC will be using this data to overlay the Land Use Classification Maps and provide more accurate data to homeowners and developers about which category their property falls under (i.e., Lands of Critical Concern, Self-Sustaining Lands, or Lands Developed Beyond Carrying Capacity). The Towns of Narragansett and North Kingstown should also develop parcel map databases so that CRMC can utilize this information in the SAMP.

5. Some of the data from the RIGIS database is now ten years old (i.e., land use). As the RIGIS database is updated, the SAMPs should be amended to reflect the most recent information available about wetlands, land use, open space, etc.

6. A homeowner survey of fertilizer use and an educational program about appropriate fertilizer use in the Narrow River watershed would give managers a better understanding of the sources of nitrogen entering the Narrow River. Presently, estimates of nitrogen loading from home fertilizer use are based on research by Gold et al. (1990) (3.8 kg/acre) for the SAMP and Eichner and Cambareri (1991) (1.36 kg/1000ft$^2$) for the Narrow River Stormwater Study (ASA 1995).

7. Recreational use of the Narrow River is increasing with more motorboats, kyakers, windsurfers etc. Although the towns have provisions for proper boat handling on the Narrow River, there needs to be an assessment of the impacts of boating on water quality, wildlife, erosion and submerged aquatic vegetation.

8. The data necessary to determine groundwater flow direction throughout the watershed of the Narrow River should be collected and a groundwatershed map of the Narrow River completed.

9. The watershed boundary around Silver Lake in South Kingstown needs to be identified as part of the Narrow River watershed or Point Judith Pond. Groundwater flow data will need to be collected around the pond to complete the analysis.

Figure 9-1. Land Use Classification System for the Town of Narragansett.

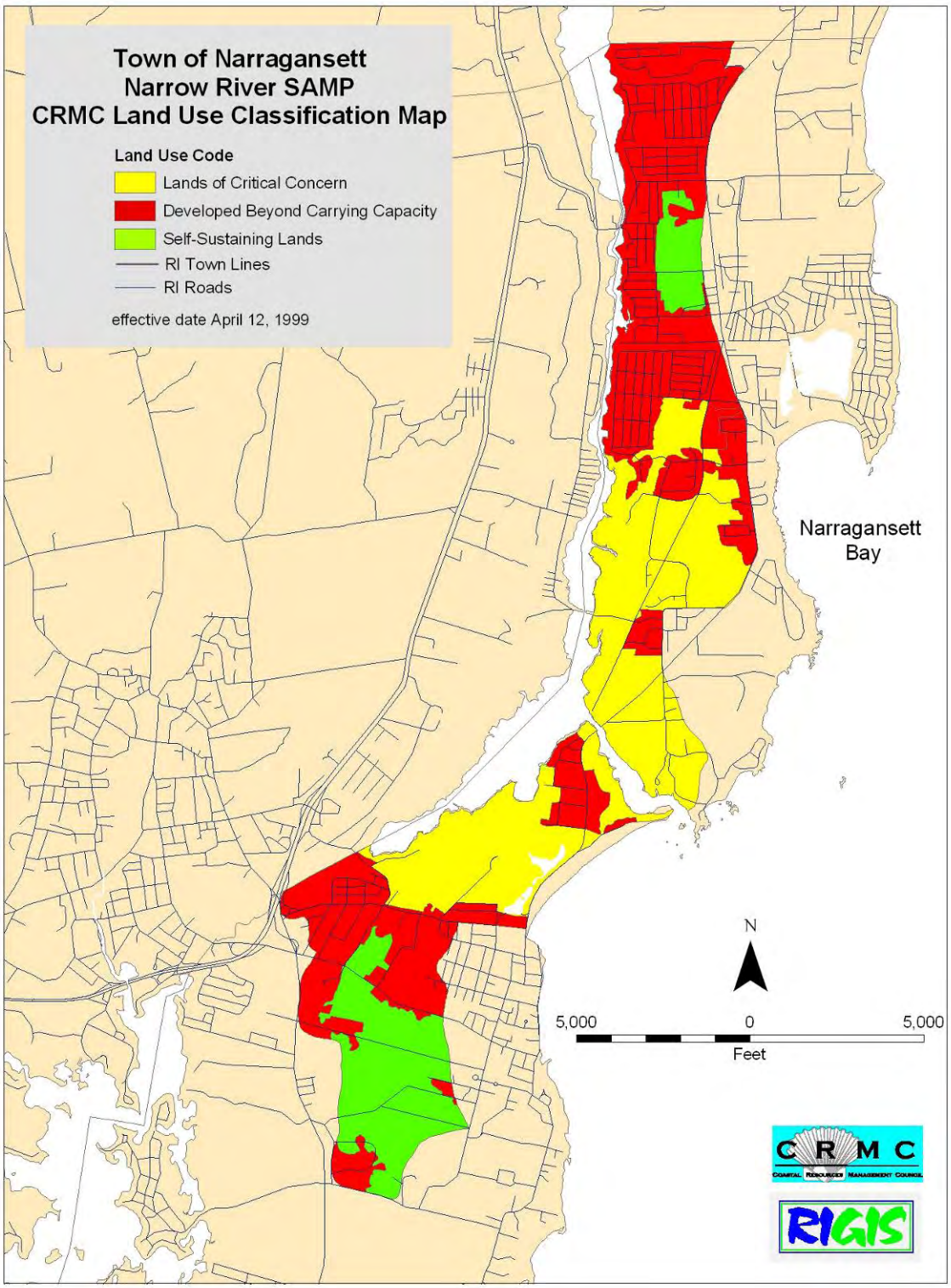


Figure 9-2. Land Use Classification System for the Town of South Kingstown.

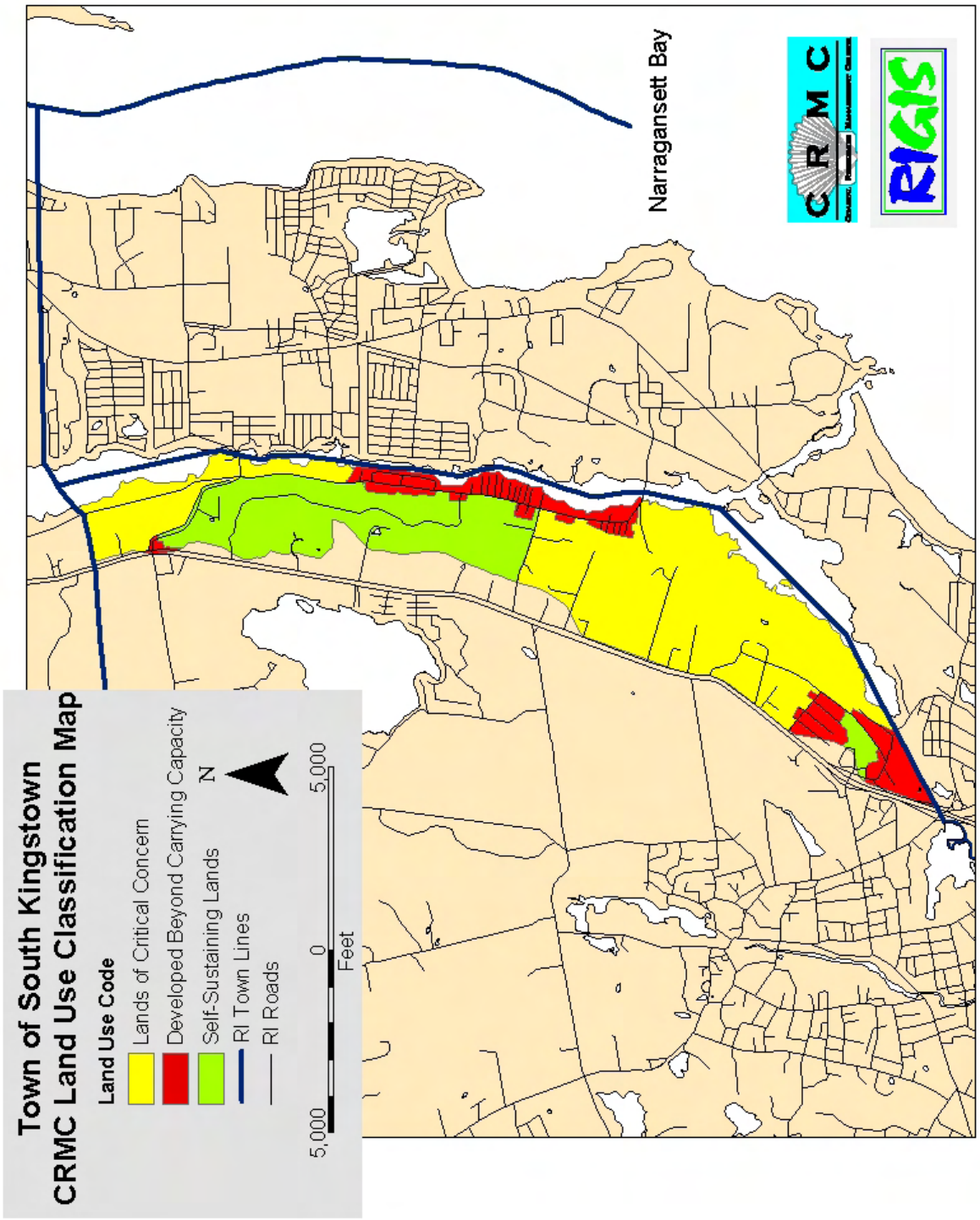
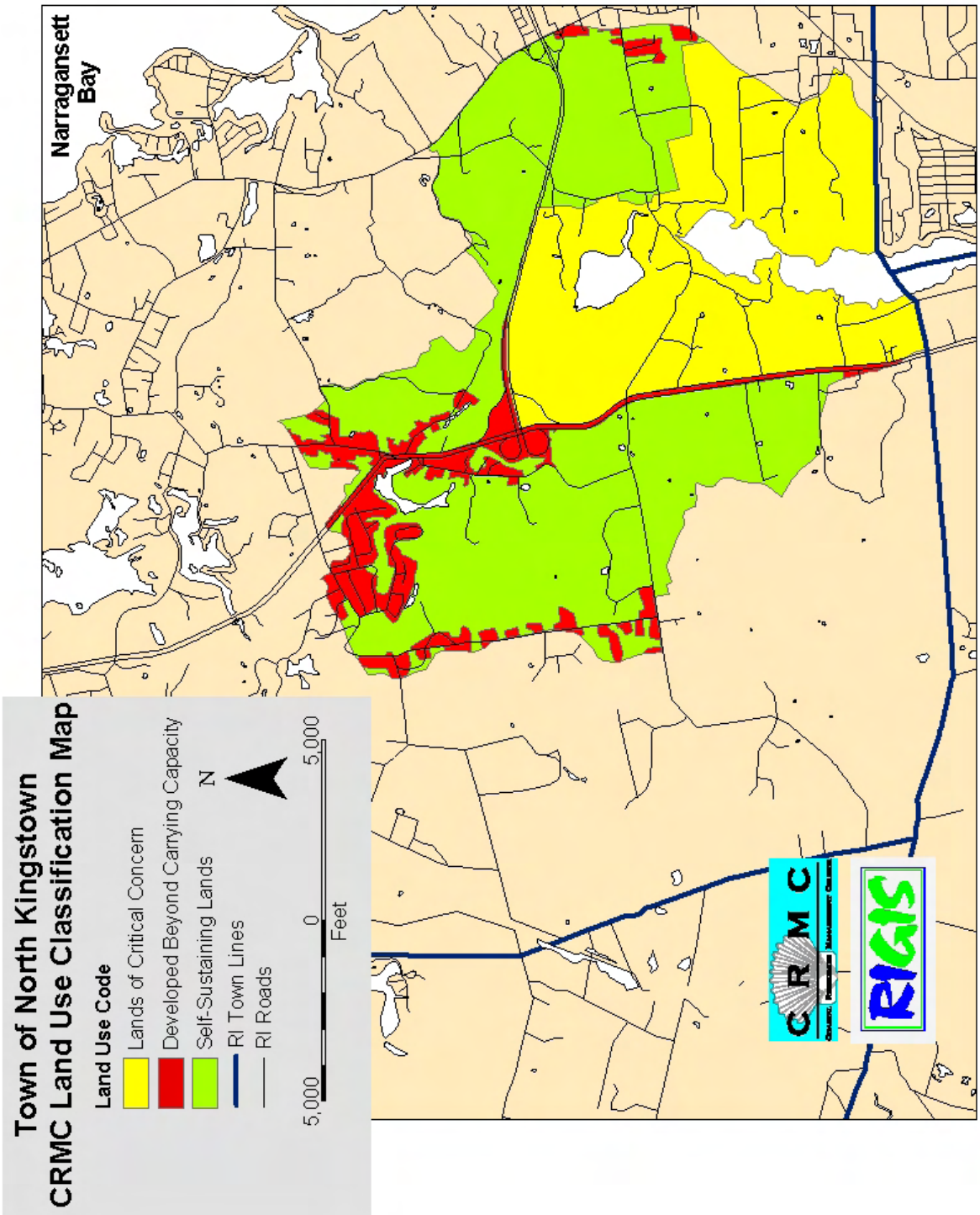


Figure 9-3. Land Use Classification System for the Town of North Kingstown.



## 920.2 Watershed Controls for Septic System Management

### A. Introduction

1. The concurrent pressures from existing ~~ISDS~~OWTS failure concentrations and increasing residential development have reached a critical point within the Narrow River watershed. There exists a need within the watershed, particularly in South Kingstown and Narragansett, to formulate a comprehensive wastewater management plan which will schedule and outline the actions necessary to address the wastewater treatment and disposal problems within the watershed.

### B. Policies

1. On an indefinite basis, it shall be the policy of the CRMC that the extension of sewer lines to those areas classified as Lands Developed Beyond Carrying Capacity will take priority over the construction or extension of private, municipal, or industrial sewage facilities or systems, conduits or interceptors to other areas of the watershed.

2. The extension of sewer lines shall follow the priorities outlined in Section 320.1.C.

### C. Recommendations

1. A regional wastewater management plan should be undertaken on a cooperative basis by the municipalities, the RIDEM, the Department of Health, and the CRMC and should address, at a minimum, the following items:

(a) The future reserve and expansion capacity of South Kingstown's Westmoreland Treatment Plant;

(b) The identification of areas that require sewer service and a schedule for their installation with priority consideration given to areas with concentrations of failed ~~ISDS~~OWTS;

(c) A watershed wide ~~ISDS~~OWTS maintenance program including regular mandatory pumping;

(d) The identification and phased replacement of individual failed units;

(e) The application of the Sewerage and Water Supply Failure Fund moneys towards these programs; and

(f) The development of programs to educate local residents about the use and maintenance of ~~ISDS~~OWTS systems. Coordination with Save the Bay workshops as well as to take advantage of ongoing University of Rhode Island Cooperative Extension Service programs aimed at homeowners on this topic may be useful.

2. Until such time as the areas prioritized for extension of sewer lines are serviced by these lines, and in all those areas not prioritized for sewer service, the towns should undertake a program to support regular maintenance of ~~ISDS~~OWTS within the watershed. The septic maintenance program should include, as a minimum, the following:

(a) ~~ISDS~~OWTS should be pumped every 3 years as recommended by the Rhode Island Division of Planning (1979);

(b) Funds for a maintenance program should be investigated and may be appropriated through:

i) The Sewage and Water Supply Failure Fund;

ii) Municipal bond issues.

(c) Septic tank pumpers should be responsible for reporting to the office designated by each town those septic tanks not able to be pumped, or requiring pumping more than 3 times per year;

(d) As an incentive to eliminate chronic ~~ISDS~~OWTS problems and to protect future homeowners, all ~~ISDS~~OWTS should be inspected upon transfer of property, and information pertaining to failed ~~ISDS~~OWTS or violations of state ~~ISDS~~OWTS regulations should be recorded on property deeds until such time as they are corrected.

3. Through the use of regular maintenance, or pumping, the life span of an ~~ISDS~~OWTS, its effectiveness in treating waste, and protection for groundwater, can be increased. Homeowners should be educated on how their wastes are being treated, the importance of regular pumping, and what preventative measures can be applied to alleviate future problems. Suggested measures include:

(a) water conservation practices;

(b) discouragement of garbage disposals;

(c) avoidance of disposal of greases and oils into household drains;

(d) proper disposal of chemical wastes (paints, thinners, alcohol, acids, drain cleaners, etc);

(e) separate drain fields for washing machine discharges;

(f) planning for alternate sites in the event of primary site failure;

(g) resting part of the leach field system periodically through design or installation of alternate beds.

4. The Council recommends the use of wastewater management districts and the protocols established in the Rhode Island Septic System Inspection Handbook for septic system inspection and pump-out to limit the occurrence of failed on-site sewage disposal systems.

## 920.3 Watershed Controls for Erosion and Sedimentation

### A. Definition

1. Erosion and sediment control refers to the prevention, control, and management of soil loss due to wind and water, caused by alterations to vegetation and soil surfaces within the Narrow River watershed.

### B. Management Policies and Regulations

1. It shall be the policy of the CRMC to prevent adverse environmental impacts to the Narrow River watershed due to erosion, soil loss, and sedimentation, including secondary and cumulative as well as direct impacts. CRMC will require that applicants strictly adhere to the regulations under Section 300.2 of the RICRMP for Filling, Removing, or Grading of Shoreline Features, Section 300.6 of the RICRMP for Treatment of Sewage and Stormwater and the most recent version of the Rhode Island Soil, Erosion and Sediment Control Handbook published jointly by the Rhode Island Department of Environmental Management and the U.S. Department of Agriculture, Soil Conservation Service.

## 920.4 Control of Pollution from Storage Tanks

1. Definitions

   (a) Underground Storage Tanks (UST) include any one or more underground tanks and their associated components, including piping, used to contain an accumulation of petroleum product or hazardous material.

2. Policies and Regulations

   (a) Except for propane and compressed natural gas, burial of domestic USTs is prohibited in the Narrow River watershed.

   (b) Commercial USTs must meet all current state standards and applicants must apply for a CRMC permit. Applicants must demonstrate an adequate construction design and means for monitoring for leakage, and shall replace all leaking tanks according to RIDEM regulations.

3. Recommendations

   (a) CRMC recommends that homeowner's close their petroleum USTs by contacting RIDEM and following the proper procedures as indicated in the RIDEM UST regulations.

## 920.5 Oil Spill Contingency

### A. Policies

1. Oil spills shall be treated as outlined in the Rhode Island Oil Spill Contingency Guide (RIDEM, 1980). It is further recommended, in the event of a nearshore spill that poses a threat to the Narrow River that efforts should be focused on impeding oil flow into the Narrows and subsequently into the lower reaches of the estuary. An oil boom should be placed as close to the seaward mouth of the estuary as permitted by currents. If oil should enter the lower reaches, attempts should be made to deflect the oil away from the sensitive salt marshes surrounding the cove through the use of strategic boom deployment. Diversion should be upstream, where fringing marshes are not as expansive, and where the close confines of the Narrow River may facilitate clean-up activities.

## 920.6 Community Participation

### A. Community Education

1. Educating the community as to sources of pollution, mechanisms by which pollutants enter the Narrow River, and the degrading effect on water quality can enlighten and encourage participation in clean-up activities. Such clean-up activities may entail individual mitigation efforts, i.e., minimizing chemical fertilizer applications, cisterns for catching rainwater, roof gutters, maintaining septic systems, and water conservation techniques.

2. Various methods for community education may include distribution of pamphlets, seminars and/or workshops, radio or television advertisements, video tapes, and local newspaper columns.

### B. Monitoring Activities

1. Watershed Watch, a citizen volunteer monitoring program coordinated by the University of Rhode Island Department of Natural Resource Sciences, was initiated in the Narrow River watershed during 1992 and has been in operation through 1997. The data collected by monitoring volunteers provides valuable data on the condition of the resource and the quality of the waters within the watershed. Watershed communities should continue to support these efforts with the intent of long-term monitoring so that trends will become apparent as the data are continually collected. Determination of trends will assist in assessing the changes and impacts in the resources as the watershed is further developed and the policies and regulations developed in this plan are implemented. Monitoring data will assist in determining new areas of focus for future planning endeavors, as well as point to successful policies that have assisted in the maintenance, preservation, and protection of this unique Rhode Island resource.

### 920.7 Future Research

**A. The CRMC recognizes that further research is needed to help protect the Narrow River and estuary. As funding becomes available, the research needs listed below are recommended:**

1. Detailed analysis of bottom sediment distribution, composition, and transport dynamics should be encouraged. These studies provide insight as to processes affecting shellfish and other bottom dwelling organisms. Sediment transport studies are also used in determining locations of erosion and/or deposition.

2. Groundwater data are scarce in the watershed. Focus should be placed on determining the status of groundwater in the watershed in terms of quality and quantity. Flow patterns have not yet been delineated but should be for purposes of determining contaminant transport and pathways.

3. Little is known about the freshwater system in the northern region of the watershed. Water quality testing should be extended into the Mettatuxet River and in Silver Spring Lake. Hydrodynamic and sediment transport studies would be extremely beneficial.

## 930. Geologic Processes

### 930.1 Dredging Navigation Channels and Basins

**A. Policies**

1. All applications for dredging in the Narrow River watershed shall be consistent with the policies and standards contained in section 300.9 and all other applicable sections of the RICRMP.

2. Dredging to support existing recreational use is permitted under the CRMP but dredging for new recreational uses is prohibited.

3. The Council shall only support dredging projects that maintain the existing level of recreational use within the Narrow River.

4. Dredging by town or state agencies is permitted for the following:

> (a) Dredging of the flood-tidal delta at the entrance to the Narrows; sand to be placed on Narragansett Town Beach;
>
> (b) Dredging of the flood-tidal delta associated with Middle Bridge for navigational reasons to maintain current recreational watercraft uses, and for safety in those multiple uses; sand to be placed on Narragansett Town Beach.

(c) Dredging of a navigational channel from the inlet to Middle Bridge may be considered if it can be demonstrated that the habitat of the winter flounder south of Middle Bridge, and the waterfowl habitat of northern Pettaquamscutt Cove, is not degraded.

5. Dredging of the major flood-tidal delta system between Sprague and Middle Bridges may be considered if it can be demonstrated that flushing north of Middle Bridge is enhanced, and the habitat of northern Pettasquamscutt Cove is not degraded.

6. A dredging/maintenance plan is required for all proposed dredging operations (see Standards Section 420.C).

7. Due to the multiple and conflicting uses of the Narrow River and the current riverbank and salt marsh erosion from boat wakes, personal watercraft and waterskiing, and the likelihood that dredging may well increase these problems, a boating safety plan including speed limits and wake restrictions shall be presented in conjunction with any dredging project.

8. The CRMC favors the use of qualified dredge material for beach replenishment projects. Dredge applications for the Narrow River should consider the use of the material as beach replenishment for the Narragansett Town Beach.

9. The Council shall determine if a proposed dredging project constitutes maintenance of an existing level of use, or if it is improvement dredging.

**B. Prohibitions**

1. Dredging and disposal activities by private citizens or groups for docking areas, launching ramps, mooring areas, or similar uses and activities, are prohibited in the Narrow River and its watershed.

2. Dredging which will likely intensify recreational watercraft usage is prohibited.

3. Dredging is prohibited without an appropriate maintenance plan in place (see section on "Standards" below for maintenance plan requirements).

4. Disposal of foreign dredged material (RICRMP, Section 300.9) is prohibited on the shoreline, wetlands and buffer zones of the watershed, unless a Council-approved program of wetland building or beach replenishment has been established. Subaqueous dumping of dredged material is also prohibited in the Narrow River.

**C. Standards**

1. All dredging activities shall be conducted in accordance with the standards contained in the RICRMP section 300.9 and all other applicable sections of the RICRMP.

2. A dredge/maintenance plan put forth by a federal, state or municipal agency must clearly describe:

(a) location of project (limited to identified tidal deltas or a navigational channel);

(b) dredging specifics, such as amount of material, construction acres and methods, dewatering requirements, transportation requirements, disposal site;

(c) habitat and circulation impacts on the species that utilize the Narrow River, and on the Narrow River itself

(d) maintenance of dredge area ;

(e) measures to reduce impacts and, where appropriate restore or improve habitat and water quality;

(f) any created, permanent well marked channel, wake restrictions and speed limits if a channel is to be identified (as close as possible to existing use area) and dredged (refer to the requirements of RICRMP Section 300.9).

3. Dredging will only be allowed to minimal dimensions necessary to support the demonstrated previous level of use.

### 930.2 Roads, Bridges and Highways

### A. Policies

1. All road, highway and bridge construction, reconstruction and relocation projects within the Narrow River watershed require a permit from the CRMC.

2. The CRMC supports limited widening of the opening of Middle Bridge to ease boating safety concerns and to retard sedimentation north or the bridge, if it can be demonstrated that fish and wildlife habitat (especially winter flounder habitat south of the bridge on the western side) would not be adversely affected.

3. Best management practices in accordance with the most recent version of the RI Stormwater Design and Installations Standards Manual must be followed for drainage improvements so that direct runoff of pollutants and contaminants into the upper tributaries of the watershed and into Narrow River are mitigated (see RICRMP Section 300.6 for information and requirements).

4. All structural and mechanical alterations proposed within the watershed shall include in their environmental considerations the aesthetic value of the region and the project's likely impact to it.

5. The regulatory process shall include the input of organizations other than state agencies for identify resource areas of significance.

6. All road, highway and bridge construction, reconstruction and relocation projects shall, to the maximum extent possible:

(a) protect areas that provide important water quality benefits or are particularly susceptible to erosion or sediment loss;

(b) limit land disturbance such as clearing and grading and cut and fill to reduce erosion and sediment loss; and

(c) limit disturbance of natural drainage features and vegetation.

7. All applications for road, highway and bridge construction, reconstruction and relocation projects within the Narrow River watershed shall include an erosion and sediment control plan in accordance with the most recent version of the Rhode Island Soil Erosion and Sediment Control Manual.

8. In cases where chemicals are present on site for road, highway or bridge projects, applicants shall:

(a) limit the application, generation, and migration of toxic substances;

(b) ensure the proper storage and disposal of toxic materials; and

(c) apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface waters.

## 940. Living Resources and Critical Habitats

### A. Definitions

1. Tributary wetlands are freshwater wetlands within the watershed that are connected via a watercourse to a coastal wetland and/or tidal waters.

2. A tributary is any flowing body of water or watercourse which provides intermittent or perennial flow to tidal waters, coastal ponds, coastal wetlands or other down-gradient watercourses which eventually discharge to tidal waters, coastal ponds or coastal wetlands.

### B. Regulations and Policies

1. It is CRMC policy to consider the trends and status of fish and wildlife species including their habitat within the watershed when making decisions about development and recreational uses.

2. Winter flounder spawning grounds shall not be disturbed during the December-May spawning season.

3. All shellfish areas within the Narrow River are shellfish management areas and as such, are a high priority for protection.

4. The Rhode Island Natural Heritage Program must be consulted by the applicant if the project falls within a critical habitat as designated on Figure 9-4. If a species is listed on the RIDEM rare and endangered list, the federal list, or both, RIHPC will be contacted to provide stipulations, recommendations and/or comments to the CRMC before the Council issues a decision.

5. Wetland restoration projects within the watershed are strongly recommended to maintain and improve the health and viability of the wildlife and finfish populations of the ponds.

6. It is the Council's policy to manage and protect submerged aquatic vegetation (SAV) from loss and degradation. Section 300.18 of the RICRMP should be referred to for requirements on surveys and avoidance requirements.

7. The black duck is targeted through the North American Waterfowl Plan and RIDEM Fish and Wildlife Species as a high priority species for conservation. This species and its vegetated habitat therefore have a high priority for protection by the Council.

8. The Council shall consider project impacts on waterfowl species including their habitat and nutritional resources such as vegetation, shellfish, and fish.

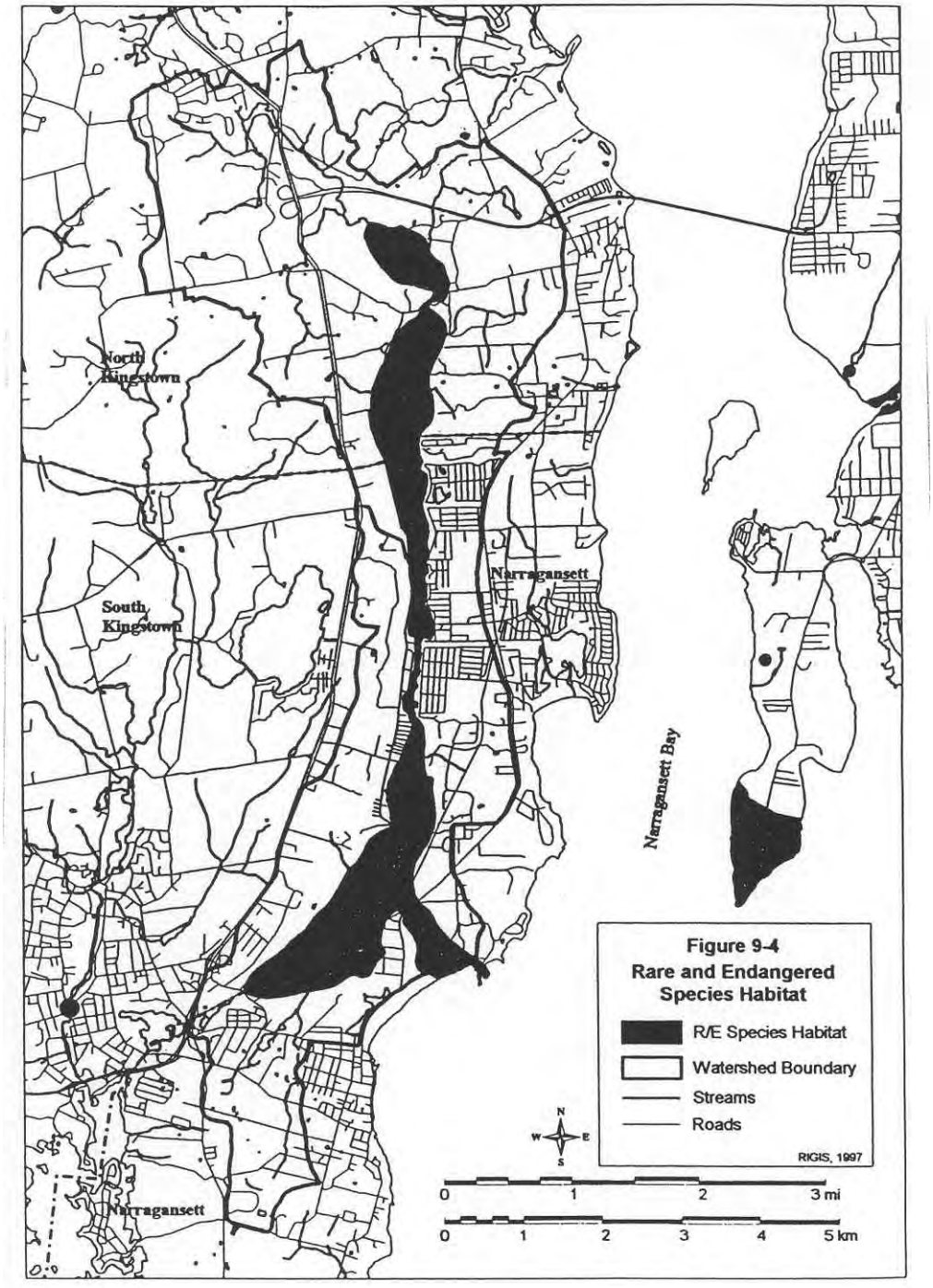
9. Limited *Phragmites australis* control programs may be approved by the Council in areas that have degraded due to invasion.

10. Buffer zones will be the maximum width under the CRMP Section 150 in areas that abut Gilbert Stuart Stream to protect anadromous fish runs.

11. CRMC encourages conservation easements to be held by towns, and such organizations/agencies as land trusts, the Nature Conservancy, and the Audubon Society. Additionally, conservation easements may be granted to the CRMC directly.

12. The CRMC encourages the appropriation of such monies by the individual towns, local communities, private land trusts, conservation groups, and the Nature Conservancy for the preservation of lands in the Narrow River watershed. Priorities for acquisition and preservation should include those lands which support rare, uncommon or endangered species, in addition to wetlands, banks and slopes, and significant cultural resources located along the Narrow River's edge.

Figure 9-4. Rare and Endangered Species Habitat.



**C. Prohibitions**

1. Filling, removing, or grading (RICRMP, Section 300.2) is prohibited on any wetland in the Narrow River watershed. For the purposes of this section, wetlands shall include coastal wetlands (RICRMP, Section 210.3) and all other wetlands subject to the Rhode Island Freshwater Wetlands Act (RIFWWA) that are located in the Narrow River watershed. However, the following exceptions may be permitted by the Council:

(a) The fifty (50) foot wetland perimeter and river bank wetland areas outside the wetland "edge" (RIFWWA, Section 2-1-20 (d) and (g)) shall not be considered part of the wetland under this section.

(b) Filling, removing, or grading of freshwater wetlands within the Narrow River Watershed, excluding areas regulated as coastal wetlands (RICRMP, Section 210.3) may receive relief from this prohibition in instances where filling is required to gain access to otherwise buildable land and when no other reasonable alternatives ~~for~~ to gain access exist and when the applicant has satisfied the variance burdens of proof set forth in Section 120 of the RICRMP. Buildable land shall be defined as a land area which satisfies all federal, state, and municipal requirements for the intended development, including ~~. To be defined as buildable land, the intended development must also satisfy~~ the pertinent requirements in the Narrow River SAMP, and meet all of the Department of Environmental Management's regulations and requirements for ~~ISDS~~ OWTS in "Critical Resource Areas~~.~~" unless a sewer line is available to provide service to the parcel. Unless otherwise located within Lands Developed Beyond Carrying Capacity any proposed sewer lines must comply with the requirements of Section 920.1.A.2(g) or Section 920.1.B.2(h) as applicable herein. In cases where the Council approves filling of a freshwater wetland in the Narrow River Watershed in order to access otherwise buildable land, the applicant shall be subject to the following requirements: a) The applicant shall be required to mitigate the area of wetland lost on a 1 to 1.5 area basis; b) the wetland that is replaced shall be consistent with that which is filled; c) the mitigation shall take place on-site and in an area which is hydrologically connected to the impacted wetland; d) setback and buffer requirements shall be required for the wetland replacement area; e) enhancement of existing wetland shall not be an acceptable form of mitigation under this section; f) all wetland replacement projects will require the approval of the Rhode island Department of Environmental Management, Division of Freshwater Wetlands or the CRMC pursuant to its *Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast*; and g) the applicant shall concurrently submit applications to the RIDEM and to the CRMC, when applicable, so that a concurrent review of the proposed activities can occur.

2. All alterations within the setback and buffer zone requirements established in accordance with Sections 920.1.A.2(e), 920.1.A.2(f), 920.1.B.2(f), and 920.1.B.2(g) are prohibited with the exception of:

(a) Minor filling, removing and grading activities within setback areas (but not buffer zones) typically involving 10 cubic yards or less of material.

(b) Minor alterations of Buffer Zones associated with Buffer Zone Management activities consistent with CRMC's most recent Buffer Zone Management Guidance.

(c) The construction of driveways and/or roadways to provide access to buildable land where no other environmentally suitable alternative is available. Buildable land shall be defined as ~~a land area which satisfies all federal, state, and municipal requirements for the intended development. To be defined as buildable land, the intended development must also satisfy the requirements in the Narrow River SAMP and meet all of the Department of Environmental Management's regulations and requirements for ISDS in "Critical Resources Areas".~~in Section 940.C.1(b) above.

(d) The Council shall encourage replacement of buffer zone areas lost to provide access as set forth in (c) in other suitable areas of the project.

3. Dredging is prohibited in winter flounder areas during spawning season and if anadromous fish restoration projects are ongoing.

**D. Standards**

1. Excavation of any mudflats or other inter- or sub-tidal sediments requires consultation with RIDEM Fish and Wildlife, Marine Fisheries section.

2. Prior to any dredging project the applicant may be required to remove any shellfish present in the sediments and transplant them to a RIDEM/CRMC approved site. Appropriate sites include RIDEM spawner sanctuaries or sites deemed appropriate by Marine Fisheries Council or RIDEM Fish and Wildlife and CRMC.

3. Buffer zones shall be established according to the policies and standards of the CRMP, Section 150. The SAMP buffer widths supersede those contained in Table 2A of the CRMP. Buffer zones shall be contiguous to the most inland edge of the coastal habitat of concern. The width of the buffer shall be not less than 200 feet in those lands classified as Lands of Critical Concern and not less than 150 feet for those lands which abut tributaries or tributary wetlands in Self-Sustaining Lands. When the feature is a tributary wetland, the buffer width shall be measured from the inland edge of the tributary wetland.

**E. Recommendations**

1. Fisheries Steward. One or more Narrow River fisheries stewards should be hired and charged with the following responsibilities:

(a) Monitor Narrow River fisheries resources and fishing effort, particularly in areas known to be productive. The assistance of volunteer monitoring groups like the URI Watershed Watch volunteers and university researchers should be encouraged.

(b) Select small areas known for shellfish (quahaugs and softshell clams) productivity and intensively manage growth and harvest to insure a continued recreational fishery through seeding, predator control, controlled fishing effort, and

special regulations for softshell clams harvested from these areas. A major purpose of such initiatives is to demonstrate the potential of such areas to produce sustained annual harvests if the public cooperates.

(c) Assist in the development of public education programs on the Narrow River and their fisheries. This is an appropriate project for academics, nonprofits, and volunteer groups. Much of this effort is on-going, however, funding limits the effectiveness of these programs.

(d) Identify major issues for future research and monitoring by the RIDEM and/or university researchers.

(e) Prepare annual reports on the conditions of the Narrow River and fisheries, activities undertaken and accomplished, and priorities for the following year. This report would be presented to the Rhode Island Marine Fisheries Council, funding agencies and the public.

2. Educational programs to inform the general public as to the function of the different habitats (wetlands, aquatic and open water, terrestrial) and their value to society should be initiated. These programs should be aimed at community residents and local elementary and secondary schools. Emphasis at the community level should be placed on how land gifts and dedications, conservation easements, and special registration of unique amenities found on private properties will serve to protect critical habitats.

3. Researching the connection between fish and their habitat is essential to the management of the Narrow River species. The RIDEM Division of Fish and Wildlife should make this a priority in future research initiatives.

### F. Research Needs

1. Identify degraded and previously altered wetlands for restoration activities similar to the Galilee Bird Sanctuary project.

2. Study impacts of recreational boating on habitat quality and quantity.

## 950. Storm Hazards

### A. Introduction

1. Much of the development around the Narrow River is vulnerable to coastal flooding and storm surge destruction. Between 1980 and 1988, coastal property values in Rhode Island increased 60 percent, from $32 million to $53 million (Flesner 1989). In order to protect private and public property and prevent the hazards associated with hurricanes and storm flooding CRMC developed policies and regulations to support existing hazard mitigation efforts by the Rhode Island Emergency Management Agency (RIEMA).

## B. Policies

1. Reconstruction After Storms

(a) When catastrophic storms, flooding, and/or erosion has occurred at a site under Council jurisdiction, and there is an immediate threat to public health and safety or immediate and significant adverse environmental impacts, the Executive Director may grant an Emergency Assent under Section 180 of the CRMP.

(b) A CRMC Assent is required of all persons proposing to rebuild shoreline structures which have been damaged by storms, waves, or other natural coastal processes in the Narrow River watershed. When damage to an individual structure is greater than 50% of the total square footage of that structure, post-storm reconstruction shall follow all standards and policies for new development in the area in which it is located.

(c) Setback requirements from CRMP Section 140 shall be applied.

(d) All construction within Federal Emergency Management Agency (FEMA) Flood Zones must follow the required construction standards for the flood zone in which the structure is located. Municipal officials need to certify that these standards are correct and present on any application for activity submitted before the CRMC.

(i) Construction in coastal high hazard flood zones (V zones) as defined by federal flood insurance rate maps, shall follow the regulations as listed in Section 300.3 of the RICRMP, as amended.

(ii) Construction in areas of coastal stillwater flood hazards (A zones), as defined by flood insurance rate maps, shall follow the regulations listed in Section 300.0 of the RICRMP as amended.

(e) A CRMC maintenance assent is required for all persons proposing to repair structures which have been destroyed less than 50% of the total square footage of the structure, by storms, waves, or natural processes.

(f) The Council encourages post-storm reconstruction applicants to increase setbacks further from the coastal feature than the previous development without expanding the footprint.

2. Wetlands which are significant in shielding flood-prone areas from storm damage, particularly those salt marshes surrounding Pettaquamscutt Cove and the lower reaches, are priorities for preservation.

## C. Prohibitions

1. Filling, removing or grading is prohibited on beaches, dunes, undeveloped barrier beaches, coastal wetlands, cliffs and banks, and rocky shores adjacent to Type 1 and Type 2 waters,

and in the Narrow River watershed unless the primary purpose of the alteration is to preserve or enhance the area as a natural habitat for native plants and wildlife.

2. When damage to an individual structure is greater than 50% of the total square footage of that structure, post storm reconstruction is prohibited from occurring within setback zones.

3. Structural shoreline protection facilities are prohibited in the Narrow River.

**D. Standards**

1. Construction Standards in Flood Zones

(a) A significant amount of construction within Rhode Island's coastal zone has the potential to fall within a Federal Emergency Management Agency (FEMA) designated flood zone. The approximate limits of the flood zones and the associated base flood elevations are shown on FEMA's Flood Insurance Rate Maps, which are commonly available at municipal building official's offices. It is extremely important (and required) to know if your project falls within a flood zone and the associated building standards that must be adhered to in that zone to minimize the inevitable damage that occurs when building in a flood hazard area. The CRMC requires all applicants proposing construction within flood hazard zones to demonstrate that applicable portions of the Rhode Island State Building Code (RISBC), specifically ~~RISBC-8, which contains~~ requirements for flood zone construction are addressed. The building official for your community can inform you of the requirements and restrictions that apply to your specific building site. A letter from the building official conferring that all the necessary building requirements for your flood zone have been met must accompany any application for construction work within the CRMP management area, and this SAMP.

**E. Recommendations**

1. General

(a) Homeowners should be aware of the flood zone designation of their property, the associated storm/flooding risk, and the accompanying building standards with which they must comply. The municipal building official retains local information regarding flood zone designation and standards.

(b) Seasonal visitors, renters, town residents and town officials should be aware of evacuation routes and locations of shelters.

(c) Acquisition priorities should be set by municipalities and the state for areas vulnerable to storm/flood hazards.

(d) Town/State public works and emergency management officials should post roadside evacuation route signs in all pre-identified coastal flood/storm evacuation areas.

(e) Incentive should be provided to homeowners to relocate structures destroyed less than 50 % through State or Federal assistance (Upton-Jones Amendment) or tax breaks.

(f) Subsidies, through federal flood insurance or other sources, should be made available to owners of structures in critical erosion areas.

(g) Municipalities, non-governmental organizations, and the State should examine areas with storm/flood hazards for open space acquisition.

2. Research Needs

(a) There is a need for better understanding the correlation between oceanographic forces and shoreline response. With knowledge of the wave, climate, surge elevations and currents during storms and the subsequent sediment transport, the effects of hurricanes and severe winter storms could be better predicted.

(b) Shoreline change data including regular updates of shoreline change rates and continuation of the beach profile network should be collected and monitored on an ongoing basis.

(c) A study should be conducted which would consider the potential future impacts on the Narrow River Watershed from the predicted rise in sea level.

3. Public Education

(a) More information on coastal erosion for the general public, especially coastal landowners and real estate agents dealing in coastal properties, should be provided. Short publications or pamphlets distributed to shorefront property owners would aid compliance with CRMC regulations and make citizens better caretakers of the coastal zone.

(b) Plans for debris removal and disposal which designate disposal sites for debris should be established, recognizing the lack of local landfills and the prohibition of debris in wetlands. Temporary storage sites should be identified by municipalities and should be located conveniently near areas where large amounts of debris are expected to accumulate. These sites should be listed with local and state civil defense offices as part of the coordination process. Sites along the Narrow River that might be considered include:

(i) RIDEM boat launch at Mitchell and River Court
(ii) RIDOT scenic overlook/parking areas at Sprague Bridge
(iii) RIDOT commuter lot at Tower Hill Road
(iv) Narragansett Pier Town Beach parking lot

## 960. Historical and Cultural Resources

### A. Introduction

1. The historical and cultural resources of the Narrow River watershed are a valuable asset to the communities in North Kingstown, South Kingstown and Narragansett. CRMC considers preservation of these resources as a high priority for the SAMP and utilizes the CRMC application process to ensure that the Rhode Island Historic Preservation Commission (RIHPC) has the opportunity to research various locations in the Narrow River watershed.

### B. Policies

1. Applications for major activities within the Narrow River watershed shall be forwarded to RIHPC for review and comment as part of the standard CRMC regulatory process.

2. Areas pre-identified by RIHPC as likely archeological sites are shown in figure 9-5. Though other areas may exist and RIHPC reserves the right to require additional information and potential digs, these areas are identified to give applicants an idea of areas of concern. Activity proposed within these areas will likely be required by RIHPC to perform a phase I archeological investigation.

3. The CRMC will await the response of RIHPC prior to completion of its own staff review and subsequent Council decision. Unless a special exception occurs, the Council will incorporate the RIHPC guidance into its regulatory decision-making and permit stipulations. If a proposed project is located within a demarcated RIHPC area of interest, it may be helpful to contact RIHPC prior to filing an application with CRMC, in order to be aware of their potential concerns.

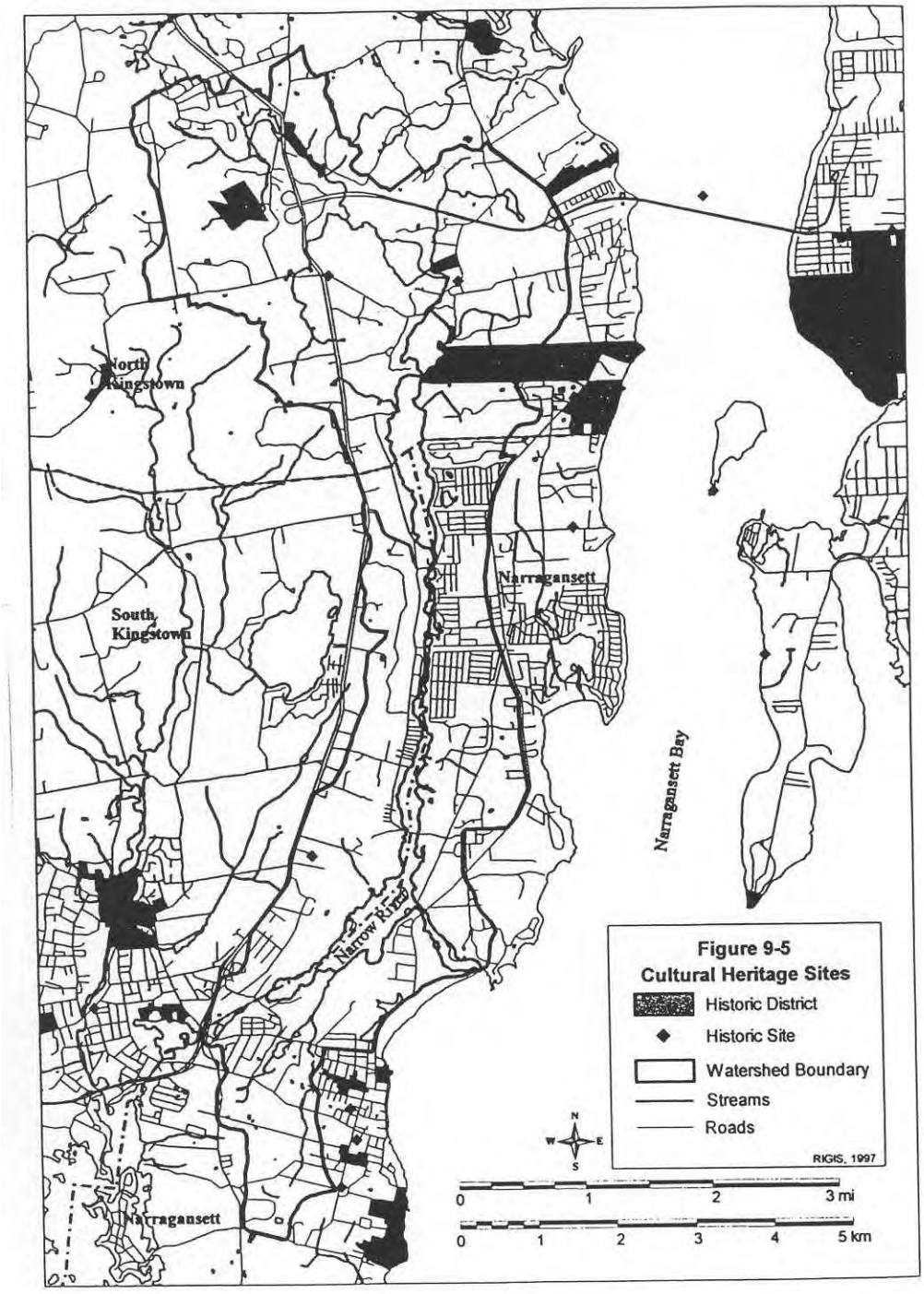
4. Where possible, those sites identified by RIHPC as having potential historical or archeological significance will be incorporated into the buffer zone by extending the boundary of the buffer where appropriate.

### C. Recommendations

1. Sites which are identified by the RIHPC as having historical or archeological significance should be priorities for acquisition and preservation programs, using open space easements, land dedications, transferring of development rights, etc. See RIHPC for further guidance on targeted areas.

2. It should be a high priority for RIHPC to conduct a detailed survey and pre-identify areas likely to contain archeological or historical resources.

Figure 9-5. Cultural and Heritage Sites.



## 970. Cumulative Impacts

### A. Introduction

1. Managing for cumulative impacts is one of the major issues of concern for CRMC. CRMC will be focusing on the cumulative impacts of ~~ISDS~~OWTS, impervious areas, stormwater runoff, vegetation removal and soil erosion, dredging the stabilized breachways and tidal deltas, barrier beach and flood zone development, residential activities, marinas, docks, and recreational boating, public water and sewer facilities, wetland alteration and noise and lighting impacts on habitat. All of these activities have the potential to cause effects in the ecosystem which increase the probability of shellfish closures, fish habitat degradation and loss, eutrophication, sedimentation of shellfish beds and much more.

### B. Definitions

1. Cumulative impacts are the total result of land use, water use and development activities or actions taking place anywhere within the Narrow River watershed over any period of time.

2. Cumulative effects are the physical, biological, or chemical outcome of a series of actions or activities on the environment.

3. The Narrow River watershed includes the environment within the surface watershed boundaries as delineated on the land use classification maps in this chapter.

### C. Policies

1. It is the Council's policy to minimize cumulative impacts by anticipating and appropriately siting land and water uses and development activities to avoid cumulative effects to the Narrow River.

2. It is the Council's policy to consider the cumulative impacts of ~~ISDS~~OWTS, impervious areas, stormwater runoff, vegetation removal and soil erosion, dredging the stabilized breachways and tidal deltas, barrier beach and flood zone development, residential activities, marinas, docks, and recreational boating, public water and sewer facilities, wetland alteration and noise and lighting impacts on habitat. These cumulative impacts are explained in Chapter 8, Findings of Fact.

### D. Standards

1. In those areas which are designated as Lands Developed Beyond Carrying Capacity, innovative technologies and development techniques that will reduce pollutants are required for new development and improvements to existing development. These include, according to the type of development, alternative on-site sewage disposal systems (as required by 920.C.2.a), narrower road widths; clustering of development to reduce road lengths with remaining open space maintained adjacent to surface waters; restrictions on layouts of subdivision cul-de-sacs and roadways to reduce impervious surface and encourage

infiltration of stormwater; use of pervious materials for driveways; restrictions on the number of parking spaces per square foot of commercial development to match average daily use - not potential maximum; requirements that all overflow parking be constructed using pervious materials; and more accessible alternative transportation such as pedestrian, bicycle and mass transit.

2. In those areas which are designated as Self-Sustaining Lands or Lands of Critical Concern, residential and commercial development on substandard lots, and on all lots abutting the Narrow River requires innovative technologies and development techniques that will reduce nitrogen. These include according to the type of development, alternative on-site sewage disposal; narrower road widths; clustering of development to reduce road lengths with remaining open space maintained adjacent to surface waters; restrictions on layouts of subdivision cul-de-sacs and roadways to reduce impervious surface and encourage infiltration of stormwater; use of pervious materials for driveways; restrictions on the number of parking spaces per square foot of commercial development to match average daily use - not potential maximum; requirements that all overflow parking be constructed using pervious materials; encourage more accessible alternative transportation such as pedestrian, bicycle and mass transit.

## E. Recommendations

1. The Council encourages the Narrow River watershed towns to adopt ordinances to minimize impervious surfaces in order to reduce cumulative impacts and transport of pollutants to the Narrow River. Possible management options include the following:

(a) Narrower road widths;

(b) Clustering of development to reduce road lengths with remaining open space maintained adjacent to surface waters;

(c) Restrictions on layouts of subdivision cul-de-sacs and roadways to reduce impervious surface and encourage infiltration of stormwater;

(d) Use of pervious materials for driveways;

(e) Restrictions on the number of parking spaces per square foot of commercial development to match average daily use - not potential maximum - and requirements that all overflow parking be constructed using pervious materials;

(f) More accessible alternative transportation such as pedestrian, bicycle and mass transit.

## Literature Cited

Lee, V. 1980. Elusive compromise: Rhode Island coastal ponds and their people: Coastal Resources Center, University of Rhode Island, Marine Technical Report 73, 82 p.

Rhode Island Department of Environmental Management and Rhode Island Coastal Resources Management Council. 1993. Stormwater Design and Installation Standards Manual. Providence, R.I.

Rhode Island Department of Environmental Management Office of Environmental Coordination, R.I. Coastal Resources Management Council and R.I. Department of Administration. 1995. Rhode Island's Coastal Nonpoint Pollution control Program. Providence, R.I.

Short, F.T., D.M. Burdick, S. Granger and S.W. Nixon. 1996. Long-term decline in eelgrass, *Zostera marina L*., linked to increased housing development. Seagrass Biology: Proceedings of an International Workshop, Rottnest Island, Western Australia, pp 291-298.

U.S. Environmental Protection Agency. 1993. Guidance Specifying Management Measures For Sources Of Nonpoint Pollution In Coastal Waters. Office of Water, Washington, D.C.