

FINAL DRAFT: LaNERR Site Criteria (28 July 2021)

The FINAL DRAFT of LaNERR Site Criteria includes six topical areas to evaluate potential NERR candidate sites: (1) Environmental Representativeness, (2) Research, Monitoring & Resource Protection, (3) Education and Interpretation, (4) Acquisition, Management Consideration, (5) Ability to conduct research on resilience and climate change, and (6) LaNERR Partnerships.

The FINAL DRAFT includes modifications to the NOAA Site Selection Criteria to better reflect terminology used in coastal Louisiana and Louisiana specific conditions as well as the addition of two new topical areas (#5 and #6 above) provided by NOAA. Changes to the original criteria are based on meetings of the Site Criteria Subcommittee on April 30, May 7, and May 21, 2021. In addition, final comments from the Site Criteria Subcommittee were solicited on changes proposed following recommendations from NOAA.

1.0 Environmental Representativeness

1.1 Ecosystem composition: A measure of the diversity of ecosystem types present within the boundaries of the site. This criterion assumes that sites that have a high diversity of major ecosystem types are of higher relative “value” for protection and management than those with low ecosystem diversity (unless the ecosystem in consideration is rare or unique).

- 3 Points. The site has a high diversity of habitat composition within its major ecosystem type, i.e., it contains three or more habitat types or subtypes within its major ecosystem type (e.g., site consists of a combination of swamps, coastal marshes, and mud flats) or has a combination of multiple coastal marsh types (e.g., tidal freshwater, brackish, salt marsh zones).
- 2 Points. The site has a moderate diversity of habitat composition within its major ecosystem type, i.e., it contains only two habitat types or subtypes within its major ecosystem type (e.g., consists of a combination of forested wetlands and a single coastal marsh type).
- 1 Point. The site has a low diversity of habitat composition within its major ecosystem type, i.e., its major ecosystem type consists of a single habitat type (e.g., tidal freshwater marsh or brackish marsh, or forested wetland).

These are the suggested Ecosystem Types to be used in the LaNERR evaluation:

Group I- Uplands

- Alluvial Forested Wetlands
- Longleaf Pine Savannas/Pine Flatwoods
- Maritime Forest- Woodland
- Coastal Prairie/bogs
- Coastal Shrublands and Cheniers

Group II- Intertidal areas

- Coastal Forested Wetlands
- Coastal Floating Marshes

Coastal Freshwater Marsh
Coastal Intermediate Marsh
Coastal Brackish Marsh
Coastal Salt Marsh
Coastal Mangroves
Intertidal Beaches and Dunes
Intertidal Mud and Sand Flats

Group III- Subtidal and Submerged Bottoms

Subtidal hard bottoms/reefs
Subtidal soft bottoms
Subtidal Plants (SAV)

1.2 Balanced ecosystem composition: A measure of the relative composition of ecosystem types within the boundaries of a site (buffer plus core areas). This criterion assumes that sites with a balanced proportion of ecosystem types are of higher relative “value” for protection and management. High, moderate, and low values are assigned to sites that contain variations in the proportions of all three ecosystem types. A value of zero is assigned to a site that is dominated by one ecosystem type or contains less than three ecosystem types.

- 3 Points. The site contains representative upland, intertidal, and subtidal habitats in relatively equal proportions (i.e. areal cover of any one ecosystem type not less than 25 percent of the total area).
- 2 Points. The site contains representative upland, intertidal, and subtidal habitats, with the areal cover of any one type not less than 10 percent of the total area.
- 1 Point. The site contains representative upland, intertidal, and subtidal habitats, with the areal cover of any one type less than 10 percent of the total area.
- 0 Points. The site contains representative upland, intertidal, and subtidal habitats, with the areal cover of two types being less than 10 percent of the total area *or* the site consists of habitats from only one or two of the three major ecosystem types.

1.3 Habitat composition and complexity: A measure of the diversity of habitat types present within the major ecosystem type found within the boundaries of the site. This criterion assumes that sites that have a high diversity of habitat types are of higher relative “value” for protection and management than those with a low diversity of habitat types. Major ecosystem type is defined here as that type that comprises approximately 40 percent of the site. Use the habitat type designations listed above for “ecosystem composition.”

- 3 Points. The site has a high diversity of habitat composition within its major ecosystem type, i.e., it contains three or more habitat types or subtypes within its major ecosystem type (e.g., site consists of a combination of swamps, coastal marshes, and reefs) or has a combination of multiple coastal marsh types (e.g., tidal freshwater, brackish, salt marsh zones including mangroves).

2 Points. The site has a moderate diversity of habitat composition within its major ecosystem type, i.e., it contains only two habitat types or subtypes within its major ecosystem type (e.g., consists of a combination of swamps and a single coastal marsh type).

1 Point. The site has a low diversity of habitat composition within its major ecosystem type, i.e., its major ecosystem type consists of a single habitat type (e.g., brackish marsh or tidal freshwater wetlands).

1.4 Significant faunal and floral support: A measure of the degree to which a site supports significant faunal or floral components. This criterion focuses on a site's contribution (i.e., function) toward supporting the activities (e.g., feeding, nesting) of the following suite of significant faunal or floral components. The list of components includes groups or organisms that are known to be dependent upon estuarine habitats for the entire or a crucial part of their life cycle.

- Fish and Shellfish Spawning and Nursery Grounds (includes use by either freshwater, estuarine, or estuarine-dependent marine species)
- Migratory Bird or Waterfowl Use
- Bird Nesting or Roosting Area
- Critical Mammal Habitat
- Non-Game Animals (amphibians, reptiles, etc.)
- State or federally Listed Species or of concern (animal or plant – including candidate species)
- Other biodiversity support as representative of ecosystem services (such as invertebrates, reef environments...).

3 Points. The site supports or serves as an important site for a wide range of the faunal or floral components listed above (4 of 6) or is an extremely important site for any threatened or endangered species.

2 Points. The site supports or serves as an important site for a moderate range and diversity of the significant faunal or floral components listed above (3 of 6).

1 point. The site supports or serves as an important site for one or two of the significant faunal or floral components listed above.

0 point. The site does not support significant faunal or floral components.

1.5 Geologic representativeness, diversity, and uniqueness of the site: A measure of the representativeness, diversity, and uniqueness of the geologic characteristics that define part or the whole of a candidate site. This criterion attempts to consider both the surface and subsurface geologic formations that may be representative or unique within a site, particularly as they affect or define associated biotic habitats. Included in these considerations are the ways that local geology affects surface hydrology, such as drainage and fluvial systems, and subsurface hydrology, such as shallow-water aquifers. Geologic and hydrologic maps should be used to evaluate this criterion.

- 3 Points. The site has numerous geologic characteristics, two or more unique geologic characteristics, and contains a high diversity of formation types or strata within its boundaries.
- 2 Points. The site has a moderate number of representative geologic characteristics and at least one unique geologic characteristic and contains a moderate diversity of formation types or strata within its boundaries.
- 1 Point. The site has a moderate number of geologic characteristics, no unique geologic characteristics, or contains a moderate diversity of formation types or strata within its boundaries.
- 0 Points. The site has few or only one representative geologic characteristic, no unique geologic characteristics, or contains few or only one formation type or strata within its boundaries.

1.6 Salinity gradient A measure of the seasonal and spatial range of salinity over multiple years within a candidate site's boundaries. This criterion recognizes the effect of salinity on the biotic structure of estuarine habitats (including the plant communities and faunal components that inhabit them). It assumes that a site with a greater range of salinity will support a broader range of habitat types and organisms.

- 3 Points. The site encompasses > 10 parts per thousand (ppt) or greater range of salinity within its boundaries.
- 2 Points. The site encompasses a 5-10 ppt range of salinity within its boundaries.
- 1 Point. The site encompasses a 2-5 ppt range of salinity within its boundaries.
- 0 Points. The site encompasses < 2 ppt range of salinity within its boundaries.

1.7 Degree developed and potential impacts to water quality: A measure of the degree to which the site (core and buffer) is developed and the relative impacts to surface waters from human activities upstream in its associated hydrologic basin (see reference map). This criterion assumes that human impacts to a site are directly proportional to the degree and type of development on site and upstream. Exceptions to this assumption may need to be considered where development at a site and its surrounding area have been subject to high levels of control. Density of development (e.g., no industrial activity or commercial development, few residences, minimal agricultural or silvicultural activity), water quality status within the site, or whether the land is in protected status are points of consideration for this criterion.

- 3 Points. The site is relatively undisturbed and the hydrologic basin contains low intensity development upstream (e.g., no industrial or commercial development, few residences, minimal agricultural or silvicultural activity) or the land is in protected status.
- 2 Points. The site is relatively undisturbed and the hydrologic basin contains moderate development upstream (e.g., relatively few residences, moderate agricultural or silvicultural activity, minimal commercial or industrial development).

- 1 Points. The site has been moderately disturbed and the hydrologic basins contains relatively intensive development (e.g., moderate density of residences, or the presence of industrial activity).
- 0 Points: The site has been extremely disturbed and the hydrologic basins contains very intensive development (e.g., high density residential, or commercial or industrial activity).

2.0. Research, Monitoring & Resource Protection

2.1 Value of site for research: A measure of the opportunities offered by characteristics of the site for research, such as a high diversity of ecosystem and habitat types, a balanced habitat composition, a wide salinity range (see criterion 1.7), biotic or geologic representativeness of the site, known historic uses or archaeological sites, and unique opportunities to conduct applied research regarding important local, state, and regional coastal management issues (including past and potential management activities). The assumption is that a site with representative, unique, and highly diverse characteristics will provide greater research, monitoring, and resource protection opportunities than one lacking these characteristics. Ratings generated for these factors under previous selection criteria can be used as a guide for rating this overall factor.

- 3 Points. The site has (1) a high diversity of ecosystem and habitat types, (2) moderate salinity range, (3) representative biotic and geologic sites or hydrologic characteristics, (4) state and federally listed species, (5) historic and archaeological significance, and (6) opportunities to address important habitat or resource management issues.
- 2 Points. The site has four or five of the six above.
- 1 Point. The site has two or three of the six above.
- 0 Points. The site has one or none of the six above.

2.2 Previous research and monitoring efforts: A measure of the degree to which the site (including the hydrologic basin) has been used for past research and monitoring, including considerations of the diversity of inquiry (fields of research), and the availability of data (the form and availability of documentation, e.g., peer-reviewed papers, grey literature, inventory reports). The assumption is that an area with previously established research and monitoring interest offers greater opportunity for future projects than an area that has not sparked such an interest in the past.

- 3 Points. The site has a long history of well-documented research and monitoring projects in a wide variety of topics. Data are readily available.
- 2 Points. The site has had major and well-documented research and monitoring efforts, generating data that are readily available. It has not had a long history of research and monitoring.
- 1 Point. The site has had only minor research and monitoring projects generating limited data (e.g., inventories) and/or these data may be difficult to obtain.

0 Points. The site has no known history of research and monitoring.

2.3 Suitability of site for environmental baseline monitoring: A measure of the suitability of the site as a reference area for assessing long-term natural resource trends or ecological characteristics, based on the degree to which the site has not been fragmented by land-use practices on or near the site. The assumption is that a site with contiguous habitats that provide landscape continuity (not interrupted by developed or disturbed lands & waters) will be a more valuable reference area to generate baseline monitoring information than a site that has been extensively altered.

3 Points. The site has outstanding areas to generate environmental baseline data to assess long-term resource trends or ecological characteristics for a wide range of needs.

2 Points. The site has adequate areas to generate environmental baseline data to assess long-term resource trends or ecological characteristics for many needs.

1 Point. The site has marginal areas to generate environmental baseline data to assess long-term resource trends or ecological characteristics.

0 Points. The site has been so extensively altered by past activities that it is unsuitable for generating environmental baseline data.

2.4. Ability to address key local, state, and regional coastal management issues: A measure of the degree to which the site is appropriate for investigating issues relevant to coastal management at the local, state, and regional levels. Solutions to these issues may require either the application of land management practices or habitat manipulations to perform meaningful research and assessment. As such, the site should offer both adequate control areas plus areas where demonstration projects and habitat manipulations (such as coastal restoration projects) can be accommodated to study many of the issues of concern. The assumption is that a site where diverse coastal management issues are evident and can be addressed will be of greater value from research and resource management standpoint than sites where these issues do not arise. The diversity and significance of coastal management issues should be identified for the hydrologic basin as it may influence core and buffer areas proposed. The following list are suggestions that may be included in the description of the sites ability to address key local, state, and regional coastal management issues.

- Wetland loss and habitat change;
- Wetland loss mitigation, restoration, and creation;
- Dredging and spoil disposal;
- Beneficial uses of dredged materials;
- Shoreline erosion;
- Commercial or recreational fisheries;
- Waterfowl and other wildlife management;
- Best management practices for habitat protection or management (e.g., wildlife management);

- Best management practices to limit impacts from agricultural, silvicultural, or development activities;
- Effects of pollutants on water quality and living resources (including oil spills, nutrients, harmful algal blooms, bacteria contamination, etc.)
- Impacts of relative sea-level rise;
- Prehistoric and early historic settlement and land use;
- Unique connections in cultural and natural resources within the site (language, customs, land-use, etc.);
- Fire management, invasive species;
- Hydrologic restoration;

3 Points. The site is highly appropriate for investigating a diversity of coastal zone management issues.

2 Points. The site is appropriate for investigating coastal zone management issues.

1 Point. The site is minimally appropriate for investigating coastal zone management issues.

0 Points. The site is not appropriate for investigating coastal zone management issues.

3.0. Education and Interpretation

3.1 Diversity and quality of training education and interpretation of opportunities: A measure of the variety and quality of training, education, and interpretation opportunities (i.e., ecological, archaeological, cultural, historical, etc.) provided by the site (core and buffer areas) for the different target audiences. The assumption is that a candidate site with a diversity of such opportunities of high quality will be utilized to a greater extent than one with fewer opportunities.

3 Point. The site has numerous different training, education, and interpretation opportunities of high quality.

2 Points. The site has several significantly different educational opportunities of good quality.

1 Point. The site has few significant educational opportunities.

0 Points. The site has insignificant educational opportunities.

3.2 Diversity and availability of target audiences: A measure of the diversity and availability of target audiences (e.g., user groups, resource managers, residents, environmental groups, decision makers, teachers and students, and the general public) which may routinely utilize the site (accessible during a single day trip) for training, education, and interpretation. The assumption is that a candidate site with a variety of available target audiences will be utilized to a greater extent than one with fewer target audiences.

3 Points. The site is suitable for a variety of target audiences that are readily available (accessible during a single day trip).

- 2 Points. The site is suitable for a moderate number of target audiences that are readily available (accessible during a single day trip).
- 1 Point. The site is suitable for few target audiences that are available (accessible during a single day trip).
- 0 Points. The site is so remote or inaccessible that it is not suitable for any target audience.

3.3 Availability of facilities: The degree to which the site (core and buffer areas) has existing facilities or potential sites for future facilities that can be used by staff, researchers, classes, and training groups (e.g., administrative building space, dormitories, labs, interpretive centers, trails and boardwalks, boat ramps, etc.). The assumption is that, due to limited reserve construction funds, a candidate site with existing facilities can meet the objectives of the Reserve System program sooner and more completely than a site without existing facilities. The availability of other sources of construction funds should be considered as part of this criterion.

- 3 Points. The site has established structures and facilities that can be used for reserve activities.
- 2 Points. The site has limited established structures or facilities that can be used for reserve activities.
- 1 Point. The site has excellent potential for the development of facilities for reserve activities.
- 0 Points. The site has limited established structures and limited potential for the development facilities for reserve activities.

3.4 Proximity and accessibility of site to researchers, educators, and resource management decision makers: A measure of (1) the relative proximity of the site to urban centers, K-12 schools, research and education institutions, and resource management agencies that may routinely utilize the site and (2) the adequacy of the roads or points for boat access at the site. The underlying assumption is that the proximity and accessibility of the site will enhance its utilization for education, research, monitoring, and resource protection purposes.

- 3 Points. The site can be utilized by the above-listed entities during a single day trip. There are good roads or points for boat access at the site.
- 2 Points. The site is relatively isolated, and utilization would require an overnight stay from any of the above-listed entities, but accommodations are readily available. There are adequate roads or points for boat access at the site.
- 1 Point. The site is relatively isolated and reasonable accommodations for an overnight stay to utilize the site are limited. There are limited roads or points for boat access at the site.
- 0 Points. The site is extremely isolated and accommodations to utilize the site are not available. There are inadequate or no roads, or points for boat access at the site.

3.5 Value of site for environmental education and interpretation programs: It is likely that sites with existing education programs have the necessary infrastructure in place to further expand their programs, thus it is valuable to rate sites based on the presence of these programs. However, in an area as large as the Louisiana Coastal Area, numerous excellent sites exist where virtually no education or interpretation programs have been developed. Thus, the potential for education and interpretation program development should be considered as well according to the diversity and quality of educational and interpretive program opportunities. Some suggestions to evaluate potential for education and interpretation program development include the following:

- Number of educational institutions in the watershed of the proposed alternative;
- Existing educational programs in the area that would likely take advantage of a NERR site;
- Level of ability to access a proposed alternative by school groups; or
- Existing facilities to host classroom education and training events.

3 Points. The site has a long history of education and interpretation, or the site offers excellent potential for future education and interpretation program development.

2 Points. The site has a good but short history of education and interpretation but is otherwise well suited or offers good potential for future education and interpretation program development.

1 Point. The site has had only a minor amount of education and interpretation being conducted, or the site offers fair potential for future education and interpretation program development.

0 Points. The site offers no significant potential for education and interpretation program development

4.0. Acquisition and Management Consideration

4.1 Publicly owned lands and feasibility of land acquisition: The degree of control on activities allowed on proposed land and waters of the candidate site (core and buffer areas) is regulated by conditions of land ownership. Land ownership by state, federal government, or local governments, or environmental interest groups, and the degree to which owners have an interest in participating in a research reserve are important to realize the missions of a LaNERR. The assumption is that the degree of control needed to maintain the site to meet the missions of a NERR increases with publicly and privately owned land, along with the chances of purchasing additional areas, increase value of a NERR candidate site. In the combination of ownership described below, no more than 49% of the area within the boundary can be federal lands.

3 Points. A large percentage (more than 50 percent) of the site (core and buffer areas) is currently owned by the state, federal, or local governments, or environmental groups, representing significant opportunities for future land acquisition.

- 2 Points. State, federal, or local governments, or environmental groups own 25 to 50 percent of the site with the remainder in the hands of a few owners representing some degree of opportunities for future land acquisition.
- 1 Point. State, federal, or local governments or environmental groups own less than 25 percent of the site with the remainder in the hands of a few owners representing limited opportunities for future land acquisition.
- 0 Points. The site is owned by a large number of owners with little potential interest in supporting opportunities for future land acquisition.

4.2. Compatibility with existing management practices and consumptive and non-consumptive

uses: A measure of the degree to which existing management practices (e.g., habitat manipulations, restoration projects, best management practices, wildlife management areas, leased bottoms, conservation easements, etc.) and historic and current consumptive and non-consumptive uses might conflict with planned and future management practices implemented under a research reserve program. The assumption is that sites with fewer conflicts are more likely to maintain both public support and the integrity of the site (core and buffer areas). NOTE: This factor should be measured with focus on how present management practices for both land and water in core and buffer areas support both the mission of a NERR and reduce potential conflict with how the public expectations align with the expected usage of the candidate site to meet the mission of a research reserve site. It should be measured with a balance of how the site protects natural and cultural resources against reasonable access by the public to other areas of the site.

- 3 Points. Existing management practices and consumptive and non-consumptive uses of the site would not conflict with any foreseeable management policy of a research reserve
- 2 Points. Due to the presence of proportionately small areas of unique habitat and endangered species or threats to the integrity of ecosystem, there is the potential for limited restrictions on existing management practices or consumptive and non-consumptive uses of a site
- 1 Point. Due to the presence of areas of unique habitat and endangered species and threats to the integrity of the ecosystem, some restrictions on existing management practices or consumptive and non-consumptive uses of a site are likely
- 0 Points. Large areas of unique habitat and threats to the integrity of the ecosystem will require restrictions on existing management practices or consumptive and non-consumptive uses of a site.

4.3 Compatibility with adjacent land use: A measure of the potential conflicts between management practices on a candidate site (core and buffer areas) with land-use practices on adjacent lands to the site (core and buffer areas). It is also a measure of the adequacy of land-use regulations, plans, or other risk management controls (e.g. sufficient regulatory control in the event of an impact) to sustain the site's natural resources for long-term research, education, and resource protection. The assumption is that a

candidate site with compatible land-use practices on adjacent lands is more likely to maintain the integrity of the reserve. NOTE: This issue should be evaluated relative to the potential for present or future conflicts with adjacent lands and the potential to designate buffer areas around a site.

- 3 Points. A large percentage of the land adjacent to the site is not currently used for activities that might impact the site (and therefore, may be obtainable as a buffer) or the land-use practices on adjacent lands would not have any negative impacts on a possible research reserve.
- 2 Points. A large to moderate percentage of the land adjacent to the site is not currently used for activities that might negatively impact the site, or the land-use practices on adjacent lands either could be negotiated or would have only minor impacts a possible research reserve.
- 1 Point. Some of the land adjacent to the site is currently used for activities that would have negative impacts on a possible research reserve and may not be negotiable.
- 0 Points. A large percentage of the land adjacent to the site is currently used for activities that would have negative impacts on a possible research reserve and would lead to conflicts.

4.4 Land ownership A measure of the degree to which the property used to establish core and buffer areas of a candidate site is divided among landowners (e.g., divided into fewer parcels or owned by many agencies/individuals). The assumption is that a candidate site with fewer property owners will be easier to control types and levels of activities and offers opportunity for future acquisitions.

- 3 Points. The property is relatively undivided among agencies or individuals.
- 2 Points. The property is divided among few property owners.
- 1 Point. The property is divided among many property owners.

4.5. Enforcement and protection of site area management practices: A measure of the degree to which land and water ownership has enforcement capabilities to protect and limit the types and levels of activities that are inconsistent with the management plans described in Site Criterion 4.2 above. This degree of control is based on size, geography, proximity to adjacent residential development and present management practices and controls. The assumption is that the integrity and security of a potential research reserve site can be better maintained with a higher level of enforcement and protection of core habitat areas to enforce management practices (such as a wildlife management area, or guidelines associated with private lands) that protects the consistency with how land and water will promote the mission of a NERR.

- 3 Points. Site areas are strongly protected and enforced to the degree necessary to meet management practices.
- 2 Points. Site areas are moderately protected and enforced to the degree necessary to meet management practices.

- 1 Point. Site areas are minimally protected and enforced to the degree necessary to meet management practices.
- 0 Point. Site areas are not protected and enforced to the degree necessary to meet management practices.

4.6. Land and water access: A measure of the degree to which land and water access to the site support visitation and recreational value within guidelines of existing management plans. This degree of access is based on points of access (present and proposed), size, geography, proximity to adjacent residential development and present management practices and controls.

- 3 Points. The site has many existing and planned access points to support visitation and recreation that are very consistent with the management plans.
- 2 Points. The site has several existing and planned access points to support visitation and recreation that are very consistent with the management plans..
- 1 Point. The site has few existing and planned access points to support visitation and recreation that are very consistent with the management plans.
- 0 Points. The site has no existing and planned access points to support visitation and recreation that are very consistent with the management plans.

4.7. Future urban and industrial development plans A measure of the potential level of future impacts of land development (urban and industry) in areas on or adjacent to a candidate site that would impact core and buffer areas. The assumption is that a candidate site with minimal to no development plans on-site and on adjacent lands to the candidate site is more likely to maintain the integrity of the reserve. NOTE: This issue involves the degree to which adjacent lands are currently being used or may be attainable as buffer areas for the research reserve.

- 3 Points.: A large percentage (more than 50 percent) of the land adjacent to the site is currently undeveloped or is not likely to be developed for urban and industrial usage (based on present urban and industrial activity). This large percentage of adjacent lands is very unlikely to be developed in the near future for urban and industrial development (e.g., consisting of marginally developable property, such as wetlands, which could be obtained as buffer).
- 2 Points. A moderate percentage (between 25 and 50 percent) of the land adjacent to the site is currently undeveloped (urban and industrial) or is not likely to be developed for urban or industrial usage (based on present or expected activity). The adjacent lands are unlikely to be developed in the near future for urban and industrial development (e.g., consisting of marginally developable property, such as wetlands, which could be obtained as buffer).
- 1 Point. A small to moderate percentage (10 to 25 percent) of the land adjacent to the site is currently undeveloped or is not likely to be developed for urban or industrial usage (based on present or expected activity).

0 Points. A large percentage (more than 50 percent) of the land adjacent to the site is developed (urban or industrial) and the area is likely to continue to be developed in the future.

5.0 Ability to conduct research on resilience and climate change impacts

5.1 Coastal resilience research: How suitable is the site (and hydrologic basin where it is found) to support research on coastal resilience including both natural, cultural, and social systems. This includes how climate change may amplify impacts of land-use change, increases in the vulnerability of the habitats of the site (and hydrologic basin) to relative sea level rise, and other climate change impacts. Research focuses include adaptations of natural, cultural, and social systems to climate change impacts, including restoration and protection projects.

3 Points. The site (and hydrologic basin) demonstrates high value in researching adaptation of natural, cultural, and social systems to climate change and relative sea level rise including research on adaptations that reduce vulnerability.

2 Points. The site (and hydrologic basin) demonstrates moderate value in researching adaptation of natural, cultural, and social systems to climate change and relative sea level rise including research on adaptations that reduce vulnerability.

1 Point. The site (and hydrologic basin) demonstrates low value in researching adaptation of natural, cultural, and social systems to climate change and relative sea level rise including research on adaptations that reduce vulnerability.

5.2 This criterion focuses on the ability to accommodate shifts in habitat as sea level, inundation or other climate-change impacts occur. Is there sufficient ability of the system to accommodate these shifts within the site boundaries and/or is there an ability to expand the boundaries to allow for maintenance of an ecological unit. This includes consideration for additional property acquisition.

3 points. Reserve boundary allows for habitat migration and several areas adjacent to the boundary provide an option for expansion to accommodate habitat shifts and boundary expansion.

2 points. Reserve boundary allows for some habitat migration and some areas adjacent to the boundary provide an option for expansion to accommodate habitat shifts and boundary expansion.

1 point. Reserve boundary allows for little habitat migration and little to no areas adjacent to the boundary provides an option for expansion to accommodate habitat shifts and boundary expansion.

0 points. Reserve boundary does not allow for habitat migration and there are no areas adjacent to the boundary that provide an option for expansion to accommodate habitat shifts and boundary expansion.

5.3 Infrastructure and Access: A changing climate is resulting in a variety of impacts that differ based on geography and conditions within geography. Reserves are designated to ensure a stable platform for research, address significant coastal management issues, enhance public awareness and understanding and promote use of the reserves consistent with the purposes outlined. Access to infrastructure that supports these purposes is key to achieving the mission of the reserve system. This criterion focuses on the expected vulnerability of existing facilities (including visitor centers, labs, storage facilities) proposed for use by the reserve to remain viable and accessible taking into account the most relevant climate change stressors in the locale. This accounts for adaptive strategies that are and/or may be in place to mitigate anticipated stressors.

- 3 points. Facility(ies) resilient and adaptable under high impact climate change scenarios given current understanding of vulnerability
- 2 points. Facilities resilient and adaptable under medium impact climate change stressor/threat scenarios
- 1 point. Facilities unlikely to be resilient and adaptable under medium/low impact climate change stressor/threat scenarios
- 0 points. Facilities vulnerable and not resilient under any climate change scenarios

5.4. Public Access Resilience: This criterion focuses on the ability to access the resources of the reserve. This includes access to water via docks and boat launches; access to interpretive and educational experiences via trails, pavilions, amphitheaters, as well as access to existing recreational and professional opportunities in the resource.

- 3 points. Public access infrastructure is resilient and adaptable under high impact climate change scenarios given current understanding of vulnerability
- 2 points. Public access infrastructure resilient and adaptable under medium impact climate change stressor/threat scenarios
- 1 point. Public access infrastructure unlikely to be resilient and adaptable under medium/low impact climate change stressor/threat scenarios
- 0 points. Public access infrastructure vulnerable and not resilient under any climate change scenarios

6.0 LaNERR Partnerships:

Partnerships should be relevant and aid the program in achieving their goals, reaching target audiences, and developing and delivering key messages. They increase the resilience of the reserve and its ability to work with the local community to address climate change and impacts from other important stressors. Partnerships can increase the ability to address research needs and gaps, reach education and public engagement goals, and provide access to facilities and field opportunities. Institutional partnerships can also provide administrative services, support leveraging of resources, and reduce program costs. These organizations or third parties can also assist with fund-raising, grant development and management, and management of program

income (ex. Friends Groups and NERRA). The strength of the reserve's partnerships and potential for partnerships will be evaluated based on the following:

6.1 Potential to develop partnerships: This criterion focuses on the site's ability to create new partnerships and strengthen existing partnerships to achieve their goals, reach target audiences, develop and deliver key messages, and address relevant coastal management issues. This can be demonstrated by potential partner interest, geography, etc. with a focus on the outcomes of the partnership, not the number or name of organizations. This will be measured by the following metrics:

- Existing MOUs or agreements explaining shared resources such as facilities and salaries
- Memberships of key individuals to professional organizations such as National Marine Educators Association, Coastal and Estuarine Research Federation, Society of Wetland Scientists, other state professional organizations, research organizations, local or regional consortia, etc.
- Recent history of key personnel participation in multi-institutional grants, publications, and projects
- Letters from existing informal partners about past projects, their outcomes, and organizational structure
- Letters from potential partners focusing on how the partner could complement or contribute to the reserve goals. This letter should include information such as historical context for partnership and their vision for contributing to the reserve mission.

3 Points. The site has strong potential to develop and strengthen new and existing partnerships of high quality evidenced by metrics stated above.

2 Points. The site has potential for new partnerships of good quality to develop.

1 Point. The site has potential for partnership development.

0 Points. The site has insignificant potential for partnerships.

6.2 Internal NOAA Partnerships: This is a measure of the number and quality of partnerships with other NOAA entities that already exist within a program or that have the potential to develop based on common goals, geographic proximity, etc. The assumption is that a candidate site with a high diversity of existing partnerships and partnership potential will have opportunities to leverage support and create sustainable programs more so than one with fewer partnerships. Some examples include Sea Grant, Coastal Programs, Marine Sanctuaries, Weather Service, Climate Office and other line offices of NOAA. This will be measured by the following metrics:

- Existing MOUs or agreements explaining shared resources such as facilities and salaries
- Recent history of key personnel participation in grants, publications, and projects with NOAA

- 3 Points. The site has a history of NOAA partnerships and there is strong potential to develop and strengthen new and existing ones of high quality evidenced by the metrics stated above.
- 2 Points. The site has several partnerships in place and there is potential for new partnerships of good quality to develop.
- 1 Point. The site has potential for partnership development.
- 0 Points. The site has insignificant potential for partnerships.

6.3 Diversity of Partnerships: This is a measure of the ability to reach diverse audiences through existing partnerships or potential partnerships based on common goals and geographic proximity. The assumption is that a candidate site with a high diversity of existing partnerships and partnership potential will have opportunities to leverage support and create sustainable programs more so than one with fewer partnerships. These partnerships should increase the candidate site's ability to address relevant coastal management issues, address research needs and gaps, and reach diverse audiences. These partner organizations should range in diversity such as federal agencies (ex. National Estuary Programs, National Wildlife Refuges, National Parks), state agencies and parks, local organizations (Marine Labs and Land Trusts), NGOs, and umbrella groups (national, regional or local). These partnerships should help bridge the gap between the NERRS and new audiences that the NERRS has not typically engaged (e.g., urban audiences) or that could help the NERRS become more effective at reaching intended audiences (e.g., national municipal association to facilitate reaching local officials). The focus of these partnerships should be the outcomes, not the number or name of organizations. This will be measured by the following metrics:

- Existing MOUs or agreements explaining shared resources such as facilities and salaries
- Recent history of key personnel participation in multi-institutional grants, publications, projects
- Letters from existing informal partners about past projects, outcomes, and organizational structure
- Letters from potential partners focusing on how the partner could complement or contribute to the reserve goals. This letter should include historical context and vision for partnership contributing to the reserve mission.

- 3 Points. The site has many diverse partnerships and there is strong potential to develop and strengthen new and existing ones of high quality evidenced by metrics stated above.
- 2 Points. The site has several diverse partnerships in place and there is potential for new partnerships of good quality to develop.
- 1 Point. The site has potential for partnership development.
- 0 Points. The site has insignificant potential for partnerships.

