

# Myakka River State Park Unit Management Plan March 2019 ARC Draft











# FLORIDA DEPARTMENT OF Environmental Protection

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**Ron DeSantis**  
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Lt. Governor

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Secretary

## Memorandum

**TO:** James Parker  
Office of Environmental Services  
Division of State Lands

**FROM:** Tyler Maldonado  
Office of Park Planning  
Division of Recreation and Parks

**SUBJECT:** Myakka River State Park  
Ten Year Management Plan Update (Lease No. 3636)  
Acquisition and Restoration Council (ARC) Public Hearing

**DATE:** March 6, 2019

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Attached is the ARC executive summary, the Division of State Lands checklist and a copy of the subject management plan update. This plan is being submitted for the Division of State Lands' compliance review and for review by ARC members.

For your convenience and use, six discs with the subject management plan file is also being provided with this memorandum.

Please contact me by email at [Tyler.Maldonado@floridadep.gov](mailto:Tyler.Maldonado@floridadep.gov) or by phone at 850.245.3070 if there are any questions related to this management plan.

Thank you for your assistance.

TM

Attachments

cc: Hank Vinson





# **LAND MANAGEMENT PLAN COMPLIANCE**

## **CHECKLIST**

→ Required for State-owned conservation lands over 160 acres ←

### Instructions for managers:

Complete each item and fill in the applicable correlating **page numbers and/or appendix** where the item can be found within the land management plan (LMP). If an item does not apply to the subject property, please describe that fact on a correlating page number of the LMP. Do not mark an "N/A" for any items below.

For more information, please visit the stewardship portion of the Division of State Lands' website at: <http://www.dep.state.fl.us/lands/stewardship.htm>.

### Section A: Acquisition Information Items

| Item # | Requirement                                                                                                                                                                                                                | Statute/Rule        | Page Numbers and/or Appendix |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------|
| 1.     | The common name of the property.                                                                                                                                                                                           | 18-2.018 & 18-2.021 | 1, App. 1                    |
| 2.     | The land acquisition program, if any, under which the property was acquired.                                                                                                                                               | 18-2.018 & 18-2.021 | 1, App. 1                    |
| 3.     | Degree of title interest held by the Board, including reservations and encumbrances such as leases.                                                                                                                        | 18-2.021            | 1, App. 1                    |
| 4.     | The legal description and acreage of the property.                                                                                                                                                                         | 18-2.018 & 18-2.021 | 1, App. 1                    |
| 5.     | A map showing the approximate location and boundaries of the property, and the location of any structures or improvements to the property.                                                                                 | 18-2.018 & 18-2.021 | 3, 101, 103, 105             |
| 6.     | An <b>assessment</b> as to whether the property, or any portion, should be declared surplus. <i>Provide Information regarding <b>assessment and analysis</b> in the plan, and provide <b>corresponding map</b>.</i>        | 18-2.021            | 121                          |
| 7.     | Identification of other parcels of land within or immediately adjacent to the property that should be purchased because they are essential to management of the property. <i>Please clearly indicate parcels on a map.</i> | 18-2.021            | 121, 123                     |
| 8.     | Identification of adjacent land uses that conflict with the planned use of the property, if any.                                                                                                                           | 18-2.021            | 93-94                        |
| 9.     | A statement of the purpose for which the lands were acquired, the projected use or uses as defined in 253.034 and the statutory authority for such use or uses.                                                            | 259.032(10)         | 1-2, 9                       |
| 10.    | Proximity of property to other significant State, local or federal land or water resources.                                                                                                                                | 18-2.021            | 3, 5, 97                     |

### Section B: Use Items

| Item # | Requirement                                                                                                                                                                                                              | Statute/Rule        | Page Numbers and/or Appendix |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------|
| 11.    | The designated single use or multiple use management for the property, including use by other managing entities.                                                                                                         | 18-2.018 & 18-2.021 | 1, App. 1                    |
| 12.    | A description of past and existing uses, including any unauthorized uses of the property.                                                                                                                                | 18-2.018 & 18-2.021 | 99                           |
| 13.    | A description of alternative or multiple uses of the property considered by the lessee and a statement detailing why such uses were not adopted.                                                                         | 18-2.018            | 8                            |
| 14.    | A description of the management responsibilities of each entity involved in the property's management and how such responsibilities will be coordinated.                                                                 | 18-2.018            | 9-10                         |
| 15.    | Include a provision that requires that the managing agency consult with the Division of Historical Resources, Department of State before taking actions that may adversely affect archeological or historical resources. | 18-2.021            | 10, 75, 84, App. 7           |
| 16.    | Analysis/description of other managing agencies and private land managers, if any, which could facilitate the restoration or management of the land.                                                                     | 18-2.021            | 7-10                         |



|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                     |            |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------|
| 17. | A determination of the public uses and public access that would be consistent with the purposes for which the lands were acquired.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 259.032(10)         | 99-121     |
| 18. | A finding regarding whether each planned use complies with the 1981 State Lands Management Plan, particularly whether such uses represent "balanced public utilization," specific agency statutory authority and any other legislative or executive directives that constrain the use of such property.                                                                                                                                                                                                                                                                                                              | 18-2.021            | 1-2, 7     |
| 19. | Letter of compliance from the local government stating that the LMP is in compliance with the Local Government Comprehensive Plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | BOT requirement     | App. 11    |
| 20. | An assessment of the impact of planned uses on the renewable and non-renewable resources of the property, including soil and water resources, and a detailed description of the specific actions that will be taken to protect, enhance and conserve these resources and to compensate/mitigate damage caused by such uses, including a description of how the manager plans to control and prevent soil erosion and soil or water contamination.                                                                                                                                                                    | 18-2.018 & 18-2.021 | 24-36      |
| 21. | *For managed areas larger than 1,000 acres, an analysis of the multiple-use potential of the property which shall include the potential of the property to generate revenues to enhance the management of the property provided that no lease, easement, or license for such revenue-generating use shall be entered into if the granting of such lease, easement or license would adversely affect the tax exemption of the interest on any revenue bonds issued to fund the acquisition of the affected lands from gross income for federal income tax purposes, pursuant to Internal Revenue Service regulations. | 18-2.021 & 253.036  | 8          |
| 22. | If the lead managing agency determines that timber resource management is not in conflict with the primary management objectives of the managed area, a component or section, prepared by a qualified professional forester, that assesses the feasibility of managing timber resources pursuant to section 253.036, F.S.                                                                                                                                                                                                                                                                                            | 18-021              | 89, App. 8 |
| 23. | A statement regarding incompatible use in reference to Ch. 253.034(10).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 253.034(10)         | 7          |

\*The following taken from 253.034(10) is not a land management plan requirement; however, it should be considered when developing a land management plan: The following additional uses of conservation lands acquired pursuant to the Florida Forever program and other state-funded conservation land purchase programs shall be authorized, upon a finding by the Board of Trustees, if they meet the criteria specified in paragraphs (a)-(e): water resource development projects, water supply development projects, storm-water management projects, linear facilities and sustainable agriculture and forestry. Such additional uses are authorized where: (a) Not inconsistent with the management plan for such lands; (b) Compatible with the natural ecosystem and resource values of such lands; (c) The proposed use is appropriately located on such lands and where due consideration is given to the use of other available lands; (d) The using entity reasonably compensates the titleholder for such use based upon an appropriate measure of value; and (e) The use is consistent with the public interest.

### Section C: Public Involvement Items

| Item # | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Statute/Rule             | Page Numbers and/or Appendix |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------------------|
| 24.    | A statement concerning the extent of public involvement and local government participation in the development of the plan, if any.                                                                                                                                                                                                                                                                                                                                                                        | 18-2.021                 | 10                           |
| 25.    | The management prospectus required pursuant to paragraph (9)(d) shall be available to the public for a period of 30 days prior to the public hearing.                                                                                                                                                                                                                                                                                                                                                     | 259.032(10)              | 10, App. 2                   |
| 26.    | LMPs and LMP updates for parcels over 160 acres shall be developed with input from an advisory group who must conduct at least one public hearing within the county in which the parcel or project is located. <i>Include the advisory group members and their affiliations, as well as the date and location of the advisory group meeting.</i>                                                                                                                                                          | 259.032(10)              | 10, App. 2                   |
| 27.    | Summary of comments and concerns expressed by the advisory group for parcels over 160 acres                                                                                                                                                                                                                                                                                                                                                                                                               | 18-2.021                 | App. 2                       |
| 28.    | During plan development, at least one public hearing shall be held in each affected county. Notice of such public hearing shall be posted on the parcel or project designated for management, advertised in a paper of general circulation, and announced at a scheduled meeting of the local governing body before the actual public hearing. <i>Include a copy of each County's advertisements and announcements (meeting minutes will suffice to indicate an announcement) in the management plan.</i> | 253.034(5) & 259.032(10) | 10, App. 2                   |

|     |                                                                                                                                                                                                                                                            |          |            |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------|
| 29. | The manager shall consider the findings and recommendations of the land management review team in finalizing the required 10-year update of its management plan. <i>Include manager's replies to the team's findings and recommendations.</i>              | 259.036  | 90, App. 9 |
| 30. | Summary of comments and concerns expressed by the management review team, if required by Section 259.036, F.S.                                                                                                                                             | 18-2.021 | App. 9     |
| 31. | If manager is not in agreement with the management review team's findings and recommendations in finalizing the required 10-year update of its management plan, the managing agency should explain why they disagree with the findings or recommendations. | 259.036  | App. 9     |

## Section D: Natural Resources

| Item # | Requirement                                                                                                                                                                                                                                                                                                                      | Statute/Rule                     | Page Numbers and/or Appendix |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------|
| 32.    | Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding soil types. <i>Use brief descriptions and include USDA maps when available.</i>                                                                                                                    | 18-2.021                         | 24                           |
| 33.    | Insert FNAI based natural community maps when available.                                                                                                                                                                                                                                                                         | ARC consensus                    | 41                           |
| 34.    | Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding outstanding native landscapes containing relatively unaltered flora, fauna, and geological conditions.                                                                                             | 18-2.021                         | 23-24, 36-53                 |
| 35.    | Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding unique natural features and/or resources including but not limited to virgin timber stands, scenic vistas, natural rivers and streams, coral reefs, natural springs, caverns, and large sinkholes. | 18-2.018 & 18-2.021              | 36-53                        |
| 36.    | Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding beaches and dunes.                                                                                                                                                                                 | 18-2.021                         | N/A                          |
| 37.    | Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding mineral resources, such as oil, gas and phosphate, etc.                                                                                                                                            | 18-2.018 & 18-2.021              | N/A                          |
| 38.    | Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding fish and wildlife, both game and non-game, and their habitat.                                                                                                                                      | 18-2.018 & 18-2.021              | 36-53, 60-64                 |
| 39.    | Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding State and Federally listed endangered or threatened species and their habitat.                                                                                                                     | 18-2.021                         | 60-64                        |
| 40.    | The identification or resources on the property that are listed in the Natural Areas Inventory. <i>Include letter from FNAI or consultant where appropriate.</i>                                                                                                                                                                 | 18-2.021                         | 36-53                        |
| 41.    | Specific description of how the managing agency plans to identify, locate, protect, and preserve or otherwise use fragile, nonrenewable natural and cultural resources.                                                                                                                                                          | 259.032(10)                      | 75-88                        |
| 42.    | <b>Habitat Restoration and Improvement</b>                                                                                                                                                                                                                                                                                       |                                  |                              |
| 42-A.  | Describe management needs, problems and a desired outcome and the key management activities necessary to achieve the enhancement, protection and preservation of restored habitats and enhance the natural, historical and archeological resources and their values for which the lands were acquired.                           | 259.032(10) &<br>253.034(5)<br>↓ | 36-60                        |
| 42-B.  | Provide a detailed description of both short (2-year planning period) and long-term (10-year planning period) management goals, and a priority schedule based on the purposes for which the lands were acquired and include a timeline for completion.                                                                           |                                  | 15-16, 36-60                 |
| 42-C.  | The associated measurable objectives to achieve the goals.                                                                                                                                                                                                                                                                       |                                  | 15-16, 36-60                 |
| 42-D.  | The related activities that are to be performed to meet the land management objectives and their associated measures. <i>Include fire management plans - they can be in plan body or an appendix.</i>                                                                                                                            |                                  | 15-16, 36-60                 |

|       |                                                                                                                                                                                                                            |                                      |              |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------|
| 42-E. | A detailed expense and manpower budget in order to provide a management tool that facilitates development of performance measures, including recommendations for cost-effective methods of accomplishing those activities. |                                      | 15-16        |
| 43.   | ***Quantitative data description of the land regarding an inventory of forest and other natural resources and associated acreage. <i>See footnote.</i>                                                                     | 253.034(5)                           | 38, 41       |
| 44.   | <b>Sustainable Forest Management, including implementation of prescribed fire management</b>                                                                                                                               | 18-2.021, 253.034(5) & 259.032(10) ↓ |              |
| 44-A. | Management needs, problems and a desired outcome (see requirement for # 42-A).                                                                                                                                             |                                      | 55-60        |
| 44-B. | Detailed description of both short and long-term management goals (see requirement for # 42-B).                                                                                                                            |                                      | 15-16, 55-60 |
| 44-C. | Measurable objectives (see requirement for #42-C).                                                                                                                                                                         |                                      | 15-16, 55-60 |
| 44-D. | Related activities (see requirement for #42-D).                                                                                                                                                                            |                                      | 15-16, 55-60 |
| 44-E. | Budgets (see requirement for #42-E).                                                                                                                                                                                       |                                      | 15-16        |
| 45.   | <b>Imperiled species, habitat maintenance, enhancement, restoration, or population restoration</b>                                                                                                                         | 259.032(10) & 253.034(5) ↓           |              |
| 45-A. | Management needs, problems and a desired outcome (see requirement for # 42-A).                                                                                                                                             |                                      | 60-67        |
| 45-B. | Detailed description of both short and long-term management goals (see requirement for # 42-B).                                                                                                                            |                                      | 17, 60-67    |
| 45-C. | Measurable objectives (see requirement for #42-C).                                                                                                                                                                         |                                      | 17, 60-67    |
| 45-D. | Related activities (see requirement for #42-D).                                                                                                                                                                            |                                      | 17, 60-67    |
| 45-E. | Budgets (see requirement for #42-E).                                                                                                                                                                                       |                                      | 17           |
| 46.   | ***Quantitative data description of the land regarding an inventory of exotic and invasive plants and associated acreage. <i>See footnote.</i>                                                                             | 253.034(5)                           | 71-74        |
| 47.   | Place the Arthropod Control Plan in an appendix. If one does not exist, provide a statement as to what arrangement exists between the local mosquito control district and the management unit.                             | BOT requirement via lease language   | 90           |
| 48.   | <b>Exotic and invasive species maintenance and control</b>                                                                                                                                                                 | 259.032(10) & 253.034(5) ↓           |              |
| 48-A. | Management needs, problems and a desired outcome (see requirement for # 42-A).                                                                                                                                             |                                      | 67-74        |
| 48-B. | Detailed description of both short and long-term management goals (see requirement for # 42-B).                                                                                                                            |                                      | 18, 67-74    |
| 48-C. | Measurable objectives (see requirement for #42-C).                                                                                                                                                                         |                                      | 18, 67-74    |
| 48-D. | Related activities (see requirement for #42-D).                                                                                                                                                                            |                                      | 18, 67-74    |
| 48-E. | Budgets (see requirement for #42-E).                                                                                                                                                                                       |                                      | 18           |

## Section E: Water Resources

| Item # | Requirement                                                                                                                                                                                                                                                                                                                      | Statute/Rule        | Page Numbers and/or Appendix |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------|
| 49.    | A statement as to whether the property is within and/or adjacent to an aquatic preserve or a designated area of critical state concern or an area under study for such designation. <i>If yes, provide a list of the appropriate managing agencies that have been notified of the proposed plan.</i>                             | 18-2.018 & 18-2.021 | 10                           |
| 50.    | Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding water resources, including water classification for each water body and the identification of any such water body that is designated as an Outstanding Florida Water under Rule 62-302.700, F.A.C. | 18-2.021            | 24-35                        |
| 51.    | Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding swamps, marshes, and other wetlands.                                                                                                                                                               | 18-2.021            | 36-53                        |
| 52.    | ***Quantitative description of the land regarding an inventory of hydrological features and associated acreage. <i>See footnote.</i>                                                                                                                                                                                             | 253.034(5)          | 38, 41                       |



|       |                                                                                                 |                               |           |
|-------|-------------------------------------------------------------------------------------------------|-------------------------------|-----------|
| 53.   | Hydrological Preservation and Restoration                                                       | 259.032(10) & 253.034(5)<br>↓ |           |
| 53-A. | Management needs, problems and a desired outcome (see requirement for # 42-A).                  |                               | 24-36     |
| 53-B. | Detailed description of both short and long-term management goals (see requirement for # 42-B). |                               | 14, 24-36 |
| 53-C. | Measurable objectives (see requirement for #42-C).                                              |                               | 14, 24-36 |
| 53-D. | Related activities (see requirement for #42-D).                                                 |                               | 14, 24-36 |
| 53-E. | Budgets (see requirement for #42-E).                                                            |                               | 14        |

## Section F: Historical, Archeological and Cultural Resources

| Item # | Requirement                                                                                                                                                                                                                                                                                                                                   | Statute/Rule                           | Page Numbers and/or Appendix |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------|
| 54.    | <b>**Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding archeological and historical resources. <i>Include maps of all cultural resources except Native American sites, unless such sites are major points of interest that are open to public visitation.</i></b> | 18-2.018, 18-2.021 & per DHR's request | 75-88                        |
| 55.    | <b>***Quantitative data description of the land regarding an inventory of significant land, cultural or historical features and associated acreage.</b>                                                                                                                                                                                       | 253.034(5)                             | 86-88                        |
| 56.    | A description of actions the agency plans to take to locate and identify unknown resources such as surveys of unknown archeological and historical resources.                                                                                                                                                                                 | 18-2.021                               | 75-88                        |
| 57.    | Cultural and Historical Resources                                                                                                                                                                                                                                                                                                             | 259.032(10) & 253.034(5)<br>↓          |                              |
| 57-A.  | Management needs, problems and a desired outcome (see requirement for # 42-A).                                                                                                                                                                                                                                                                |                                        | 75-88                        |
| 57-B.  | Detailed description of both short and long-term management goals (see requirement for # 42-B).                                                                                                                                                                                                                                               |                                        | 19, 75-88                    |
| 57-C.  | Measurable objectives (see requirement for #42-C).                                                                                                                                                                                                                                                                                            |                                        | 19, 75-88                    |
| 57-D.  | Related activities (see requirement for #42-D).                                                                                                                                                                                                                                                                                               |                                        | 19, 75-88                    |
| 57-E.  | Budgets (see requirement for #42-E).                                                                                                                                                                                                                                                                                                          |                                        | 19                           |

**\*\*While maps of Native American sites should not be included in the body of the management plan, the DSL urges each managing agency to provide such information to the Division of Historical Resources for inclusion in their proprietary database. This information should be available for access to new managers to assist them in developing, implementing and coordinating their management activities.**

## Section G: Facilities (Infrastructure, Access, Recreation)

| Item # | Requirement                                                                                                                               | Statute/Rule                  | Page Numbers and/or Appendix |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------|
| 58.    | <b>***Quantitative data description of the land regarding an inventory of infrastructure and associated acreage. <i>See footnote.</i></b> | 253.034(5)                    | 100-105                      |
| 59.    | Capital Facilities and Infrastructure                                                                                                     | 259.032(10) & 253.034(5)<br>↓ |                              |
| 59-A.  | Management needs, problems and a desired outcome (see requirement for # 42-A).                                                            |                               | 113-121                      |
| 59-B.  | Detailed description of both short and long-term management goals (see requirement for # 42-B).                                           |                               | 20, 113-121                  |
| 59-C.  | Measurable objectives (see requirement for #42-C).                                                                                        |                               | 20, 113-121                  |

|       |                                                                                                                         |                               |             |
|-------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------|
| 59-D. | Related activities (see requirement for #42-D).                                                                         |                               | 20, 113-121 |
| 59-E. | Budgets (see requirement for #42-E).                                                                                    |                               | 20          |
| 60.   | *** Quantitative data description of the land regarding an inventory of recreational facilities and associated acreage. | 253.034(5)                    | 100-105     |
| 61.   | <b>Public Access and Recreational Opportunities</b>                                                                     | 259.032(10) & 253.034(5)<br>↓ |             |
| 61-A. | Management needs, problems and a desired outcome (see requirement for # 42-A).                                          |                               | 113-121     |
| 61-B. | Detailed description of both short and long-term management goals (see requirement for # 42-B).                         |                               | 20, 113-121 |
| 61-C. | Measurable objectives (see requirement for #42-C).                                                                      |                               | 20, 113-121 |
| 61-D. | Related activities (see requirement for #42-D).                                                                         |                               | 20, 113-121 |
| 61-E. | Budgets (see requirement for #42-E).                                                                                    |                               | 20          |

| Section H: Other/Managing Agency Tools |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                   |                              |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------|
| Item #                                 | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Statute/Rule                      | Page Numbers and/or Appendix |
| 62.                                    | Place this LMP Compliance Checklist at the front of the plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ARC and managing agency consensus | Front                        |
| 63.                                    | Place the Executive Summary at the front of the LMP. Include a physical description of the land.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ARC and 253.034(5)                | Front                        |
| 64.                                    | If this LMP is a 10-year update, note the accomplishments since the drafting of the last LMP set forth in an organized (categories or bullets) format.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ARC consensus                     | 11-12                        |
| 65.                                    | Key management activities necessary to achieve the desired outcomes regarding other appropriate resource management.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 259.032(10)                       | 13-21                        |
| 66.                                    | Summary budget for the scheduled land management activities of the LMP including any potential fees anticipated from public or private entities for projects to offset adverse impacts to imperiled species or such habitat, which fees shall be used to restore, manage, enhance, repopulate, or acquire imperiled species habitat for lands that have or are anticipated to have imperiled species or such habitat onsite. The summary budget shall be prepared in such a manner that it facilitates computing an aggregate of land management costs for all state-managed lands using the categories described in s. 259.037(3) which are resource management, administration, support, capital improvements, recreation visitor services, and law enforcement activities. | 253.034(5)                        | 13-21                        |
| 67.                                    | Cost estimate for conducting other management activities which would enhance the natural resource value or public recreation value for which the lands were acquired, include recommendations for cost-effective methods in accomplishing those activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 259.032(10)                       | 13-21                        |
| 68.                                    | A statement of gross income generated, net income and expenses.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 18-2.018                          | 107-108                      |

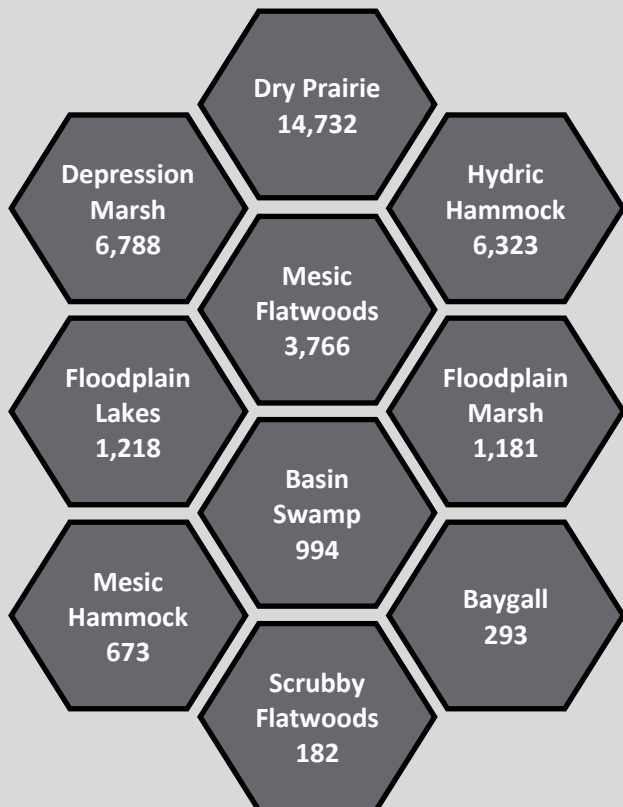
\*\*\* = The referenced inventories shall be of such detail that objective measures and benchmarks can be established for each tract of land and monitored during the lifetime of the plan. All quantitative data collected shall be aggregated, standardized, collected, and presented in an electronic format to allow for uniform management reporting and analysis. The information collected by the DEP pursuant to s. 253.0325(2) shall be available to the land manager and his or her assignee.

BUILT BY THE MEN  
OF THE  
CIVILIAN CONSERVATION CORPS  
1934 - 1941

## Executive Summary

At one of Florida's oldest and largest parks, the first state-designated wild and scenic river flows through a vast expanse of unspoiled wetlands, prairies, hammocks, and pinelands. Arching palm trees and live oaks reflect on the winding tea-colored blackwater stream, while alligators and turtles sun lazily on logs and riverbanks.

## Total Acreage – 37,197 acres



## Myakka Wild and Scenic River

Designated by Florida Statute in 1985  
Regulates development within the "River Area"  
Total of 34 miles in Sarasota County  
Approximately 12 miles within the state park

*"The Myakka River possesses outstandingly remarkable ecological, fish and wildlife, and recreational values which are unique in the State of Florida. These values give significance to the river as one which should be permanently preserved and enhanced for the citizens of the State of Florida, both present and future." (Florida Statutes)*

## Imperiled Plant and Animal Species

### Notable Imperiled Species (55 total imperiled species)

#### Plants (17 total imperiled plant species)

|                                 |                         |
|---------------------------------|-------------------------|
| Pine Lily                       | State-Listed Threatened |
| Many-flowered grass pink orchid | State-Listed Threatened |
| Giant airplant                  | State-Listed Endangered |
| Cardinal airplant               | State-Listed Endangered |

#### Animals (38 total imperiled animal species)

|                        |                             |
|------------------------|-----------------------------|
| Florida burrowing owl  | State-Listed Threatened     |
| Crested caracara       | Federally-Listed Threatened |
| Florida sandhill crane | State-Listed Threatened     |
| Florida scrub-jay      | Federally-Listed Threatened |
| American alligator     | Federally-Listed Threatened |
| Gopher tortoise        | State-Listed Threatened     |
| Florida manatee        | Federally-Listed Threatened |

# 10-Year Key Accomplishments

- Volunteers contributed over 225,000 hours of service.
- The Friends of Myakka, Inc., has provided the park with funding for education, research, publications and a new website; specialized equipment for park operations/resource management, including computer equipment, firefighting equipment, mowers and other needed equipment; and funding for canopy walkway repairs.
- Prescribed fire management conducted on 82,000 acres.
- 3,400 acres treated for exotic plants species.
- 8,950 exotic animals were removed from the park, including 8,600 feral hogs.
- Nine blocked or failing culverts were repaired or replaced along the park drive.
- Mechanical treatment/fire prep conducted on 4,880 acres for Florida dry prairie habitat improvement.
- Connected administration office, south restroom, shop building, and two residences at the shop to main wastewater system and abandoned septic systems.

## Resource Management Objectives

- ☐ Conduct a hydrological assessment and feasibility study to determine the effects of historical hydrologic alterations on the Myakka River system.
- ☐ Maintain fire-dependent natural communities by conducting prescribed burning on between 10,384–17,314 acres per year.
- ☐ Conduct habitat/natural community assessments to determine enhancement and restoration needs; Develop site-specific restoration plans.
- ☐ Develop a plan for Florida dry prairie restoration on the abandoned pasture south of State Road 72.
- ☐ Treat a minimum of 45 infested acres (300 gross acres) of exotic plant species per year.
- ☐ Annually monitor and evaluate 43 recorded cultural resources.

## Land Use and Recreation Objectives

- ☐ Establish the parameters and desired outcomes of a recreational carrying capacity study with the MRMCC; Seek funding and partnerships to conduct the study.
- ☐ Develop a conceptual master plan for the park that considers traffic circulation at the south entrance, mobility options between use areas, recreational uses, and interpretation.
- ☐ Relocate park management support facilities.
- ☐ Address facility repair and renovation needs.

## 10-Year Average Attendance

*415,000 visitors per year*

*86% day use visitors*

*14% overnight visitors*

## Estimated Economic Impact

*\$30.5 million per year*

## Optimum Boundary

Approximately 12,250 acres have been identified for potential acquisition to achieve the park's optimum boundary. Benefits from acquisition would include:

- ⇒ Hydrological maintenance and restoration of the Myakka River and its watershed.
- ⇒ Prescribed fire management and restoration of native habitat.
- ⇒ Preservation of a natural buffer between development and wilderness areas.



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# Introduction

## **Introduction**

Myakka River State Park is located within the North Port-Sarasota-Bradenton metropolitan statistical area (MSA or metro area). This MSA includes the entirety of Manatee and Sarasota Counties (see Vicinity Map). The Vicinity Map also reflects significant land and water resources existing near the park.

## **Acquisition History**

Myakka River State Park was initially created in 1934 by the Board of Trustees of the Internal Improvement Trust Fund (Trustees) and the Florida Board of Forestry. The Trustees hold fee simple title to the park and on January 23, 1968, the Trustees leased the property to DRP under a 99-year lease (see Appendix 1). A new lease number (3636) was assigned in 1998 without changing any of the terms and conditions. The property leased from the Trustees to the DRP is 28,936.92 acres. The current lease will expire on January 22, 2067. On March 25, 1997, DRP assumed management of an 8,260.76-acre property owned by the Southwest Florida Water Management District (SWFWMD). In total, the park comprises 37,197.68 acres. A legal description of the park property can be made available upon request.

At Myakka River State Park, public outdoor recreation and conservation is the designated single-use of the property. The Myakka Wild and Scenic Designation and Preservation Act constrains use of the property within the "River Area", as defined by the Act.

## **Purpose and Significance of the Park**

The purpose of Myakka River State Park is to preserve the natural beauty, wildlife, and historical features of the property; to serve as an important link in the chain of protected lands in the southern portion of the state; and to provide outstanding outdoor recreation and natural resource interpretation for the benefit of the people of Florida.

Myakka River State Park is one of the oldest and largest units in the Florida State Park system. The Myakka River winds through the park from north to south, for nearly 12 miles. The Myakka River is designated as a Florida Wild and Scenic River, and is the only river in Florida to receive state recognition for its intersection of ecological, biological, and recreational significance. The river and associated lakes provide opportunities for boating, paddling, and fishing. Wildlife viewing in the park is exceptional, particularly in the wintertime when groups of white pelicans, flamboyant roseate spoonbills and black-bellied whistling ducks are common.

The park protects nearly 15,000 acres of Florida dry prairie, a globally imperiled ecosystem endemic to the state. Dry prairie was a significant element of Florida's historic landscape, but today most of the original extent of dry prairie within Florida has been converted to housing or agriculture uses. The dry prairie provides critical habitat for 17 imperiled plant species and numerous animal species, including Audubon's crested caracara, Florida sandhill crane, and the Florida Burrowing owl.

A significant portion of the park's dry prairie and a segment of the Myakka State Wild and Scenic River are included within the park's 7,500-acre wilderness preserve. Access to the wilderness preserve is limited to just 30 visitors per day. This portion of the park has seen little permanent alteration and offers an outstanding opportunity for solitude and a primitive wilderness experience. Located at the south end of Lower Myakka Lake within the Wilderness Preserve is "Deep Hole", the only large sinkhole known to exist in the park. Alligators are extremely plentiful in the park, but especially at Deep Hole where the sink acts as a fish trap during times of low water. Hungry alligators will congregate here to feed, creating quite a magnificent wildlife spectacle.

The park's cultural landscape is shaped by the early 20th century cattle ranching industry and features associated with Civilian Conservation Corps (CCC) park development during the late 1930s to early 1940s. Much of what is now the park was a part of "Meadow Sweet Pastures" a cattle ranch owned by Mrs. Potter Palmer, an important figure in the development of cattle ranching in southwest Florida. The Palmer family donated the original 1,920 acres of the park to the State of Florida in 1934.

The most noteworthy of the park's historic structures are the various buildings, features, and other improvements constructed by the CCC. The park contains 19 CCC structures and related features. Many of the park's CCC buildings still serve the public, including 5 original cabbage palm log cabins, that provide comfortable lodging and a unique visitor experience. The CCC activities at the park are significant to the history of Florida's African American population, as the park was one the few Florida parks to be developed with black CCC enrollees.

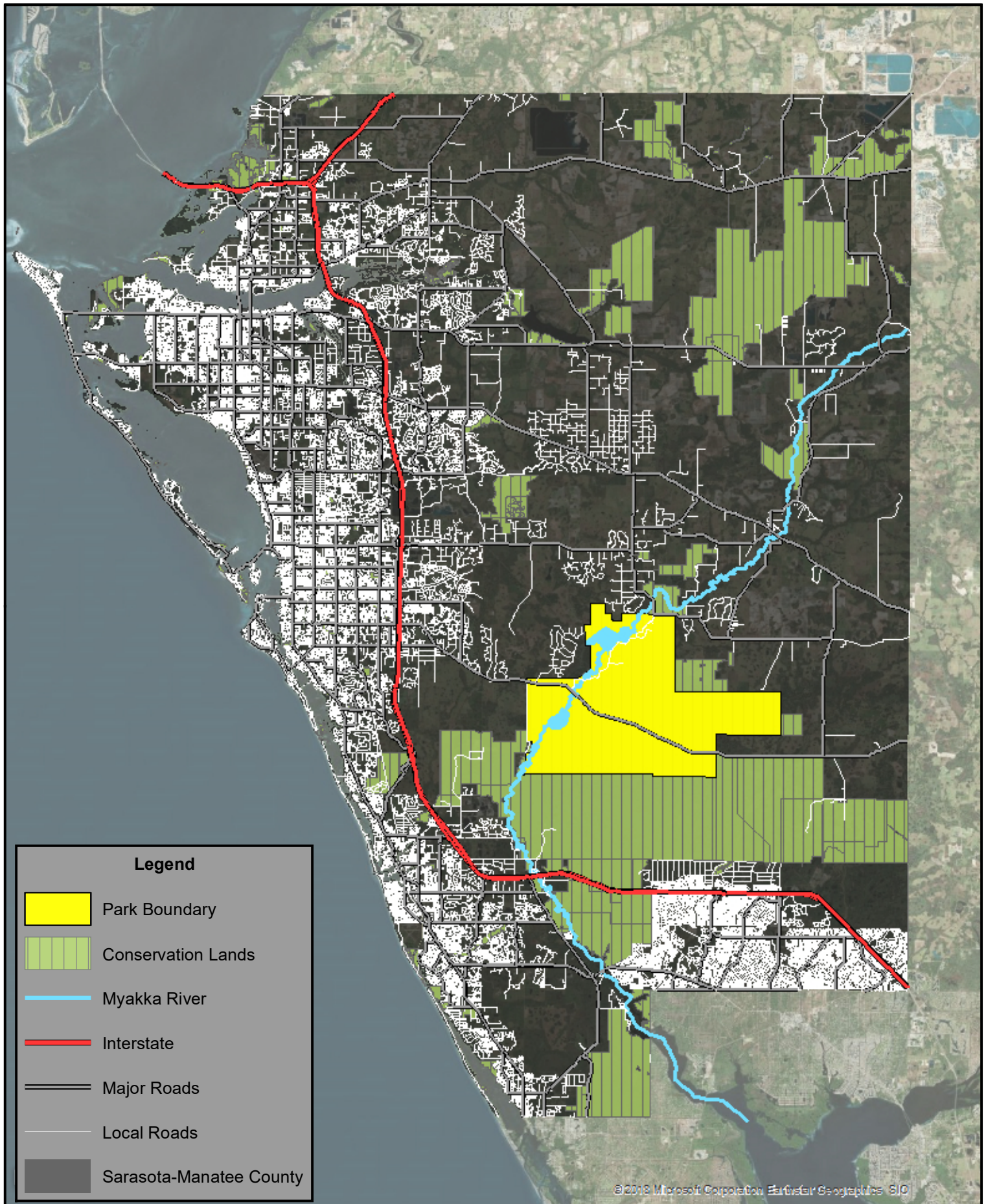
## Myakka Wild and Scenic River

According to the Myakka River Wild and Scenic River Designation and Preservation Act (know hereafter as the Act), "The Myakka River in Manatee, Sarasota, and Charlotte Counties possesses outstandingly remarkable ecological, fish and wildlife, and recreational values which are unique in the State of Florida. These values give significance to the river as one which should be permanently preserved and enhanced for the citizens of the State of Florida, both present and future" (Section 258.501, Florida Statutes). As such, in 1985 the Florida Legislature designated 34 miles of the Myakka River (from County Road 780 south to the Sarasota/Charlotte County line) a Florida Wild and Scenic River. The entire river portion flowing through Myakka River State Park is included in the State Wild and Scenic River designation. The Act also directed the Florida Department of Environmental Protection (FDEP) to adopt rules and a permitting program to regulate activities within the protected River Area.

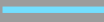
As defined by the Act, "the River Area means the corridor of land beneath and surrounding the Myakka River from river mile 7.5 to river mile 41.5, together with a corridor including the maximum upland extent of wetlands vegetation" (Section 258.501, Florida Statutes). Interpreted as the river's floodplain, it is within this area that the Myakka River Wild and Scenic River Rule (Chapter 62D-15, F.A.C. [also known as the Rule]) regulates and constrains the use of Myakka River State Park. In addition, the Wild and Scenic River Protection Zone buffers the River Area and extends 220 feet landward from the River Area. The Wild and Scenic River Protection Zone (also known as the Myakka River Protection Zone) is administered within the state park by Sarasota County. The implications of the Rule on land use development and proposals will be discussed in the Land Use Component of this plan.

Established by the Act in 1985, the Myakka River Management Coordinating Council is tasked with providing interagency and intergovernmental coordination in the management of the river. The Council holds three meetings per year to review and make recommendations on all proposals for amendments to the Designation Act, Myakka Wild and Scenic River Management Plan, Myakka River Wild and Scenic River Rule, as well as on other matters which may be



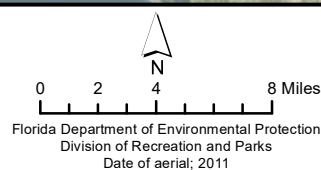


**Legend**

-  Park Boundary
-  Conservation Lands
-  Myakka River
-  Interstate
-  Major Roads
-  Local Roads
-  Sarasota-Manatee County

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MYAKKA RIVER STATE PARK

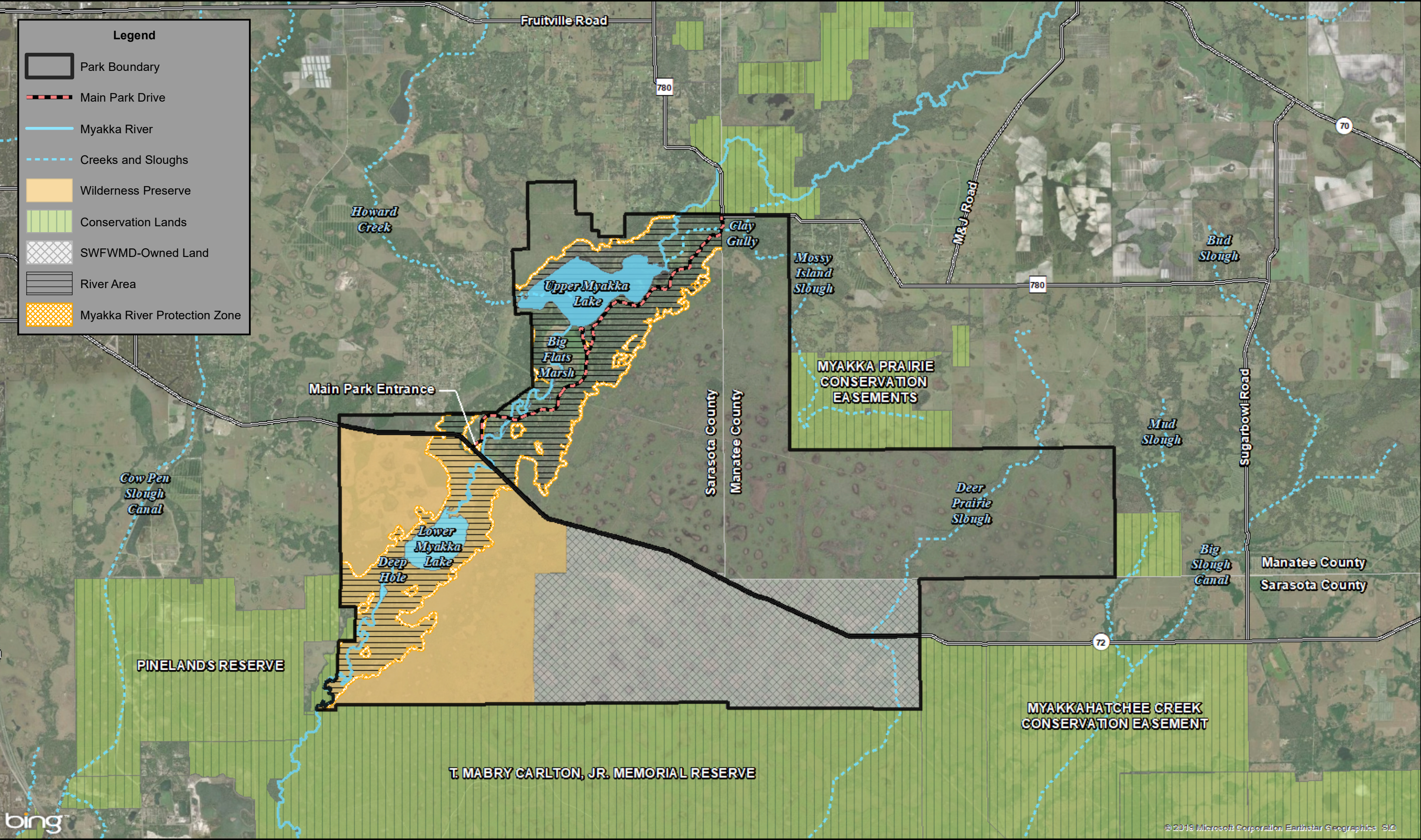


VICINITY MAP













brought before the Council by the FDEP, any local government, or any member of the Council. The Council can then render its advisory opinions to affected entities.

The most recent update of the Myakka Wild and Scenic River Management Plan was facilitated by the Myakka River Management Coordinating Council and developed in 2011 with input from applicable state agencies, Southwest Florida Water Management District, Tampa Bay and Southwest Florida Regional Planning Councils, affected local governments, agricultural, environmental and landowner interest groups, and the public. Additional information about the Myakka River Wild and Scenic River Management Plan, including links to the relevant statute and rule, can be found on the Myakka River Management Coordinating Council website.

This management plan update for Myakka River State Park was developed with the Myakka River Management Coordinating Council as a key stakeholder in an effort to align the objectives outlined in the Myakka River Wild and Scenic River Management Plan.

## **Purpose and Scope of the Plan**

Myakka River State Park is classified as a state park in the DRP's unit classification system. In the management of a state park, a balance is sought between the goals of maintaining and enhancing natural conditions and providing various recreational opportunities. Natural resource management activities are aimed at management of natural systems. Development in the park is directed toward providing public access to and within the park, and to providing recreational facilities, in a reasonable balance, that are both convenient and safe. Program emphasis is on interpretation on the park's natural, aesthetic and educational attributes.

This plan serves as the basic statement of goals and objectives for the management of Myakka River State Park as a unit of Florida's state park system. It identifies the goals, objectives, actions and criteria or standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives and provide balanced public utilization. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes (F.S.), Chapter 18-2, Florida Administrative Code (F.A.C.), and is

intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the 2004 approved plan.

## **Resource Management Component**

The Resource Management Component provides a detailed inventory and assessment of the natural and cultural resources of the park. Resource management needs and issues are identified, and measurable management objectives are established for each of the park's management goals and resource types. This component provides guidance on the application of such measures as prescribed burning, exotic species removal, imperiled species management, cultural resource management and restoration of natural conditions.

The DRP's philosophy of resource management is natural systems management. Primary emphasis is placed on restoring and maintaining, to the degree possible, the natural processes that shaped the structure, function and species composition of Florida's diverse natural communities as they occurred in the original domain. Single species management for imperiled species is appropriate in state parks when the maintenance, recovery or restoration of a species or population is complicated due to constraints associated with long-term restoration efforts, unnaturally high mortality or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes and should not imperil other native species or seriously compromise the park values.

The DRP's management goal for cultural resources is to preserve sites and objects that represent Florida's cultural periods, significant historic events or persons. This goal often entails active measures to stabilize, reconstruct or restore resources, or to rehabilitate them for appropriate public use.

Because park units are often components of larger ecosystems, their proper management can be affected by conditions and events that occur beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program that assesses resource conditions, evaluates management activities and refines management actions, and reviews local



comprehensive plans and development permit applications for park/ecosystem impacts.

## Land Use Component

The Land Use Component is the recreational resource allocation plan for the park. Based on considerations such as access, population, adjacent land uses, park resources, current public uses, and existing development, measurable objectives are set to achieve the desired allocation of the physical space of the park. These objectives identify use areas and propose the types of facilities and programs as well as the volume of public use to be provided.

Land use planning and park development decisions for the state park system are based on the dual responsibilities of the Florida Department of Environmental Protection, Division of Recreation and Parks. These responsibilities are to preserve representative examples of original natural Florida and its cultural resources, and to provide outdoor recreation opportunities for Florida's citizens and visitors.

The general planning and design process begins with an analysis of the natural and cultural resources of the unit, and then proceeds through the creation of a conceptual land use plan that culminates in the actual design and construction of park facilities. Input to the plan is provided by experts in environmental sciences, cultural resources, park operation and management. Additional input is received through public workshops, and through environmental and recreational-user groups. With this approach, the DRP objective is to provide quality development for resource-based recreation throughout the state with a high level of sensitivity to the natural and cultural resources at each park.

This component of the unit plan includes a brief inventory of the external conditions and the recreational potential of the unit. Existing uses, facilities, special conditions on use, and specific areas within the park that will be given special protection, are identified. The land use component then summarizes the current conceptual land use plan for the park, identifying the existing or proposed activities suited to the resource base of the park. Any new facilities needed to support the proposed activities are expressed in general terms.

All development and resource alteration proposed in this plan is subject to the granting of appropriate permits, easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from requirements of the appropriate local, state or federal agencies.

## Secondary Uses Consideration

In accordance with 253.034(5) F.S., the potential of the park to accommodate secondary management purposes was analyzed. These secondary purposes were considered within the context of DRP's statutory responsibilities and the resource needs and values of the park. This analysis considered the park's natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. For this park, it was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation.

As required for all state park units larger than 1,000 acres, a timber management analysis (Appendix 8) was conducted for the park's upland flatwoods. However, timber management activities will not be conducted during this ten-year planning cycle. Any thinning activities that take place will be as a part of natural community improvement and restoration efforts.

DRP has determined that uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) would not be consistent with this plan or the management purposes of the park.

In accordance with 253.034(5) F.S. The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that multiple-use management activities would not be appropriate as a means of generating revenues for land management. Instead, techniques such as entrance fees, concessions and similar measures will be employed on a case-by-case basis as a means of supplementing park management funding.

## Contract Services

DRP may provide the services and facilities outlined in this plan either with its own funds and staff or through an outsourcing contract. Private contractors may provide assistance with natural resource management and restoration activities or a concessionaire may provide services to park visitors in order to enhance the visitor experience. For example, a concessionaire could be authorized to sell merchandise and food and to rent recreational equipment for use in the park. A concession may also be authorized to provide specialized services, such as interpretive tours, or overnight accommodations when the required capital investment exceeds that which DRP can elect to incur. Decisions regarding outsourcing, contracting with the private sector, the use of concessionaires, etc. are made on a case-by-case basis in accordance with DRP's Operations Manual (OM).

## Management Program Overview

### Management Authority and Responsibility

In accordance with Chapter 258, F.S. and Chapter 62D-2, F.A.C., the Division of Recreation and Parks (DRP) is charged with the responsibility of developing and operating Florida's recreation and parks system. These are administered in accordance with the following policy:

*It shall be the policy of the Division of Recreation and Parks to promote the state park system for the use, enjoyment, and benefit of the people of Florida and visitors; to acquire typical portions of the original domain of the state which will be accessible to all of the people, and of such character as to emblemize the state's natural values; conserve these natural values for all time; administer the development, use and maintenance of these lands and render such public service in so doing, in such a manner as to enable the people of Florida and visitors to enjoy these values without depleting them; to contribute materially to the development of a strong mental, moral, and physical fiber in the people; to provide for perpetual preservation of historic sites and memorials of statewide significance and interpretation of their history to the people; to contribute to the tourist appeal of Florida.*

The Board of Trustees of the Internal Improvement Trust Fund (Trustees) has granted management authority of certain sovereign submerged lands to the DRP under Management Agreement MA 68-086 (as amended January 19, 1988). The management area includes a 400-foot zone from the edge of mean high water where a park boundary borders sovereign submerged lands fronting beaches, bays, estuarine areas, rivers or streams. Where emergent wetland vegetation exists, the zone extends waterward 400 feet beyond the vegetation. The agreement is intended to provide additional protection to resources of the park and nearshore areas and to provide authority to manage activities that could adversely affect public recreational uses.

Many operating procedures are standardized system-wide and are set by internal direction. These procedures are outlined in the OM that covers such areas as personnel management, uniforms and personal appearance, training, signs, communications, fiscal procedures, interpretation, concessions, public use regulations, resource management, law enforcement, protection, safety and maintenance.

### General Park Management Goals

The following park goals express DRP's long-term intent in managing the state park:

- Provide administrative support for all park functions.
- Protect water quality and quantity in the park, restore hydrology to the extent feasible, and maintain the restored condition.
- Restore and maintain the natural communities/habitats of the park.
- Maintain, improve, or restore imperiled species populations and habitats in the park.
- Remove exotic and invasive plants and animals from the park and conduct needed maintenance-control.
- Protect, preserve, and maintain the cultural resources of the park.
- Provide public access, interpretation, and recreational opportunities in the park.
- Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.



## Management Coordination

The park is managed in accordance with all applicable laws and administrative rules. Agencies having a major or direct role in the management of the park are discussed in this plan.

The Florida Department of Agriculture and Consumer Services (FDACS), Florida Forest Service (FFS), assists DRP staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FWC) assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within the park. In addition, the FWC aids DRP with wildlife management programs, including imperiled species management. The Florida Department of State (FDOS), Division of Historical Resources (DHR) assists staff to ensure protection of archaeological and historical sites. The Southwest Florida Water Management District (SWFWMD) provides aquatic control of invasive exotics along the river and Upper and Lower Myakka Lakes. Sarasota County assists park staff in monitoring water levels and vegetation on the wilderness preserve and southern boundary of the park. In addition, the County is available to assist on prescribed burns along the southern boundary of the park.

## Public Participation

DRP provided an opportunity for public input by conducting a public workshop and an advisory group meeting to present the draft management plan to the public. These meetings were held on March 2 and 3, 2017 respectively. Meeting notices were published in the Florida Administrative Register [2/20/17, VOL 43/34], included on the Department Internet Calendar, posted in clear view at the park, and promoted locally. The purpose of the advisory group meeting is to provide the advisory group members an opportunity to discuss the draft management plan (see Appendix 2).

## Other Designations

Myakka River State Park is not within an Area of Critical State Concern as defined in Section 380.05, Florida Statutes, and it is not presently under study for such designation. The park is a component of the Florida

Greenways and Trails System, administered by the Department's Office of Greenways and Trails.

All waters within the park have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302, Florida Administrative Code. The section of the Myakka River within the park is designated as Class I waters (potable water supplies), and all other surface waters in this park are classified by the Department as Class III waters. This park is not within or adjacent to an aquatic preserve as designated under the Florida Aquatic Preserve Act of 1975 (Section 258.35, Florida Statutes).



# Past Accomplishments Future Objectives

## **Past Accomplishments**

The resource management and land use components of this management plan provide a thorough inventory of the park's natural, cultural and recreational resources. They outline the park's management needs and problems, and recommend both short and long-term objectives and actions to meet those needs. The past accomplishments and future objectives section addresses the administrative goals for the park and reports on DRP progress toward achieving resource management, operational, and capital improvement goals and objectives since approval of the previous management plan for this park.

Since the approval of the last management plan for Myakka River State Park in 2004, significant work has been accomplished and progress made towards meeting the DRP's management objectives for the park. These accomplishments fall within four general categories: park administration and operations, resource management, recreation and visitors services, and park facilities.

### **Park Administration and Operations**

- During the last ten years, park volunteers contributed over 225,000 hours of volunteer service.

- The park's Citizen Support Organization (CSO), Friends of Myakka, Inc., has provided the park with:
  - \* funding for education, research, publications and a new website;
  - \* specialized equipment for park operations/resource management, including computer equipment, firefighting equipment, mowers and other needed equipment; and
  - \* funding for canopy walkway repairs.
- The CSO has also held numerous nature classes and special events at the park to raise funds for some of the items listed above.

## **Resource Management**

### **Natural Resources**

- Equipment purchased for natural community restoration activities, including tractor/loader/tree cutter.
- Prescribed fire management conducted on 82,000 acres.
- 3,400 acres treated for exotic plants.
- 8,950 exotic animals were removed from the park, including 8,600 feral hogs.
- Six additional culverts were placed under SR72.
- Two low-water crossings and three culverts were repaired.



## Natural Resources Cont.

- Three new culverts were added, and three unpaved roads were improved to allow for sheet flow.
- Nine blocked or failing culverts were repaired or replaced or repaired along the park drive.
- A timber project was conducted for habitat improvement on mesic flatwoods and scrubby flatwoods natural communities. 196 acres of planted pine were removed, and 1,404 acres were thinned.
- Mechanical treatment (roller chopping or tree-cut mowing) conducted on 4,878 acres for habitat improvement to Florida dry prairie.
- Bi-annual butterfly survey has been added to park's monitoring.
- During the busy months of the year, a bird naturalist is at the birdwalk on certain days of the week. The naturalist has a scope, bird guides, and birding experience handy for the visitors' use.
- A Myakka River Clean Up was organized and led by our interpretive chairperson.
- Weekly Camper Coffees and Ice Cream Socials are organized by volunteers for park visitors and campers (December-March).
- Every two weeks, story time is provided in the Log Pavilion for campers. This is a time when rangers and volunteers tell stories or read poems about Myakka and Florida history.
- The park serves as host to many weddings, private events and family gatherings.
- The park is listed as a site on the Great Florida Birding Trail.
- Myakka Half Marathon fundraiser event for families affected by Alzheimer's (2015-2018)
- NSPC Myakka, LLC began operating tour boats and tram rides in July 2018. Additional pre-approved services may also include equestrian and backcountry tours.

## Cultural Resources

- A preservation plan was completed in May 2009 for seven CCC structures.
- A Partnerships in Parks project was completed to restore the seven CCC structures which include all five cabins, the log pavilion and the log restroom).
- Added six buildings to the Florida Master Site File.
- Replaced roof on four CCC structures.
- Completed Archaeological Resource Sensitivity Modeling for park.

## **Recreation and Visitor Services**

- Myakka Outpost continued to provide food, souvenirs and rental services for the enjoyment of park visitors.
- A self-guided Native Tree Walk is provided, which allows the visitors to learn about the native trees of the park.
- The Friends of Myakka continued to host Moon Over Myakka concerts during the winter months. These concerts are Myakka's biggest events of the year.
- We provide guided Full Moon Bike Rides once a month during the park's busy season. The guides lead the participants along the main drive during evening hours to watch the sunset and view wildlife under the full moon.
- Weekly ranger guided walks and campfire programs are scheduled for park visitors and campers (December-March).
- A weekly, walking tour to Deep Hole is offered during the fall and winter months.
- Post-flooding repairs to facilities, roads and infrastructure (2004 and 2014)
- Upgraded electric to 50-amp service in Old Prairie Campground
- Upgrade youth area with water service
- Built event stage for concerts
- Replaced eleven roofs on park buildings
- New residence for park manager
- New 6,400-square-foot concession building
- Removed old concession building
- New campground
- Road repairs/repaving
- Repaired Clay Gully Bridge
- Replaced lift station at Stop Camp
- Upgrades to tour boat landing and services
- Tied in Administration office, south restroom, shop building, and two residences at the shop to main wastewater system and abandoned three failing septic systems
- Added commercial water softener system to main water plant to address drinking water concerns
- Replaced two failing drain fields

## **Park Facilities**

## Future Objectives

This section also compiles the management goals, objectives, and actions expressed in the separate parts of this management plan for easy review. Estimated costs for the ten-year period of this plan are provided for each action and objective, and the costs are summarized under standard categories of land management activities. The Ten-Year Implementation Schedule and Cost Estimates summarizes the management goals, objectives, and actions that are recommended for implementation over this period. Measures are identified for assessing progress toward completing each objective and action. The timeframes for completing each objective and action are Continuous (C), Short-Term (ST), Long-Term (LT), and Unfunded Need (UFN). Preliminary cost estimates for each action are provided and the estimated total costs to complete each objective are computed. Finally, all costs are consolidated under the following three standard land management categories: administration and support, resource management, and recreation and visitor services.

Many of the actions identified in the plan can be implemented using existing staff and funding. However, a number of continuing activities and new activities with measurable quantity targets and projected completion dates are identified that cannot be completed during the life of this plan unless additional resources for these purposes are provided.

The plan's recommended actions, time frames, and cost estimates will guide the DRP's planning and budgeting activities over the period of this plan. It must be noted that these recommendations are based on the information that exists at the time the plan was prepared. A high degree of adaptability and flexibility must be built into this process to ensure that the DRP can adjust to changes in the availability of funds, improved understanding of the park's natural and cultural resources, and changes in statewide land management issues, priorities, and policies.

Statewide priorities for all aspects of land management are evaluated each year as part of the process for developing the DRP's annual legislative budget requests. When preparing these annual requests, the DRP considers the needs and priorities of the entire state park system and the projected availability of funding from all sources during the upcoming fiscal year. In addition to annual legislative appropriations, the DRP pursues supplemental sources of funds and staff resources wherever possible, including grants, volunteers and partnerships with other entities. The DRP's ability to accomplish the specific actions identified in the plan will be determined largely by the availability of funds and staff for these purposes, which may vary from year to year. Consequently, the target schedules and estimated costs may need to be adjusted during the ten-year management planning cycle.

| Administration and Support |                                                                                                                 | Measure                         | Planning Period | Estimated Manpower and Expense Cost (10-years) |
|----------------------------|-----------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------|------------------------------------------------|
| <b>Objective A</b>         | Continue day-to-day administrative support at current levels.                                                   | Administrative support ongoing  | C               | \$247,000                                      |
| <b>Objective B</b>         | Expand administrative support as new lands are acquired, new facilities are developed, or as other needs arise. | Administrative support expanded | C               | \$16,000                                       |



## Accomplishments and Objectives

| Hydrological Management Program |                                                                                                                                                                                                                        | Measure                   | Planning Period | Estimated Manpower and Expense Cost (10-years) |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------|------------------------------------------------|
| <b>Objective A</b>              | Conduct/obtain an assessment of the park's hydrological needs.                                                                                                                                                         | Assessment conducted      | LT              | \$663,000                                      |
| Action 1                        | Conduct an assessment and feasibility study of the effects of the weir, blocked culverts adjacent to the weir and the private dam on the hydrologic flow, hydroperiod, flora and fauna within the Myakka River system. | Assessment conducted      | ST              | \$250,000                                      |
| Action 2                        | Pending the outcome of the assessment in Action 1, and if it is determined as feasible to do so, remove or modify structures to improve hydrology.                                                                     | Implement Assessment      | UFN             | \$350,000                                      |
| Action 3                        | Monitor the water inflow to Myakka River State Park from adjacent sources, including any associated storm water runoff. DRP should continue to support all entities that track water sources for the park.             | Data collected            | C               | \$6,000                                        |
| Action 4                        | Continue water quality monitoring through the University of Florida's Lakewatch Program.                                                                                                                               | Data collected            | C               | \$29,000                                       |
| Action 5                        | Conduct a more inclusive water quality assessment on a yearly basis.                                                                                                                                                   | Data collected            | UFN             | \$12,000                                       |
| Action 6                        | Restore hydrologic sheet flow and natural hydroperiod by filling ditches that were created to connect and drain wetlands.                                                                                              | # Miles of ditches filled | UFN             | \$16,000                                       |

| Natural Communities Management Program |                                                                                                                                                                                                        | Measure                                       | Planning Period | Estimated Manpower and Expense Cost (10-years) |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------|------------------------------------------------|
| <b>Objective A</b>                     | Maintain 26,085 acres within the optimal fire return interval.                                                                                                                                         | # Acres within fire return interval target    | LT              | \$1,548,000                                    |
| Action 1                               | Update annual burn plan on a yearly basis.                                                                                                                                                             | Plan updated                                  | C               | \$16,000                                       |
| Action 2                               | Maintain fire-dependent communities by burning between 10,384–17,314 acres annually.                                                                                                                   | Average # acres burned annually               | C               | \$618,000                                      |
| Action 3                               | Continue and improve monitoring fire effects on dry prairie, mesic flatwoods and scrubby flatwoods.                                                                                                    | # Acres monitored/ data collected             | C               | \$16,000                                       |
| Action 4                               | Maintain firebreaks.                                                                                                                                                                                   | # Miles of firebreaks maintained              | C               | \$898,000                                      |
| <b>Objective B</b>                     | Conduct habitat/natural community assessments to determine restoration and enhancement needs.                                                                                                          | # Acres restored or with restoration underway | C               | \$189,000                                      |
| Action 1                               | Survey and assess restoration needs and develop/update site specific restoration plans using the restoration roller-chopping guidelines. Each fiscal year, the natural communities should be assessed. | Plan developed/ updated                       | C               | \$16,000                                       |
| Action 2                               | Implement restoration plan.                                                                                                                                                                            | # Acres with restoration underway             | UFN             | \$157,000                                      |
| Action 3                               | Update and maintain a comprehensive mechanical treatment map.                                                                                                                                          | Map complete                                  | C               | \$16,000                                       |



## Accomplishments and Objectives

|                    |                                                                                                                                                                                                                           |                                                            |     |             |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-----|-------------|
| <b>Objective C</b> | Develop a plan for Florida dry prairie restoration of the abandoned pasture south of State Road 72, that identifies priorities, feasibility, and partnership or funding opportunities.                                    | Plan developed                                             | UFN | \$1,298,000 |
| Action 1           | Develop a restoration plan which outlines the desired outcome; documents the existing conditions; identifies potential restoration projects.                                                                              | Plan developed                                             | UFN | \$16,000    |
| Action 2           | Determine the feasibility of the projects; outline a budget for each project and phase; prioritize project schedule; and establish a list of potential partnership and funding opportunities.                             | Budget determined; partnership & funding available         | UFN | \$82,000    |
| Action 3           | After Actions 1 and 2 are met, implement the project(s).                                                                                                                                                                  | # of Acres pastures restored to historic natural community | UFN | \$1,200,000 |
| <b>Objective D</b> | Conduct aquatic habitat restoration activities on 880 acres of river floodplain lake that identifies priorities, feasibility and partnership/funding.                                                                     | # Acres improved or with improvements underway             | LT  | \$29,000    |
| Action 1           | Identify, develop, and implement comprehensive aquatic habitat management of the Upper Myakka Lake by collaborating with FWC and the SWFWMD.                                                                              | Comprehensive aquatic management implemented               | LT  | \$27,000    |
| Action 2           | Continue to coordinate with FWC Invasive Plant Management Section and SWFWMD Vegetation Management to control the spread of aquatic invasive plants in the Upper Myakka Lake, the Lower Myakka Lake and the Myakka River. | # Acres invasive aquatic plants treated                    | C   | \$2,000     |
| <b>Objective E</b> | Develop a desired future conditions map using historical data including pre-settlement land survey plat maps and notes for the area and interpret 1940s aerial photography.                                               | Map complete                                               | ST  | \$10,000    |

| Imperiled Species Management Program |                                                                                                                                                                              | Measure                                       | Planning Period | Estimated Manpower and Expense Cost (10-years) |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------|------------------------------------------------|
| <b>Objective A</b>                   | Periodically update imperiled species occurrence inventory lists for plants and animals.                                                                                     | List updated                                  | C               | \$11,000                                       |
| <b>Objective B</b>                   | Monitor and document 38 selected imperiled animal species in the park.                                                                                                       | # Species monitored                           | C               | \$68,000                                       |
| Action 1                             | Develop monitoring protocols for 3 selected imperiled animal species, including crested caracara, burrowing owl and sandhill cranes.                                         | # Protocols developed                         | ST              | \$18,000                                       |
| Action 2                             | Implement monitoring protocols for imperiled animal species including those listed in Action 1 above and the bald eagle, Florida scrub jay, gopher tortoise and butterflies. | # Species monitored                           | C               | \$32,000                                       |
| Action 3                             | Determine best management practice in relation to reducing the impacts of human disturbance on alligators at Deep Hole and implement.                                        | Reduction of impacts by visitors at Deep Hole | C               | \$18,000                                       |
| <b>Objective C</b>                   | Monitor and document 17 selected imperiled plant species in the park.                                                                                                        | # Species monitored                           | C               | \$5,000                                        |
| Action 1                             | Maintain the herbarium which was established in 1940's; continue to add new species as they are found.                                                                       | Intact herbarium                              | C               | \$3,500                                        |
| Action 2                             | Develop monitoring protocols for the cardinal airplant and the giant airplant along the main paved roads in the park.                                                        | # Protocols developed                         | ST              | \$500                                          |
| Action 3                             | Implement monitoring protocols for the cardinal airplant and the giant airplant along the main paved roads in the park.                                                      | # Species monitored                           | C               | \$1,000                                        |



## Accomplishments and Objectives

| Exotic Species Management Program |                                                                                                                                                         | Measure                                                       | Planning Period | Estimated Manpower and Expense Cost (10-years) |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-----------------|------------------------------------------------|
| <b>Objective A</b>                | Annually treat a minimum of 45 infested acres (300 gross acres) of exotic plant species in the park.                                                    | # Acres treated                                               | C               | \$109,000                                      |
| Action 1                          | Annually develop/update exotic plant management work plan.                                                                                              | Plan developed/updated                                        | C               | \$14,000                                       |
| Action 2                          | Implement annual work plan by treating 45 zones in park, annually, and continuing maintenance and follow-up treatments, as needed.                      | Plan implemented                                              | C               | \$79,000                                       |
| Action 4                          | Continue to seek out grants and additional funding for the treatment of FLEPPC category 1 and 2 exotic plants.                                          | # of funding dollars received                                 | C               | \$16,000                                       |
| <b>Objective B</b>                | Implement control measures on 3 exotic animal species in the park.                                                                                      | # Species for which control measures implemented              | C               | \$58,000                                       |
| Action 1                          | Authorized staff and contractors will participate in the feral hog removal program as resources permit.                                                 | # of hogs removed; # improved habitat acres/ # miles of roads | C               | \$38,000                                       |
| Action 2                          | Research best management practice to reduce the population of exotic fish, island apple snails, and exotic amphibian species and implement if feasible. | Best management practice identified and implemented           | C               | \$20,000                                       |

| Cultural Resources Management Program |                                                                                                                                                                  | Measure                              | Planning Period | Estimated Manpower and Expense Cost (10-years) |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------------|------------------------------------------------|
| <b>Objective A</b>                    | Assess and evaluate 43 of 43 recorded cultural resources in the park.                                                                                            | Documentation complete               | LT              | \$47,000                                       |
| Action 1                              | Complete 17 assessments/evaluations of archaeological sites.                                                                                                     | Assessments complete                 | LT, ST          | \$17,000                                       |
| Action 2                              | Complete 12 Historic Structures Reports (HSRs) for historic buildings and cultural landscape. Prioritize stabilization, restoration and rehabilitation projects. | Reports and priority lists completed | LT              | \$30,000                                       |
| <b>Objective B</b>                    | Compile reliable documentation for all recorded historic and archaeological sites.                                                                               | Documentation complete               | LT              | \$42,250                                       |
| Action 1                              | Ensure all known sites are recorded or updated in the Florida Master Site File.                                                                                  | # Sites recorded or updated          | ST              | \$10,250                                       |
| Action 2                              | Conduct Phase I archaeological survey for area within proposed future development and identified by predictive model.                                            | Survey(s) completed                  | UFN             | \$30,000                                       |
| Action 3                              | Develop and adopt a Scope of Collections Statement.                                                                                                              | Document completed                   | ST              | \$2,000                                        |
| <b>Objective C</b>                    | Bring 17 of 43 recorded cultural resources into good condition.                                                                                                  | # Sites in good condition            | LT              | \$120,000                                      |
| Action 1                              | Design and implement regular monitoring programs for 17 cultural sites.                                                                                          | # Sites monitored                    | C               | \$20,000                                       |
| Action 2                              | Create and implement a cyclical maintenance program for each cultural resource.                                                                                  | Programs implemented                 | C               | \$100,000                                      |

## Accomplishments and Objectives

| Recreational Management Program |                                                                                                       | Measure                                        | Planning Period | Estimated Manpower and Expense Cost (10-years) |
|---------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------|-----------------|------------------------------------------------|
| <b>Objective A</b>              | Improve the visitor experience in the main use areas.                                                 | # Facilities/<br>miles of Road/study completed | UFN             | \$557,000                                      |
| Action 1                        | Seek funding and partnerships to conduct a recreational carrying capacity study for the Myakka River, | Study completed                                | UFN             | \$250,000                                      |
| Action 2                        | Develop a conceptual master plan for the park.                                                        | Document completed                             | ST              | \$5,000                                        |
| Action 3                        | Continue, improve, and develop new interpretive programs.                                             | # Interpretive programs                        | C               | \$302,000                                      |
| <b>Objective B</b>              | Improve recreation and support facilities.                                                            | # Facilities                                   | C               | \$12,244,500                                   |
| Action 1                        | Maintain all recreation and support facilities in the park.                                           | # Facilities maintained                        | C               | \$4,937,000                                    |
| Action 2                        | Relocate park management support facilities.                                                          | # Facilities relocated                         | UFN             | \$577,500                                      |
| Action 3                        | Address facility repair and renovation needs.                                                         | # Facilities repaired                          | UFN             | \$6,206,000                                    |
| Action 4                        | Consider developing additional recreational facilities.                                               | # Facilities developed                         | UFN             | \$524,000                                      |



| Summary of Ten-Year Cost Estimates |                                                      |             |
|------------------------------------|------------------------------------------------------|-------------|
| Management Categories              | Total Estimated Manpower and Expense Cost (10-years) | Percentage  |
| Administration and Support         | \$263,000                                            | 1%          |
| Resource Management                | \$4,197,250                                          | 25%         |
| Hydrology                          | \$663,000                                            |             |
| Natural Communities                | \$3,074,000                                          |             |
| Imperiled Species                  | \$84,000                                             |             |
| Exotic Species                     | \$167,000                                            |             |
| Cultural Resources                 | \$209,250                                            |             |
| Recreation and Visitor Services    | \$12,801,500                                         | 74%         |
| <b>Total</b>                       | <b>\$17,261,500</b>                                  | <b>100%</b> |



# Resource Management Component



## **Natural Resources**

### **Topography**

The general topography of Myakka River State Park has been highly influenced in the past by marine processes and solution of underlying limestone. During the Pleistocene epoch (11,700-2.6 million years ago) and during previous epochs, marine sands were deposited in the form of dune ridges and basins.

Solution of permeable limestone has caused the formation of shallow sinks and solution troughs. These sinks and troughs form what are commonly referred to as depression marshes and sloughs, respectively. Solution processes are also largely responsible for the formation of Upper Myakka and Lower Myakka lakes.

Some alteration of the terrain by past activities has affected the topography of the park. Roads, drainage ditches, borrow pits, agricultural operations and other notable topographic disturbances on the property have all affected the park in some form.

From its origin near Myakka Head, the Myakka River generally flows from northeast to southwest. Elevations in the park are 14-15 feet above mean sea level (MSL) along the river, which gradually rises to elevations of 25-45 feet (see Topography Map). The rise is

more precipitous westward to eastward, with the highest elevations north of the Upper Myakka Lake and in the easternmost section of the park near Deer Prairie Slough. Within this landscape there are major sloughs and the numerous depression marshes, many of which will eventually become sloughs due to solution processes.

### **Geology**

Myakka River State Park lies within two of the state's prominent physiographic regions: The Gulf Coastal Lowlands and the DeSoto Plain, both recently emerged submarine plains (Randazzo and Jones 1997). Most of the park lies in the Gulf Coastal Lowlands and ascends the slight incline to the DeSoto Plain only at its eastern side (Geraghty and Miller, Inc. 1981). Karst topography accounts for the multitude of shallow sinks (depression marshes) and solution troughs (sloughs). Only one major sinkhole is known to exist in the park. This sink is known as "Deep Hole" and is approximately 295 feet wide. In 2012, researchers conducted a dive into the sink and found it to be 131 feet deep (Culter et al. 2013). The Upper and Lower Lakes and the wide marshes between them also lie in basins that are solution features. Fissures in the underlying limestone have created numerous short creeks known as blind gullies. Most are short in length, varying from one hundred



yards to one mile. These gullies are common in flatwoods and dry prairie areas within the park.

Beneath the surface, several distinct geologic formations are present. Layers of clastic sedimentary deposits extend just below the surface to depths of 80 to 120 feet. These clastic layers are composed of sands and clays with interbedded layers of sandy, dolomitic limestone. Collectively, they form the surficial aquifer and the underlying upper confining deposits. Further down, extending to depths of about 250 feet, limestone, dolostone and sands associated with the Hawthorn formation comprise the secondary artesian aquifer (Intermediate Aquifer). Clay lenses, which serve to separate various productive zones within the secondary artesian aquifer, are present in certain areas. Below 250 feet, impermeable layers of limestone, dolostone, sandstones, clays and sands are present, associated with the Tampa formation. These layers form the lower confining deposits that separate the secondary artesian aquifer from the underlying Upper Floridan Aquifer. The Floridan Aquifer occurs just above the Suwannee limestone, at a depth generally greater than 400 feet (Geraghty and Miller, Inc. 1981).

## Soils

Thirty-four different soil types occur on this unit (see Soils Map) according to the USDA Soil Conservation Service Soil Survey for Sarasota County (1991) and Manatee County (1983). Soils were surveyed at the county level, so similar soils may be mapped/named differently depending on the county. Detailed soil descriptions are listed in Appendix 4. Soils on this unit associated with the river floodplain include Bradenton fine sand (frequently flooded), Delray and Astor soils (frequently flooded), Felda and Pompano fine sands (frequently flooded), and Floridana and Gator soils (frequently flooded).

Soils associated with dry prairie and mesic flatwoods on this unit include EauGallie fine sand, EauGallie and Myakka fine sands, Ft. Green fine sand, Myakka fine sand, Ona fine sand, Palmetto sand, Pineda fine sand, Pinellas fine sand, and Wabasso fine sand.

Soils on this unit commonly associated with scrubby flatwoods include Cassia fine sand and Pomello fine sand.

Soils typical of basin and depression marshes on this unit include Delray complex, Delray fine sand (depressional), Felda fine sand (depressional), Floridana fine sand, Floridana and Gator soils (depressional), Floridana-Immokalee-Okeelanta association, Holopaw fine sand (depressional), and Manatee loamy fine sand (depressional).

Soils commonly associated with baygall, hammocks and sloughs on this unit include Bradenton fine sand, Canova, Anclote and Okeelanta soils, Delray mucky loam fine sand, Felda fine sand, Felda-Palmetto complex, Gator muck, Parkwood Variant complex, and Pople fine sand.

Plant communities associated with a given soil type may vary, depending upon other environmental factors, such as fire, hydrology and disturbances (either natural or man-made). Plant communities identified by soil types are meant only as a guideline and may not necessarily be present, as described above.

## Soil Erosion Issues

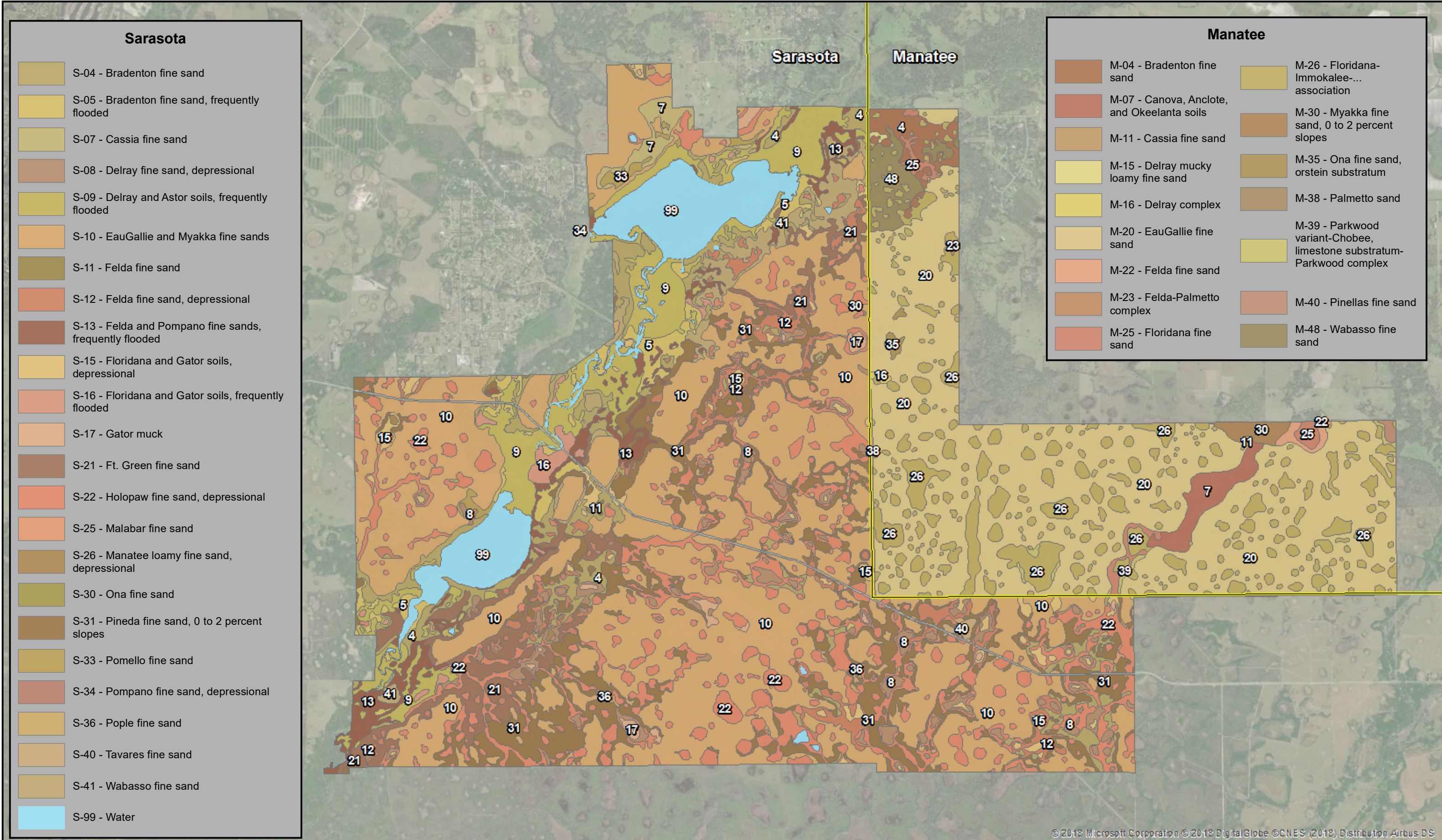
Currently, areas of erosion issues at the park are confined to the roads and road shoulders due to periods of heavy rain during the wet season (usually June through September). In 2013, erosion controls along Bee Island Extension were implemented on an experimental basis. A portion of the erosion along the unpaved, park management roads is due to yearly burn preparation, which includes disking. To alleviate this issue, disking is implemented on the shoulder of the park management roads, and the roads are mowed. Feral hog (*Sus scrofa*) rooting along the roads has intensified the potential of erosion. There is a hog removal program in progress.

## Hydrology

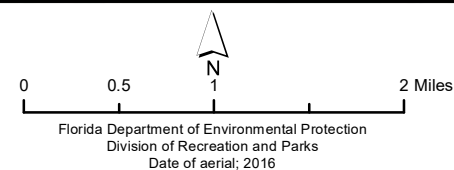
### Surface water

The park lies within the Myakka River watershed which encompasses approximately 600 square miles. The Myakka River collects water from numerous creeks and sloughs to provide drainage in the watershed. Four major depressions act as natural water detention areas. These include the Flatford Swamp near Myakka City, Tatum Sawgrass Marsh just north of the park, and the Upper Myakka Lake and the Lower Myakka Lake within the park.





MYAKKA RIVER STATE PARK



SOIL MAP







Legend

Park Boundary

Elevation (ft)

High : 47

Low : 10

A topographic map of Myakka River State Park. The map features a color-coded elevation overlay on an aerial photograph background. The park's boundary is outlined in black. The Myakka River is shown as a prominent blue feature winding through the lower-left portion of the park. Elevation is indicated by a color gradient: dark brown for higher elevations (up to 47 feet) and green/yellow for lower elevations (down to 10 feet). The map shows a mix of forested areas and open land within the park boundaries.

bing™

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MYAKKA RIVER STATE PARK

N

00.512 Miles

Florida Department of Environmental Protection  
Division of Recreation and Parks  
Date of aerial, 2011

TOPOGRAPHIC MAP





Seven sub-basins, or portions of them, have impacts on drainage pattern in the park: Myakka River (including Vanderipe Slough and Big Flats), Clay Gully, Mossy Island Slough, Shiney Town Slough, Deer Prairie Slough, Mud Lake Slough, and Big Slough Canal.

The Myakka River, which is the central natural feature of this park, originates at Myakka Head in east-central Manatee County. Wingate Creek is the first to flow into the Myakka River. Seven additional tributaries (Coker Creek, Boggy Creek, Ogleby Creek, Long Creek, Maple Creek, Young's Creek, and Taylor Creek) meet with the Myakka River shortly after, and this convergence is the basis of the Flatford Swamp. The river channel splits into Clay Gully and the Myakka River. About one-half mile before entering the park, the Myakka River flows through the southeastern part of the Tatum Sawgrass Marsh. The river enters the park in Sarasota County from the north, about 1.3 miles south of County Road 780.

In addition to being an Outstanding Florida Waterway, the 34 miles of the Myakka River within Sarasota County have been designated as a "Wild and Scenic River" by the Florida Legislature. This includes 12 miles of the designated portion of the river that are contained within the park. Additional information on this designation and hydrology of the watershed can be obtained in the Myakka Wild and Scenic River (MWSR) Management Plan (DEP 2011).

The Myakka River is a southern blackwater stream. Three critical aspects of the water resource value of the Myakka River are the water quality, the quantity of discharge, and the timing of the discharge. These three variables are crucial to the continued health of the Myakka River, as well as the health of downstream estuarine areas of Charlotte Harbor.

Low flow data indicate that groundwater contributions to Myakka River streamflow are small (Hutchinson 1984). Discharge from the surficial aquifer is insufficient to provide base flow to the Myakka River during the dry period (SWFWMD 1989). Streamflow and water quality characteristics indicate that there are negligible natural groundwater contributions to the Myakka River between Myakka City and the outlet to Lower Myakka Lake. The lakes and river channel are underlain by relatively impermeable clays (Flippo et al. 1968).

All non-tidal reaches of streams cease natural flows during droughts and many go dry during most years. During the dry season, drainage from agricultural lands may contribute between 10 and 60 percent of stream discharge. Near zero flow has occurred in the Myakka River for periods of up to six months, and during normal water years the river will experience near zero flow for approximately two months. Dry season discharges (average low flows) in the upper Myakka River watershed have increased during the past three decades and most notably at the State Road 70 USGS streamflow gauge during the mid-1980s because of agricultural irrigation (PBS&J et al. 1998). Minimum discharges generally occur in April, May, or early June.

The quality, quantity, and timing of freshwater input are critical to downstream estuarine areas. However, what is relatively unknown is the critical amount of freshwater necessary to maintain the proper functioning of estuarine areas. The SWFWMD is currently developing Minimum Flows and Levels (MFL) for the entire Southwest Florida region to quantify the amount of water that can be used for public supply while causing no significant harm to the ecological functions in lakes, streams, and rivers.

A MFL study for the Myakka River was completed during 2005-2006. MFLs have been adopted for the upper freshwater portion of the Myakka River. During the study, the SWFWMD used flow data from 1940-1969 for their study, due to the evidence that dry season flows began to increase in the 1970s. The SWFWMD used a building block approach for establishing MFLs for the Myakka River to maintain or recreate the hydrological conditions under which communities existed prior to flow disturbance, and meet the ecological needs of the river. Block 1 considers the low flow conditions during the dry season, Block 2 considers the base flow period during the cooler portion of the year when evapotranspiration is often lower, and Block 3 considers the high flow period during the wet season. The proposed MFLs are set to "not significantly harm" the water resources or ecology, which is defined as less than 15 percent decline in habitat availability (SWFWMD 2005).

The average annual rainfall in the Myakka watershed is 59 inches, approximately 60 percent of which occurs from June to September (Loper and Morris 2008). Because



there is a lag time of river discharge following rains, the maximum river discharge generally occurs from July to October. The discharge of the Myakka River, as measured at the U.S. Geological Survey (USGS) gauging station between the lakes, averaged 253 cubic feet per second annually for the period 1937 to 2008. Inflow of freshwater to Charlotte Harbor from the Myakka River averages 630 cubic feet per second annually.

During the wet season, areas around the river may flood. The flood stage is an elevation of 15.86 feet above sea level (ASL), or a water level of 7 feet or greater read on the USGS gauge in Myakka River State Park.

### Water Quality

The Myakka River is designated as Class I waters (potable water supplies) from the Manatee County line to Border Road Bridge at river mile 20. The portions within the park are also designated as a Wild and Scenic River and as an Outstanding Florida Water. All other surface waters in the park are designated Class III (recreation; propagation and management of fish and wildlife).

The Myakka River Watershed generally has good water quality and supports productive freshwater and estuarine habitats. However, the river is naturally sluggish, often with no net flow during the dry season. Dissolved oxygen levels are typically low. Part of the upper basin drains phosphate-rich areas, which, combined with agricultural and rangeland runoff, elevate the river's nutrient levels. Upper Myakka Lake is eutrophic with low concentrations of dissolved oxygen.

Water quality within the Myakka River varies seasonally. During the wet season when streamflow is mainly surface runoff, specific conductance is lowest and color is darkest. The brown color of the river water is the result of humic, fulvic, and tannic acids from drainage of floodplain swamps. Nutrient concentrations and coliform concentrations tend to increase with increased surface runoff. Dissolved oxygen concentrations are generally higher during the low-flow period. During high-flow periods, dissolved oxygen concentrations are lower due to the input of oxygen-demanding organics included in runoff. Water quality during the dry season may be measurably affected by limited groundwater contributions to base flow and the runoff of groundwater utilized for agricultural irrigation.

Potential sources of nutrient and pollution loads in the Myakka River watershed are generally nonpoint sources. These sources of high nutrients and pollution may include agricultural and rangeland runoff, phosphate mining in the upper watershed, residential areas and related septic tank drain fields, landfills, golf courses, bio-solids and effluent disposal, and other sources of stormwater runoff. Sarasota County is taking monthly water quality samples from 11 sites throughout the watershed including five sites in the Myakka River.

The Myakka River is on the Florida Department of Environmental Protection's (FDEP) Group 3 Verified Impaired Waters List for Total Maximum Daily Loads (TMDLs). TMDLs may be forthcoming for various segments of the river for the following parameters: Fecal Coliform, Dissolved Oxygen (DO), Iron, (Fe), and Nutrients. In late 2013 FDEP issued a state-wide TMDL for Mercury in fish tissue.

The EPA published a TDML for nutrients for both Owen Creek and Myakka River (WBID 1981B) in March 2013. WBID 1981B is the river section between the Upper Myakka Lake and Lower Myakka Lakes, and a central feature of the park.

The October 2016 FDEP produced a Final List of Assessments in the Group 3 Basins for the Verified List of Impaired Waters. This updated document listed a dozen impairments for waterbodies above or contained within the park in addition to seven in the tidal Myakka River that may have an indirect impact to park resources. Most notable on the updated list are impairments to Howard Creek and Clay Gully which both enter the Upper Myakka Lake. The Upper Myakka Lake (WBID 1981C) is on the list with a nutrient (total Phosphorus) impairment, accompanied by the river section immediately south (WBID 1981B) for nutrient impairments as well. In the 2015 FDEP framework priority document it outlines a schedule that priority impairments be assessed for establishment of TMDLs for Group 3 Impaired Waters starting in 2017.

From 1998 to 2005 (SWFWMD 2005; Charlotte Harbor Environmental Center Inc. 2008), the Myakka River near Sarasota showed statistically significant trends of increasing dry season discharge, annual runoff, annual average nitrite + nitrate, annual average ammonia, and specific

conductance, while annual total nitrogen, total organic carbon decreased significantly throughout the watershed. The increases in specific conductance and monthly stream discharge probably resulted from the increased runoff associated with irrigation. Although only a 1 percent increase in agricultural lands has occurred since 1972, a shift from agricultural uses requiring less water (rangeland) to agricultural uses requiring more irrigation (row crops) may have resulted in an increase in runoff and dry season discharge (SWFWMD 2005). The primary source of irrigation water in the watershed is groundwater, which has higher concentrations of chloride, sulfate, and dissolved solids than does surface water. Irrigation water effects are primarily seasonal, with the greatest quantities of water utilized during the dry season (Hammett 1988).

In general, Upper Myakka Lake has been characterized as a highly disturbed ecological system with excessive nutrient concentration. The lake has experienced numerous dissolved oxygen concentrations below the DEP state standards (Chapter 62-302, FAC) primarily during warmer months, and there is a general lack of dissolved oxygen just above the organic sediments of the lake. Total nitrogen in the lake has been found to peak following periods of high inflow from tributaries and following the application of herbicides for the control of aquatic weeds. Lake water quality is influenced primarily from nonpoint source loads contributed by tributary loading (Priede-Sedgewick, Inc. 1983).

Both Upper and Lower Myakka Lakes and the river between the lakes have had an extensive exotic aquatic vegetation problem in the past. With continued efforts made by SWFWMD, the aquatic weed problem has been controlled in both lakes.

The base flow of streams in the Myakka watershed is principally controlled by the permeability and porosity of the surficial deposits, the interrelations among these deposits and older underlying beds, the relative elevations of the water table and the water surface elevation in streams, soil moisture conditions and evapotranspiration rates, man-induced alterations to drainage systems and water use, and the time distribution of precipitation. The streamflow of the Myakka River is highly variable and mostly dependent on surface runoff during the rainy season.

## Groundwater

In the Myakka River watershed, the groundwater system is divided into three main aquifers: Surficial Aquifer, Intermediate Aquifer system, and the Floridan Aquifer system. The Upper Floridan Aquifer system is the principal source of groundwater in Florida. However, the use of this water source in the Myakka River Watershed is generally restricted because of poor water quality. Large withdrawals of water are made from the Upper Floridan Aquifer system and used primarily for agricultural irrigation and large public supplies. Recharge rates of the Upper Floridan Aquifer system are low in this region, and no recharge occurs along the Myakka River.

The water of the Intermediate Aquifer system is generally within DEP primary and secondary drinking water standards. Water quality is best in eastern Sarasota County and degrades towards the southwest and with depth. The Intermediate Aquifer is the most highly developed aquifer in this region and supplies most of the water used for domestic supply and home irrigation. For potable usage, the intermediate aquifer water frequently requires extensive treatment to reduce mineralization.

The uppermost aquifer is the Surficial Aquifer, which generally varies from less than 25 to more than 50 feet in thickness in Manatee County. In Sarasota County, many hundreds of wells tap the Surficial Aquifer, and are used to obtain water for domestic supply, lawn irrigation, and watering livestock. In Manatee County, the Surficial Aquifer is generally undeveloped as a water source and is used only in small volumes for domestic supply, lawn irrigation, and watering livestock. The Surficial Aquifer as a water supply source has low yields and may be limited by drought periods. It is, however, readily recharged by rainfall. It also has the greatest potential for contamination from surface sources (FDEP 2011).

The Myakka River is primarily rain-fed. There is minimal evidence that ground water significantly contributes to the flow of the river. Topography of the area is generally flat to gently sloping. Upland areas generally have a high-water table and poor drainage due to organic hardpan soils (SWFWMD 2004). The natural drainages within the Myakka River watershed are primarily sloughs which form a poorly developed drainage system. Most have

small drainage basins, with short channel lengths. Many of the sloughs and swamps have been ditched and channelized to facilitate their drainage efficiency and reduce flooding of upland areas.

### Historical Alterations

In the past, several of the park depression marshes were drained by ditching. There has been an active program at the park to fill or plug the ditches to restore the natural hydrology to these wetlands. This work will be continued to restore wetlands and improve sheet flow.

Numerous drainage modifications within the Myakka watershed have been instituted for the conversion of lands to agricultural uses, to control flooding, and for transportation needs. Hydroperiod and the timing of water delivery are fundamental factors that determine natural community structure. Alterations of the natural hydrologic regime have had a negative impact on natural communities within the park and in adjacent conservation lands. Several DEP plans (FDNR 1986; DEP 1999; DEP 2004), the MWSR Management Plan (DEP 2011), as well as the Southwest Florida Water Management District (SWFWMD) Comprehensive Watershed Management Plan (2004) and Charlotte Harbor National Estuary Program Comprehensive Conservation and Management Plan (CHNEP 2013) have all identified specific hydrologic alterations in the Myakka watershed for study and potential restoration.

Starting from the northern part of the watershed, the historic alterations of the natural hydrologic regime that most impact the park include: dry season inputs into Flatford Swamp; the dikes draining Tatum Sawgrass Marsh; the County Road 780 bridge and causeway; the Clay Gully diversion; the dikes at Hidden River; the inputs from Howard Creek; the dike separating Upper Myakka Lake from Vanderipe Slough; the concrete weir where the Myakka River exits the Upper Myakka Lake; the State Road 72 bridge, causeway, and drainage ditches; the railroad grade; ditching and the dike on Deer Prairie Slough; and Down's Dam on the Myakka River near the southern boundary of the park. Changes to land use starting in the late 1970s have led to increased water inflows to Flatford Swamp, and while relatively distant, produce negative impacts downstream into the park.

In a report prepared for the SWFWMD, Tree Mortality Assessment of the Upper Myakka River Watershed (Coastal Environmental 1998), researchers assigned the cause of a large tree mortality event in the Upper Myakka River Basin and Flatford Swamp to hydrological stress. This stress was identified as being from an increase in seasonal highwater levels and longer seasonal hydroperiods. The primary contributor was subsurface seepage generated from agricultural irrigation which caused an excess base flow to the swamp. In 1998, the zone of potentially abnormal mortality and stress (area with dead trees) in the Upper Myakka River Watershed (100-year floodplain from State Road 64 downstream to State Road 72) covered approximately 3,740 acres, or about 25 percent. An Assessment of Tree Conditions in Myakka River State Park (Ford and Brooks 2000) reported that the increased flows in the Upper Myakka Watershed were causing stress and mortality in trees within the park, most notably upstream of the weir at the outflow of the Upper Myakka Lake. Beyond the tree mortality issue, the increased input of water during the dry season has drastically reduced the number "no flow" periods and changed the water chemistry through the addition of mineralized groundwater. These changes have had impacts to natural communities well beyond the river banks and slough systems.

Tatum Sawgrass Marsh was modified by 1974 via a series of dikes to divert water away from the marsh to create agricultural lands and control flooding. Tatum Sawgrass is extremely important as a holding basin during periods of heavy rainfall. It has the capacity to store an equivalent of 1.8 inches of rainfall, which is four times that of the Upper and Lower Myakka Lakes combined. The results of the Tatum Sawgrass diking have reduced the storage capacity of the marsh and increased the potential of downstream flooding by diverting water away from the marsh. As a result of the dike system, flood-peak discharges and flood heights having recurrence intervals of up to 25 years are increased, and approximately 1,200 additional acres along the Myakka River may be flooded during two-year flood conditions. In addition, a 19 percent increase in flood-peak discharge at the County Road 780 Bridge may occur, and a 0.8-foot increase in flood height can result (Hammett et al. 1978).

The raised berm (causeway) for the approach road and associated bridge at County Road



780 over the Myakka River constrict flow south of the Tatum Sawgrass area especially during peak flow events. Duever and McCollom (1990) note the large width of river floodplain and potential for flow reduction at these points could lead to adverse impacts to natural communities. They also suggest changes are likely minor and localized. There is a potential for future study to determine what hydrologic effects this structure has and what, if any, modifications could be made to enhance hydrologic functions. Sarasota County replaced the old bridge in 2018.

Clay Gully was originally a slough system that was ditched to increase drainage around 1900 (Suau 2005). A more formal diversion was constructed in 1949 after it was recommended by Robert Angas in his 1945 Engineering Report to Florida Forest and Park Service. The resulting project diverts much of the normal flow of the river through Clay Gully and into Upper Myakka Lake at its northeast corner. Based on measurements made during a UGSG study, 35 percent of the flow goes directly into the lake, bypassing Tatum Sawgrass Marsh (Hammett et al. 1978). This has hastened vegetation changes in the bypassed section of the river, which now stays dry almost half of the year between its juncture with Clay Gully and the point where it enters the Upper Myakka Lake (FDNR 1986).

The dikes at the Hidden River community were originally installed in 1958 to exclude water from the Myakka River to create pasture for cattle. The result of the dikes is increased water input in the Upper Myakka River Watershed via the Myakka River that would have historically flowed into adjacent marsh and bottomlands communities. In 1966, it was platted for a residential community (Suau 2005). The proximity and history of flood issues in the Hidden River community make potential return to the natural hydrologic regime unlikely.

Beginning in the 1950s, land clearing activities in the Howard Creek area for agriculture, and later increases in irrigation have had a net result of increased water input to Upper Myakka Lake. Treated reclaimed wastewater has been used to irrigate several thousand acres of agricultural operations starting in the 1990s (Suau 2005) and continues to the present. Howard Creek discharges into the western tip of Upper Myakka Lake at the western park boundary close to Vanderipe Slough.

A 1,000-foot earthen dike separating Upper Myakka Lake from Vanderipe Slough was constructed by the Civilian Conservation Corps (CCC) and completed around 1940. The structure's purpose was to prevent water from the lake from entering the slough (Historic Property Associates 1989). Due to concerns that excess water from the Upper Myakka Lake was damaging adjacent pasturelands, it was suggested by Robert Angas (1945) that the dike be extended, which was completed in the late 1950s. Resulting impacts from dikes included redirected flow of Howard Creek from Vanderipe Slough into the Upper Myakka Lake.

In 1937-38, the CCC constructed a weir at the main outflow to the Upper Myakka Lake (Historic Property Associates 1989). Flippo and Joyner (1968) reported that in spring 1941 a low concrete weir replaced the previous CCC structure that had been partially washed out. These alternations to the natural hydrology were conducted to retain water in the Upper Myakka Lake to enhance sport fishing and recreational boating. While certain features may have been enhanced, there were also unintended consequences to plant and animal communities.

The Upper Myakka Lake Weir was bypassed by culverts in November 1974. Six 60-inch culverts were installed just southeast of the dam with the primary purpose of controlling invasive exotic plants in the lake by periodic drawdown (Suau 2005). Since 1979, the culverts have generally been kept open, restricting little to no water flow. In the past, the culvert openings were restricted in order to slow the flow through the bypass during the dry season, which was perceived to extend the period of operation of the concession airboats. In May of 2016 there was a wash out associated with bypass culverts leaving a 10-foot opening on the east side. Efforts to work with the SWFWMD and FWC to assist in funding a feasibility study of restoration options is underway which ideally would include the adjacent weir as directed in previous Unit Management Plans.

As with County Road 780, State Road 72 and its associated bridges impede natural hydrologic flow. Beginning in late 2006 and continuing through April 2010, four bridges were replaced or improved, including those over Vanderipe Slough, Myakka River, and Deer Prairie Slough. Some efforts were made to improve hydrologic functions, including

sheet flow, flood conveyance as well as enhanced stormwater treatment and wildlife crossings. There may be opportunities to improve these functions in the future.

While relatively minor, it is worth mentioning that some remnants from an earthen dam at the south end of the Lower Myakka Lake still exist. Water movement at this point may be near pre-alteration conditions, but some bottleneck effect may be present from the remaining earthen structure on either side. No research has been done on the existing condition and effects of the earthen dam on hydrology. Flippo and Joyner (1968) only mention in passing that the lower lake was dry in 1945 before the structure was in place and “dry in 1950, after the earthen dam at its outlet had washed out.”

Near the south park boundary, a privately constructed dam was built in 1942, locally known as Downs' Dam. During much of the year, this dam can effectively retain water levels upstream above their natural levels, acting as an obstacle to the movement of fish such as American eel (*Anguilla rostrata*), striped mullet (*Mugil cephalus*), Atlantic tarpon (*Megalops atlanticus*), and common snook (*Centropomus undecimalis*). These species may be found in Lower Myakka Lake following prolonged periods of high water. The degree of the dam's impact is unknown, but may be considered a negative influence on the Myakka River system (FDNR 1986). Since 2012, during high water events, Florida manatees (*Trechichus manatus latirostris*) have been observed regularly in the park north of Downs' Dam in both the Lower and Upper Myakka Lakes and river. In January 2014, as the water receded, a juvenile manatee stranding occurred on the north side of Downs' Dam. This led to a discussion of the potential impact this and other structures have on movement of manatees within the park. The dam has a 5-foot-wide by 4-foot-tall notch that was historically used as a gate capable of retaining approximately 4 feet of water. The owner has agreed to leave the gate open for the time being, and although this does not eliminate the hazard of manatee stranding posed by the dam, it may help.

The railroad grade was constructed from Nocatee (just south of Arcadia) to Sarasota during a 20-year period beginning in 1904. Using heavy equipment, ditches were dug on either side of the railroad to provide fill for the grade. The project was later abandoned, and

the railroad company salvaged the structural components during the 1940s. A permanent easement for power transmission lines along the park's western three miles of the abandoned railroad grade was granted in 1949. The elevated grade and associated ditches may hinder sheet flow across the dry prairie. In 1999, a pilot project to lower three miles of the eastern portion of the railroad grade was completed. In 2002, an additional 2.5 miles of the railroad grade were lowered. Soft low-water crossings were established in areas along Railroad Grade that had washouts during high rain events. The projects have proved to be a success, allowing water to move via natural sheet flow from the north to south of Railroad Grade.

The east side of the park drains primarily through Deer Prairie Slough and to a lesser extent through Mud Lake Slough and Big Slough Canal. Deer Prairie Slough enters the Myakka River approximately 11 miles below the park. Channelization of this slough during the last 50 years has altered local surface water flow patterns and resulted in shorter hydroperiods in nearby wetlands. At the north end of this slough where it enters the park, upland ditches also connect to the channelized slough. At the southern border of the park, a dike with culverts was constructed in the 1970s to compensate for the effects of channelization in the slough. In 2001-2002 Sarasota County through a cooperative effort with SWFWMD completed a restoration project south of the park that backfilled approximately 8.4 miles of ditching in Deer Prairie Slough to approximate historic pre-ditching hydrology and improved habitat value.

Additional information on hydrologic alterations and their potential impacts including those that take place below the park boundary can be found in the MWSR Management Plan (2011). As indicated previously, many agency and watershed management comprehensive plans identify the need to study these human alterations, and to look at potential restoration to a more natural hydrological regime, as a priority. The SWFWMD evaluated potential projects to restore a more natural hydrologic regime as a part of the Myakka River Watershed Initiatives (MRWI): Restoration Best Management Practices Evaluation Report (2013). The study covers several specific manmade alterations that impact the park, including Flatford Swamp, the Clay Gully diversion, and the

Upper Myakka Lake Weir. Using previous District models, the study examined different alternatives to create more natural hydrologic conditions. The District has no plans to pursue any of these projects at this time, except for continued study of Flatford Swamp restoration options. The March 2013 Flatford Swamp Hydrologic Restoration Feasibility Study explores alternatives for the transfer of excess water from Flatford Swamp to help restore Flatford Swamp and the Myakka River. A pilot project is being considered to pump excess water from Flatford Swamp into the Floridan Aquifer. Results of test pumping will determine the long-term feasibility of the proposal. DRP will continue to work with SWFWMD and other agencies on the potential restoration of altered natural hydrologic systems.

## **Hydrological Management Program**

**Goal: Protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain the restored condition.**

The natural hydrology of most state parks has been impaired prior to acquisition to one degree or another. Florida's native habitats are precisely adapted to natural drainage patterns and seasonal water level fluctuations, and variations in these factors frequently determine the types of natural communities that occur on a particular site. Even minor changes to natural hydrology can result in the loss of plant and animal species from a landscape. Restoring state park lands to original natural conditions often depends on returning natural hydrological processes and conditions to the park. This is done primarily by filling or plugging ditches, removing obstructions to surface water "sheet flow," installing culverts or low-water crossings on roads, and installing water control structures to manage water levels.

***Objective A: Conduct/obtain an assessment of the park's hydrological restoration needs***

Action 1 Conduct an assessment and feasibility study of the effects of the weir, failing culverts adjacent to the weir and the private dam on the hydrologic flow, flora and fauna within the Myakka River system

Action 2 Pending the outcome of the assessment in Action 1, and if it is determined as feasible to do so, remove or modify structures to improve hydrology

Action 3 Monitor the water inflow to Myakka River State Park from adjacent sources, including any associated storm water runoff. DRP should continue to support all entities that monitor water resources for the park

Action 4 Continue water quality monitoring through the University of Florida's Lakewatch Program

Action 5 Conduct a more inclusive detailed water quality assessment on a yearly basis

Action 6 Restore hydrologic sheet flow and natural hydroperiod by filling ditches that were created to connect and drain wetlands

During periods of high water level, manatees have been sighted in the Lower and Upper Myakka Lakes. During periods of low water level, the weir and dam have proven to be an obstacle to manatees traversing the river. In January 2014, a stranding of a juvenile manatee occurred. It is important to understand the influence of the two man-made structures to improve natural hydrologic processes and restore ecosystem health.

In the past, the former airboat concession requested, during periods of low water level, to close the culverts adjacent to the Upper Myakka Lake weir. The alteration of water flow during lower water levels may have an effect on the flora and fauna both downstream and upstream. The conclusion of the assessment may influence management practices. A feasibility study for the removal or modification of the weir, bypass culverts, and dam is being cooperatively funded with partnerships with SWFWMD with work to begin in early 2019. Pending the outcome of the study, funding and partnerships will be sought for modifying or removing the structure, and associated restoration work.

Over the last decade there has been several landscape alterations and land use changes, which may affect the quality and quantity of water within the park. Understanding these effects will enable better management decisions. SWFWMD, USGS, Manatee and Sarasota Counties have programs that



monitor land use changes and water resources. Myakka Wild and Scenic River staff should continue to review changes in land use in the watershed upstream of the park that could affect water quality and quantity. Emphasis will focus on water quality and quantity reports and permits as they relate to the park's water resources and natural systems.

The park participates in the LAKEWATCH program and water samples are collected on a monthly basis. Lakewatch analyzes the water samples on a monthly to bi-monthly basis dependent on funding. Total phosphorus (TP), total nitrogen (TN), chlorophyll, water clarity and depth are analyzed. From the data collected, the Upper Myakka Lake is considered eutrophic with a high level of biological productivity (Lakewatch).

As mentioned in Action 5, LAKEWATCH analysis includes TP, TN and chloride. A more thorough analysis to include but not limited to dissolved oxygen, pH, total alkalinity and chloride, should be conducted to give a more detailed report on water parameters and an assessment of river/lake health. Management decisions would benefit from more detailed understanding of the water resources in the park.

Manmade ditches that drain wetlands or alter the natural sheet flow of water, should be mapped and where feasible should be plugged or filled-in to improve hydroperiods in wetlands and across the landscape.

### Natural Communities

This section of the management plan describes and assesses each of the natural communities found in the state park. It also describes the desired future condition (DFC) of each natural community and identifies the actions that will be required to bring the community to its desired future condition. Specific management objectives and actions for natural community management, exotic species management, imperiled species management [and population restoration] are discussed in the Resource Management Program section of this component.

The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (FNAI). The premise of this system is that physical factors such as climate, geology, soil, hydrology, and

fire frequency generally determine the species composition of an area, and that areas that are similar with respect to those factors will tend to have natural communities with similar species compositions. Obvious differences in species composition can occur, however, despite similar physical conditions. In other instances, physical factors are substantially different, yet the species compositions are quite similar. Some physical influences, such as fire frequency, may vary from FNAI's descriptions for certain natural communities in this plan.

When a natural community within a park reaches the desired future condition, it is considered to be in a maintenance condition. Required actions for sustaining a community's maintenance condition may include:

- maintaining optimal fire return intervals for fire dependent communities,
- ongoing control of non-native plant and animal species;
- maintaining natural hydrological functions (including historic water flows and water quality);
- preserving a community's biodiversity and vegetative structure;
- protecting viable populations of plant and animal species (including those that are imperiled or endemic);
- preserving intact ecotones that link natural communities across the landscape.

The entire park is divided into management zones that delineate areas on the ground that are used to reference management activities (see Management Zones Map). The shape and size of each zone may be based on natural community type, burn zone, and the location of existing roads and natural fire breaks. Table 1 reflects the management zones with the acres of each zone.

The park is a Florida dry prairie landscape divided east to west by a river floodplain. Depression marshes/ponds, palm-hardwood hammocks, elevated scrubby sandy rises, pine "islands" (in areas with natural fire protection), and seasonally wet herbaceous-dominated drainages are also part of the Florida dry prairie landscape (Orzell and Bridges 1999). Thirteen natural communities and eight altered landcover types have been identified in this landscape (see Natural Communities Map). A list of known plants and animals is contained in Appendix 5.

**Table 1. Myakka River State Park Management Zones**

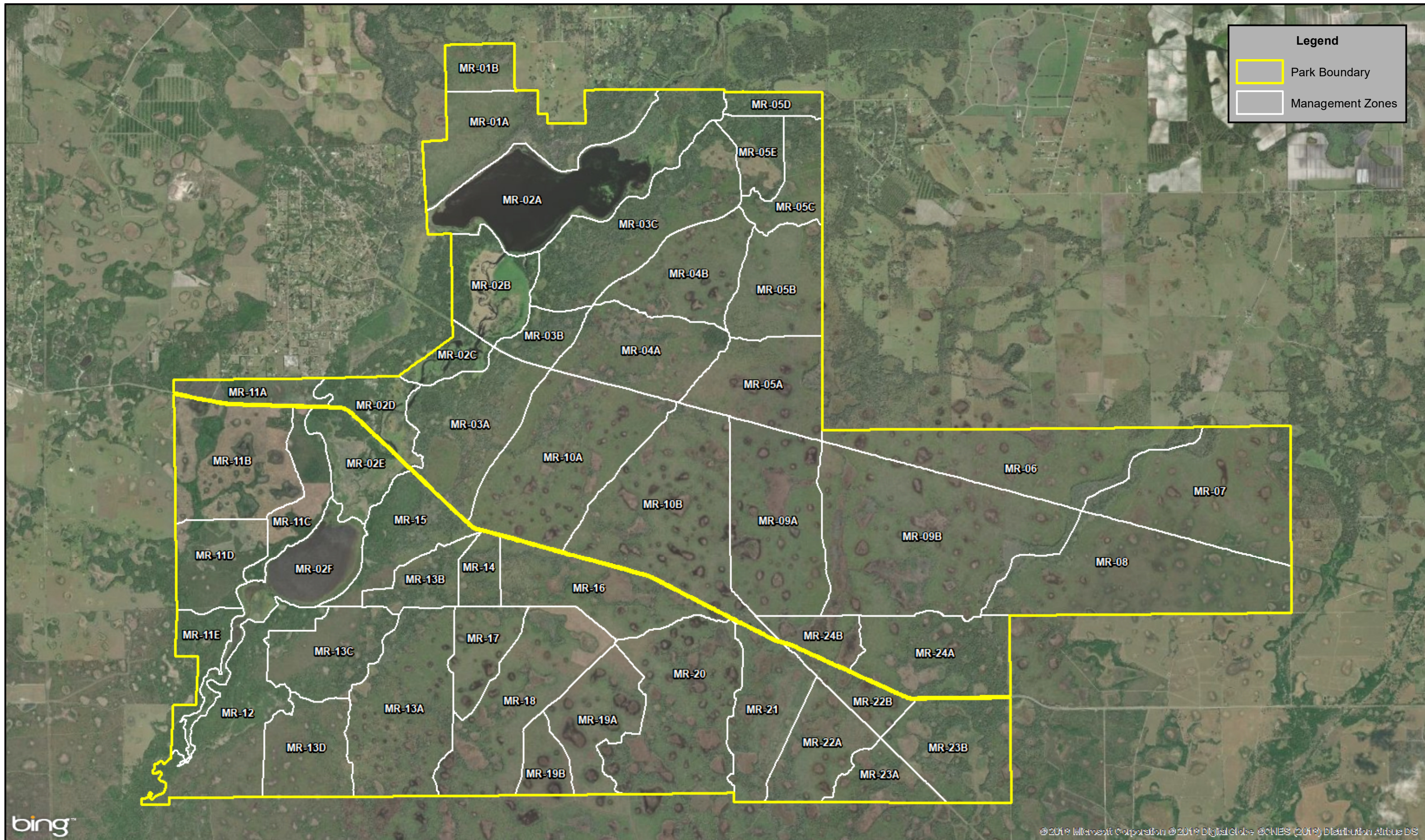
| <b>Management Zone</b> | <b>Acreage</b> | <b>Managed with Prescribed Fire</b> | <b>Contains Known Cultural Resources</b> |
|------------------------|----------------|-------------------------------------|------------------------------------------|
| <b>MR-01A</b>          | 984.19         | Y                                   | N                                        |
| <b>MR-01B</b>          | 243.35         | Y                                   | N                                        |
| <b>MR-02A</b>          | 1,449.83       | Y                                   | Y                                        |
| <b>MR-02B</b>          | 561.32         | Y                                   | Y                                        |
| <b>MR-02C</b>          | 210.30         | Y                                   | N                                        |
| <b>MR-02D</b>          | 352.02         | Y                                   | Y                                        |
| <b>MR-02E</b>          | 452.52         | Y                                   | Y                                        |
| <b>MR-02F</b>          | 674.75         | Y                                   | Y                                        |
| <b>MR-03A</b>          | 936.97         | Y                                   | N                                        |
| <b>MR-03B</b>          | 242.72         | Y                                   | Y                                        |
| <b>MR-03C</b>          | 1,170.65       | Y                                   | N                                        |
| <b>MR-04A</b>          | 803.57         | Y                                   | N                                        |
| <b>MR-04B</b>          | 746.01         | Y                                   | N                                        |
| <b>MR-05A</b>          | 764.08         | Y                                   | Y                                        |
| <b>MR-05B</b>          | 698.00         | Y                                   | N                                        |
| <b>MR-05C</b>          | 396.83         | Y                                   | N                                        |
| <b>MR-05D</b>          | 173.77         | Y                                   | Y                                        |
| <b>MR-05E</b>          | 296.45         | Y                                   | Y                                        |
| <b>MR-06</b>           | 1,224.56       | Y                                   | Y                                        |
| <b>MR-07</b>           | 1,382.42       | Y                                   | Y                                        |
| <b>MR-08</b>           | 1,581.48       | Y                                   | N                                        |
| <b>MR-09A</b>          | 1,257.58       | Y                                   | N                                        |
| <b>MR-09B</b>          | 2,256.42       | Y                                   | N                                        |
| <b>MR-10A</b>          | 1,468.59       | Y                                   | N                                        |
| <b>MR-10B</b>          | 1,623.47       | Y                                   | N                                        |
| <b>MR-11A</b>          | 251.31         | Y                                   | N                                        |
| <b>MR-11B</b>          | 1,007.42       | Y                                   | N                                        |
| <b>MR-11C</b>          | 386.15         | Y                                   | Y                                        |
| <b>MR-11D</b>          | 522.65         | Y                                   | Y                                        |
| <b>MR-11E</b>          | 294.58         | Y                                   | Y                                        |
| <b>MR-12</b>           | 975.83         | Y                                   | N                                        |
| <b>MR-13A</b>          | 1,202.81       | Y                                   | N                                        |
| <b>MR-13B</b>          | 323.58         | Y                                   | N                                        |
| <b>MR-13C</b>          | 621.00         | Y                                   | N                                        |
| <b>MR-13D</b>          | 586.73         | Y                                   | N                                        |
| <b>MR-14</b>           | 205.71         | Y                                   | Y                                        |
| <b>MR-15</b>           | 583.30         | Y                                   | N                                        |
| <b>MR-16</b>           | 818.88         | Y                                   | Y                                        |
| <b>MR-17</b>           | 392.97         | Y                                   | N                                        |
| <b>MR-18</b>           | 1,119.81       | Y                                   | N                                        |
| <b>MR-19A</b>          | 626.15         | Y                                   | N                                        |
| <b>MR-19B</b>          | 234.47         | Y                                   | N                                        |
| <b>MR-20</b>           | 1,362.88       | Y                                   | N                                        |
| <b>MR-21</b>           | 688.21         | Y                                   | N                                        |
| <b>MR-22A</b>          | 561.94         | Y                                   | N                                        |
| <b>MR-22B</b>          | 254.89         | Y                                   | N                                        |
| <b>MR-23A</b>          | 311.50         | Y                                   | N                                        |
| <b>MR-23B</b>          | 786.87         | Y                                   | N                                        |
| <b>MR-24A</b>          | 865.66         | Y                                   | N                                        |
| <b>MR-24B</b>          | 260.55         | Y                                   | N                                        |

**Table 2. Natural Communities and Altered Landcovers**

| <b>Natural Communities</b>     | <b>Acreage</b>   | <b>Percentage</b> |
|--------------------------------|------------------|-------------------|
| Dry Prairie                    | 14,732.65        | 39.61%            |
| Depression Marsh               | 6,788.86         | 18.25%            |
| Hydric Hammock                 | 6,323.91         | 17.00%            |
| Mesic Flatwoods                | 3,766.16         | 10.12%            |
| River Floodplain Lake          | 1,218.09         | 3.27%             |
| Floodplain Marsh               | 1,181.81         | 3.18%             |
| Basin Swamp                    | 994.75           | 2.67%             |
| Mesic Hammock                  | 673.43           | 1.81%             |
| Baygall                        | 293.4            | 0.79%             |
| Scrubby Flatwoods              | 182.44           | 0.49%             |
| Blackwater Stream              | 142.57           | 0.38%             |
| Dome Swamp                     | 8.91             | 0.02%             |
| Sinkhole                       | 1.98             | 0.01%             |
| <b>Altered Landcover Types</b> | <b>Acreage</b>   | <b>Percentage</b> |
| Abandoned Pasture              | 565.73           | 1.52%             |
| Utility Corridor               | 96.57            | 0.26%             |
| Developed                      | 81.26            | 0.22%             |
| Successional Hardwood Forest   | 58.35            | 0.16%             |
| Abandoned Field                | 48.96            | 0.13%             |
| Artificial Pond                | 27               | 0.07%             |
| Canal/Ditch                    | 7.7              | 0.02%             |
| Spoil Area                     | 3.14             | 0.01%             |
| <b>Total Acreage</b>           | <b>37,197.68</b> | <b>100%</b>       |

| <b>Combined Landcover Types</b> | <b>Acreage</b> | <b>Percentage</b> |
|---------------------------------|----------------|-------------------|
| Upland                          | 19,356.66      | 52.04%            |
| Wetland                         | 16,809.73      | 45.19%            |
| Lacustrine                      | 1,218.09       | 3.27%             |
| Riverine                        | 142.57         | 0.38%             |
| Altered                         | 888.71         | 2.39%             |

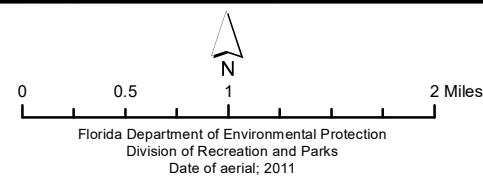




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MYAKKA RIVER STATE PARK

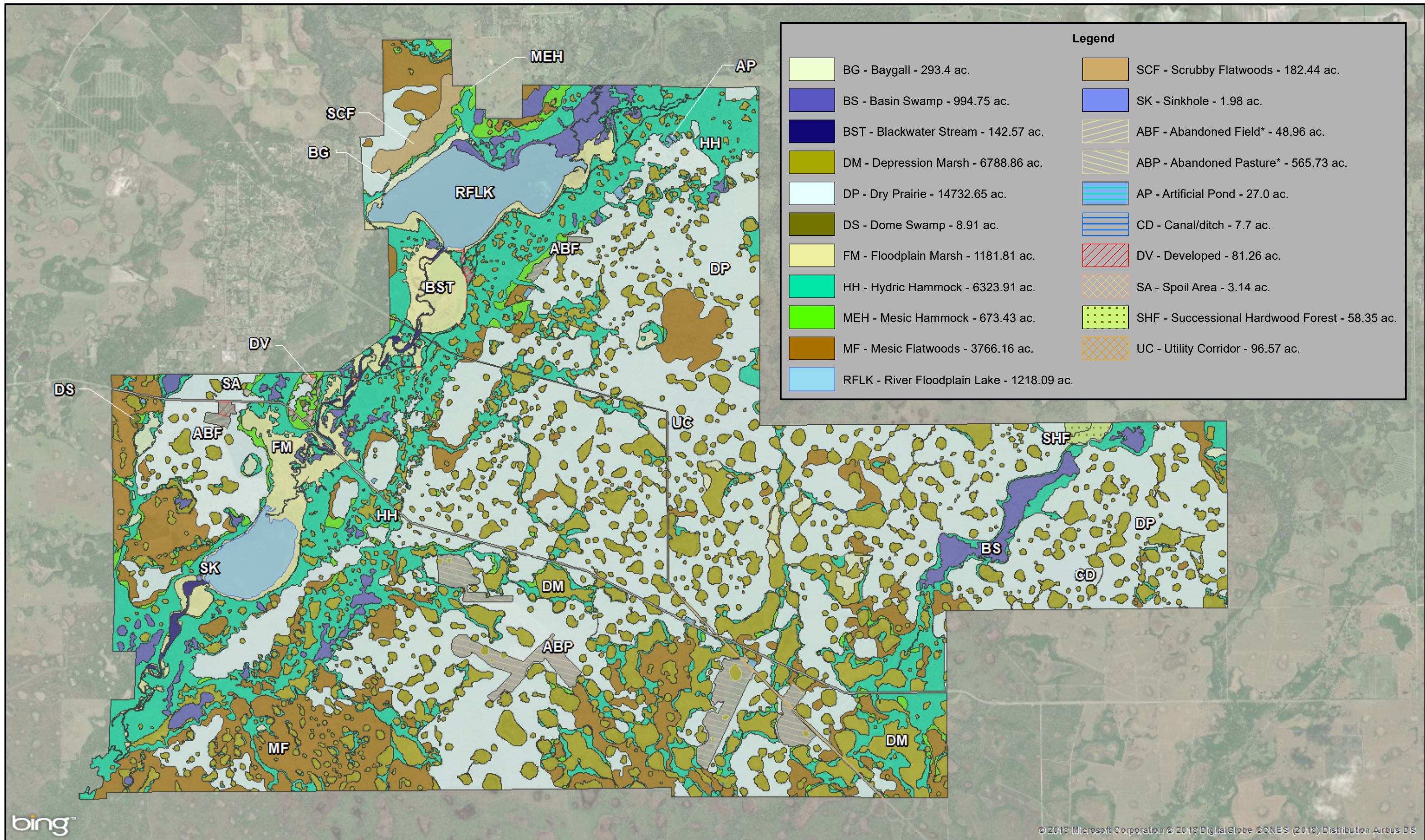


MANAGEMENT ZONES MAP





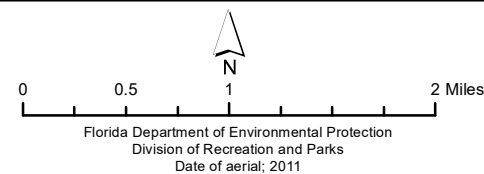




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MYAKKA RIVER STATE PARK



NATURAL COMMUNITIES MAP





## Dry Prairie

*Desired future condition:* Florida dry prairie will be nearly treeless shrub-grassland with species rich, herbaceous ground cover. The dry prairie will contain high plant diversity with the bulk of species present being herbaceous and low-growing. The species per square meter will range from 15 to 30 species at Myakka, with some plots lower because of dwarf live oak (*Quercus minima*) or shrub coverage (personal comment from Edwin Bridges 2019). Shrub height will range between one and four feet, with the majority of shrubs growing less than two feet tall. Shrub height greater than three feet may occur naturally along wetland edges, hammock borders or in small patches of less than 1/2 acre, very widely spaced over the landscape. Woody species cover will range from 10 to 50 percent. There will be few, if any, large trunks of saw palmetto (*Serenoa repens*) along the ground. South Florida slash pine (*Pinus elliottii* var. *densa*) may also be present but in extremely low densities. The desired future condition will achieve similar coverage as observed and described by Roland Harper (1927) with approximately half the prairie covered in low shrubs, and the other half covered in herbaceous vegetation. "The saw palmetto makes up about half the shrubbery and the wiregrass about half the herbage." Frequent fire with a return interval of 12 to 30 months is required to maintain this community in desired condition. Coverage of invasive exotic plant species will be less than one percent. Based on the FNAI recommended range for dry prairie the desired future conditions, are as follows:

- Pine basal area: 0 sq. feet per acre
- Average max. shrub height: <2 feet
- Average max. palmetto height: ≤1.5 feet
- Herbaceous/grass cover: >35 percent

*Description and assessment:* The most extensive community type at the park is considered a globally imperiled habitat (FNAI 2010). It is characterized by low, flat topography and relatively poorly drained, acidic, sandy soil sometimes underlain by an organic horizon (Myers and Ewel 1990). The current composition of flora in the Florida dry prairie at the park is saw palmetto and shrubs such as gallberry (*Ilex glabra*), fetterbush (*Lyonia lucida*), and low-lying blueberries (*Vaccinium* spp.) intermixed with various grasses (*Andropogon*, *Aristida*, *Dicanthelium*,

*Schizachyrium*, *Sorghastrum*, and *Eragrostis* spp.) and many forbs including golden aster (*Pityopsis* spp.), blazing star (*Liatris* spp.) slender flat-top goldenrod (*Euthamia caroliniana*), purple false foxglove (*Agalinis purpurea*), a variety of goldenrod species (*Solidago* spp.) and several chaffhead species (*Carphephorus* spp.).

Fire was actively excluded or suppressed in the park between 1936 and 1976, in the area of the park west of All Weather Road, degrading the Florida dry prairie in varying degrees. Cattlemen with leases continued to burn much of the park east of All Weather Road through the mid-1950s. The SWFWMD owned portion of the park was consistently burned by cattlemen prior to acquisition and inclusion in the park in 1996. As a result, oaks and South Florida slash pine became established in the Florida dry prairie, and overall tree and shrub density has increased (Huffman and Blanchard 1991). Some dormant season (winter) burns were introduced to the park in 1974 in Big Flats Marsh and into the dry prairie/mesic flatwoods communities in 1976, and growing season (April-August) burns were initiated in 1980. Shrub height has decreased considerably since the reintroduction of fire, though shrub density is thicker than desired in some areas of the park. The fuel conditions in the dry prairie will support fire after 18-20 months in all management zones. A fire return interval of 12 to 30 months, predominantly in the growing season, is desired to maintain diversity of burn conditions and increase the ability to attain mosaic burns.

Fire exclusion, altered hydrology, planting offsite North Florida slash pines (*Pinus elliottii* var. *elliottii*), and introduction of invasive exotic plants and animals have degraded the Florida dry prairie at the park. The bedding activities associated with the pine plantations and ditching to drain wetlands in the 1920s and 1930s changed the flow of water and the duration of inundation. Pine plantations introduced offsite trees to an area where few to no trees should exist. The pine plantations have been harvested over the years, with the last small remnant of North Florida slash pine that were too young to harvest were in zone 1B and were removed in 2018. Additional recruitment of North Florida slash will be monitored and established trees removed, since there are mature trees on private property adjacent to the park.

Mechanical treatment has reduced competition of light and encouraged the growth of native grasses and forbs. However, the increased occurrence of invasive exotic plants and animals including cogon grass (*Imperata cylindrica*), feral hogs, and red imported fire ants (*Solenopsis invicta*) have negatively impacted the dry prairie.

The alterations to plant composition through the historic suppression of fire, development of pine plantations, and numerous drainage projects caused a loss of prairie animal species such as the crested caracara (*Caracara cheriway*) and the Florida burrowing owl (*Athene cunicularia floridana*) at the park. These two species are only found east of the Mississippi River in Florida. Both species can be found in healthy dry prairie habitat and during the 1930s and 1940s were common at the park. Although they have not made a complete recovery, in recent years both the crested caracara and the Florida burrowing owl have been observed in the park. Other listed species, including the eastern indigo snake (*Drymarchon couperi*) and gopher tortoise (*Gopherus polyphemus*), find favorable habitat in this community. The indigo snake has not been observed recently in the park.

Although there is great variation in the condition of the Florida dry prairie (from poor to good), the overall condition is considered fair. FNAI (2009) identifies Myakka as an exemplary site for dry prairie (FNAI 2010) and has a reference site located at the park.

**General management measures:** Prescribed fire will continue between January and July, with the brunt of it conducted from April through July. The current fire return interval is typically between 20 to 36 months with emphasis on the lightning season, but as fuel conditions improve will be shifted towards more frequent fires. Pursue exemptions to general burning restrictions under dry conditions to be able to burn the dry prairie frequently enough to maintain this community in desired conditions.

Mechanical treatment, including roller-chopping and brush-cut mowing, will continue to reduce the coverage and density of shrubs, hardwood trees and saw palmetto to optimal conditions. Guidelines for restoration roller-chopping are included as Appendix 12 and need to be followed to make sure this important tool is used to enhance the prairie

in selective areas where saw palmettos are too dense. In addition, where feasible, improving the hydrology of the dry prairie will continue. Sheet flow will be restored by removing manmade ditches that alter the dry prairie's natural drainage and hydroperiods. Remaining offsite North Florida slash pines will be monitored for additional recruitment and removed.

An aggressive survey and treatment (management) program for invasive exotic plants will continue. Damage caused by feral hogs will be lessened by reducing their population through contract trapping and other methods.

### Mesic Flatwoods

**Desired future condition:** Florida mesic flatwoods have the third highest plant diversity in South Florida with 457 native plant species recorded (USFWS 1999). The canopy coverage of mature mesic flatwoods ranges from 10 to 80 percent (Wade and Hofstetter 1980). In Southwest Florida mesic flatwoods, mature pine trees typically attain 30-41 centimeters (12-16 inches) diameter at breast height (DBH), with 23-26 meters (75-85 feet) in height (Beever and Dryden 1998). Based on the FNAI recommended range for mesic flatwoods the desired future conditions, are as follows:

- Pine basal area: 10-50 sq. feet per acre
- Average max. shrub height: <2 feet
- Average max. palmetto height: ≤3 feet
- Herbaceous/grass cover: >25 percent

Since the mesic flatwoods at the park is generally embedded within dry prairie, fire will be frequent with an optimal fire return interval consistent with that of the adjacent dry prairie of 12 to 30 months. Coverage of invasive exotic plant species will remain less than one percent.

**Description and assessment:** The condition of mesic flatwoods within the park ranges from poor to good, with most acreage in fair condition. The park's mesic flatwoods are similar in plant composition to dry prairie, but with a greater density of pines. Vegetation includes scattered South Florida slash pine and/or longleaf pine (*Pinus palustris*) with an understory of saw palmetto, gallberry, fetterbush, wax myrtle (*Morella cerifera*), winged sumac (*Rhus copallina*), wiregrass



(*Aristida spp.*), and a variety of other grasses and herbaceous species. Mesic flatwoods generally occur in areas between 15 and 30 feet in elevation at the park. Myakka River State Park has two types of mesic flatwoods; one having South Florida slash as the dominant pine, and the other having longleaf pine as the dominant pine. Most of the South Florida slash mesic flatwoods are found south of State Road 72, within the designated wilderness preserve. The longleaf mesic flatwoods occur at Bee Island (35-40 feet ASL), at a small site on the north end of Deer Prairie Slough, and north of the Upper Myakka Lake.

During the summer, seasonal rains create extremely wet conditions. It is common to have several inches of water standing, or even flowing, during the late summer. In the longleaf pine site, standing water is less frequent. Historic hydrologic ditching has occurred in many of the areas containing mesic flatwoods, thus altering the sheet flow of water and the duration of inundation of water.

As with the Florida dry prairie, fire was actively excluded or suppressed at the park degrading the mesic flatwoods to varying degrees. In the absence of fire, hardwood tree and shrub density increased, and grasses and forbs decreased. Without fire, pine seedlings which require bare mineral soil for germination, were unable to develop. Mature longleaf pine trees are also dying in the park due to lightning strikes, a frequent occurrence. Between 1995 and 2002, Bee Island lost approximately a dozen longleaf pine trees to lightning strikes per year (Perry, personal observation 1997). Due to the previous 40 years of fire exclusion at the park, the reintroduction of frequent fires has reduced the saw palmetto height but not the density in some of the flatwoods. This higher density increases the fire intensity and may reduce pine seedling survival. Those seedlings that do survive to become saplings usually succumb to hog rubbing. To compensate, in 2003 nearly 4,000 longleaf seedlings were hand planted in zones 1A, 4B and 5B. The success of these plantings has not been determined, but in 2018, small longleaf pine trees were observed in zone 4B.

In addition to changes in hydrology and fire frequency, the invasion of exotic plants and animals has stressed the mesic flatwoods. FLEPPC category I plants including cogen

grass, and Caesarweed (*Urena lobata*) have invaded the mesic flatwoods. Feral hogs have rooted the vegetation, reduced pine recruitment, and altered the route of fire and water.

FNAI (2010) identifies Myakka as an exemplary site for mesic flatwoods and has a reference site located at the park.

*General management measures:* Continue the prescribed fire program for the mesic flatwoods with an emphasis on growing season fires, with fire return intervals consistent with the dry prairie of 12 to 30 months. Continue mechanical, or other methods to reduce the coverage and density of shrubs, hardwood trees and saw palmetto, to optimal conditions. Consult the restoration roller-chopping guidelines in Appendix 12 to assess the selective need to chop dense saw palmetto. Where feasible continue improving the hydrology of the mesic flatwoods by removing barriers to sheet flow, and by filling ditches that change the natural drainage and hydroperiods. Continue an aggressive survey and treatment program for invasive exotic plants. Reduce the damage by feral hogs and improve longleaf pine recruitment by decreasing the hog population through contract trapping and other methods with an emphasis on the Bee Island area.

## Mesic Hammock - Prairie Mesic Hammocks

*Desired future condition:* Prairie mesic hammocks are isolated stands of live oaks (*Quercus virginiana*), cabbage palms (*Sabal palmetto*) and saw palmettos within a matrix of pyrogenic vegetation. Prairie hammocks form along the fringe of freshwater wetlands and prairies. Prairie hammocks are often found in ecotones between wetlands and upland communities. Historically, such hammocks form on the lee (north) side of wetlands that are protected from fire carried by the dominant southerly winds.

The preferred desired future condition of prairie mesic hammock in the park is a canopy of oaks and cabbage palms, with a mix of smaller trees with little understory. The herb layer will be sparse or patchy and consists of various graminoids. Prairie mesic hammock will be open with small components of understory ringing the edge, and little ground cover except for leaf litter. Vines, although common, will not be thick. Abundant epiphytes will be found on live oaks and

cabbage palms, as these are a characteristic feature of mesic hammocks. Invasive exotic plants will be less than three percent. Feral hog damage will be eliminated due to the reduction in the hog population through contract trapping and other methods.

*Description and assessment:* Typically, prairie hammocks consist of live oak, laurel oak (*Quercus laurifolia*), cabbage palm and are often ringed with saw palmetto. A number of epiphytic plants are also common, including Spanish moss (*Tillandsia usneoides*), giant airplant (*Tillandsia utriculata*), golden polypody (*Phlebodium aureum*), shoestring fern (*Vittaria lineata*), resurrection fern (*Pleopeltis polypodioides*) and Florida butterfly orchid (*Encyclia tampensis*).

Populations of once abundant epiphytes, the giant airplant and cardinal airplant (*Tillandsia fasciculata*), have been reduced in the park's hammocks by Mexican bromeliad weevils (*Metamasius callizona*), which kills the larger species of airplants resulting in the airplants being listed as imperiled species.

Prairie mesic hammock in the park is characterized by a closed canopy of hardwood species, primarily live oak and cabbage palm, and by a fairly open shrub layer and a sparse, species-poor herb layer. Herb diversity is frequently higher for epiphytes than for groundcover species. Conditions within the hammocks include dense leaf litter, high moisture levels in the litter layer, and higher humidity that make the community fire-resistant. Prairie mesic hammocks burn infrequently because of fire entering from adjacent fire-maintained communities. Infrequent, low-intensity fire is not detrimental to mesic hammocks; however, catastrophic fires, burning through in times of drought, may completely destroy some hammocks, which may then be invaded by weedy and exotic species (Alexander and Crook 1973).

Prairie mesic hammock at the park is typically found along the wetland to upland ecotone between the prairie hydric hammock of the Myakka River floodplain and other wetland communities and the mesic flatwoods or dry prairie. Isolated mesic hammocks can also be found in the fire shadow of depression marshes.

Due to 40 years of fire exclusion, hammocks have expanded into the surrounding dry

prairie and cover more acreage than in 1948 (Huffman and Blanchard 1991). In the prolonged absence of fire, a version of mesic hammock will expand into the adjacent community (pseudo mesic hammock), potentially reducing the fire frequency. Pseudo mesic hammocks that develop as the result of fire suppression and invasion into pyric communities usually contain species associated with the invaded community, such as saw palmetto or slash pine. The unnatural expansion due to lack of fire creates a dense hammock often with a thick understory that does not readily burn. Vines are common and often abundant, occasionally creating a solid groundcover in disturbed hammocks. There are several areas of pseudo mesic hammocks found adjacent to true prairie mesic hammock in the park. Under the right conditions, prescribed fire can be used to incrementally reduce the amount pseudo mesic hammock.

As with many of South Florida's natural communities, the natural species diversity and composition in prairie mesic hammocks is threatened by the encroachment of exotic plant species. Exotic species compete with native plant species, including rare and endangered species, for light and nutrients and may completely overwhelm and eliminate entire vegetative strata within a plant community. Old World climbing fern has become established in a few prairie mesic hammocks. This exotic plant creates ladder fuel which allows fire to travel into the canopy. Invasive Caesarweed is also commonly found in hammock, especially in areas where hogs have rooted and disturbed the soil. Feral hogs are common in prairie mesic hammocks, where they feed on acorns in the fall and winter or on roots and seedlings in other seasons. Feral hogs pose a threat to native wildlife such as Osceola wild turkey (*Meleagris gallopavo osceola*), white-tailed deer (*Odocoileus virginianus*), and Florida black bear (*Ursus americanus floridanus*) by intensely competing for mast, particularly during a year of mast failure. Their consumption of acorns, roots, and seedlings interferes with natural regeneration of trees and shrubs. Rooting by hogs severely disturbs soil structure and creates conditions that encourage exotic plant invasion. The rooting disturbance also alters the pattern of fire and hydrologic flow. Although there is considerable damage by hogs in this community, hammocks in the park are in good to excellent condition.

*General management measures:* Continue to mechanically treat the pseudo prairie mesic hammocks containing a dense understory with mowing, where fire alone has not reduced the hardwoods. It is preferred to mechanically treat at least two weeks prior to prescribed burning to allow for drying of the vegetation which will encourage the fire to penetrate deeper than it typically would. The unnatural expansion may be discouraged by removal of the hardwoods. To prevent new pseudo mesic hammock from developing, allow fire to penetrate ecotones. Through the desired future condition mapping project, reassess the distribution and acreage of pseudo mesic hammocks after decades of prescribed fire use in the park. Continue an aggressive survey and treatment (management) program for invasive exotic plants. Decrease the damage caused by feral hogs by reducing their population through contract trapping and by other methods.

### Scrubby Flatwoods

*Desired future condition:* Typical plants include longleaf pine, South Florida slash pine, myrtle oak (*Quercus myrtifolia*), saw palmetto, staggerbush (*Lyonia fruticosa*) and wiregrass. Scrubby flatwoods are inhabited by many of the same rare animal species found in scrub. These include Florida scrub-jay (*Aphelocoma coerulescens*), eastern indigo snake, gopher tortoise, and associated tortoise commensal species such as the gopher frog (*Lithobates capito*).

Natural fires rarely burn all of this community at once, creating a mosaic of scrub habitat types with differing fire return intervals. Therefore, there is no single way a natural scrub or scrubby flatwoods should always appear. The desired condition is to keep the scrubby flatwoods suitable as early successional scrub-jay habitat with oaks and shrubs averaging less than 5.5 feet tall and averaging less than two trees greater than 15 feet tall per acre. (FWC 2010).

*Description and assessment:* Scrubby flatwoods occur along a line of ridges running from northeast to southwest, just northwest of Upper Myakka Lake and small area north of Deer Prairie Slough and the Oak Grove primitive camping area. The site north of Upper Myakka Lake is an open-canopy forests having widely scattered pine trees, a sparse scrubby understory with small scrub oak pockets dispersed throughout, with contiguous

and evenly distributed saw palmetto, and a few small bare sand openings. Principal canopy species are longleaf pine and South Florida slash pine. The shrub layer consists of sand live oak (*Quercus geminata*), myrtle oak, and Chapman's oak (*Q. chapmanii*), with typical shrubs of mesic flatwoods including saw palmetto, gallberry, coastalplain staggerbush, fetterbush, and deerberry (*Vaccinium stamineum*). Grasses include wiregrass, broomsedge bluestem, and little bluestem (*Schizachyrium scoparium*); dwarf shrubs include dwarf live oak, dwarf huckleberry (*Gaylussacia dumosa*), gopher apple (*Geobalanus oblongifolia*), and shiny blueberry (*Vaccinium myrsinites*). A variety of forbs, many typical of drier types of mesic flatwoods, are present, including coastalplain honeycomb-head (*Balduina angustifolia*), narrowleaf silkgrass (*Pityopsis graminifolia*), and Chapman's goldenrod (*Solidago odora* var. *chapmanii*). The small 5-10 acre area of scrubby flatwoods near the Oak Grove Campsite has a more continuous coverage of scrub oaks and shrubs, a lower percentage of saw palmetto, a few bluejack oak (*Quercus incana*) and scrub hickory (*Carya floridana*) in addition to the more prevalent myrtle and sand live oaks. There are also a few bare sand patches scattered in the area.

The planted North Florida slash pine north of the Upper Myakka Lake was removed in 2011. In 2003, longleaf pine seedlings were planted in the scrubby flatwoods in zone 1A.

Florida scrub-jays have historically resided north of Upper Myakka Lake. They were last observed in zone 1A in December 2005. The acreage of scrubby flatwoods at the park is not enough to sustain a population of scrub-jays long-term, but could support a few families. Exotic plants such as cogongrass have invaded small areas of the scrubby flatwoods. The park's scrubby flatwoods are rated as being in fair to good condition.

*General management measures:* Monitor for recruitment of North Florida slash pines, and remove those that persist after prescribed fires. Since the scrubby flatwoods is embedded within the dry prairie the scrubby flatwoods will be treated with prescribed fire at the same interval as the adjacent dry prairie. This should allow it to burn in a mosaic fashion, allowing for a variation of number of years between fires. The majority of the scrubby flatwoods will carry fire at an interval of 4 to 8 years. Treat exotic plants.



## Basin Swamp

*Desired future condition:* The flow of water in the basin swamps will be unimpeded. The natural boundary of the basin swamps will return to pre-fire exclusion configurations. Fire will be allowed to burn from the adjacent pyric natural communities to the edge of the basin swamp. Coverage of invasive exotic plant species will be less than three percent. The invasion of Old World climbing fern along the interior of the basins will be halted and if possible eliminated. There will be little to no damage or disturbance by feral hogs.

*Description and assessment:* The park contains several basin swamps. Examples are Deer Prairie Slough, the largest, located in the eastern section of the park and Vanderipe Slough, located west of the park entrance. The Deer Prairie Slough basin includes some very large swamp tupelo (*Nyssa biflora*), red maple (*Acer rubrum*), swamp bay (*Persea palustris*), cabbage palm, and other trees with an affinity for frequently flooded areas. The outer edge of the Deer Prairie Slough basin developed as a result of fire suppression in the marsh community, expanding beyond its natural boundaries. Therefore, with the continued burning effort, the outer edge will be pushed back to its historic boundaries. Basin swamps burn infrequently, perhaps once every 25 years, at which time the accumulated organic matter is reduced and the system can begin again if the natural hydrological pattern is maintained (Duever 1986). The Deer Prairie Slough basin swamp has not had fire infiltrate since the opening of the park, with the exception of the southwest corner of the basin swamp in zone 8 which was impacted by fire in 2012.

Today, Deer Prairie Slough drains an area of approximately 33 square miles beginning north of Myakka River State Park through the Carlton Reserve, to a confluence with the Myakka River north of Warm Mineral Springs. Historically, it was a smaller system that joined other seasonal ponds only during periods of high water. South of the park, it was channelized during the 1950s for cattle grazing that significantly altered hydrological regimes and plant communities associated with it (Perry 1997). The slough was successfully restored south of the park by backfilling the channel in 2001-02. Old World climbing fern and West Indian marshgrass (*Hymenachne amplexicaulis*) are established along portions of the Deer Prairie

Slough basin swamp. Hogs forage in this community when there is no standing water in it. An invasive exotic insect, the Mexican bromeliad weevil (*Metamasius callizona*), has become established on native bromeliads, killing many of them in the tree canopy.

Basin swamp areas provide roosting and breeding sites for many wading birds at the park. Ibis, egret, and heron roosts may be found along the southern shore of the Lower Myakka Lake and the northeast shore of Upper Myakka Lake. A large rookery area in Deer Prairie Slough, inactive for many years in the 1970s, is again being used by herons and egrets, although in lesser numbers. Basin swamps in the park are presently in good to excellent condition.

*General management measures:* Exotic plants including Old World climbing fern and West Indian marshgrass along the interior of the slough and cogongrass on the edge of the basin swamp are monitored and treated yearly when possible. The water flow is somewhat constricted by Railroad Grade and the road that separates zones 9B and 24A. Impediments from the park roads will be addressed with best management practices which may include but are not limited to installation of additional culverts. Fire will continue to be utilized to control the expansion of basin swamp associated vegetation beyond its natural boundaries.

## Baygall

*Desired future condition:* A baygall is a forested, peat-filled seepage depression at the base of sandy slopes, edges of floodplains, and in stagnant drainages. Deep peat soils and seepage from uplands or adjacent wetlands work to maintain a constantly saturated but rarely flooded environment. Constant damp conditions limit decomposition of organic material, which in turn keeps available nutrient levels low (FNAI 2010). They are dominated by sweetbay (*Magnolia virginiana*), swamp bay, and loblolly bay (*Gordonia lasianthus*) with an understory of shrubs, ferns, and sphagnum moss. The dominant baygall species are fire-intolerant, and a mature canopy indicates the lack of destructive fire for many years.

Although, the saturated soils and humid conditions within baygalls typically inhibit fire, droughts may create conditions that allow them to burn catastrophically (FNAI 2010).

Baygalls will have intact soils and peat layers, with little to no damage or disturbance by feral hogs. There will be no hydrologic alterations that reduce soil and peat saturation. The coverage of invasive exotic plants will be less than three percent.

*Description and assessment:* There are a few small areas of baygall in the park. The largest baygall is located on the northwest slope of the basin in which Upper Myakka Lake lies. The baygalls of Myakka River State Park possess an open to dense tree canopy containing loblolly bay, sweetbay, red maple, and/or swamp bay. The understory is comprised of fetterbush, dahoon holly (*Ilex cassine*), wax myrtle, and/or Virginia willow (*Itea virginica*). Vines, especially laurel greenbrier (*Smilax laurifolia*), coral greenbrier (*S. walteri*), and muscadine (*Vitis rotundifolia*), may be abundant and contribute to the often-impenetrable nature of the understory. Herbs are absent or few, and typically consist of ferns such as cinnamon fern (*Osmunda cinnamomea*), netted chain fern (*Woodwardia areolata*), and Virginia chain fern (*W. virginica*). Sphagnum mosses (*Sphagnum spp.*) are common.

Rooting by feral hogs has caused damage to the substrate, which may impede successful tree recruitment. Because of the hog damage to this community, it is only in fair condition.

*General management measures:* As with other wetlands, baygall communities are best managed with a landscape level focus on maintaining high quality adjacent natural uplands and upland-wetland ecotones. When possible, fires from adjacent communities should be allowed to extinguish naturally at the edges of the baygall to prevent encroachment of bay species into other communities and to maintain open, grassy wetland/upland ecotones (FNAI 2010). The maintenance of natural hydrology is critical to wetland communities, therefore if there are future impediments, they will be addressed with best management practices. Invasive exotic plants will continue to be monitored and treated. Feral hogs will be removed from the system whenever possible.

### Depression Marsh

*Desired future condition:* Depression marshes typically occur in landscapes occupied by fire-maintained matrix communities such as mesic flatwoods and dry prairie. The concentric

zones or bands of vegetation are related to length of the hydroperiod and depth of flooding. Depression marshes usually derive most, if not all, of their water from runoff from the immediately surrounding uplands. They have a normal hydroperiod of 50 to 200 days. Periodic fires, typically at the frequency of adjacent upland pyric natural communities, maintain these seasonally wet depressions by inhibiting invasion by trees and shrubs (FNAI 2010). Without fire, tree invasion and peat accumulation would convert a depression marsh into a forested wetland.

*Description and assessment:* The depression marshes in the park may be inundated seasonally or year-round by precipitation. They are typically shallow, generally round, or elliptical depressions and may be vegetated with concentric bands of hydrophytic herbaceous plants. Depending upon the depth and slope of the depression, an open water zone with or without floating plants may occur at the center. Within the park, the character and plant communities of the thousands of marshes, both large and small, are directly governed by the depth and extent of the solution features they occupy and the porosity of the soil. Vegetation associated with the park's herbaceous wetlands includes pickerelweed (*Pontederia cordata*), maidencane (*Panicum hemitomon*), sandweed (*Hypericum fasciculatum*), sawgrass (*Cladium jamaicense*), various sagittaria (*Sagittaria spp.*), spatterdock (*Nuphar advena*), Tracy's beaksedge (*Rhynchospora tracyi*), and rosy camphorweed (*Pluchea baccharis*). Several species of frogs and salamanders breed regularly in depression marshes, and these constitute an important part of the food supply of wading birds and snakes, including the rare eastern indigo snake. Other rare species using this habitat include the Florida sandhill crane (*Grus canadensis pratensis*) and round-tailed muskrat (*Neofiber alleni*). Wading birds, in addition to feeding in depression marshes, use clumps of willows or other trees in the center for roosting or nesting (FNAI 2010).

For the most part, the depression marshes in the park are in fair to excellent condition with a very small portion in poor condition. The depression marshes assessed as poor have had fire excluded in the past, allowing woody species to invade. In addition to the woody invasion, invasive exotic plants including torpedograss (*Panicum repens*), Peruvian primrose willow (*Ludwigia peruviana*), and

West Indian marshgrass have been established. Invasive plant incursion has been made easier due to ground disturbance by feral hogs.

In the 1900s, several depression marshes fell victim to ditching, which was meant to drain the wetlands for additional cattle grazing or mosquito control. Within the last 10 years, many of the ditches have been filled or blocked, allowing for a more natural hydroperiod of the wetlands and hydrologic sheet flow over the landscape during the rainy season. A number of ditches still require filling or plugging to repair the natural hydroperiod of the marshes.

Several depression marshes (approximately three acres total) within the park were planted with bald cypress (*Taxodium distichum*) by the CCC. Four of these sites are expected to be restored to depression marshes with repeated treatment by fire. Depression marshes will be monitored to ensure there is no additional expansion of cypress. The sixth site is unlikely to expand due to its location within the prairie hammock north of Ranch House Road and will be maintained as a dome swamp.

*General management measures:* Fires in surrounding communities are allowed to burn into depression marshes and extinguish naturally or burn through them. To maintain desired conditions of depression marshes, they should occasionally be burned under drought conditions, which will require exemption to drought burning restrictions. Invasive exotic plants are monitored and treated. New methods of treatment of deeper interior infested sites are being explored. Any remaining ditches that drain the wetlands and alter the hydroperiod are to be filled or blocked where feasible.

## Dome Swamp

*Desired future condition:* The characteristic dome shape is created by smaller trees that grow in the shallower waters of the outer edge, while taller trees grow in the deeper water in the interior of the swamp (FNAI 2010). The dome swamp will have an open understory devoid of all exotic grasses and a re-establishment of bald cypress trees (*Taxodium distichum*) in the interior as well as around the perimeter.

*Description and assessment:* Six depression

marshes (approximately three acres total) within the park were planted with off-site bald cypress by the CCC. Three of the sites have formed domes. The most significant dome is south of State Road 72 along a historic pioneer trail. Its natural occurrence is questionable, although it was present prior to 1940 and the trees appear to be randomly distributed. Prior to 2008, the cypress dome interior had not burned in more than 30 years. In 2008, a prescribed fire burned through the dome, which was not holding water. The fire scorch reached up to 15 feet on several bald cypress. The duff continued to burn for more than a week. The fire along with an extended period of drought had a negative effect on the dome, killing many trees in the interior. West Indian marshgrass became established and is currently found throughout the dome. Fortunately, the Jameson's waterlily (*Nymphaea jamesoniana*), listed as state endangered, was not impacted by the fire. This dome is in poor condition. Depression marshes will be monitored, and cypress removed, as needed, to prevent additional cypress domes from forming.

*General management measures:* Treat West Indian marshgrass and all other invasive exotics. Allow fires to burn the perimeter when adequate soil moisture or water is in the interior of the dome to prevent a duff or muck fire.

## Floodplain Marsh

*Desired future condition:* Floodplain marsh is a wetland community occurring in river floodplains and is dominated by herbaceous vegetation and/or shrubs. Sand cordgrass (*Spartina bakeri*), barnyard grass (*Echinochloa spp.*), maidencane, smartweed (*Polygonum spp.*), and tickseed (*Coreopsis spp.*) are common dominants, but various other herbs may be found distributed along a hydrologic gradient. Broadleaf emergents and floating plants, particularly bulltongue arrowhead (*Sagittaria lancifolia*), bladderworts (*Utricularia spp.*), and pickerelweed occupy the deepest, most frequently flooded sites, and mixed herbaceous stands are found in the somewhat higher portions of the marsh. While the progression from high to low marsh occurs generally from the upland edge to the river edge, these vegetation patches may also be scattered throughout the marsh, which provides a diversity of habitats beneficial to wildlife. Floodplain marsh will contain less than five percent invasive exotic plants.



*Description and assessment:* Floodplain marsh occurs between the Upper and Lower Myakka Lakes and along the Myakka River. It is an herbaceous wetland on the river floodplain. Much of this community is dominated with two exotic grasses: Paragrass (*Urochloa mutica*) and West Indian marshgrass. West Indian marshgrass was observed in Tatum Sawgrass in the 1970s and became dominant in the park's floodplain marsh after 1987. Paragrass was established much earlier. In 1903, the Ocala Banner reported that a 4,000-acre tract in the Myakka Valley was to be planted with paragrass for cattle grazing. Park staff treat this community with prescribed fire to reverse the trend towards succession to hydric hammock and to control the exotic marsh grasses. Over the years, the eggs from the exotic island apple snail (*Pomacea maculata*), have been observed on vegetation in the floodplain marsh. Overall condition is fair.

Starting in 2013 in partnership with FWC, the exotic grasses in approximately half of Big Flats Marsh were aerially treated with herbicides and then burned. Re-sprouting exotic grasses in the treatment area were then retreated with herbicides. The results of this approach were promising with native wetland species dominating post-treatment.

*General management measures:* The floodplain marsh is treated with fire when conditions warrant. Fire maintains a grassy and herbaceous species composition and excludes hardwood trees and shrubs. Newly established invasive exotics such as sicklepod (*Senna obtusifolia*) are treated. Because both paragrass and West Indian marshgrass have been well established for a long period of time, research is being conducted with the FWC's Invasive Plant Management Section and SWFWMD to determine best management practices.

## Hydric Hammock - Prairie Hydric Hammock

*Desired future condition:* Prairie hydric hammocks are stands of live oaks (*Quercus virginiana*), laurel oaks (*Quercus laurifolia*), American elm (*Ulmus americana*), and cabbage palms. Prairie hydric hammocks form along the fringe of freshwater wetlands and in the river floodplain. Prairie hammocks are often found in ecotones between wetlands and upland communities. Historically, such hammocks form on the lee (north) side of wetlands that are protected from fire carried by the dominant southerly winds.

The desired condition of prairie hydric hammock in the park is a canopy dominated by oaks and cabbage palms, with a mix of other tree species with little understory. The herb layer will be sparse or patchy and consists of various graminoids. Under the canopy, hydric hammocks will be open with small components of shade and flood tolerant understory vegetation, and little ground cover except for leaf litter. Vines, although common, will not be thick. Abundant epiphytes will be found on live oaks and cabbage palms, as these are a characteristic feature of hammocks. Invasive exotic plants will be less than one percent. Feral hog damage will be eliminated due to the reduction in the hog population through contract trapping and other methods.

*Description and assessment:* Typically, prairie hydric hammocks consist of live oak, laurel oak, cabbage palm located along the Myakka River corridor on frequently flooded wetland soils. A number of epiphytic plants are also common, including Spanish moss, giant airplant, golden polypody, shoestring fern, resurrection fern and Florida butterfly orchid.

The prairie hydric hammock transitions to prairie mesic hammock at higher elevation on upland soils. Due to fire exclusion, hammocks have expanded into the surrounding floodplain marsh, basin marsh or dry prairie. See the discussion about pseudo mesic hammocks that develop as the result of fire suppression in the prairie mesic hammock description.

Old World climbing fern has become established in a few prairie hydric hammocks. Feral hogs are common in prairie hydric hammocks, where they compete for acorns with other wildlife. Rooting by hogs severely disturbs soil structure and creates conditions that encourage exotic plant invasion and alters hydrologic flow. Although there is considerable damage by hogs in this community, hammocks in the park are in good to excellent condition.

*General management measures:* Allow fire to penetrate the ecotone of the system. If there is evidence of alteration of the natural hydrologic flow creating a change in saturation or hydroperiod, it should be addressed. Continue an aggressive survey and treatment program for invasive exotic plants. Decrease the damage caused by feral hogs by reducing their population.

## River Floodplain Lake

*Desired future condition:* Although the occurrence of vegetation in the lakes fluctuate over time, it is preferred that there be a portion of the lakes that contain aquatic plants for the benefit of the native fish and birds. When present, typical plants might include white waterlily (*Nymphaea odorata*), yellow waterlily, spatterdock, frog's bit (*Limnobiium spongia*), bladderwort (*Utricularia spp.*), maidencane and softstem bulrush (*Schoenoplectus tabernaemontani*). Native submerged aquatic plants should also be present, including small pondweed (*Potamogeton pusilla*) and coontail (*Ceratophyllum demersum*). Exotic fish and exotic snail populations will be low, and healthy populations of largemouth bass and other native fish and snail species will be present.

*Description and assessment:* Two shallow depression lakes, the Upper Myakka Lake and Lower Myakka Lake are found within the park. Both lakes have wide-open water. The primary water source is rainfall with additional input from runoff and seepage from surrounding uplands. The water depth varies from approximately 2 feet to 6 feet, depending on rainfall.

The vegetation within the lakes has fluctuated greatly over the last 70 years. During the period between 2001 and 2010, little native aquatic vegetation occurred. In the spring of 2010, yellow waterlily (*Nymphaea mexicana*) was present and continues to persist along with a few other aquatic plants. In the past, both lakes have been inundated with invasive exotic plants such as hydrilla (*Hydrilla verticillata*) and water hyacinth (*Eichhornia crassipes*), but with the efforts made by SWFWMD, the aquatic exotics are being controlled. Although there were a number of years when vegetation in the Upper Myakka Lake was sparse, currently found are smartweed (*Polygonum setaceum*), softstem bulrush and yellow waterlily. Paragrass and West Indian marshgrass line the edge of lake. Invasive exotic fish including blue tilapia (*Oreochromis aureus*), brown hoplo (*Hoplosternum littorale*), sailfin suckermouth catfish (*Pterygoplichthys spp.*) and walking catfish (*Clarias batrachus*) are well established in the lakes. In 2012, an exotic snail, the island apple snail was found in the Upper Myakka Lake. It is now residing in both the Upper and Lower Myakka Lakes. Common

reed (*Phragmites australis*), although considered native, has grown into large bands around 3 sides of the Upper Myakka Lake. Agricultural activities, spray irrigation fields and an effluent treatment system along Howard Creek are possible contributors to the poor water quality of the lakes (Lowrey et al. 1989). These lakes serve as two of the many detention areas within the Myakka River watershed that are nutrient-enriched and exhibit seasonally low dissolved oxygen levels. The condition of the lakes is fair to good.

*General management measures:* SWFWMD continues to treat the invasive exotic plants found in the lakes. Research is being conducted by the FWC's Invasive Plant Management Section and park staff to determine the best management practice for the reduction of paragrass and West Indian marshgrass along the edge of the lakes. The population trends of the exotic fish are being periodically monitored. Water quality samples are taken on a monthly basis as part of the University of Florida's Lakewatch Program. Staff will continue to research and implement best management practices for the reduction of exotic aquatic wildlife.

## Sinkhole Lake

*Desired future condition:* The sinkhole lake is a deep, funnel-shaped depressions in a limestone base. The desired future condition of the sinkhole is to maintain its integrity against erosion.

*Description and assessment:* Sinkhole lakes are considered endangered in Florida (FNAI 2010). The sinkhole lake at the park is known as Deep Hole. Deep Hole is engulfed by Lower Myakka Lake during the rainy season but can be a stand-alone feature when water levels in the Lower Myakka Lake are low. There is no vegetation in Deep Hole. Research conducted by Sarasota County in 2012 analyzed water quality parameters and examined its physical properties. It was determined that Deep Hole contained only fresh water, with little to no evidence of spring flow. The water quality was stratified, with poor water quality below 30 to 40 feet. The water at depth is anoxic, cold, turbid and rich in ammonia and sulfur. Water near the surface is dark and rich in iron. The water overall was rich in phosphorus. The temperature of the water is uniformly 58 degrees below 40 feet and the depth is estimated at 131 feet (Culter et al. 2013). Sinkhole lakes are often threatened by

erosion, pollution and other threats to the aquifers with which they are connected.

*General management measures:* There is little active management needed except to limit pedestrian and boat traffic that disturbs wildlife. Deep Hole is an important dry season refuge for American alligators (*Alligator mississippiensis*) and other species, so human disturbance should be limited.

## Blackwater Stream

*Desired future condition:* The desired condition for the Myakka River is a fairly open blackwater stream, devoid of exotic vegetation and exotic fish and wildlife. The river will contain both emergent and floating aquatic vegetation along shallower and slower moving sections, but their presence is often reduced because of typically steep banks and considerable seasonal fluctuations in water level. Typical plants will include goldenclub (*Orontium aquaticum*), smartweed (*Polygonum spp.*), sedges (*Cyperus spp.*), maidencane, and water paspalum (*Paspalum repens*). Typical animals include longnose gar (*Lepisosteus osseus*), gizzard shad (*Dorosoma cepedianum*), lake chubsucker (*Erimyzon sucetta*), channel catfish (*Ictalurus punctatus*), golden topminnow (*Fundulus chrysotus*), blue-spotted sunfish (*Enneacanthus gloriosus*), Everglades pygmy sunfish (*Elassoma evergladei*), redear sunfish (*Lepomis microlophus*), black crappie (*Pomoxis nigromaculatus*), largemouth bass, American alligator, common snapping turtle (*Chelydra serpentina*), peninsula cooter (*Pseudemys peninsularis*), common musk turtle/stinkpot (*Sternotherus odoratus*), Florida water snake (*Nerodia fasciata pictiventris*), and North American river otter (*Lontra canadensis*).

There will be less than five percent cover of invasive, exotic plants. The invasive aquatic fauna will be reduced to a level that will not affect the natural community. The damage by feral hogs will be significantly reduced by impacting the population through contract trapping and other methods.

*Description and assessment:* Twelve miles of the Myakka River and less than one mile of Clay Gully, flow within the park. At river mile 43, just north of the park, the river channel splits into Clay Gully and the Myakka River. Both watercourses run into Upper Myakka Lake at approximately river mile 39. There is

a concrete weir that blocks a portion of the river from the Upper Myakka Lake. Culverts to one side of the weir, when open, allow water to flow through. These culverts have deteriorated and are no-longer functioning, and in 2016 significant erosion occurred east of the culverts, separating a popular observation deck from shore. Funding for a feasibility study has been obtained to determine options for restoration. Work on the feasibility study will commence during the late winter/early spring 2019.

Downriver from the Upper Myakka Lake, a large marsh known as Big Flats is present. Below State Road 72, the river enters the park's wilderness preserve at approximately river mile 36. At this point, the hammock closes in on the river channel for a short stretch before again opening into marshes at the northern end of Lower Myakka Lake. Downriver from the lower lake, the hammock again closes in on the river channel. The river is a state-designated wild and scenic river within Sarasota County.

The blackwater stream banks are lined with paragrass and West Indian marsh grass. Other aquatic exotics including water hyacinth and water lettuce (*Pistia stratiotes*) which on occasion block the flow of the blackwater stream. Invasive exotic fish including blue tilapia, brown hoplo and walking catfish are well established in the river. The island apple snail can also be found in the river. Florida manatees are now observed annually in the park during high water events in the river. The assessment of the blackwater stream is poor to fair due to the exotic invasion.

*General management measures:* SWFWMD continues to treat the invasive exotic plants found in the river. The population trends of the exotic fish are being periodically monitored. Staff will research and implement best management practices for the reduction of exotic aquatic wildlife. Research should be completed on the ecological effects of the concrete weir and feasibility of removal. If research and the proposed feasibility study shows removal is warranted, the weir should be removed.



## Altered Landcover Types

### Developed

*Desired future condition:* Development will not detract from, nor overshadow the splendor of surrounding natural and cultural resources. Avoid or minimize impact to the viewshed of the Myakka Prairie and the Myakka Wild and Scenic River. Development will be integrated in such a way as to enhance visitor experiences and provide essential infrastructure. Cover from invasive exotic plants should be less than five percent.

*Description and assessment:* Parking lots, buildings, maintained lawns, campgrounds, playgrounds, paved roads, recreational, and residential areas are the developed areas.

*General management measures:* Maintain structures as needed. Treat exotic plants and remove feral hogs.

### Canal/Ditch

*Desired future condition:* Canals and ditches that cause an alteration in the sheet flow of water and in hydroperiod of the marshes will be filled or plugged.

*Description and assessment:* Drainage ditches were used to connect wetlands to move water off the land for cattle grazing and mosquito control. Several ditches in the Florida dry prairie that were connecting depression marshes have been filled or blocked to restore natural sheet flow across the prairie. There still exists a small number of ditches that need to be plugged.

*General management measures:* When appropriate, ditches and canals are filled by pushing the adjacent berm materials back into the previously excavated channels.

### Artificial Pond

*Desired future condition:* The park's one artificial pond is functioning as a natural pond, fulfilling ecological functions while supporting native aquatic vegetation and providing habitat for aquatic wildlife. Therefore, there is no need to remove or alter it except to remove invasive exotic plants.

*Description and assessment:* The artificial pond is a 4-acre rectangle. It is not connected to any other wetlands, and contains many of the same plant species that a natural

depression marsh in the park would have, including pickerelweed, maidencane and sandweed. It is also home to the same aquatic wildlife also found in natural wetlands.

*General management measures:* Staff will continue to treat invasive exotic plants when present.

### Pasture/Field – Abandoned

*Desired future condition:* Restoration of the abandoned pasture and field back to the original natural community, whether Florida dry prairie or mesic flatwoods, is the long-term goal. A restoration strategy must be developed for this extensive project.

*Description and assessment:* There are more than 560 acres of abandoned pasture scattered throughout the park, most of which are located south of State Road 72. A majority of the abandoned pastures can be found on the portion of the park formerly known as the "Myakka Prairie". The pastures are largely comprised of bahiagrass, dogfennel, and wax myrtle. Invasive exotic plants have been found in the pastures, including cogongrass, tropical soda apple (*Solanum viarum*), and twoleaf nightshade (*Solanum diphyllum*). The pastures have been abandoned for more than two decades, and as a result, native early successional shrub and tree species including wax myrtle, silverling (*Baccharis glomeruliflora*), groundsel tree (*Baccharis halimifolia*), and other native species have recruited into these areas.

*General management measures:* The pasture is burned on the fire return interval of the surrounding natural communities in adjacent management zones. On occasion, the pastures are mowed to improve fire movement. Invasive exotic plants are monitored and treated as needed. A phased restoration strategy will be developed to convert pasture back to the biologically diverse natural community formerly found there.

### Spoil Area

*Desired future condition:* All FLEPPC Category I and II exotic plants are removed. Native plants found in the adjacent unspoiled area are established. The ground is leveled to the surrounding grade.

*Description and assessment:* The area was an old sandpit located near Vanderipe Slough approximately three acres in size. The ground has been disturbed, creating mounds approximately four to six feet tall. There are a wide variety of FLEPPC Category I and II exotic invasive plants that reside in the area, including Old World climbing fern, cogongrass, Guineagrass (*Urochloa maxima*) and air potato (*Dioscorea bulbifera*) and very little native ground cover.

*General management measures:* Continue to treat invasive exotic plants to prevent expansion into the adjacent natural communities.

## Successional Hardwood Forest

*Desired future condition:* Closed-canopied forest dominated live oak, often with remnant pines. These forests are either invaded natural habitat (i.e., mesic flatwoods or scrubby flatwoods) due to lengthy fire-suppression or old fields that have succeeded to forest. The subcanopy and shrub layers of these forests are often dense and dominated by smaller individuals of the canopy species. Successional hardwood forests can contain remnant species of the former natural community

*Description and assessment:* This 20-acre site was once an old homestead or animal paddock in MR-06 west of Deer Prairie Slough. The area was mostly clear of vegetation in the 1940s, with a windrow of trees around sections of the perimeter. These abandoned corrals have subsequently been invaded by live oak and allowed to mature. The understory has various pasture grasses like Bahia grass with a few saw palmettos in the midstory. The canopy has epiphytes similar to those seen in the park's hydric and mesic prairie hammocks. The successional hardwood forest resembles the park's mesic hammock with more openings in the canopy allowing more light to groundcover vegetation, and there are fewer cabbage palms.

*General management measures:* In general, this area will be monitored and treated for exotic plant and animal species and allowed to burn with the surrounding dry prairie, mesic or scrubby flatwoods. Restoration of these forests, if decided upon later, includes mechanical tree removal and reintroduction of fire. Where characteristic herbaceous species (e.g., wiregrass) have been lost,

reintroduction via seed or plants may be necessary to restore natural species composition and community function.

## Utility Corridor

*Desired future condition:* The footprint will be limited. The invasive exotic plants growing in and along the corridor will be reduced to less than five percent. Feral hog populations will be significantly reduced, eliminating hog-related damage.

*Description and assessment:* There are 3 utility corridors in the natural areas of the park. The smaller utility corridor runs into Big Flats marsh. The other two, run along Powerline Road and South Powerline Road. The Powerline and South Powerline corridors are used as access roads. There are several invasive exotics growing in and along the roads, including torpedo grass, rose natalgrass and heartland sida. Several low water crossings have been installed along the powerline to improve sheet flow from north to south. Feral hogs cause damage by uprooting the substrate of the dirt roads along the utility corridors.

*General management measures:* Staff will monitor and treat invasive exotics, and will limit the footprint of utility corridors.

## Natural Communities Management Program

### **Goal: Restore and maintain the natural communities/habitats of the park.**

The DRP practices natural systems management. In most cases, this entails returning fire to its natural role in fire-dependent natural communities. Other methods to implement this goal include large-scale restoration projects as well as smaller scale natural community improvements. Following are the natural community management objectives and actions recommended for the state park.

## Prescribed Fire Management

Prescribed fire is used to mimic natural lightning-set fires, which are one of the primary natural forces that shaped Florida's ecosystems. Prescribed burning increases the abundance and health of many wildlife species. A large number of Florida's imperiled plant and animal species are dependent on

periodic fire for their continued existence. Fire dependent natural communities gradually accumulate flammable vegetation; therefore, prescribed fire reduces wildfire hazards by reducing these wild land fuels.

All prescribed burns in the Florida state park system are conducted with authorization from the FDACS, Florida Forest Service (FFS). Wildfire suppression activities in the park are coordinated with the FFS.

The park contains several natural communities that rely on fire to maintain its plant composition and structure. Within these communities exist flora and fauna that could not persist without fire. The fire dependent communities include Florida dry prairie, mesic flatwoods and scrubby flatwoods. Florida dry prairie and mesic flatwoods cover the greatest area of the park.

Florida dry prairie is the largest fire-dependent community in the park. The natural fire frequency in Florida dry prairie is approximately 1 to 2 years. The higher frequency of fire, followed by the long hydroperiod, are probably the primary factors that limit pine recruitment (FNAI 2010). When fire regimes are altered or fires are suppressed, saw palmetto can proliferate, leading to significant changes in the ecosystem, particularly the herbaceous vegetation (Willcox and Guiliano 2010). An increase of pine, hardwoods, and palmetto, with a decrease in grasses and herbaceous plants, was the result of fire suppression for more than 40 years in the park. Fire-dependent species such as the state-listed many-flowered grasspink and the pine lily were not able to thrive with the thick overstory that ensued. Both plants require open ground and nutrient reloading that occurs after a fire. Another likely result of fire exclusion was the elimination of the state and federally endangered Florida grasshopper sparrow from the park. The Florida grasshopper sparrow is a ground-inhabiting sparrow endemic to the Florida dry prairie, requiring open grassy areas to nest and to forage (Pranty and Tucker 2006). Alterations to the habitat due to changes to fire seasonality and frequency, and alterations of hydrology are the primary causes of its decline. It is unlikely that Florida grasshopper sparrows will return to the park due to their extremely low population and the distance from where they are currently found. However, the park has two other bird species

that have more promising futures. During the period of fire exclusion, the crested caracara (federally threatened) and the Florida burrowing owl (state threatened) were not observed residing in the park. Thanks in part to the reintroduction of fire starting in the 1970s, both the crested caracara and the burrowing owl have returned to the park's dry prairies. Because of decades of fire suppression in Myakka's dry prairie, and the current density of woody shrubs and saw palmetto the minimum successful fire return intervals achieved are 18 months to two years. However, fuel loads, weather conditions, season of most recent burn, and other factors may affect prescribed fire goals; a longer FRI may sometimes occur for an individual management zone containing dry prairie. As fuel conditions improve through mechanical treatment and frequent fire during dry growing-season conditions, the optimum fire return interval would be less than 30 months.

Mesic flatwoods are the park's second largest upland fire-dependent natural community. Mesic flatwoods require frequent fire; all of its constituent plant species recover rapidly from fire and several species require fire to reproduce. South Florida slash and longleaf pines have thick bark to protect them from fire, and their seeds need the mineral-rich soil and open sunlight that fire provides to germinate. Both pine species undergo a grass stage for several years after germination that is resistant to fire. Wiregrass, along with a number of other characteristic herbs such as whitetop aster (*Oclemena reticulata*) and many-flowered grasspink, requires fire to flower (FNAI 2010). Without fire in mesic flatwoods, increases in saw palmetto height, cover, and density have become a concern, potentially resulting in the loss of many grass and forb species and causing declines in the species-rich herbaceous ground layer (Wade et al. 1980; Huffman and Blanchard 1991; Robbins and Myers 1992; Olson and Platt 1995 as cited by Willcox and Guiliano 2010). Such changes threaten the integrity of pine flatwoods and their suitability for many wildlife species of conservation concern. These include a variety of mammals, birds, amphibians, and reptiles such as Sherman's fox squirrel (*Sciurus niger shermanii*), Florida black bear, and gopher tortoise.

Fire was reintroduced in the park in the late 1970s. The restoration of long unburned dry prairie favors growing-season burns to reduce



woody species. Three growing-season burns (two in May and one in June) in the space of six years were successful at killing mature live oaks that had invaded dry prairie at Myakka River State Park during 46 years of fire exclusion (Huffman and Blanchard 1991). Studies examining shrub communities indicate regrowth is lower after growing-season burns than dormant-season burns as a result of reduced shrub resprouting (Lewis and Harshbarger 1976; Fitzgerald 1990; Huffman and Blanchard 1991; Olson and Platt, 1995; Drewa et al. 2002 as cited by Willcox and Guiliano 2010). However, reducing dense palmetto cover and increasing herbaceous cover in long fire-excluded prairie is more challenging (FNAI 2010). The height of the palmetto is reduced with fire, but the density will have to be addressed by mechanical treatment, which will be discussed in the Natural Community Restoration section.

Prescribed fire is not conducted in the fall, during the season of grass seed production. Fires occurring during fall when the grass seeds are held on the stem usually destroy most of them (USGS/NPWRC 2013). With the goal of increasing the native grass component to the dry prairie and mesic flatwoods in mind, burns are conducted during winter, spring and early summer. Most of the park's burns are conducted in spring. The reintroduction of fire has been successful in reducing height of palmetto/shrubs and has reduced the number of hardwoods encroaching into dry prairie and mesic flatwoods. The invasion of pine into the prairie has also been reduced. There are now known pairs of crested caracara residing in the park, and in 2013, a pair of burrowing owls were observed near a burrow within the park. These sightings are an indication that the burn program has been successful and must continue to improve the park's fire-dependent communities.

**Objective A: Maintain 26,085 acres within the optimum fire return interval.**

- |          |                                                                                                     |
|----------|-----------------------------------------------------------------------------------------------------|
| Action 1 | Update burn plan on a yearly basis.                                                                 |
| Action 2 | Maintain fire-dependent communities by burning between 10,384–17,314 acres annually.                |
| Action 3 | Continue and improve monitoring fire effects on dry prairie, mesic flatwoods and scrubby flatwoods. |
| Action 4 | Maintain firebreaks.                                                                                |

Based on the Park Service Fire Management Standards, burn plans are developed to provide strong guidance to the park, but modifications may occur throughout the year for a variety of reasons. Determining whether a zone should be burned or not in the next annual cycle is a matter of considering fire return intervals for each community type, present fuel load, resource management objectives, and strategic location. It is very important to consider how each zone fits into the overall scheme of accomplishing a number of burns at each park. Each year, the burn plan will include a selection of zones that meet different weather parameters to increase the chance of being able to burn under a variety of conditions. To the greatest extent possible, zones are planned in a sequence so that each burn makes the next burn easier by reducing the amount of holding required to burn each zone (i.e. plan to burn into recently burned zones). The overall mosaic of burned zones in the park is considered, avoiding extreme large expanses of burned areas. This may be alleviated by the timing of the burn. The annual plan considers season of burn with an emphasis placed on growing-season burning as the ideal objective. The frequency of burning is determined by the natural communities found in the zone and its natural fire frequency. The annual park fire plan includes zones to be burned, burnable acreage, preferred season of burn, and identification of backlogged acreage.

With the omission of the natural process of fire, fire-dependent communities change over time. There is an increase of hardwoods and palmettos in both the Florida dry prairie and mesic flatwoods communities. With the increase in canopy cover, native grasses and herbaceous plants can't compete for sunlight and eventually disappear. Ground nesters such as the Florida grasshopper sparrow can no longer survive. This occurred at Myakka River State Park, but since the mid-1970s, the park has been reintroducing fire back to its fire-dependent communities. Over the last 14 years (July 2003 – June 2017), the park has burned an average of 7,513 acres per year. This number is lower than the yearly minimum goal because of drought inspired burn restrictions during this timeframe. Prior to this plan update the minimum target acreage to burn was 8,000, which was exceeded during eight of the 14 years listed above.

There are multiple benefits to the use of fire as a management tool:

- Restoration or preservation of fire-adapted natural communities.
- Restoration or preservation of habitat for rare plant and animal species.
- Creation of a vegetation mosaic by varying intensity, frequency, and season of burn within each maintained natural community.
- Promotion of diversity within natural communities.
- Stimulation of flowering in herbs, forbs, and other vascular plants.
- Reduction of potentially hazardous fuels.
- Maintenance of natural transition zones between vegetation types.
- Reduction of wildfires and resulting smoke management problems through management of fuel loads.

The Day of Burn Report is submitted after each burn, noting fire behavior, fire effects on wetlands, wildlife observed during the fire and issues that may have occurred during the fire. A copy of the report stays in the park and another is sent to the district. Reports are reviewed prior to the next burn. A six month and/or one year post-fire evaluation would be a useful tool as well and should be incorporated into the program.

Firebreaks will be maintained at an effective width to minimize spot fires during prescribed burns. Minimum width of firebreaks should generally be at least 2 times as wide as the height of adjacent receptive fuels. Firebreaks are disked to mineral to stop the movement of flames.

Depression marshes dividing management zones or along fence lines may be used when conditions warrant as a firebreak, but there can be complications when the soils on the edge of the marshes are too saturated to traverse or when the marshes are too dry to contain the fire. Therefore, there is a need to establish wetland go-arounds used as firebreaks.

Table 3 contains a list of all fire-dependent natural communities found within the park, their associated acreage and optimal fire return interval, and the annual average target acreage to be burned.

Prescribed fire is planned for each burn zone on the appropriate interval. The park's burn

**Table 3. Prescribed Fire Management**

| <b>Natural Community</b>     | <b>Acres</b>           | <b>Optimal Fire Return Interval</b> |
|------------------------------|------------------------|-------------------------------------|
| Florida Dry Prairie          | 14,733                 | <30 months                          |
| Mesic Flatwoods              | 3,766                  | <30 months                          |
| Scrubby Flatwoods            | 182                    | 4-8 years                           |
| Depression Marsh             | 6,789                  | <30 months                          |
| Pasture/Field - Abandoned    | 615                    | <30 months                          |
|                              |                        |                                     |
| <b>Annual Target Acreage</b> | <b>10,384 — 17,314</b> |                                     |

plan is updated annually because fire management is a dynamic process. To provide adaptive responses to changing conditions, fire management requires careful planning based on annual and specific burn objectives. Each annual burn plan is developed to support and implement the broader objectives and actions outlined in this ten-year management plan.

To track fire management activities, the DRP maintains a statewide burn records in the Natural Resource Tracking System (NRTS) database. The database allows staff to track various aspects of each park's fire management program including individual burn zone histories and fire return intervals, staff training and experience, backlog, mechanical treatment, etc. The database is also used for annual burn planning and determining goals for the year which are usually set within the target acreage range of 10,384-17,314 acres. The database allows DRP to document fire management goals and objectives on an annual basis. As prescribed burns occur, the database is updated and reports are produced that track progress towards meeting annual burn objectives.

## Natural Community Restoration

In some cases, the reintroduction and maintenance of natural processes is not enough to reach the desired future conditions for natural communities in the park, and active restoration programs are required. Restoration of altered natural communities to

healthy, fully functioning natural landscapes often requires substantial efforts that may include mechanical treatment of vegetation or soils and reintroduction or augmentation of native plants and animals. For the purposes of this management plan, restoration is defined as the process of assisting the recovery and natural function of degraded natural communities to desired conditions, including the reestablishment of biodiversity, ecological processes, vegetation structure, and physical characteristics.

Examples that would qualify as natural community restoration, requiring annual restoration plans, include large mitigation projects, large-scale hardwood removal and timbering activities, roller-chopping, and other large-scale vegetative modifications. The key concept is that restoration projects will go beyond management activities routinely done as standard operating procedures such as routine mowing, the use/reintroduction of fire as a natural process, spot treatments of exotic plants, and small-scale vegetation management.

The following natural community/habitat restoration and maintenance actions are prescribed to create the desired conditions in the Florida dry prairie and mesic flatwoods communities.

***Objective B: Conduct habitat/natural community assessments to determine restoration and enhancement needs.***

- |          |                                                                                                                                                                                                        |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Action 1 | Survey and assess restoration needs and develop/update site specific restoration plans using the restoration roller-chopping guidelines. Each fiscal year, the natural communities should be assessed. |
| Action 2 | Implement restoration plan.                                                                                                                                                                            |
| Action 3 | Update and maintain a comprehensive mechanical treatment map.                                                                                                                                          |

Appendix 12 contains the restoration roller-chopping instructions and guidelines. Potential restoration roller-chopping sites will need to be assessed using the methodology outlines in the guidelines. When an area is designated as a potential restoration site, it is assessed more closely through vegetation transects. This practice will continue. Once an area is designated as a restoration area, the best method of mechanical treatment available to

reach the objective is determined and implemented.

Most of the restoration/enhancement activity for this objective will be roller-chopping dry prairie and mesic flatwoods to reduce the density of saw palmetto.

Myakka River's prairies were species rich prior to several decades of fire exclusion. Healthy dry prairie typically has diverse plant occurrence with the bulk of species present being herbaceous. From 15 to 30 species per square meter should be present. The mechanical treatment of roller-chopping, where appropriate, in conjunction with a frequent fire return interval can, through time, greatly aid in regaining the low aspect and diversity of healthy Florida dry prairie.

The goal of roller-chopping is to restore the aspect and woody/herbaceous ratio to within the range of non-fire excluded prairie and flatwoods. Shrub height in dry prairie gradates between one and four feet in height, with the tallest boarding wetlands and hammocks. Percent cover of woody species range from ten to ninety, with the majority of large expanses of area from twenty to fifty percent. This range corresponds with historical prairie descriptions such as described by Roland Harper (Harper 1927).

An additional objective is to obtain a natural mosaic of burned and unburned area, the treatment of roller-chopping should achieve a mosaic of chopped and unchopped area. A general guideline is to leave unchopped islands totaling from one to four acres within a 10-acre treatment area.

Roller-chopping alone cannot effectively restore dry prairie (Watts 2002). The treatment does not increase species diversity in highly degraded prairie/flatwoods, but increases soil surface sunlight to allow herbaceous species to colonize when combined with other strategies. These strategies include chopping sites adjoining those with adequate seed source; selecting chop sites upwind of the prevailing SE/SW winds; scheduling treatment to benefit from peak seeding periods; and collecting/planting seeds harvest from the same region. Using these strategies, a roller-chopping/restoration plan should be updated annually.

Park staff should continue to map areas that have been mechanically treated and maintain



a comprehensive mechanical treatment map as a reference, emphasizing the history of areas roller-chopped.

**Objective C: Develop a plan for Florida dry prairie restoration of the abandoned pasture south of State Road 72 that identifies priorities, feasibility, and partnership/funding opportunities.**

- |          |                                                                                                                                                                                      |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Action 1 | Develop a restoration plan which outlines the desired outcome, documents the existing conditions, and identifies potential restoration projects.                                     |
| Action 2 | Determine the feasibility of the projects, outline a budget for each project and phase, prioritize project schedules, and establish a list of partnership and funding opportunities. |
| Action 3 | After Actions 1 and 2 are met, implement the project(s).                                                                                                                             |

Restore 566 acres of abandoned pastures back to historic natural communities to regain the natural ecological function of the project areas, benefitting wildlife while enhancing the visitors' experience of the "real" Florida.

**Objective D: Conduct aquatic habitat restoration activities on 880 acres of river floodplain lake.**

- |          |                                                                                                                                                                                                                                                              |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Action 1 | Identify, develop, and implement comprehensive aquatic habitat management of the Upper Myakka Lake by collaborating with FWC's Habitat and Species Conservation section, FWC's Invasive Plant Management section and SWFWMD's Vegetation Management section. |
| Action 2 | Continue to coordinate with FWC's Invasive Plant Management section and SWFWMD's Vegetation Management section to control the spread of aquatic invasive plants in the Upper Myakka Lake, Lower Myakka Lake, and the Myakka River.                           |

Management includes removal/treatment of invasive and nuisance plants and replacing with native plants historically established in the park. Work is underway with FWC AHRES program to treat the invasive common reed, para grass, and West Indian marsh grass and

plant natives including soft-stem bulrush and jointed spike-rush.

**Objective E: Develop a desired future conditions map using historical data including pre-settlement land survey plat maps and notes for the area and interpret 1940s aerial photography.**

A desired future conditions map should be developed using historical aerial photography and land survey maps. This map could be used as a baseline to guide natural community enhancement and restoration activities in the park. Decades of fire exclusion allowed pines and hardwoods to become established in dry prairie and other fire dependent natural communities. This work could also be used to guide restoration of the abandoned pasture listed in Objective C.

## Imperiled Species

Imperiled species are those that are (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC), or the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened, or of special concern.

The welfare of imperiled species is an important concern of the Division. In many cases, these species will benefit most from proper management of their natural communities. At times, however, additional management measures are needed because of the poor condition of some communities, or because of unusual circumstances that aggravate the particular problems of a species. To avoid duplication of efforts and conserve staff resources, the Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species. Specifically, data collected by the FWC and United States Fish and Wildlife Service (USFWS) as part of their ongoing research and monitoring programs will be reviewed periodically to inform management of decisions that may have an impact on designated species at the park.

There are 55 designated imperiled species (17 plant and 38 animal) recorded at Myakka River State Park (see Table 4 and Appendix 5). While there are no measures specifically

designed to protect these species, many current practices serve this end. Park policies prohibiting the removal of plants and animals benefit all species, designated or not. An additional practice is limiting access to the park's wilderness preserve area benefiting reclusive creatures such as the bald eagle. Restoration and best management practices for Florida's ecosystems will maintain the health of habitats that sustain these species.

The bald eagle was removed from the imperiled species list in 2007 but maintains protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), which was enacted in 1940. The act was amended several times since then, but it continues to prohibit anyone without a permit issued by the Secretary of the Interior from "taking" bald eagles, including their parts, nests, or eggs (USFWS). FWC approved a management plan and new eagle rule in 2008, which was sunset and replaced with a species action plan in 2017 (FWC 2017). Bald eagle nesting success at Myakka River State Park has been monitored by staff and volunteers. Over the last five years, there has been an average of six active nests within the park. The average number of eaglets fledged per year within the park is seven.

A focus of Myakka River State Park is the restoration and maintenance of the park's nearly 15,000 acres of Florida dry prairie. The Florida Natural Areas Inventory designates Florida dry prairie as imperiled, ranking it as G2 and S2. Restoration tools include mechanical treatment, application of prescribed fire, and hydrologic restoration. As a result of the decades of restoration effort, burrowing owls (*Athene cunicularia floridana*) returned and were observed in the east panhandle of the park in 2013, 2014, and south of SR-72 in 2015. The Florida burrowing owl is classified as a threatened species by the FWC. Historically, the burrowing owl occupied sandhills and prairies with sparse ground cover in central and south Florida. Recently, these populations have decreased because of disappearing habitat (FWC 2013). Burrowing owls live as single breeding pairs or in loose colonies consisting of two or more families. Unlike most owls, burrowing owls are active during both day and night. During the day, they are usually seen standing erect at the mouth of the burrow or on a nearby post. Burrowing owls use burrows year-round, both for roosting during the winter and for raising young during the breeding season (February -

July). Florida's burrowing owls typically dig their own burrows but will use gopher tortoise or armadillo burrows. Burrows are typically one foot below the surface, extend 4 to 8 feet in length and are lined with materials such as grass clippings, feathers, paper, and manure (Stevenson and Anderson 1999). The reoccurrence of the burrowing owls is an indicator that the park's Florida dry prairie is returning to pre-fire exclusion conditions.

Another listed species benefitting from the restoration of the Florida dry prairie is the crested caracara, a federally threatened species. Audubon's crested caracara is a large species of raptor. Florida's caracaras remain year-round on home ranges that consist of the nesting territory and feeding habitat. They exhibit mate fidelity as well (Morrison 2001). Crested caracara observations in and around the park have greatly increased over the last 10 years, and in 2014 and 2015, nesting activity was confirmed in the southeastern portion of the park.

A confirmation of the importance of Florida dry prairie restoration is the decline of the Florida grasshopper sparrow (*Ammodramus savannarum floridanus*). It is listed as a federally endangered subspecies. In July 1937, a student wildlife technician surveyed a portion of Myakka River State Park and noted two Florida grasshopper sparrows. In 1941, another wildlife technician recorded Florida grasshopper sparrows to be common at Myakka River State Park. It is not known what month in 1941 the Florida grasshopper sparrows were observed, which is relevant because there is another subspecies of grasshopper sparrow that winters in Florida but is not a year-round resident. The natural habitat for the non-migratory subspecies prefers frequently burned dry prairie (Bridges & Reese 1999, as cited by Delaney et al. 2007). The park service policy for more than 40 years until the mid-1970s was to exclude fire whether natural or human-induced, creating a habitat unsuitable for Florida grasshopper sparrows. Despite restoration efforts, the Florida grasshopper sparrow has not been recorded in the park since the 1940s. Optimum dry prairie habitat for this species contains large (>50 acres), treeless, grasslands that are maintained with frequent fire. Suitable prairie is dominated by saw palmetto and dwarf oaks 30 to 70 cm in height. Grasses like bluestem (*Andropogon spp.*), wiregrass, and St. John's wort (*Hypericum spp.*) also can be found in good

sparrow habitat (Delany et al. 1985; USFWS 1999). Tree densities of >1 tree per acre are not tolerated. As ground-dwelling birds, they require bare ground (at least 20 percent) for ease of movement and foraging. Cover (i.e., bunchgrasses and low shrubs), however, is important for providing nesting habitat. The conversion of large prairies to sod farms and pastures has been the main factor in the decline of this subspecies. On the remaining natural lands, fire exclusion and alterations to natural drainages also pose threats.

Florida scrub-jays were last observed at the park in 2005. They were located in the scrubby flatwoods north of the Upper Myakka Lake. The goal is to maintain the scrubby flatwoods close to optimal conditions through prescribed fire and mechanical treatment to increase the likelihood of Florida scrub-jays returning to Myakka River State Park if there is a population in the area. There are approximately 182 total acres of scrubby flatwoods in the park, which could support several family groups as part of a larger population. However, there is not enough habitat in the park to support a long-term viable population of scrub-jays. Florida scrub-jay territories in scrubby flatwoods north of Upper Myakka Lake were surveyed for nesting activity several times in the early 1990s (Thaxton 1990, 1991). Three to four families were found to have established territories that overlapped at least some of the scrubby flatwoods in the park. In 1990, one of the six nesting attempts among four families was successful. The nests tended to be located on old fence lines or on immediately adjacent private property. Scrub-jays were last seen at the park in December of 2005.

The Upper Myakka Lake was the summer home to a group of manatees (*Trichechus manatus*) from 2012-2018. Summer rains increased the water level in the river and lakes significantly, making the manatee's travel possible over or around the dam (located at the park's southern boundary) and the weir (located at the south end of the Upper Myakka Lake) possible. All sightings are reported to the FWC's Marine Mammal Pathobiology Lab. There is concern that once summer rains stop and water levels drop, manatees would not be able to traverse the dam and weir. This concern came to fruition in January 2014, when a stranding did occur. A coordinated effort by FWC Manatee Rescue staff, park staff and park neighbors to rescue the manatee was successful. If summer rains

continue to increase water levels, enabling manatees to enter the park, future manatee strandings will continue to be a concern; therefore, the benefits of the weir and dam should be reassessed.

In addition to listed animals, the park also contains 17 designated plants. Several of them were negatively affected by the suppression of fire from 1939 until the mid-1970s. Nine of the 17 designated plants were historically found in Florida dry prairie. The pine lily (*Lilium catesbaei*) and the grass pink orchid (*Calopogon multiflorus*) are two of the designated plants found in dry prairie that without fire, populations decline. During the past decade, there has been an increase of sightings for both plants due to mechanical treatment and the reintroduction of fire.

The giant airplant and cardinal airplant in the park have suffered due to an invasive exotic insect, the Mexican bromeliad weevil. The weevil is now established at the park, and the adult and larvae feed on the larger native airplant species, killing many of them. Myakka River State Park has worked in partnership with the University of Florida as a research site on the *Metamasius callizona* project. Juvenile plants have been observed in the canopy along the Main and North Drive. It would be beneficial to maintain a closer record of the occurrence and health of these species to determine whether further management action is warranted.

Table 4 contains a list of all known imperiled species within the park and identifies their status as defined by various entities. It also identifies the types of management actions that are currently being taken by DRP staff or others and identifies the current level of monitoring effort. The codes used under the column headings for management actions and monitoring level are defined following the table. Explanations for federal and state status as well as FNAI global and state rank are provided in Appendix 6.



Table 4. Imperiled Species Inventory

| Common and Scientific Name                               | Imperiled Species Status |         |       |                | Management Actions | Monitoring |
|----------------------------------------------------------|--------------------------|---------|-------|----------------|--------------------|------------|
|                                                          | FWC                      | USFWS   | FDACS | FNAI           |                    |            |
| PLANTS                                                   |                          |         |       |                |                    |            |
| Grass pink<br><i>Calopogon multiflorus</i>               |                          |         | LT    | G2G3, S2S3     | 1,2,4,7            | T1         |
| Tampa mock vervain<br><i>Glandularia tampensis</i>       |                          |         | LE    | G2, S2         | 1,2,4,7            | T1         |
| Angularfruit milkvine<br><i>Gonolobus suberosus</i>      |                          |         | LT    |                | 2                  | T1         |
| Threadroot orchid<br><i>Dendrophylax porrectus</i>       |                          |         | LT    |                | 4                  | T1         |
| Catesby's lily; Pine lily<br><i>Lilium catesbaei</i>     |                          |         | LT    |                | 1,2,4,7            | T1         |
| Southern twayblade<br><i>Listera australis</i>           |                          |         | LT    |                | 1,2,4,7            | T1         |
| Lowland loosestrife<br><i>Lythrum flagellare</i>         |                          |         | LE    | G2, S2         | 4                  | T1         |
| Jameson's waterlily<br><i>Nymphaea jamesoniana</i>       |                          |         | LE    | G5, S2S3       | 4                  | T1         |
| Blueflower Butterwort<br><i>Pinguicula caerulea</i>      |                          |         | LT    |                | 1,4                | T1         |
| Yellow Butterwort<br><i>Pinguicula lutea</i>             |                          |         | LT    |                | 1,4                | T1         |
| Giant orchid<br><i>Pteroglossaspis ecristata</i>         |                          |         | LT    | G2G3, S2       | 1,2,4,7            | T1         |
| Leafless beaked orchid<br><i>Sacoila lanceolata</i>      |                          |         | LT    |                | 2                  | T1         |
| Long lip ladiestresses<br><i>Spiranthes longilabris</i>  |                          |         | LT    |                | 1,2,4,7            | T1         |
| Northern Needleleaf<br><i>Tillandsia balbisiana</i>      |                          |         | LT    |                | 2                  | T1         |
| Cardinal airplant<br><i>Tillandsia fasciculata</i>       |                          |         | LE    |                |                    | T1         |
| Giant airplant<br><i>Tillandsia utriculata</i>           |                          |         | LE    |                |                    | T1         |
| Redmargin rain-lily<br><i>Zephyranthes simpsonii</i>     |                          |         | LT    | G2G3, S2S3     | 1,2,4,7            | T1         |
| BUTTERFLIES                                              |                          |         |       |                |                    |            |
| Arogos skipper<br><i>Atrytone arogos</i>                 |                          |         |       | G3, T1T2, S1   | 1                  | T3         |
| Eastern meskes skipper<br><i>Hesperia meskei straton</i> |                          |         |       | G3G4, T3, S2S3 | 1                  | T3         |
| REPTILES                                                 |                          |         |       |                |                    |            |
| American alligator<br><i>Alligator mississippiensis</i>  | FT(S/A)                  | LT(S/A) |       | G5, S4         | 2,4,10             | T3         |
| Eastern indigo snake<br><i>Drymarchon couperi</i>        | FT                       | LT      |       | G3, S3         | 1,2,4,7            | T1         |
| Gopher tortoise<br><i>Gopherus polyphemus</i>            | LT                       | C       |       | G3,S3          | 1,2,4,7            | T1         |

## BIRDS

|                                                                        |    |    |  |                 |         |           |
|------------------------------------------------------------------------|----|----|--|-----------------|---------|-----------|
| Florida grasshopper sparrow<br><i>Ammodramus savannarum floridanus</i> | FE | LE |  | G5T1Q, S1       | 1,2,4,7 | T1,<br>T2 |
| Florida scrub-jay<br><i>Aphelocoma coerulescens</i>                    | FT | LT |  | G2, S2          | 1,2,4,7 | T1,<br>T2 |
| Great white heron<br><i>Ardea herodias occidentalis</i>                |    |    |  | G5T2, S2        | 1,2,4,7 | T1,<br>T2 |
| Florida burrowing owl<br><i>Athene cunicularia floridana</i>           | LT |    |  | G4T3, S3        | 1,2,4,7 | T1,<br>T2 |
| Short-tailed hawk<br><i>Buteo brachyurus</i>                           |    |    |  | G4G5, S1        | 1,2,4,7 | T1,<br>T2 |
| Crested caracara<br><i>Caracara cheriway</i>                           | LT | LT |  | G5, S2          | 1,2,4,7 | T1,<br>T2 |
| Little blue heron<br><i>Egretta caerulea</i>                           | LT |    |  | G5, S4          | 2,4     | T1,<br>T2 |
| Reddish egret<br><i>Egretta rufescens</i>                              | LT |    |  | G4, S2          | 2,4     | T1,<br>T2 |
| Tricolored heron<br><i>Egretta tricolor</i>                            | LT |    |  | G5, S4          | 2,4     | T1,<br>T2 |
| Swallow-tailed kite<br><i>Elanoides forficatus</i>                     |    |    |  | G5, S2          | 1,2,4,7 | T1,<br>T2 |
| White-tailed kite<br><i>Elanus leucurus</i>                            |    |    |  | G5, S1          | 1,2,4,7 | T1,<br>T2 |
| Merlin<br><i>Falco columbarius</i>                                     |    |    |  | G5, S2          | 1,2,4,7 | T1,<br>T2 |
| Peregrine falcon<br><i>Falco peregrinus</i>                            |    |    |  | G4, S2          | 1,2,4,7 | T1,<br>T2 |
| Southeastern American kestrel<br><i>Falco sparverius paulus</i>        | LT |    |  | G5T4, S3        | 1,2,4,7 | T1,<br>T2 |
| Magnificent frigatebird<br><i>Fregata magnificens</i>                  |    |    |  | G5, S1          | 2,4     | T1,<br>T2 |
| Florida sandhill crane<br><i>Grus canadensis pratensis</i>             | LT |    |  | G5T2T3,<br>S2S3 | 1,2,4,7 | T1,<br>T2 |
| American oystercatcher<br><i>Haematopus palliatus</i>                  | LT |    |  | G5, S2          | 2,4     | T1,<br>T2 |
| Worm-eating warbler<br><i>Helmitheros vermivorum</i>                   |    |    |  | G5, S1          | 1,2,4,7 | T1,<br>T2 |
| Caspian tern<br><i>Hydroprogne caspia</i>                              |    |    |  | G5, S2          | 2,4     | T1,<br>T2 |
| Wood stork<br><i>Mycteria americana</i>                                | FT | LT |  | G4, S2          | 2,4     | T1,<br>T2 |
| Red-cockaded woodpecker<br><i>Picoides borealis</i>                    | FE | LE |  | G3, S2          | 1,2,4,7 | T1,<br>T2 |
| Roseate spoonbill<br><i>Platalea ajaja</i>                             | LT |    |  | G5, S2          | 2,4     | T1,<br>T2 |
| American avocet<br><i>Recurvirostra americana</i>                      |    |    |  | G5, S2          | 2,4     | T1,<br>T2 |
| Snail kite<br><i>Rostrhamus sociabilis</i>                             | FE | LE |  | G4G5T2, S2      | 1,2,4,7 | T1,<br>T2 |
| Black skimmer<br><i>Rynchops niger</i>                                 | LT |    |  | G5, S3          | 2,4     | T1,<br>T2 |
| American redstart<br><i>Setophaga ruticilla</i>                        |    |    |  | G5, S2          | 1,2,4,7 | T1,<br>T2 |
| White-breasted nuthatch<br><i>Sitta carolinensis</i>                   |    |    |  | G5, S2          | 1,2,4,7 | T1,<br>T2 |

**BIRDS (Cont.)**

|                                                 |    |  |  |        |     |           |
|-------------------------------------------------|----|--|--|--------|-----|-----------|
| Least tern<br><i>Sternula antillarum</i>        | LT |  |  | G4, S3 | 2,4 | T1,<br>T2 |
| Sandwich tern<br><i>Thalasseus sandvicensis</i> |    |  |  | G5, S2 | 2,4 | T1,<br>T2 |

**MAMMALS**

|                                                          |    |    |  |            |         |           |
|----------------------------------------------------------|----|----|--|------------|---------|-----------|
| Florida panther<br><i>Puma concolor coryi</i>            | FE | LE |  | G5,T1, S1  | 1,2,4,7 | T1,<br>T2 |
| Sherman's fox squirrel<br><i>Sciurus niger shermani</i>  | LS |    |  | G5T3, S3   | 1,2,4,7 | T1        |
| Florida manatee<br><i>Trichechis manatus latirostris</i> | FT | LT |  | G2, T1, S2 | 2, 4    | T1        |
| Florida black bear<br><i>Ursus americanus floridanus</i> |    |    |  | G5T2, S2   | 1,2,4,7 | T1        |

**Management Actions**

1. Prescribed Fire
2. Exotic Plant Removal
3. Population Translocation/Augmentation/Restocking
4. Hydrological Maintenance/Restoration
5. Nest Boxes/Artificial Cavities
6. Hardwood Removal
7. Mechanical Treatment
8. Predator Control
9. Erosion Control
10. Protection from visitor impacts/law enforcement
11. Decoys (shorebirds)
12. Vegetation planting
13. Outreach and Education
14. Other

**Monitoring Level**

- Tier 1. Non-Targeted Observation/Documentation: includes documentation of species presence through casual/passive observation during routine park activities (i.e. not conducting species-specific searches). Documentation may be in the form of Wildlife Observation Forms, or other district specific methods used to communicate observations.
- Tier 2. Targeted Presence/Absence: includes monitoring methods/activities that are specifically intended to document presence/absence of a particular species or suite of species.
- Tier 3. Population Estimate/Index: an approximation of the true population size or population index based on a widely accepted method of sampling.
- Tier 4. Population Census: A complete count of an entire population with demographic analysis, including mortality, reproduction, emigration, and immigration.
- Tier 5. Other: may include habitat assessments for a particular species or suite of species or any other specific methods used as indicators to gather information about a particular species.

**Imperiled Species Management Program****Goal: Maintain, improve or restore imperiled species populations and habitats in the park.**

The DRP strives to maintain and restore viable populations of imperiled plant and animal species primarily by implementing effective management of natural systems. Single species management is appropriate in state parks when the maintenance, recovery or restoration of a species or population is complicated due to constraints associated with long-term restoration efforts, unnaturally high mortality or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes, and should not imperil other native species or seriously compromise park values.

In the preparation of this management plan, DRP staff consulted with staff of the FWC's Imperiled Species Management or that agency's Regional Biologist and other appropriate federal, state and local agencies for assistance in developing imperiled animal

species management objectives and actions. Likewise, for imperiled plant species, DRP staff consulted with FDACS. Data collected by the USFWS, FWC, FDACS and FNAI as part of their ongoing research and monitoring programs will be reviewed by park staff periodically to inform management of decisions that may have an impact on imperiled species at the park.

Ongoing inventory and monitoring of imperiled species in the state park system is necessary to meet the DRP's mission. Long-term monitoring is also essential to ensure the effectiveness of resource management programs. Monitoring efforts must be prioritized so that the data collected provides information that can be used to improve or confirm the effectiveness of management actions on conservation priorities. Monitoring intensity must at least be at a level that provides the minimum data needed to make informed decisions to meet conservation goals. Not all imperiled species require intensive monitoring efforts on a regular interval. Priority must be given to those species that can provide valuable data to



guide adaptive management practices. Those species selected for specific management action and those that will provide management guidance through regular monitoring are addressed in the objectives below.

***Objective A: Periodically update imperiled species occurrence inventory lists for plants and animals.***

Action 1 Update the inventory as needed during the planning period.

The baseline imperiled species occurrence inventory lists are complete for the 2019 Management Plan revision. The inventory lists will be updated as needed during the next 10 years.

***Objective B: Monitor and document 38 selected imperiled animal species in the park.***

Action 1 Develop monitoring protocols for three selected imperiled animal species: crested caracara, burrowing owl and sandhill crane.

Action 2 Implement monitoring protocols for imperiled animal species including those listed in Action 1 above and the bald eagle, Florida scrub-jay, gopher tortoise and butterflies.

Action 3 Determine best management practices in relation to reducing the impacts of human disturbance on alligators at Deep Hole.

All imperiled wildlife species are monitored at the Tier 1 level, which includes non-targeted observation and documentation through casual/passive observation during routine park activities implemented daily by staff members. In addition, avian species have been monitored at a level of tier 2. Volunteer bird interpreters record the presence of bird species (many include the number of individuals observed) at the Bird Walk on Upper Myakka Lake, during the months of November through May. Moreover, Myakka River State Park has participated with the Christmas Bird Count since 1959, recording the species and numbers observed on the third Monday in December.

Alligators in the Upper Myakka Lake are monitored at a tier 2 level through the FWC's

Alligator Management Program. The Upper Myakka Lake and the section of Myakka River between the weir and the Main Park Drive Bridge are surveyed. The number present and size of the alligators are recorded. This survey should continue in order to identify population and demographic trends. Human disturbance to alligators at Deep Hole should be monitored during the dry season, and steps taken to limit boat and pedestrian access to the sink hole.

The Florida panther is the target of periodic surveys led by FWC's Florida Panther Project and FWC's Landowner Assistance Program. A remote-sensing trail camera has been set to record all the wildlife crossing a trail in expectation of capturing a Florida panther image. FWC shares all data collected with the park biological staff. The park will continue to work with FWC to continue survey efforts.

The Florida manatee has been observed in the Upper and Lower Myakka Lakes and the Myakka River during the summer months when water levels are high. Due to the possibility of stranding when the water level recedes, the DRP collaborates with the FWC Manatee Section to ensure the safety of the manatees.

The swallow-tailed kite, crested caracara and the burrowing owl nest in the park. Monitoring of the birds' nesting success can indicate whether the park's management practices are effective.

Since 1986, bald eagle nesting has been monitored each year from October through May by staff and volunteers. Over the last five years, there has been an average of six active nests with a total average of seven eaglets fledged. Monitoring of nest success will continue.

Florida sandhill cranes nest in wetlands at the park. Prior to late winter and early spring prescribed fires, wetlands in targeted zones should be surveyed for nesting cranes and measures taken to protect vulnerable nests.

Florida scrub-jays have periodically resided in the northern section of the park's scrubby flatwoods. Monitoring efforts were implemented in the late 1990s until 2002, when the last bird disappeared. Monthly monitoring was resumed in August 2004 after a pair was discovered and continued to September 2007, at which time it was

confirmed the pair was no longer present. Due to improvement of the scrubby flatwoods, the area should be monitored on a bi-annual basis to determine presence/absence of the scrub-jays. If scrub-jays are discovered, monthly monitoring should recommence.

Gopher tortoises are often observed in Florida dry prairie, mesic flatwoods and scrubby flatwoods. Periodic Global Positioning System (GPS)-based censuses, using established FWC protocols for gopher tortoise population surveys will be conducted to track population trends and burrow distribution. This will ensure the necessary population viability data is collected. The plan will determine if resource management actions to improve gopher tortoise and other listed species habitat result in changes to the tortoise population.

Since 2010, butterflies have been surveyed in the spring and fall by volunteer butterfly hobbyists affiliated with the North American Butterfly Association (NABA). The data are maintained by the park and are posted on the NABA website for public viewing. The surveys document species presence and numbers observed. Surveys will continue if butterfly experts are available.

## **Objective C: Monitor and document 17 selected imperiled plant species in the park.**

- |          |                                                                                                                         |
|----------|-------------------------------------------------------------------------------------------------------------------------|
| Action 1 | Maintain the herbarium which was established in 1986s; continue to add new species as they are found.                   |
| Action 2 | Develop monitoring protocols for the cardinal airplant and the giant airplant along the main paved roads in the park.   |
| Action 3 | Implement monitoring protocols for the cardinal airplant and the giant airplant along the main paved roads in the park. |

The herbarium collection provides a representation of the park's flora. This collection is important for research purposes, as well as for interpretation of the park's rich biodiversity. The herbarium is particularly valuable as a comprehensive record of plant species that occur or have occurred in the park. The herbarium includes specimens that were collected in the 1940s.

The giant airplant and cardinal airplant in the park have suffered due to an invasive exotic insect, the Mexican bromeliad weevil, which has become established in the park. The adult and larvae feed on these airplants, killing many of them. Myakka River State Park has worked in partnership with the University of Florida as a research site on the *Metamasius callizona* project. Juvenile plants have been observed in the canopy along the Main and North Drive. It would be beneficial to maintain a closer record of the occurrence and health of these species to determine whether further management action is warranted.

## **Exotic and Nuisance Species**

Exotic species are plants or animals not native to Florida. Invasive exotic species are able to outcompete, displace or destroy native species and their habitats, often because they have been released from the natural controls of their native range, such as diseases, predatory insects, etc. If left unchecked, invasive exotic plants and animals alter the character, productivity and conservation values of the natural areas they invade. Exotic animal species include non-native wildlife species, free-ranging domesticated pets or livestock, and feral animals. Because of the negative impacts to natural systems attributed to exotic animals, the DRP actively removes exotic animals from state parks, with priority being given to those species causing the greatest ecological damage.

### Plants

A little more than one hundred exotic plant species have been identified in the park (see Appendix 4). Most of the exotic plant species are not on the FLEPPC list, but 31 percent of those exotic plants are identified as FLEPPC category I or category II. Using the FLEPPC designation, all known invasive exotic plants found in the park have been placed into one of three management classifications. These classifications and the suggested management response recommended for each category are listed below. Additions and deletions to the above categories are expected as exotics appear and disappear within the park.

*Category I.:* Invasive and threatening exotic species which are so invasive as to threaten displacement of native plants in natural areas and if left uncontrolled, would become the predominant cover in the area. Park representative species in this category include

paragrass, air potato, Old World climbing fern, and cogongrass. The eradication of category I plants often requires several treatments and some category I invasive exotic plants may not be eliminated but only controlled.

Cogongrass has proved to be quite difficult to eliminate. Cogongrass is a perennial grass native to Southeast Asia and considered one of the world's worst weeds. Over the last 10 years, infested sites have gone from 50 to more than 800, albeit many of them small. The best time to treat cogongrass is in the fall and spring. During the fall, treating cogongrass is first priority for the park. During the spring, treating cogongrass is the second priority with conducting prescribed fire as the first priority. It is often problematic to find the manpower to treat in the spring because the same people trained to treat exotics are also the same people trained to conduct prescribed burns. There is not enough staff to designate separate exotic and burn teams. Prescribed fire currently takes precedence, but if the park is unable to treat cogongrass for two or more years, the health of the ecosystem is at risk. Cogongrass, if unimpeded, will occupy a site to the detriment of almost all other species. It will displace entire plant and animal communities, including endangered species. Cogongrass has allelopathic effects whereby plants in the proximity will display reduced stem height, leaf length, nitrogen concentration, and root/shoot length, as well as lower survival rates (Sajise and Lales 1975; Brook 1989; Bryson and Carter 1993; Casini et al. 1998 as cited by Alabama Cogongrass Control Center – Final Report 2012). Cogongrass has little wildlife value because of its high silica content and serrated leaf margins, which may harm animals who attempt to feed on it. Small, ground-dwelling animals are displaced by cogongrass due to its minimal forage value and dense foliage (Alabama Cogongrass Control Center – Final Report 2012). It is important that more resources are provided to fight this invasion.

**Category II.:** Invasive but not as threatening. This category includes Guinea grass (*Urochloa maxima*), balsampear (*Momordica charantia*), and two-leaf nightshade.

To manage category I and II, a system to record frequency, location coordinates, extent and treatment method has been developed which identifies individual locations and provides documentation for treatment methods and follow-up. The management goal

is to treat a minimum of 50 percent once a year.

Non-invasive species that are confined to disturbed areas include yellow nut-grass (*Cyperus esculentus*), pangola grass (*Digitaria decumbens*), and bush mint (*Hyptis mutabilis*). No treatment is given to these exotics. In addition, SWFWMD herbicides the Upper and Lower Myakka Lakes and the river channel to control water hyacinth, water lettuce, hydrilla and other invasive aquatics which can prohibit navigation of these waterways.

### Animals

Like exotic plants, some exotic animals are more deleterious than others are. Exotic animals having the greatest impact on natural communities receive the highest priority for removal. Generally, these are animals that have a high reproductive potential and few natural controls, such as feral hogs and fire ants. Also included in this group are animals whose abundance is directly related to human populations, such as domestic cats and dogs. Although house pets do not typically propagate in the wild, their free-ranging activities on park lands can affect native species which normally would not have to contend with these additional pressures.

Feral hogs occur throughout the park and cause significant ecological damage unless their numbers are kept low. They begin to breed at one year and can produce two litters of 1–13 (usually 5–7) piglets per year (IFAS, publication WEC277). They are predators of ground-nesting birds and snakes, plus they dig up large areas looking for tubers and roots. The rooted areas alter fire behavior and hydrologic flow. The upturned soil also provides a planting bed for exotic plant species. Since September 1986, over 26,000 hogs have been removed from the park. It is preferred to utilize the services of hog contractors, but park staff have augmented the hog removal program. The policy of hog removal will be continued to limit the negative ecological effects of the hogs.

Aquatic exotic animals have become more prevalent in the Upper and Lower Myakka Lakes and the Myakka River. Blue tilapia (*Oreochromis aureus*), a fish native to North Africa and the Middle East, is widespread and abundant in Florida. Tilapia are well-established throughout the Myakka River



system. Tilapia feed primarily on plankton and small organisms living in or on bottom detritus (FWC 2014), however, Courtenay and Robins (1973), as cited by Nico et al. (2015), reported that certain streams where this species is abundant have lost most vegetation and nearly all native fishes. Male tilapia alter the sandy bottom of the lakes and river by digging large circular nests with their mouths. Several studies found blue tilapia to be a competitor with native species for spawning areas, food, and space (Nico et al. 2015; Buntz and Manooch 1969; Noble and Germany 1986; Muoneke 1988; Zale and Gregory 1990). Extreme cold temperatures for extended periods of time have detrimental effects on tilapia populations, but unfortunately within a couple of years, populations are able to rebound. Other exotic fish are found in the waters of the park including walking catfish (*Clarias batrachus*), brown hoplo (*Hoplosternum littorale*), vermiculated sailfin catfish (*Pterygoplichthys disjunctivus*), and jewel fish (*Hemichromis letourneuxi*). In addition to recreational fishing, other methods of removal should be explored. Monitoring will continue for the occurrence of new exotic fish species.

A new exotic resident of Myakka River State Park is the island apple snail (*Pomacea insularum*). The island apple snail is the most common introduced species of snail. It was probably released in South Florida in the early 1980s by persons with the tropical pet industry, and rapidly expanded throughout the state (Bernatis 2006). The park's first observation was in 2012. Mating and egg laying occurs when water temperatures rise above 74o F, with clutches of over a thousand pink eggs laid on vegetation above the water surface. After discovering this species in the park staff and volunteers collected eggs to try and stem the spread of the species, however this was not effective and the snail is now common in the lakes, river, and floodplain marshes. Similar to exotic fish, other methods of management to reduce populations will need to be explored.

Other exotic species that impact native wildlife populations are the red imported fire ant (*Solenopsis invicta*) and Cuban treefrogs (*Osteopilus septentrionalis*). Once populations are established, there are currently no methods to eradicate them. Cold winters with freezing temperatures can reduce Cuban treefrog populations for a short time, but populations quickly rebound. To reduce the

spread of Cuban treefrogs from the developed areas to more remote sections of the park, park and contractor vehicles should be inspected and Cuban treefrogs removed.

Several biological controls have been released to reduce fire ant colonies, including the parasitic phorid "decapitating" fly (*Pseudacteon spp.*). Park staff should investigate the feasibility of releasing biological controls to reduce or stress colonies of fire ants, allowing for native ant populations to rebound. As additional exotic fauna moves onto the park, they will be assessed and best management practices will be utilized to remove them when warranted.

## Nuisance Species

In some cases, native wildlife may also pose management problems or nuisances within state parks. A nuisance animal is an individual, native animal whose presence or activities create special management problems. Examples of animal species from which nuisance cases may arise include raccoons and alligators that are in public areas. Nuisance animals are dealt with on a case-by-case basis in accordance with the DRP's Nuisance and Exotic Animal Removal Standard. The Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species that are considered a threat or problem.

Fire exclusion and alterations to hydroperiods have caused the spread of hardwood species in the park. Laurel oak, water locust, pop ash and buttonbush are more common in marshes than in the past. In most cases, returning these marshes to their original condition will require some mechanical removal. Fire only eliminates young encroaching hardwoods; mature trees must be physically removed. Laurel and live oaks have also invaded mesic flatwoods and dry prairies. These, too, will require mechanical removal because of their size and number in areas where fire alone has not reduced the oak density.

Hardwoods have become established on road shoulders wherever fill material was used to elevate roadways. This detracts from scenic vistas on the park drive and in the mesic flatwoods and dry prairie. Priority will be given to removing these hardwoods to reestablish the scenic vistas along elevated grades.

A plant that is thought to be native but has the characteristics of an exotic, the common reed has become problematic in the Upper Myakka Lake. According to the University of Florida's Institute of Food and Agricultural Sciences (IFAS), its status as a native species in the US has been recently questioned. For several years, the plant was found on the north side of the Upper Myakka Lake, but in recent years, it has expanded to the west and south side. The large, tall clumps of common reed have been multiplying, creating dense lines of tall vegetation that have not historically been present. SWFWMD is working in cooperation with FWC's Invasive Plant Management Section and FWC's Habitat and Species Conservation Section to eliminate this plant on the west and south side of Upper Myakka Lake. After reed removal, softstem bulrush and jointed spikerush (*Eleocharis equisetoides*), both historically occurring native species, were planted as part of the aquatic habitat restoration project. Test planting areas have been successful and addition planting are planned.

Table 5 contains a list of the Florida Exotic Pest Plant Council (FLEPPC) Category I and II invasive exotic plant species found within the park. The table also identifies relative distribution for each species and the management zones in which they are known to occur.

## Exotic Species Management Program

**Goal: Remove exotic and invasive plants and animals from the park and conduct needed maintenance control.**

The DRP actively removes invasive exotic species from state parks, with priority being given to those causing the most ecological damage. Removal techniques may include mechanical treatment, herbicides, or biocontrol agents.

***Objective A: Park staff will annually treat a minimum of 45 infested acres (300 gross acres) of invasive exotic plant species in the park.***

- Action 1      Annually develop/update the park's exotic plant management work plan.
- Action 2      Implement an annual work plan by treating 45 zones in the park annually, and continuing follow up maintenance, as needed.

- Action 3      Continue to seek grants and additional funding for the treatment of FLEPPC category 1 and 2 exotic plants.

The park is broken into 50 management zones. Each year an annual work plan is developed for the treatment of invasive exotic plants with emphasis on cogongrass management. To maintain cogon grass coverage to less than one percent, a minimum of 45 management zones will need to be treated annually by park staff, with additional funding sought for contracted treatment.

Park staff, Florida Conservation Corps (AmeriCorps) and volunteers receive written instructions with the zone number, GPS coordinates, and last known size of the infestation. Staff and volunteers traverse the area searching for the exotic plant and when found, use the best management method and herbicide to treat the infested area.

In order to track invasive exotic plant management activities, the DRP maintains statewide exotic treatment records in the NRTS database. The database allows DRP to update exotic plant surveys and distribution within each management zone of the park; set annual exotic plant treatment goals; and update treatment records.

***Objective B: Implement control measures for three exotic animal species in the park.***

- Action 1      Authorized staff and contractors will participate in the feral hog removal program as resources permit.
- Action 2      Research best management practice to reduce the population of exotic fish, island apple snails, and exotic amphibian species and implement, if feasible.

Work with FWC's Division of Freshwater Fisheries Management (DFFM), Fish and Wildlife Research Institute, and others, to determine the best management practices to reduce the number of exotic fish species in the Myakka River and Lakes and seek methods to control Cuban treefrogs.

Feral hog control activities will focus on areas where hogs are causing the most damage, including any threatened cultural resources.

**Table 5. Inventory of FLEPPC Category I and II Exotic Plant Species**

| Common and Scientific Name                                 | FLEPPC   |              | Management Zone(s)                                                                                                                                                                               |
|------------------------------------------------------------|----------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                            | Category | Distribution |                                                                                                                                                                                                  |
| Rosary pea<br><i>Abrus precatorius</i>                     | I        | 2            | MR-02A, MR-02D, MR-02E,<br>MR-05D, MR-11B                                                                                                                                                        |
| Alligator-weed<br><i>Alternanthera philoxeroides</i>       | II       | 1            | MR-02A, MR-02B, MR-02C,<br>MR-02D                                                                                                                                                                |
| Durban crowfootgrass<br><i>Dactyloctenium aegyptium</i>    | II       | 1            | MR-04A, MR-05A                                                                                                                                                                                   |
|                                                            |          | 2            | MR-03A                                                                                                                                                                                           |
| Woman's tongue<br><i>Albizia lebbek</i>                    | I        | 1            | MR-02D, MR-11A                                                                                                                                                                                   |
| Camphor tree<br><i>Cinnamomum camphora</i>                 | I        | 1            | MR-11B, MR-11D                                                                                                                                                                                   |
| Wild taro<br><i>Colocasia esculenta</i>                    | I        | 1            | MR-02D                                                                                                                                                                                           |
| Air-potato<br><i>Dioscorea bulbifera</i>                   | I        | 2            | MR-02D, MR-02E, MR-11A                                                                                                                                                                           |
|                                                            |          | 3            | MR-02D                                                                                                                                                                                           |
| Water-hyacinth<br><i>Eichhornia crassipes</i>              | I        | 1            | MR-02D                                                                                                                                                                                           |
|                                                            |          | 3            | MR-02A, MR-02B, MR-02C,<br>MR-02D MR-02E, MR-02F, MR-03B,<br>MR-23                                                                                                                               |
| Laurel fig<br><i>Ficus microcarpa</i>                      | I        | 1            | MR-2A                                                                                                                                                                                            |
| West Indian marsh grass<br><i>Hymenachne amplexicaulis</i> | I        | 1            | MR-02D                                                                                                                                                                                           |
|                                                            |          | 2            | MR-02D, MR-03B, MR-04A,<br>MR-05E MR-13B                                                                                                                                                         |
|                                                            |          | 3            | MR-02A, MR-02B, MR-02C,<br>MR-02D MR-03B, MR-03C,<br>MR-04A, MR-04B MR-05A, MR-05C,<br>MR-05D, MR-06, MR-08, MR-10A,<br>MR-10B, MR-11A, MR-11B,<br>MR-11C, MR-11D, MR-12, MR-14,<br>MR-15, MR-17 |
|                                                            |          | 6            | MR-04A, MR-04B                                                                                                                                                                                   |



|                                                      |   |   |                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------|---|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cogon grass<br><i>Imperata cylindrica</i>            | I | 1 | MR-02C, MR-02D, MR-03A, MR-03B MR-03C, MR-04B, MR-05A, MR-05C MR-05E, MR-09A, MR-10A, MR-10B, MR-11A, MR-11B, MR-11C, MR-11D MR-12, MR-13B, MR-13C, MR-13D, MR-14, MR-15, MR-16, MR-18, MR-19B, MR-21, MR-22B, MR-23B,MR-24B                                                                                                                            |
|                                                      |   | 2 | MR-01A, MR-01B, MR-02A, MR-02B, MR-02D, MR-02E, MR-03A, MR-03B MR-03C, MR-04A, MR-04B, MR-05A MR-05B, MR-05C, MR-05D, MR-05E MR-06, MR-07, MR-08, MR-09A, MR-09B, MR-10A, MR-10B, MR-11A, MR-11B, MR-11C, MR-11D, MR-11E MR-12, MR-13A, MR-13B, MR-13C, MR-13D, MR-14, MR-15, MR-16, MR-17, MR-18, MR-19A, MR-19B, MR-20, MR-21, MR-22A, MR-22B, MR-24A |
|                                                      |   | 3 | MR-02A, MR-03A, MR-03C, MR-04A MR-04B, MR-05C, MR-05D, MR-05E MR-06, MR-07, MR-08, MR-09B, MR-10A, MR-10B, MR-11C, MR-11D MR-12, MR-13A, MR-13B, MR-13C, MR-13D, MR-15, MR-16, MR-20, MR-21, MR-24A                                                                                                                                                     |
|                                                      |   | 4 | MR-02A, MR-03A, MR-05E, MR-10B, MR-13B, MR-15, MR-18, MR-21, MR-24A                                                                                                                                                                                                                                                                                     |
| Peruvian primrosewillow<br><i>Ludwigia peruviana</i> | I | 1 | MR-05E, MR-12, MR-13B, MR-13C                                                                                                                                                                                                                                                                                                                           |
|                                                      |   | 2 | MR-02B, MR-02D, MR-02E, MR-03A, MR-03B, MR-03C, MR-04A, MR-07, MR-08, MR-10B, MR-11A, MR-12, MR-13A, MR-20                                                                                                                                                                                                                                              |
|                                                      |   | 3 | MR-02D, MR-05A, MR-06, MR-10B                                                                                                                                                                                                                                                                                                                           |
|                                                      |   | 4 | MR-04A, MR-10A, MR-21                                                                                                                                                                                                                                                                                                                                   |
|                                                      |   | 6 | MR-04A, MR-05A, MR-06, MR-07, MR-08, MR-09A, MR-9B, MR-10A, MR-10B, MR-11B, MR-11D, MR-11E, MR-15, MR-14, MR-16, MR-22B, MR-23B, MR-24A, MR-24B                                                                                                                                                                                                         |
| Japanese climbing fern<br><i>Lygodium japonicum</i>  | I | 2 | MR-01A, MR-03A                                                                                                                                                                                                                                                                                                                                          |

|                                                                |    |   |                                                                                                                                                                                                 |
|----------------------------------------------------------------|----|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Old world climbing fern<br><i>Lygodium microphyllum</i>        | I  | 1 | MR-03A, MR-07, MR-10A, MR-10B, MR-11B, MR-12, MR-13B, MR-13C, MR-13D, MR-15, MR-16, MR-21, MR-23B, MR-24B                                                                                       |
|                                                                |    | 2 | MR-01A, MR-02D, MR-03A, MR-03B, MR-03C, MR-04A, MR-04B, MR-05A, MR-05E, MR-06, MR-07, MR-08, MR-09B, MR-10B, MR-11C, MR-11D, MR-12, MR-13A, MR-13B, MR-13C, MR-13D, MR-15, MR-16, MR-20, MR-23B |
|                                                                |    | 3 | MR-03A, MR-03C, MR-07, MR-08, MR-9B, MR-10A, MR-10B, MR-12, MR-15                                                                                                                               |
|                                                                |    | 4 | MR-03A                                                                                                                                                                                          |
| Phasey bean; wild bush bean<br><i>Macroptilium lathyroides</i> | II | 2 | MR-02D, MR-02C, MR-10B, MR-07, MR-11A, MR-24                                                                                                                                                    |
| Melaleuca<br><i>Melaleuca quinquenervia</i>                    | I  | 1 | MR-10A, MR-11B, MR-13A, MR-13B, MR-15                                                                                                                                                           |
|                                                                |    | 2 | MR-01B, MR-11C, MR-20, MR-21                                                                                                                                                                    |
| Natal grass<br><i>Melinis repens</i>                           | I  | 1 | MR-04A                                                                                                                                                                                          |
|                                                                |    | 2 | MR-05A                                                                                                                                                                                          |
| Balsam apple<br><i>Momordica charantia</i>                     | II | 1 | MR-2D, MR-04A, MR-05A                                                                                                                                                                           |
| Sword fern<br><i>Nephrolepis cordifolia</i>                    | I  | 1 | MR-02D, MR-03C                                                                                                                                                                                  |
| Torpedo grass<br><i>Panicum repens</i>                         | I  | 2 | MR-03A, MR-07, MR-09A, MR-10A, MR-10B, MR-11C, MR-13B, MR-13C                                                                                                                                   |
|                                                                |    | 3 | MR-03A, MR-03C, MR-04B, MR-10B, MR-12, MR-13A, MR-13B, MR-13C, MR-13D, MR-14, MR-15, MR-16, MR-17, MR-18                                                                                        |
|                                                                |    | 4 | MR-02E, MR-03A, MR-09B                                                                                                                                                                          |
|                                                                |    | 6 | MR-04A, MR-04B, MR-05A, MR-05B, MR-05C, MR-06, MR-07, MR-08, MR-09B, MR-11B, MR-11C, MR-11D, MR-21, MR-22                                                                                       |
| Water-lettuce<br><i>Pistia stratiotes</i>                      | I  | 2 | MR-02A, MR-02B, MR-02D, MR-02F, MR-07, MR-08, MR-21                                                                                                                                             |
| Green shrimp plant<br><i>Ruellia blechum</i>                   | II | 2 | MR-02D, MR-02E                                                                                                                                                                                  |
| Mexican petunia<br><i>Ruellia simplex</i>                      | I  | 1 | MR-02D, MR-02B                                                                                                                                                                                  |
| Water sprangle<br><i>Salvinia minima</i>                       | I  | 2 | MR-02A, MR-2B, MR-2C, MR-2D, MR-2E, MR-2F, MR-11E, MR-07, MR-08, MR-24A                                                                                                                         |
| Chinese tallow tree<br><i>Sapium sebiferum</i>                 | I  | 2 | MR-02A, MR-11B, MR-11D                                                                                                                                                                          |

|                                                     |    |   |                                                                                                                                                                                                                                     |
|-----------------------------------------------------|----|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Brazilian pepper<br><i>Schinus terebinthifolius</i> | I  | 1 | MR-03C, MR-10A, MR-10B, MR-13A<br>MR-13B, MR-21                                                                                                                                                                                     |
|                                                     |    | 2 | MR-02D, MR-03C, MR-11B,<br>MR-11C, MR-11D, MR-12, MR-20                                                                                                                                                                             |
|                                                     |    | 4 | MR-21                                                                                                                                                                                                                               |
| Rattlebox<br><i>Sesbania punicea</i>                | II | 2 | MR-02D, MR-03B, MR-03A,<br>MR-04A, MR-05A, MR-06, MR-07,<br>MR-08, MR-09A, MR-09B, MR-10A,<br>MR-10B                                                                                                                                |
| Two-leaf nightshade<br><i>Solanum diphyllum</i>     | II | 2 | MR-02A, MR-02B, MR-02D                                                                                                                                                                                                              |
| Tropical soda apple<br><i>Solanum viarum</i>        | I  | 1 | MR-02D, MR-11B, MR-12                                                                                                                                                                                                               |
| Wedelia<br><i>Sphagneticola trilobata</i>           | II | 2 | MR-02B, MR-02C, MR-02D, MR-05E                                                                                                                                                                                                      |
|                                                     |    | 3 | MR-05D                                                                                                                                                                                                                              |
| Arrowhead vine<br><i>Syngonium podophyllum</i>      | I  | 3 | MR-02D                                                                                                                                                                                                                              |
| Caesar's weed<br><i>Urena lobata</i>                | I  | 2 | MR-02A, MR-02B, MR-02C,<br>MR-02D, MR-02E, MR-03A,<br>MR-03B, MR-03C, MR-04A,<br>MR-04B, MR-05E, MR-06, MR-07,<br>MR-09A, MR-10A, MR-10B,<br>MR-11A, MR-12, MR-13A, MR-13B,<br>MR-13C, MR-13D, MR-15, MR-16,<br>MR-18, MR-20, MR-21 |
|                                                     |    | 3 | MR-02D, MR-03A, MR-03C,<br>MR-04A, MR-05A, MR-05C,<br>MR-05D, MR-05E, MR-08, MR-10B,<br>MR-11B, MR-11C                                                                                                                              |
|                                                     |    | 6 | MR-01A, MR-02A, MR-04B                                                                                                                                                                                                              |
| Para grass<br><i>Urochloa mutica</i>                | I  | 2 | MR-02D, MR-04A, MR-05E,<br>MR-10A, MR-15                                                                                                                                                                                            |
|                                                     |    | 3 | MR-02A, MR-02B, MR-02D                                                                                                                                                                                                              |
|                                                     |    | 4 | MR-03C, MR-02C, MR-02E, MR-02F                                                                                                                                                                                                      |
|                                                     |    | 5 | MR-02A, MR-02B                                                                                                                                                                                                                      |
| Guinea grass<br><i>Urochloa maxima</i>              | II | 2 | MR-02D, 11A                                                                                                                                                                                                                         |

## Distribution Categories

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>0 No current infestation: All known sites have been treated and no plants are currently evident.</p> <p>1 Single plant or clump: One individual plant or one small clump of a single species.</p> <p>2 Scattered plants or clumps: Multiple individual plants or small clumps of a single species scattered within the gross area infested.</p> <p>3 Scattered dense patches: Dense patches of a single species scattered within the gross area infested.</p> | <p>4 Dominant cover: Multiple plants or clumps of a single species that occupy a majority of the gross area infested.</p> <p>5 Dense monoculture: Generally, a dense stand of a single dominant species that not only occupies more than a majority of the gross area infested, but also covers/excludes other plants.</p> <p>6 Linearly scattered: Plants or clumps of a single species generally scattered along a linear feature, such as a road, trail, property line, ditch, ridge, slough, etc. within the gross area infested.</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



## **Cultural Resources**

This section addresses the cultural resources present in the park that may include archaeological sites, historic buildings and structures, cultural landscapes and collections. The Florida Department of State (FDOS) maintains the master inventory of such resources through the Florida Master Site File (FMSF). State law requires that all state agencies locate, inventory and evaluate cultural resources that appear to be eligible for listing in the National Register of Historic Places. Appendix 7 contains the FDOS's Division of Historical Resources (DHR) management procedures for archaeological and historical sites and properties on state-owned or controlled properties; the criteria used for evaluating eligibility for listing in the National Register of Historic Places, and the Secretary of Interior's definitions for the various preservation treatments (restoration, rehabilitation, stabilization and preservation). For the purposes of this plan, significant archaeological site, significant structure and significant landscape means those cultural resources listed or eligible for listing in the National Register of Historic Places. The terms archaeological site, historic structure or historic landscape refer to all resources that will become 50 years old during the term of this plan.

## **Condition Assessment**

Evaluating the condition of cultural resources is accomplished using a three-part evaluation scale, expressed as good, fair and poor. These terms describe the present condition, rather than comparing what exists to the ideal condition. Good describes a condition of structural stability and physical wholeness, where no obvious deterioration other than normal occurs. Fair describes a condition in which there is a discernible decline in condition between inspections, and the wholeness or physical integrity is and continues to be threatened by factors other than normal wear. A fair assessment is usually a cause for concern. Poor describes an unstable condition where there is palpable, accelerating decline, and physical integrity is being compromised quickly. A resource in poor condition suffers obvious declines in physical integrity from year to year. A poor condition suggests immediate action is needed to reestablish physical stability.

## **Level of Significance**

Applying the criteria for listing in the National Register of Historic Places involves the use of contexts as well as an evaluation of integrity of the site. A cultural resource's significance derives from its historical, architectural, ethnographic or archaeological context. Evaluation of cultural resources will result in a designation of NRL (National Register or National Landmark Listed or located in an NR district), NR (National Register eligible), NE (not evaluated) or NS (not significant) as indicated in the table at the end of this section.

There are no criteria for determining the significance of collections or archival material. Usually, significance of a collection is based on what or whom it may represent. For instance, a collection of furniture from a single family and a particular era in connection with a significant historic site would be considered highly significant. In the same way, a high-quality collection of artifacts from a significant archaeological site would be of important significance. A large herbarium collected from a specific park over many decades could be valuable to resource management efforts. Archival records are most significant as a research source. Any records depicting critical events in the park's history, including construction and resource management efforts, would all be significant.

The following is a summary of the FMSF inventory. In addition, this inventory contains the evaluation of significance.

## **Prehistoric/Historic Archaeological Sites**

*Desired future condition:* All significant archaeological sites within the park that represent Florida's cultural periods or significant historic events or persons are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

*Description:* According to FMSF, Myakka River State Park contains 17 recorded archaeological sites. Of these sites, five are prehistoric sites, twelve are historic sites related to the late nineteenth and early twentieth century, with two of the twelve historic sites dating to the New Deal development of the park by the Civilian Conservation Corps (CCC) in the late 1930s and 1940s.

The portions of the park in Manatee County and the former Ringling-MacArthur Reserve (now part of the park "Myakka Prairie" and Carlton Reserve) have been subjected to surface inspection and limited subsurface testing in areas with high site-potential. In 1985, Piper Archaeological Research surveyed almost 3,000 acres of the 33,000-acre Ringling-MacArthur Reserve that were identified as possessing a high site potential based on environmental variables, in order to produce data on cultural sensitivity for Sarasota County. The portion of the park located east of Lower Myakka Lake and south of State Road 72 was included in this survey which resulted in the recordation of three sites now within park boundaries (Piper Archaeological Research, Inc. 1987). In 1991, Piper Archaeology/Janus Research surveyed portions of Manatee County with a high site potential in order to assist the county with development planning, resulting in the recordation of one site now in the western reaches of the park (Piper Archaeology/Janus Research 1992). A 2013 archaeological sensitivity survey model utilizing advanced GIS technology that incorporated LiDAR mapping, georeferenced historic maps, environmental data, and field investigation was conducted by Dr. Lori Collins at Alliance for Integrated Spatial Technologies, University of South Florida. Over 78 percent of the park was determined to contain medium to high sensitivity for location of archaeological sites (Collins 2013).

The park has never been comprehensively surveyed for cultural resources, and no surveys have been conducted in the western half of the park. As a result, very little is known about the prehistoric occupation of the area and more could be learned about the various historic activities in the area, including cattle ranching, oil drilling, turpentine, and homesteading.

The settlement model for the interior coastal plain developed and refined by Robert Austin based on the results of the Ringling-MacArthur Reserve survey provides useful information for understanding prehistoric activity in the area and predicting site location (Piper Archaeological Research, Inc. 1987). Like the Ringling-MacArthur Reserve, Myakka River State Park is bisected by the Myakka River and lies within the Gulf Coastal Lowlands and the DeSoto Plain physiographic regions. Prehistoric sites appear to be short-term resource extraction or campsites located

primarily on upland slopes adjacent to freshwater sources (wetland depressions, streams, or rivers), and secondarily in oak hammocks adjacent to freshwater swamps. Few, if any, large or permanent habitation sites have been identified. Areas located on the 20-foot contour line appear to have the highest potential for containing sites, while areas with low elevation, poor drainage, poor soil, and no permanent potable water appear to have the lowest potential. While the Myakka River and its lakes are the largest local source of fresh water, erosion and redeposition activity caused by periodic flooding have altered the landscape and likely destroyed many lower elevation sites. According to Austin, this region was occupied most intensively during the middle Archaic period, 5,000–3,000 B.C., and less frequently and intensively in the post-Archaic period.

### Prehistoric Archaeological Sites

Myakka River State Park contains five recorded prehistoric sites which provide very limited insight into the prehistory of aboriginal peoples in the area. Two of these sites are represented by only a single artifact, two sites were documented in 1951 based on informant data alone, and two sites were recorded as limited lithic scatters. All of the sites are located in or immediately adjacent to high site probability areas; two sites (8So21, 8So22) are near the southwestern shore of Lower Myakka Lake, one site (8MA810) is near the northern end of Deer Prairie Slough, and two sites (8So431, 8So6727) are adjacent to an upland slope. No cultural affiliation or temporal period has been assigned to any of these sites.

*Deep Hole Site (8So21):* Surface scatter, including ceramic sherds; flooded annually. Documented by Ripley Bullen in 1951. An associated collection of artifacts is accessioned with the State.

*No Name (8So22):* Residence mound or kitchen midden; top layer excavated many years ago. Documented by Ripley Bullen in 1951. An associated collection of artifacts is accessioned with the State.

*Cow Trail Site (8So431):* Single coral thinning flake; recovered from the surface of an old cow trail in 1985 during the Ringling-MacArthur Reserve survey. Subsurface testing revealed no additional artifacts.

*Oak Grove Campsite (8Ma810)*: Single lithic flake; recovered from a screen shovel test from 75 cm below ground surface in 1991 during the Manatee County archaeological survey. Three additional shovel tests revealed no additional artifacts.

*Geo Tracker (8So6727)*: This site was discovered during a survey for archaeological resources prior to the construction of Palmetto Ridge Campground in 2009. It is described as a low-density prehistoric lithic scatter. Of the nine test holes that were dug, two tested positive for cultural materials (prehistoric lithic debitage) at a depth of 50-90 cm below the surface.

## Historic Archaeological Sites

Myakka River State Park contains recorded and unrecorded remnants of the early 20th century cattle ranching industry and features associated with CCC park development and occupation during the late 1930s to early 1940s.

Mrs. Potter Palmer, a “progressive” agri-businesswoman, purchased much of what is now the park in 1910, and owned or controlled approximately 90,000 acres in Sarasota and Manatee Counties at the time of her death in 1918. The extensive dry prairie and wetlands in the region had been used for free-range cattle grazing since the 1840s. Mrs. Palmer, however, fenced and cross-fenced her property, installed dipping vats to eradicate ticks, erected silos and attempted to raise rice and corn for silage, and built a number of operational structures at her showcase ranch “Meadow Sweet Pastures” (Monroe 1977, Austin 1987). Beef cattle were brought in to improve the scrub-cow lineage, wetlands were connected by ditching to hasten drainage and increase grazing opportunities, earth roads were built, and exotic grasses were introduced to enhance the carrying capacity of the land for cattle. Shortly after the Palmer ranch was established, the Atlantic Coastline Railroad constructed and operated tracks from Nocatee (a small community southwest of Arcadia) to Sarasota, and a depot named Honore after Mrs. Palmer’s brother, Adrian Honore, was constructed for loading cattle. Mrs. Palmer’s death, followed by the great stock market crash a decade later, led to the decline of the cattle ranching industry and railroad operations in the area. The Palmer family donated 1,920 acres to the State, and the

state purchased 17,070 acres from the estate of Adrian Honore in September of 1934. Remnants of Mrs. Palmer’s ranch include recorded structural remains and their associated archaeological deposits, recorded trash piles, and unrecorded cultural landscape features such as roads and a 12-mile railroad grade that passed the Honore depot. The various structural remains are located in portions of the park not typically frequented by visitors. Many of the old roads are presently used as hiking trails or service roads for park maintenance. Half of the railroad grade has been used as a power line right-of-way since 1949. Five and one-half miles of the grade have been lowered to restore the hydrology.

*Old Palmer Ranch Site (8So395)*: Remnants of the ranch headquarters, including footprints and structural elements of the main structure and associated outbuildings, three silo bases, old fencing, wells and debris piles. Documented in 1977 by L. Ross Morrell, SHPO, during relocation of the park camping area. Remnants observed in 2014 include concrete foundation stones and a welcome stone. Upon site visit and Archaeological Site Condition Assessment conducted in 2014, there is evidence of glass and ceramic remains being moved by visitors from the site onto the foundation.

*Lincer Site (8So430)*: Two-acre above ground refuse pile, 1920–1950, adjacent to dirt road, upland slope, and intermittent stream; contains heavy duty, generic food-related artifacts such as glass bottles, jars and ceramic dishware, and structural remains such as clay bricks. Austin hypothesized that the site was associated with a cattle camp, either the result of debris accumulation over time or a single deposition of demolished structure and associated debris. Further research is needed to confirm site’s association with the cattle ranching industry. Site remains relatively undisturbed from visitors. There is some hog and armadillo rooting present in the area.

*Lincer Site #2 (8So611)*: Small, scattered refuse pile exposed by earth moving activity, 1930-1960, located on a low rise next to a stream; contains glass bottles and ceramics, similar in type, date range, and spatial proximity to Lincer. Further research is needed to confirm site’s association with the cattle ranching industry. Site integrity has been disturbed by past land clearing activity.



*Mossy Silo Bases (8Ma1466):* Remains of grain silos similar to 8So6142, 8So6144, and 8So6146.

*Cattle Dip Vat #2 (8Ma1467):* Concrete cattle dip vat poured approximately four feet below grade with concrete drying area and remnant fencing.

*Alligator Point Silo Bases (8So6142):* These are the remains of two wooden grain silos dating to Mrs. Palmer's ranch. All that is left are concrete bases consisting of concrete pads one foot thick with cylindrical depressions in which the silos would have been constructed. A seasonally-flowing well is located 30 feet from this feature.

*Ranch House Silo Bases (8So6144):* These are the remains of wooden grain silos dating to Mrs. Palmer's ranch. There are two separate bases at this location: one single and one double concrete base. Both bases consist of concrete pad two feet thick with cylindrical depressions in which the silos would have been constructed.

*Youth Area Silo Bases (8So6146):* These are the remains of wooden grain silos dating to Mrs. Palmer's ranch. There are two separate bases at this location: one single and one double concrete base. Both bases consist of a concrete pad one foot thick with cylindrical depressions in which the silo would have been constructed.

Two archaeological sites are associated with camping activities which occurred in the park prior to Civilian Conservation Corps (CCC) development of the park.

*Campground Well (8So6141):* A small well sits by a sabal palm to the east of the boat basin at the Upper Myakka Lake. This is the location of tree houses that were constructed in large oak trees before the park was open. The well was then used to supply water to the campground that was constructed in the area in the late 1930s-1940s.

*Harris Camp (So6607):* This site is the location of a camp that was frequented by the Harris, Crowley, Wilson and Lowe families from 1889 until the mid-1940s. Harris Camp Monument (So3105) marks this location, located south of Lower Myakka Lake along the Myakka River.

### CCC-Era Archaeological Sites

The most prominent of the park's cultural resources are the various structures, features, and other improvements constructed by the CCC between 1935 and 1942. Two recorded archaeological sites are associated with the CCC's occupation of the park.

*CCC Boat Graveyard/Dump Site (8So2282):* Large refuse pile, 1935–1945, scattered over 0.2 miles along two dirt roads; contains structural/construction debris, machinery and vehicle parts, ceramic dishware, glass bottles, and nine cypress rowboats. Retired park manager, Robert Dye, documented the site in 1993 via narrative text, video, and photography, and salvaged brass screws and oarlocks, and galvanized steel strapping and bow eyes. Site integrity is deteriorating as above ground remains rot and oxidize from exposure to the elements. None of the wooden boats remain visible as they were reported in 1993.

*CCC Water Tower #1 (8So6145):* Four cement foundation blocks are all that remain of what was once a water tower used to supply water for the CCC Camp in the early 1930s.

*Condition assessment:* All the archaeological sites in the park appear to be in a stable state and in fair condition. All sites are in remote locations not frequented by park visitors and are not obvious even to professional archaeologists. Site preservation is facilitated by the distance of most sites from public-use areas, park staff's sensitive natural resource management in cultural resources areas and regular site inspections.

Many of the sites were recorded as single or isolated artifact finds which were collected and archived. Revisits to these sites have not yielded additional finds, or could not be specifically located due to the nature of the site itself. Feral hogs are well known for their ground disturbing nature and are found throughout the park. They have the potential to unearth previously undiscovered artifacts at these sites. Two of the sites (8So21 and 8Ma810) have the potential for degradation due to erosion as they are seasonally flooded sites. The rate of degradation would be minimal since they occur within a lake edge (8So21) and within a slough (8Ma810), both of which have gradual rates of water exchange during high and low water level events.

DHR compliance and review of proposed development projects and archaeological resource monitoring of ground-disturbing activity help to protect both recorded and unrecorded cultural resources. The most at-risk archaeological component at the park appears to be above ground metal and organic artifacts which are deteriorating from exposure to the elements at an unknown rate. In 1993, the Park Manager recognized the need for further investigation of the CCC Dump/Boat Graveyard (8So2282) before many of the artifacts deteriorated completely. Unfortunately, none of the wooden boats noted in the 1993 assessment are still visible.

*Level of significance:* The CCC Boat Graveyard/Dump Site (8So2282) was considered as potentially eligible for the National Register of Historic Places by the surveyor when first surveyed in 1989 as individually significant and as a contributor to a potential CCC archaeological and historic district. However, the site has lost a great deal of integrity due to environmental factors and should be reevaluated. Surveyors of the Oak Grove Campsite (8Ma810) and Geo Tracker (8So6727) sites evaluated the sites as ineligible for the National Register due to extremely limited amounts of recovered material for evaluation and their lack of potential for yielding information to add to the archaeological record. None of the archaeological sites in the park have been formally evaluated by the State Historic Preservation Officer (SHPO) for eligibility for listing in the National Register.

*General management measures:* Preservation is the preferred treatment for all of the archaeological sites in the park. It is recommended that each site is visited at a minimum biannually to monitor conditions. Sites should also be documented with photographic evidence, and a site update form describing existing conditions and any changes since the last update should be submitted to the Division of Historic Resources. A new Archaeological Site Condition Assessment Program was launched in early 2014 and new assessment updates were completed for sites 8So395 (Old Palmer Ranch Site), 8So06607 (Harris Camp), and 8So6142 (Alligator Point Silo Bases) and added to our Master Site Files in February 2014. This program is designed for checking sites to see degradation levels, discerning which factors may threaten the site, and determining what treatment actions to take.

## Historic Structures

*Desired future condition:* All significant historic structures and landscapes that represent Florida's cultural periods or significant historic events or persons are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

*Description:* The most noteworthy of the park's historic structures are the various buildings, features, and other improvements constructed by the Civilian Conservation Corps (CCC) between 1935 and 1942. In 1989, Historic Property Associates, Inc. inventoried, evaluated the significance of, and made National Register of Historic Places nomination and preservation recommendations for structures in Florida's nine New Deal parks, resulting in the recordation of 19 CCC-era structures in Myakka River State Park. In total, the park contains 26 recorded historic structures primarily clustered just north of State Road 72 between Upper and Lower Myakka Lakes. In addition to constructing numerous park facilities, the CCC cleared extensive firebreaks, built many miles of all-weather roads, installed weirs below Upper and Lower Myakka Lakes, and planted hundreds of thousands of North Florida slash pines in the dry prairies. While many of the park's CCC buildings still serve the public, most of the other "enhancements" have been, or are being removed or remedied; while they were well intended, they were not ecologically prudent actions. In addition to providing employment and job training for men during the Great Depression, CCC activities were also intended to improve or restore the degraded landscape, and to develop public recreation facilities according to professionally-drawn plans. The majority of the park's extant CCC buildings are rustic structures that were constructed out of natural materials, including limestone, cabbage palm logs, and timber extracted from the surrounding area.

### CCC-Era Historic Structures

*Latrine (8So2264):* One-story, rectangular building with a wooden post-and-girt construction, cypress plank siding, gable roof with cypress shakes, and articulated limestone foundation. Past maintenance repairs and improvements that have altered the structure's historical integrity include installation of skylights and tile flooring in 1981.

*Picnic Pavilion (8So2265):* One-story shelter with a wooden post-and-girt construction, square hewn logs, crosses gable roof with cypress plank sidings, tripartite corner posts, and carved extended purlins. Its physical integrity is threatened by moisture damage, which is causing rot at the base of its square support beams despite installation of flashing. Past maintenance repairs and improvements that have altered the structure's historical integrity include replacement of rotted wood with mortar. Rot areas were patched with mortar to slow degradation, but wood rot continues nonetheless. Nearly all of the support beams show rot and half have severe rot and need to be replaced. The original roof material would have been wooden shake shingles, and in the past have been replaced with asphalt shingles. Additionally, the structure had been painted from its original natural finish.

*Log Picnic Pavilion (8So2266):* One-story building with a wooden post-and-girt construction, cross gable roof with cypress shakes and decorative king post trusses and knee bracing in the gable end, palm log exterior walls chinked with asphalt and sawdust composite mortar, carved rafter ends, limestone chimney, and articulated limestone foundation. Its physical integrity is threatened by moisture damage, which is causing limestone to spall and wooden elements such as shingles to deteriorate. Past maintenance repairs and improvements that have altered the structure's historical integrity include replacement of cypress shakes with sawn shingles in 1980 and 1993, repointing of chimney brick, and installation of an ADA ramp circa 1999.

*Shed (8So2267):* One and one half-story wood frame building with board-and-batten exterior wall fabric and a gable roof with 3-V crimp surfacing.

*Ranger's Residence (8So2268):* One-story wood frame vernacular residential building with a gable roof, end porch with knee wall and screen, wood weather board drop siding, brick chimney, and 3/1 double hung sash windows; pre-dates the CCC structures and was relocated to the park. The original structure consisted of a large room with a bedroom in the back; a kitchen, bedroom, and bathroom are later additions. Roof sheathing would have been originally shake shingles and has been replaced with asphalt.

*Horse Barn/Interpretive Center (8So2269):* Large one and one half-story building with wooden post-and-girt construction, gable roof with cypress shakes, cypress plank exterior wall fabric, cupola, casement windows, and articulated limestone foundation. Its physical integrity is threatened by insects and water damage, which is causing mildew and wood rot. Past maintenance repairs and improvements that have altered the structure's historical integrity include replacement of the majority of cypress siding in 1980, replacement of purlins, rotation and replacement of beams and rafters, replacement of cypress roof shakes with fiberglass tab shingles, and addition of reversible restrooms with separate plumbing in 2002.

*Caretaker's Cottage (8So2270):* One-story building with wooden post-and-girt construction, cross gable roof with cypress plank siding in gable ends, palm log exterior wall secured with heavy gauge wiring and chinked with asphalt and sawdust mortar, decorative shutters, limestone chimney, and limestone foundation piers. Its physical integrity is threatened by long periods of dampness in the lower walls, which is causing pocket rot. Past maintenance repairs and improvements that have altered the structure's historical integrity include replacement of log siding via stapling, addition of metal flashing, and replacement of original shakes with regular shim shingles.

*Maintenance Shed/Park Shop (8So2271):* One-story building with wooden post-and-girt construction, cross gable roof, articulated limestone foundation, and plywood siding. The building has undergone substantial modifications, and consequently retains little historical integrity.

*Concrete Dam (8So2273):* Dam with limestone walls and cylindrical concrete spillway, approximately 200 feet long, located on the southern edge of Upper Myakka Lake. This structure is degrading and potentially hazardous, with the concrete finish crumbling in many areas, with some exposed holes.

*Latrine (8So2274):* One-story building with wooden post-and-girt construction, gable roof with cypress shakes, palm log exterior wall secured with heavy gauge wire and chinked with asphalt and sawdust mortar, two stoops, louvered windows, copper and lead flashing, and an articulated limestone foundation. Its



physical integrity is threatened by termites. Past maintenance repairs and improvements that have altered the structure's historical integrity include replacement of oak corner beams with cypress beams and brackets.

*Cabin 1 (8So2275):* One-story, L-shaped building with wooden post-and-girt construction, cross gable roof with decorative king post trusses and knee braces in gable end, palm log exterior wall secured to with heavy gauge wire and chinked with asphalt and sawdust mortar, entrance porch, carved rafter ends, limestone chimney, and limestone foundation piers. Its physical integrity was threatened by periodic flooding, and was elevated in 2015. Past maintenance repairs and improvements that have altered the structure's historical integrity include floor replacement with plywood, and in-fill of the porch to provide ADA accessibility. The original structure originally would have been rectangular with an addition added in the 1940s.

*Cabins 2–5 (8So2276–8So2279):* Similar to Cabin 1, minus ADA alterations.

*Earthen Dam/Levee (8So2280):* Earthen levee, approximately 1000 feet long and 25 feet high, designed to stop downstream drainage of Upper Myakka River.

*Fire Tower (8So2281):* Elevated building with a hip roof, steel skeletal frame, and concrete piers. The building is not presently under park management and is under the property of the Florida Forest Service (FFS). This structure was auctioned off by FFS to a private bidder and was removed from the property in December of 2013.

*Harris Camp Monument (8So3105):* Stone monument erected in 1945 in the location of the Harris Camp (So6607) site to commemorate the Harris, Crowley, Wilson and Lowe families' use of the site as a camp since October 1889. Allen Crowley was the first park manager at Myakka River State Park, and the Wilson and Lowe families were early settlers in the area of Sarasota, then in Manatee County. Condition during the 2014 site assessment, there was evidence of visitor use in the area but no damage or degradation to the monument except normal wear from the elements.

*Myakka Shop Building (8So6992):* One-story wood frame vernacular rectangular building

with a gable roof. Built in 1935 with wood siding, concrete floor, and asphalt shingles on roof. Shop building has not been moved, altered, or added onto. Overhang from building to cover another concrete slab serves as a maintenance bay. Plaque on outside of building states: "Built by the men of the Civilian Conservation Corp 1934-1941."

## Other Historic Structures

*Cattle Dip Vat #1 (8So2272):* One of two concrete cattle dip vats, poured below grade with an associated rough-cut, heart pine draining platform; constructed circa 1917. The vat was recorded as part of the New Deal survey, but is believed to be associated with Mrs. Potter Palmer's ranch. The Florida Department of Environmental Protection analyzed the vat for contaminants, detecting arsenic in the surrounding soil but not the water.

*Myakka Original Ranger Station (8So6986):* One-story wood frame, concrete block vernacular rectangular building with a gable roof. Wood siding, concrete block, and asphalt shingles on roof. This structure was originally built in 1959 to serve as main Ranger Station. It was converted to administrative offices in 2002. The original door used to take day use admission was removed and decorative stone was added to match the new Ranger Station. Double pane sliding windows replaced in 2013 from single pane sliding. New windows fitted to old openings. Ornamental limestone on bottom 1/3 of structure added in 2002.

*Old Prairie Campground Bathhouse (8So6989):* One-story concrete block vernacular rectangular building with a gable roof. Concrete building with asphalt shingles. Built in 1961 to serve as a bathhouse for the campground. Supply room altered into unisex restroom in 2011.

*Big Flats Campground Bathhouse (8So6991):* One-story concrete block, masonry veneer-artificial, and stone vernacular rectangular building with a gable roof. Concrete building with asphalt shingles. Built in 1958 to serve as a bathhouse for the campground. Heavy campground use and poor design have caused the walls to crack and settle. Concrete blocks were stacked on top of each other instead of staggered, which would have given it more support. Rectangular screen windows with wood frames and concrete louvers.

*Myakka River State Park North Residence (8So6988):* One-story concrete block vernacular building with a gable roof. T-shaped exterior with wood siding and stone with asphalt shingles on the roof. 2 bedroom 1 bath house with braced wood frame and poured concrete footing. Built in 1962 as a private residence to house the north gate park ranger who collected tolls at the north entrance of the park. It has since housed rangers and assistant park managers. An addition of car port and porch were added later and other alterations are unknown. Single hung sash, metal, paired, 2/2, rectangular windows.

*Myakka River State Park North Gatehouse (8So6990):* One-story masonry veneer-artificial vernacular rectangular building with gable roof. Built in 1962 to serve as a gatehouse to collect admission fees to the park. Currently, there is limited use of building as it is only open weekends and state holidays and has very limited public access. Used strictly for collecting admission fees to the park. Concrete slab, braced wood frame, and poured concrete footing. Building has not been moved or added on to. Alterations are not known. Single hung sash, metal, paired, 2/2, rectangular windows.

*CCC Memorial Historic Monument (8So7028):* This structure is a memorial to the CCC men who created the infrastructure for Myakka in the 1930s and 40s. It consists of a large plaque on a large stone formation.

At least 10 park buildings were constructed during the late 1950s to the mid-1960s and are now considered as historic structures. These buildings should be documented and recorded in the Florida Master Site File. They include the Lake Restroom (BL056018), the Hill Area Ranger Residence (BL056020), the Manager's Residence (BL056021), the Group Area Restroom/Shower (BL056017), the Park Manager's Shed (BL056039), the Grease House (BL056029), the Myakka Residence (BL056044), the Horse Trail Privy (BL056027), and the Equipment Shelter (BL056028).

*Condition assessment:* The park's CCC structures are generally in good condition, because of vigilant monitoring, maintenance, and retention of historical appearance by park staff. These buildings, the majority of which continue to serve public and park maintenance needs in the original function

intended, show the predictable deterioration caused by environmental factors and daily use. Excessive environmental moisture in the form of heavy rainfall and periodic flooding is the largest threat to the structures, causing wood to rot, fungus to bloom, and limestone to spall. Remedial preservation efforts demand frequent repair and periodic replacement of structural elements, application of mildewcides, and consideration of other effective, low risk alternatives to reducing structures' vulnerability to water damage. Pests that nest and feed on structural lumber, such as termites and wasps, also threaten buildings' cosmetic appearance and structural integrity.

A report entitled Preservation Plan for 7 CCC Structures at Myakka River State Park was developed by Stevenson Architects Inc. in 2009. The plan documented and assessed existing conditions for the Log Picnic Pavilion (8So2266), the Latrine/Log Restroom (8So2274) and the five CCC cabins (8So2275–8So2279), provided preservation recommendations, and created conceptual designs, prioritizations of work and project budgets. Archival drawings, existing conditions drawings and conceptual design drawings were also created as part of the plan.

Many of the unrecorded historic structures from the 1950s to the mid-1960s are standard park buildings that were not constructed to match or complement the CCC buildings and have been modified from their original construction to keep up with increasing visitor use, changing building codes, updating to meet ADA compliance and general maintenance repairs and renovations. They are in fair to good condition. However, a few of these structures continue to degrade, are near or past the end of their typical life expectancy and are in poor condition.

*Level of significance:* All of the CCC structures were considered as potentially eligible for the National Register of Historic Places by the surveyor when first surveyed in 1989, both individually and as contributors to a potential CCC archaeological and historic district. The large concentration of palm log buildings at the park is unique. However, some structures have experienced a loss of material integrity as noted in the Description section above, and may no longer be considered as individually significant, although they still retain a great deal of their historic appearance and

contribute to larger historic district. None of the historic structures in the park have been individually evaluated by the State Historic Preservation Officer (SHPO) for eligibility for listing in the National Register; however, the SHPO's office generally considers that all of the CCC structures in the park are eligible for the National Register as elements of a potential CCC historic district. A National Register district nomination was begun in 2017 by the Division of Historical Resources but is not yet completed.

*General management measures:* All of the recorded CCC structures in the park are managed using preservation or a combination of rehabilitation and preservation as the preferred treatments. All of these buildings are currently being used for their original purposes, although a few have had modifications for safety and ADA purposes. All of the historic CCC structures have been tented and fumigated with Vikane, Sentricon termite monitoring and baiting systems are employed, and physical barriers such as screens have been installed. Park maintenance repairs and improvements, such as new building additions or substitution of new construction material, can adversely impact structures' historical fabric and character. Care must be taken to select appropriate material, methods, and design that meet Secretary of Interior historic preservation standards, to consult with preservation consultants at the Bureau of Natural and Cultural Resources and elsewhere as needed, and to secure Florida Division of Historic Resources' Compliance and Review approval if warranted. Any historical structure requires routine maintenance in order to preserve its integrity. Historic structures at Myakka River State Park require at times an immense amount of maintenance due to the particularly wet environment.

Ongoing documentation of the preservation treatments applied to each historic structure is one of the park's largest cultural resource management needs. While preservation work ideally increases the longevity, and maintains the integrity of a building, it can also alter the building's historical configuration and composition through the introduction of new treatment applications, structural materials, and building additions. Furthermore, despite highest hopes, some preservation work proves unsuccessful, or is later superseded by more effective or appropriate alternate treatments. Documenting each repair or restoration

project is critical to understand and differentiate between the structure's historical and modern composition at any point in time, to learn about the best approaches and products from past efforts and mistakes, and to make sound and informed decisions about future preservation needs.

To mitigate the recurrent flooding threat the five CCC cabins (8So2275 – 8So2279) were elevated by 24 inches above the current height in 2015, as recommended in the 2009 preservation plan. Flood damaged materials were also repaired or replaced. Elevation of the cabins will prevent exposure to flood waters during most flooding events.

Three park buildings constructed in the late 1950s are under consideration for removal. The cost to repair these buildings is likely to exceed the cost of replacement, and they are standard park buildings with no historic or design association or significance. The old concession building (BL056019) was in a serious state of disrepair and was demolished in June 2017, a replacement concession building was constructed in 2009. Two restroom structures, the Lake Restroom (BL056018) and the Big Flats Restroom (BL056026) are in the process of being evaluated for reuse or replacement. If replacement is determined to be the most feasible option for the buildings, Bureau of Natural and Cultural Resources staff will consult with DHR Compliance staff as to documentation of the buildings prior to their removal.

## Collections

*Desired future condition:* All historic, natural history and archaeological objects within the park that represent Florida's cultural periods, significant historic events or persons, or natural history specimens are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

*Description:* Collections kept within Myakka are limited. There is an existing herbarium collection composed of most plant species found in the park. The visitor center contains numerous natural resource artifacts in the form of taxidermy specimens of represented species in the park.

*Condition assessment:* The collections are maintained currently in the park visitor center. This includes the herbarium and most



taxidermy and is maintained with a central heating and ventilation system. No additional humidity control devices are in place. There are a few taxidermy specimens housed in the ranger station which are maintained with a central heating and ventilation system. All taxidermy specimens are aging and some are badly deteriorating. Their useful life is not expected to extend beyond the life of this plan. Pest control consists of quarterly inspections by contract with Terminex, limited to general pest treatment around the perimeter of the structure in which they are housed.

*Level of significance:* The collection represents the types of plant and wildlife to be found in the park. Its significance lies in its ability to interpret the park's natural resources.

*General management measures:* A collections management program was virtually nonexistent until 2013. It was then that a statewide collections management program was initiated for the DRP and the park's collections were inventoried and recorded. It is intended that this information will be stored and available for reference through the Past Perfect software database. There are currently no staff trained in taxidermy care and maintenance. The specimens are housed in enclosed displays in the visitor center and the specimens housed in the ranger station are exposed. It is recommended that these specimens be evaluated for condition, and those which have passed their useful life be de-accessioned, with these displays consolidated and replaced with modern interpretive displays to include the cultural history of the park such as the CCC and cattle ranching. A Scope of Collections is needed to assist the park in formulating its collections strategy and determining the types of objects needed to advance interpretive programming.

Table 6 contains the name, reference number, culture or period, and brief description of all the cultural sites within the park that are listed in the Florida Master Site File. The table also summarizes each site's level of significance, existing condition and recommended management treatment. An explanation of the codes is provided following the table.

### **Cultural Resource Management Program**

Cultural resources are individually unique, and collectively, very challenging for the public

land manager whose goal is to preserve and protect them in perpetuity. The DRP will implement the following goals, objectives and actions, as funding becomes available, to preserve the cultural resources found in Myakka River State Park.

### **Goal: Protect, preserve and maintain the cultural resources of the park.**

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. All activities related to land clearing, ground disturbing activities, major repairs or additions to historic structures listed or eligible for listing in the National Register of Historic Places must be submitted to the FDOS's Division of Historical Resources (DHR) for review and comment prior to undertaking the proposed project. Recommendations may include, but are not limited to concurrence with the project as submitted, pre-testing of the project site by a certified archaeologist, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects. In addition, any demolition or substantial alteration to any historic structure or resource must be submitted to the DHR for consultation, and the DRP must demonstrate that there is no feasible alternative to removal and must provide a strategy for documentation or salvage of the resource. Florida law further requires that DRP consider the reuse of historic buildings in the park in lieu of new construction and must undertake a cost comparison of new development versus rehabilitation of a building before electing to construct a new or replacement building. This comparison must be accomplished with the assistance of the DHR.

### ***Objective A: Assess and evaluate 43 of 43 recorded cultural resources in the park.***

- |          |                                                                                                                                                                   |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Action 1 | Complete 17 assessments/evaluations of archaeological sites.                                                                                                      |
| Action 2 | Complete 12 Historic Structures Reports (HSR's) for historic buildings and cultural landscape. Prioritize stabilization, restoration and rehabilitation projects. |

Assessments of the 17 known archaeological sites in Table 6 will be conducted every two years. Such assessments should include an examination of each site with a discussion of any threats to the site's condition such as natural erosion; vehicular damage; horse, bicycle or pedestrian damage; looting; construction including damage from firebreak construction; animal damage; plant or root damage, other factors that might cause deterioration of the site, and whether or not the site could be relocated. This evaluation should attempt to compare the current condition with previous evaluations using photo points, high resolution scanning, or similar techniques in order to prioritize the need for preservation and stabilization projects.

Historic Structures Reports are recommended for the remaining 12 recorded CCC/New Deal structures that were not included within the Preservation Plan for 7 CCC Structures at Myakka River State Park (Stevenson 2009). Such reports are necessary to prioritize repair, rehabilitation, and preservation projects and to determine whether more detailed documentation and preservation plans need to be developed for certain structures.

**Objective B: Compile reliable documentation for all recorded historic and archaeological resources.**

- Action 1      Ensure all known sites are recorded or updated in the Florida Master Site File.
- Action 2      Conduct Phase I archaeological survey for two priority areas identified by the predictive model.
- Action 3      Develop and adopt a Scope of Collections Statement.

The park needs to record the 1950s to mid-1960s buildings which are now considered historic. They are the Lake Restroom (BL056018), the Hill Area Ranger Residence (BL056020), the Manager's Residence (BL056021), the Group Area Restroom/Shower (BL056017), the Park Manager's Shed (BL056039), the Grease House (BL056029), the Myakka Residence (BL056044), the Horse Trail Privy (BL056027), and the Equipment Shelter (BL056028).

A predictive model (archaeological sensitivity model) has been completed for the park. A Phase I archaeological survey will be

conducted in at least two priority areas identified by the predictive model and located within areas of proposed future development. A Scope of Collections Statement will be developed and adopted in accordance with Chapter 12 of the DRP Operations Manual and in coordination with BNCR staff.

**Objective C: Bring 17 of 43 recorded cultural resources into good condition.**

- Action 1      Design and implement regular monitoring programs for 17 cultural sites.
- Action 2      Create and implement a cyclical maintenance program for each cultural resource.

Monitoring programs of the 17 known archaeological sites in Table 6 will be designed and implemented based on the results of the archaeological evaluations/assessments conducted in accordance with Objective A. Such evaluations will help guide the frequency that each site is monitored and identify which sites can be brought to "good" condition.

A cyclical maintenance program shall be designed and implemented for each cultural resource. Archaeological site maintenance shall be guided by the results of the assessment and evaluation of the sites. Historic structure maintenance shall be determined in conjunction with regular park building maintenance schedules and guided by the Secretary of the Interior's Standards for Historic Preservation.

Most of the recorded historic structures in the park are in good condition. Implementation of the preservation recommendations in the Preservation Plan for 7 CCC Structures at Myakka River State Park (Stevenson 2009) for the Log Picnic Pavilion (8So2266), the Latrine/Log Restroom (8So2274) and the five CCC cabins (8So2275 – 8So2279) was completed in 2016.

**Table 6. Cultural Sites Listed in the Florida Master Site File**

| <b>Florida Master Site File Number and Site Name</b> | <b>Culture/Period</b>                             | <b>Description</b>  | <b>Significance</b> | <b>Condition</b> | <b>Treatment</b> |
|------------------------------------------------------|---------------------------------------------------|---------------------|---------------------|------------------|------------------|
| 8Ma810<br>Oak Grove Campsite                         | Prehistoric/Unspecified                           | Archaeological Site | NS                  | F                | P                |
| 8Ma1466<br>Mossy Silo Bases                          | Historic/American, 1821-1899                      | Archaeological Site | NE                  | F                | P                |
| 8Ma1467<br>Cattle Dip Vat #2                         | Historic/American, 1821-1899                      | Archaeological Site | NE                  | F                | P                |
| 8So21<br>Deep Hole                                   | Prehistoric/Unspecified                           | Archaeological Site | NE                  | F                | P                |
| 8So22<br>No Name                                     | Prehistoric/Unspecified                           | Archaeological Site | NE                  | F                | P                |
| 8So395<br>Old Palmer Ranch Site                      | Historic/American 1821-1899                       | Archaeological Site | NE                  | F                | P                |
| 8So430<br>Lincer Site                                | Historic/Twentieth century American, 1900-present | Archaeological Site | NE                  | F                | P                |
| 8So431<br>Cow Trail Site                             | Prehistoric/Unspecified                           | Archaeological Site | NE                  | F                | P                |
| 8So611<br>Lincer #2                                  | Unspecified                                       | Archaeological Site | NE                  | F                | P                |
| 8So2264<br>Latrine<br>(South Restroom)               | Historic/New Deal—CCC                             | Historic Structure  | NR                  | G                | P                |
| 8So2265<br>South Picnic Pavilion                     | Historic/New Deal—CCC                             | Historic Structure  | NR                  | F                | P                |
| 8So2266<br>Log Picnic Pavilion                       | Historic/New Deal—CCC                             | Historic Structure  | NR                  | G                | P                |
| 8So2267<br>Shed                                      | Historic/New Deal—CCC                             | Historic Structure  | NR                  | F                | P                |
| 8So2268<br>Ranger's Residence                        | Historic/New Deal—CCC                             | Historic Structure  | NR                  | G                | P                |



|                                          |                                  |                        |     |     |   |
|------------------------------------------|----------------------------------|------------------------|-----|-----|---|
| 8So2269<br>Interpretive Center           | Historic/New Deal—CCC            | Historic Structure     | NR  | G   | P |
| 8So2270<br>Caretaker's Cottage           | Historic/New Deal—CCC            | Historic Structure     | NR  | G   | P |
| 8So2271<br>Maintenance Shed              | Historic/New Deal—CCC            | Historic Structure     | NR  | G   | P |
| 8So2272<br>Cattle Dip Vat #1             | Historic/WWI and<br>Aftermath    | Historic Structure     | NR  | F   | P |
| 8So2273<br>Concrete Weir and<br>Dam      | Historic/New Deal—CCC            | Historic Structure     | NR  | F   | P |
| 8So2274<br>Latrine (Log<br>Restroom)     | Historic/New Deal—CCC            | Historic Structure     | NR  | G   | P |
| 8So2275<br>Cabin 1                       | Historic/New Deal—CCC            | Historic Structure     | NR  | G   | P |
| 8So2276<br>Cabin 2                       | Historic/New Deal—CCC            | Historic Structure     | NR  | G   | P |
| 8So2277<br>Cabin 3                       | Historic/New Deal—CCC            | Historic Structure     | NR  | G   | P |
| 8So2278<br>Cabin 4                       | Historic/New Deal—CCC            | Historic Structure     | NR  | G   | P |
| 8So2279<br>Cabin 5                       | Historic/New Deal—CCC            | Historic Structure     | NR  | G   | P |
| 8So2280<br>Earthen Dam/Levee             | Historic/New Deal—CCC            | Historic Structure     | NR  | F   | P |
| 8So2281<br>Fire Tower                    | Historic/New Deal—CCC            | Historic Structure     | N/A | N/A | R |
| 8So2282<br>Boat Graveyard                | Historic/New Deal—CCC            | Archaeological<br>Site | NR  | F   | P |
| 8So3105<br>Harris Camp<br>Monument       | Historic/New Deal—CCC            | Historic Structure     | NE  | G   | P |
| 8So6141<br>Campground Well               | Historic-Unspecified             | Archaeological<br>Site | NE  | F   | P |
| 8So6142<br>Alligator Point Silo<br>Bases | Historic/American, 1821-<br>1899 | Archaeological<br>Site | NE  | F   | P |
| 8So6144<br>Ranch House Silo<br>Bases     | Historic/American 1821-<br>1899  | Archaeological<br>Site | NE  | F   | P |

# Resource Management Component

|                                                    |                               |                     |    |   |   |
|----------------------------------------------------|-------------------------------|---------------------|----|---|---|
| 8So6145<br>CCC Water Tower #1                      | Historic/New Deal—CCC         | Archaeological Site | NE | F | P |
| 8So6146<br>Youth Area Silo Bases                   | Historic/American, 1821-1899  | Archaeological Site | NE | F | P |
| 8So6607<br>Harris Camp                             | Historic/American, 1821-1899  | Archaeological Site | NE | F | P |
| 8So6727<br>Geo Tracker                             | Prehistoric/Unspecified       | Archaeological Site | NS | G | P |
| 8So6992<br>Myakka Shop Building                    | Historic/New Deal—CCC         | Historic Structure  | NS | F | P |
| 8So6986<br>Myakka Original Ranger Station          | Historic/American 1950s-1960s | Historic Structure  | NS | F | P |
| 8So6989<br>Old Prairie Campground Bathhouse        | Historic/American 1950s-1960s | Historic Structure  | NS | F | P |
| 8So6991<br>Big Flats Campground Bathhouse          | Historic/American 1950s-1960s | Historic Structure  | NS | F | P |
| 8So6988<br>Myakka River State Park North Residence | Historic/American 1950s-1960s | Historic Structure  | NS | F | P |
| 8So6990<br>Myakka River State Park North Gatehouse | Historic/American 1950s-1960s | Historic Structure  | NS | F | P |
| 8So7028<br>CCC Historic Monument                   | Historic Modern Post-1950s    | Historic Structure  | NS | F | P |

## Significance

|     |                            |
|-----|----------------------------|
| NRL | National Register listed   |
| NR  | National Register eligible |
| NE  | not evaluated              |
| NS  | not significant            |

## Condition

|    |                |
|----|----------------|
| G  | Good           |
| F  | Fair           |
| P  | Poor           |
| NA | Not accessible |
| NE | Not evaluated  |

## Recommended Treatment

|     |                |
|-----|----------------|
| RS  | Restoration    |
| RH  | Rehabilitation |
| ST  | Stabilization  |
| P   | Preservation   |
| R   | Removal        |
| N/A | Not applicable |

## **Special Management Considerations**

### **Timber Management Analysis**

#### **Statutory Requirements**

Chapters 253.036 Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres, including:

- An analysis of the multiple-use potential of the parcel. Such analysis shall include the potential of the parcel to generate revenues to enhance the management of the parcel.
- An assessment of the feasibility of managing timber resources for conservation and revenue generation purposes through a stewardship ethic that embraces sustainable forest management practices in land management plans.

During the development of this plan, an analysis was made regarding the potential for and feasibility of timber management activities in the park. It was determined that the primary management objectives of the unit could be met without conducting commercial timber management activities for this management plan cycle. Timber management will be re-evaluated during the next revision of the management plan.

### **Land Management Condition and Objectives**

The primary management goals for MRSP (37,197 acres total) is the restoration and maintenance of the dry prairie (14,732 acres). Dry prairie is endemic to Florida and is ranked imperiled by the state of Florida and globally. The high-quality, contiguous prairie habitat at MRSP is some of the last remaining of this globally endangered natural community.

The prairie is inhabited by robust populations of imperiled plants and animals that are rare throughout the rest of their natural range.

The maintenance and restoration of the dry prairie habitat requires the frequent application of prescribed fire and the restoration of natural hydrological processes. There is no canopy of trees associated with the prairie and the site is dominated by native grasses and low growing shrubs. MRSP's only potential need for timber removal would be to reduce the encroaching hardwoods from the

embedded and adjacent hammocks, and scrubby and mesic flatwoods.

The approximate 3,948 acres of scrubby and mesic flatwood habitat at MRSP is not contiguous but rather occurs in 108 somewhat small (average 35 acres per area), isolated patches scattered among the dry prairie and depression marshes (totaling 21,520 acres) of the park. The scrubby flatwoods of MRSP contains a sparsely stocked overstory compared to the FNAI desired condition, and more closely resembles scrub. The majority of scrubby flatwoods is in a band northwest of the Upper Myakka Lake. To preserve the highly biodiverse transition zones between habitat types, mineral soil fire breaks are not placed at habitat edges. No effort is made to prevent these areas from burning with the same frequency as the surrounding dry prairie, every 1-2 years. There are documented accounts of Florida scrub-jays breeding in the MRSP scrubby flatwoods; the long-term goal is to burn these areas to maintain the successional stage required by scrub-dependent species.

The remainder of MRSP consists of wetland habitat types characterized by extended hydroperiods and a canopy, if one is present, dominated by hardwoods and palms. The only active management in these habitats is to let fire burn into the area as far as possible, dependent on soil moisture, to reduce the encroachment of woody vegetation into the surrounding prairie. The Timber Management Analysis found in Addendum 8 provides additional details.

### **Dark Skies**

Due to the park's location in a largely rural area, the night sky remains dark and relatively free from artificial light pollution. Night sky observation programs have been popular at the park for many years. Dark skies benefit the park's visitors, and help protect the park's flora and fauna. Research has shown that artificial light pollution can disrupt the growth cycle of plants and alter the foraging, migrating, and breeding behavior of wildlife, not just in urban centers but in rural areas as well (Chepesiuk 2009). Maintaining dark skies in and around the park has ecological, aesthetic, and recreational benefits.



## Arthropod Control Plan

All DRP lands are designated as “environmentally sensitive and biologically highly productive” in accordance with Ch. 388 and Ch. 388.4111 Florida Statutes. If a local mosquito control district proposes a treatment plan, the DRP works with the local mosquito control district to achieve consensus. Larviciding and ground adulticiding (truck spraying in public use areas) is typically allowed. The DRP does not authorize new physical alterations of marshes through ditching or water control structures. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a Governor’s Emergency Proclamation.

Currently, there is an Arthropod Control Plans for this park with Sarasota County Mosquito Management Services, that allows for ground spraying the visitor use areas if requested, but no other treatment. There is no Arthropod Control Plan with Manatee County Mosquito Control District because they do not intend to treat mosquitos within the park boundary. Updated maps have been made available to both agencies.

## Wilderness Preserve

A 7,500-acre tract in the southwest corner of the park has been designated as a Wilderness Preserve. Wilderness preserve designations are typically reserved for large undeveloped areas within parks that have retained their principal character and influence without permanent alteration. They are protected and managed in a manner to preserve this natural appeal and value. The number of visitors allowed into a wilderness area is limited to maintain the wilderness quality. The characteristics of a wilderness preserve are as follows:

- Generally appears to have been affected primarily by the forces of nature, with human impacts substantially unnoticeable;
- Offers outstanding opportunities for solitude, or a primi-tive and unconfined type of recreation;
- Is expansive and sufficient in size to make preservation and use in an unimpaired condition practical;
- May also contain ecological, archaeological, or other features of scientific, educational, scenic, or historic value.

Uses are limited, passive in nature, and related to the aesthetic, educational and scientific enjoyment of the features and conditions maintained. Other uses may be permitted if fully compatible. Activities that are generally recognized as being compatible within the Preserve are trail use, canoeing/kayaking, nature study and natural scenery appreciation. Facilities are limited to those considered essential for management and appropriate forms of public use. Vehicles are prohibited on the wilderness preserve except for during emergencies and for resource management.

Only 30 visitors per day are allowed access to the preserve. Permits are required for boaters, paddlers and hikers. Permits are issued on a first come first serve basis at the ranger station. Permits are in high demand and all available permits will frequently be issued by as early as 9 am on busy days.

## Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation and recreation lands titled in the name of the Board of Trustees are being managed for the purposes for which they were acquired and in accordance with their approved land management plans. The DRP considered recommendations (see Appendix 9) of the land management review team and updated this plan accordingly.

Myakka River State Park was subject to a land management review on June 6, 2014. The review team made the following determinations:

- The land is being managed for the purpose for which it was acquired.
- The actual management practices, including public access, complied with the management plan for this site

# Land Use Component



## Demographics

### **North Port-Sarasota-Bradenton Metropolitan Area**

Myakka River State Park is within the North Port-Sarasota-Bradenton metropolitan statistical area (MSA or metro area), which includes Sarasota and Manatee County. MSAs (also newly termed as a Core Based Statistical Area) are defined by the Federal Office of Budget and Management as geographic entities with at least one urban core, plus adjacent areas that have a high degree of social and economic integration with the core through commuting ties (OMB 2010). Sarasota, Bradenton, and North Port are considered to be the urban cores, with the unincorporated areas of Sarasota and Manatee County as the adjacent areas. The current population of the North Port-Sarasota-Bradenton MSA is 776,042 (\*UF—BEBR 2017).

The demographic characteristics of Sarasota and Manatee County differ only slightly. As shown in the Table 7, Sarasota County is more populous and is more urbanized, with 36.5% of its population living in incorporated municipalities compared to 21% in Manatee County. Both counties can be characterized as racially homogenous; 92% of Sarasota County residents self-identify as white, while Manatee

County is slightly lower at 86%. Manatee County has more diversity with 9% identifying as African-American and 16% as Hispanic compared to 4% and 9%, respectively, in Sarasota County (US Census 2017). Per capita income in Sarasota County is \$59,013 and \$44,158 in Manatee County, with the statewide average at \$45,953 (BEA 2017).

**Table 7 . North Port-Sarasota-Bradenton Metro Area Current Populations\***

| <b>Counties</b>    | <b>Sarasota County</b> | <b>Manatee County</b> |
|--------------------|------------------------|-----------------------|
| Incorporated       | 148,666                | 76,918                |
| Unincorporated     | 258,594                | 291,864               |
| Total              | 407,260                | 368,782               |
| <b>Urban Cores</b> |                        |                       |
| North Port         | Sarasota               | Bradenton             |
| 67,196             | 54,641                 | 54,652                |

## Land Use Component

The following population pyramids show the age distribution in the two counties (US Census 2017). As can be seen, Sarasota and Manatee County both have large older populations, but Manatee County has a relatively large young population that could potentially fuel population growth moving forward.

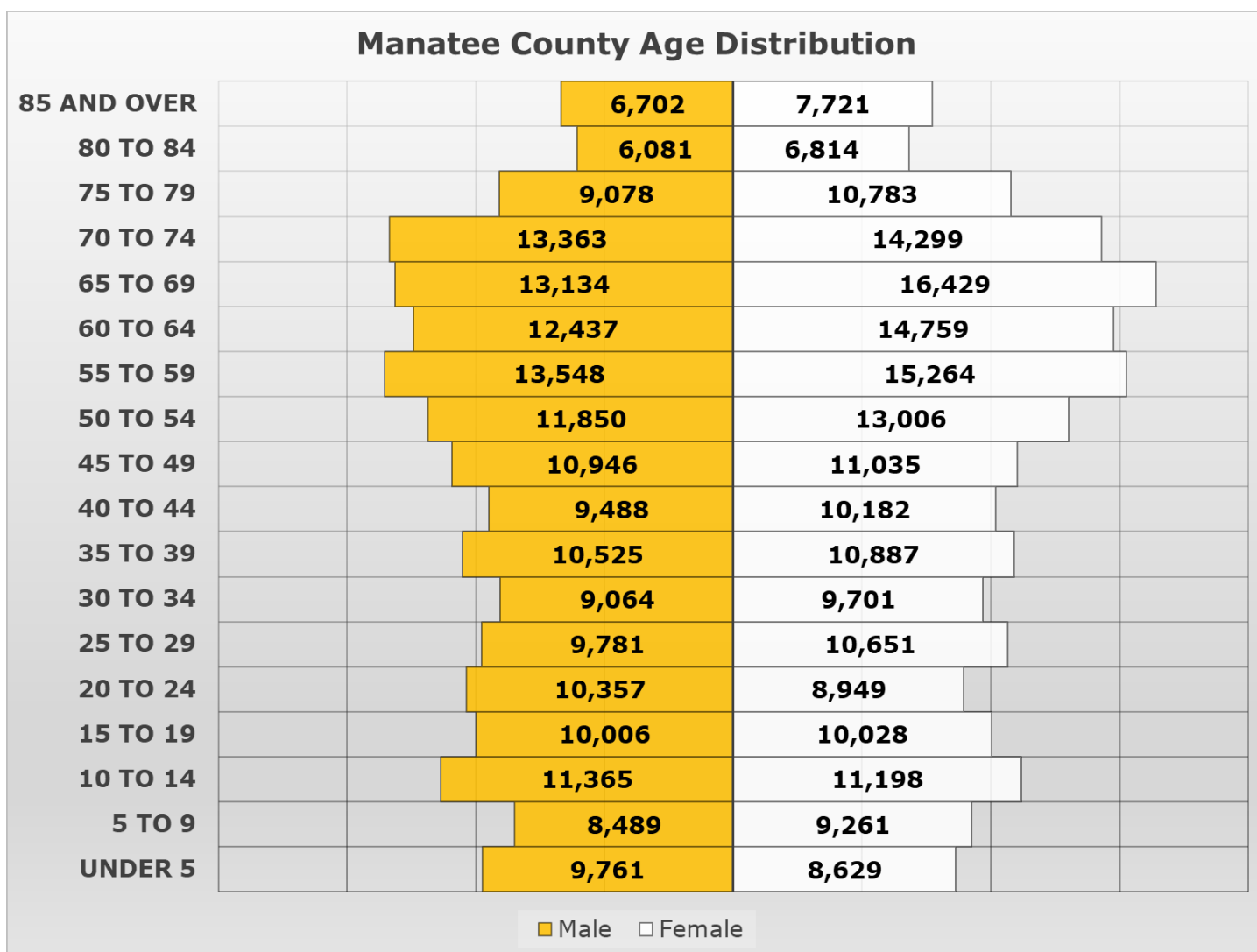
### Regional Population Growth

Over the past twenty years, the North Port-Sarasota-Bradenton MSA has grown almost 40%, increasing from approximately 535,000 to over 776,000 (UF—BEBR 2017). While both Sarasota and Manatee County have grown steadily, more of the growth over the past twenty years can be attributed to Manatee County. From 1995-2015, Manatee County grew by 48% while Sarasota County grew by 31%. Over the next twenty years, population growth is projected to continue to increase for both counties; but, the growth of Manatee County is projected to continue accelerating at

a faster rate. By 2040, Manatee County could be the more populous of the two counties. The following chart shows population projections for the North Port-Sarasota-Bradenton MSA. According to University of Florida demographers, if both counties achieve their mid-level projections, this MSA will top one million residents by 2040 (UF—BEBR 2017).

### Land Use and Zoning

An assessment of the conditions that exist beyond the boundaries of the unit can identify any special development problems or opportunities that exist because of the unit's unique setting or environment. This also provides an opportunity to deal systematically with various planning issues such as location, regional demographics, adjacent land uses and park interaction with other facilities.





## Existing Use of Adjacent Lands

Adjacent land uses surrounding the park are generally conservation lands, agriculture use, and rural residential uses. To the southwest and south are additional conservation areas such as the Pineland Reserve, T. Mabry Carlton, Jr. Memorial Reserve and the Carlton Ranch. To the east of the park is mainly agricultural use and some areas of low-density residential. Where Manatee County adjoins the park to the east, there is a buffer of conservation land, low-density residential, and agricultural uses. To the north and north east of the park are areas in agricultural use, low-density rural residential uses, and the Triangle Ranch Conservation Easement.

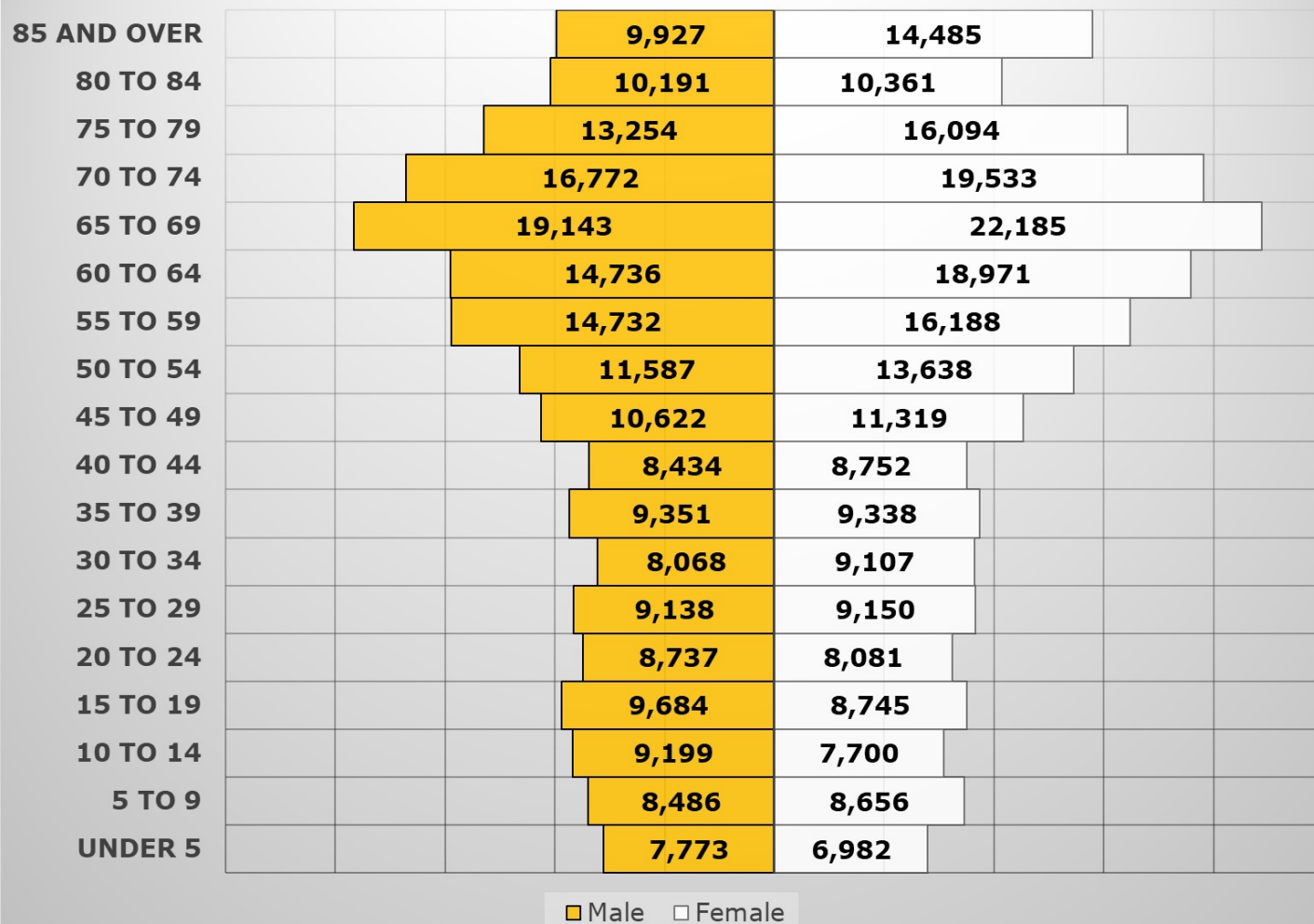
## Planned Use of Adjacent Lands

Each comprehensive plan for Sarasota and Manatee County has been approved to help guide development in the respective counties. In general, both counties are seeking to limit

urban sprawl, encourage infill development and increased density in the urban cores, improve quality of life, and promote environmental conservation. Each county has established an urban growth boundary to discourage urban sprawl and delineate the area in which the counties would prefer to encourage continued urban development and increased density. The areas immediately adjacent to and surrounding Myakka River State Park are largely designated as rural (low density residential), agricultural, or conservation lands and provide a significant buffer between the park and the highly urbanized areas in the region.

Through their 2050 Resource Management Area System, Sarasota County has devised an additional set of policies to go along with their future land use designations that creates an incentive-based system for managing growth in the county. This system sets up six Resource Management Areas (RMA), including: urban/suburban, economic

### Sarasota County Age Distribution



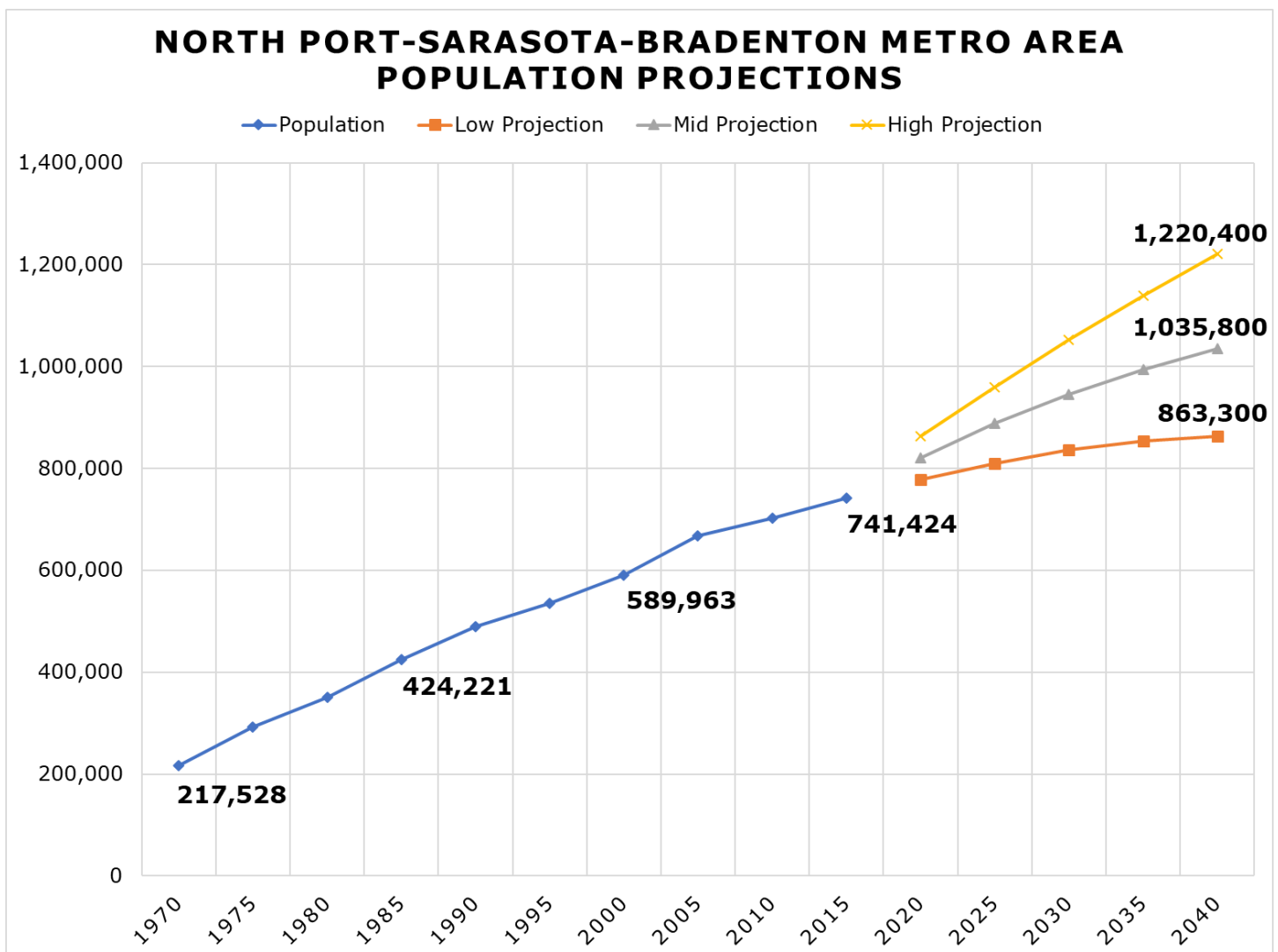
## Land Use Component

development, village/open space, greenway, rural heritage/estate, and agricultural reserve. The RMA to be noted for the park is village/open space. This RMA includes two type of development patterns: villages and hamlets. Large areas adjacent to the park's wilderness preserve are designated as hamlet land use, and areas to the northwest of the park north of SR 72 are designated as village/open space land use. These areas could potentially be developed with residential densities that are greater than the traditional low-density allowances in the rural designation. Transfer of Development Rights (TDR), clustered development, and minimum open space requirements allow for a maximum of one dwelling unit per acre for hamlet developments and six dwelling units per acre for village developments. These type of developments would also include mixed-use, commercial, public, and civic land uses. The DRP should continue to monitor for Hamlet Planned Developments and Village Planned Developments being proposed near the park.

### Future Land Use Designation of the Park

The DRP works with local governments to establish designations that provide both consistency between comprehensive plans and zoning codes and permit typical state park uses and facilities necessary for the provision of resource-based recreation.

The Sarasota County Comprehensive Plan indicates that the future land use designation as Public Conservation/Preservation. This category is defined as areas of high ecological value that are managed to preserve habitat and maintained primarily for environmental protection. These areas may also be dedicated for public open space and recreation. The Manatee County Comprehensive Plan shows the future land use designation as Conservation. This category is intended for major publicly or privately-held lands which are reserved for the primary purpose of the preservation of natural resources.



## **Regional Conservation, Recreation, and Trails**

Table 8 and its corresponding map shows the resource-based recreational opportunities in the region surrounding Myakka River State Park. Significant conservation areas are directly adjacent to the northern, eastern, and southern boundaries of the park. However, most of these areas are conservation easements with no public access and are not included in the table below. Local parks in the urban cores are also not included.

### **Florida Greenways and Trails System**

The Florida Greenways and Trails System (FGTS) is made up of existing, planned and conceptual non-motorized trails and ecological greenways that form a connected, integrated statewide network (see Conservation and Recreation Lands Map). The FGTS serves as a green infrastructure plan for Florida, tying together the greenways and trails plans and planning activities of communities, agencies and non-profit organizations throughout Florida. Trails include paddling, hiking, biking, multi-use and equestrian trails. The Office of Greenways and Trails maintains a priority trails map and gap analysis for the FGTS to focus attention and resources on closing key gaps in the system.

In some cases, existing or planned priority trails run through or are adjacent to state parks, or they may be in close proximity and can be connected by a spur trail. State parks can often serve as trailheads, points-of-interest, and offer amenities such as camping, showers and laundry, providing valuable services for trail users while increasing state park visitation.

The Legacy Trail is an existing portion of the Southwest Gulf Coast Regional Connector, which is a priority trail corridor as identified by the FGTS. This trail is approximately 8 miles west of Myakka River State Park and bisects Oscar Scherer State Park. Currently, the Legacy Trail is approximately 10 miles and travels north-south from Culverhouse Nature Park in Sarasota to the Venetian Waterway Park in Venice. In 2018, Sarasota County residents approved a referendum to extend the trail to create connectivity north to downtown Sarasota and east to North Port. The eastern extension could have implications for trail activity around Myakka River State Park. Potential trail connections to Carlton

Reserve would connect with the vast trail network within the reserve, which links with trails in the southern portion of the state park. These potential trail connections through the network of conservation lands adjacent to Myakka River State Park have been identified as opportunity corridors by the FGTS.

### **Statewide Comprehensive Outdoor Recreation Plan**

The Statewide Comprehensive Outdoor Recreation Plan (SCORP) analyzes both resource-based and user-based recreation opportunities throughout the state, with the state divided up into eight planning regions. Myakka River State Park falls within the Southwest region, which includes Charlotte, Collier, DeSoto, Glades, Hendry, Lee, Manatee, and Sarasota County.

An economic analysis conducted as a part of the SCORP process (2019 draft) found that residents of the Southwest region spent approximately \$1.8 billion on outdoor recreation in 2017, compared to \$6.1 billion spent by visitors to the region. The top five recreational activities for residents and visitors are as follows:

| <u>Residents</u>    | <u>Visitors</u>      |
|---------------------|----------------------|
| 1. Walking/jogging  | 1. Beach activities  |
| 2. Beach activities | 2. Picnicking        |
| 3. Hiking           | 3. Hiking            |
| 4. Bicycling        | 4. Walking/jogging   |
| 5. Tennis           | 5. Saltwater fishing |

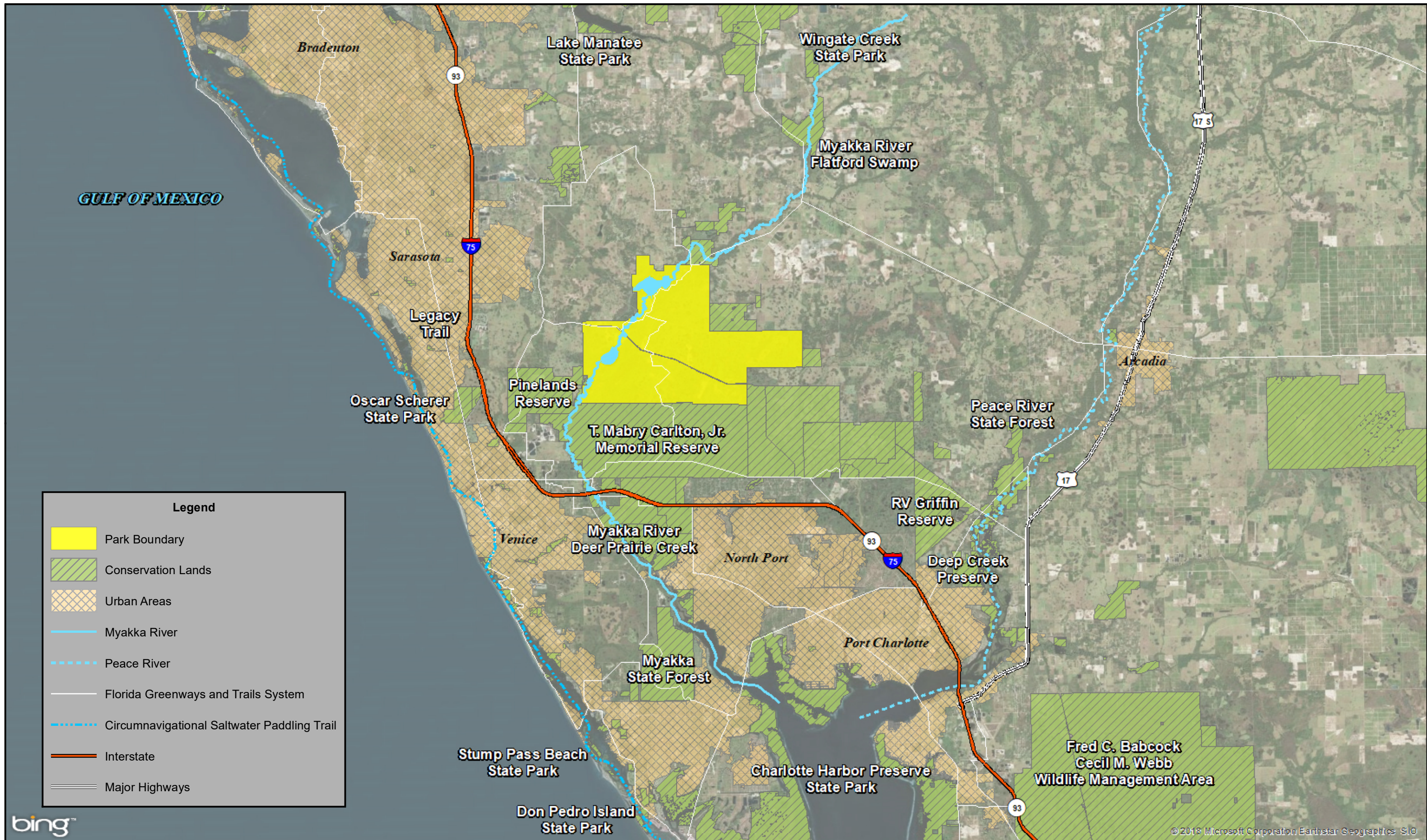
According to the SCORP update, the Southwest region is below the statewide median in freshwater fishing and freshwater boat ramp amenities. However, the Southwest region also has the lowest resident participation rate in freshwater boat ramp usage, potentially suggesting a lack of demand.



**Table 8. Regional Resource-Based Recreational Opportunities**

| Name                                                         | Biking                     | Hiking | Picnicking | Swimming/<br>Beach Access | Boating/<br>Paddling | Fishing | Wildlife Viewing | Camping | Hunting | Equestrian |
|--------------------------------------------------------------|----------------------------|--------|------------|---------------------------|----------------------|---------|------------------|---------|---------|------------|
| Florida Fish and Wildlife Conservation Commission            |                            |        |            |                           |                      |         |                  |         |         |            |
| Fred C. Babcock<br>Cecil M. Webb<br>Wildlife Management Area | x                          | x      |            |                           | x                    | x       | x                | x       | x       | x          |
| Southwest Florida Water Management District                  |                            |        |            |                           |                      |         |                  |         |         |            |
| Deep Creek Preserve                                          |                            | x      | x          |                           | x                    | x       | x                | x       |         | x          |
| Myakka River<br>Deer Prairie Creek                           | x                          | x      | x          |                           | x                    | x       | x                |         |         | x          |
| Myakka River<br>Flatford Swamp                               |                            | x      |            |                           |                      | x       | x                |         |         |            |
| RV Griffin Reserve                                           | x                          | x      | x          |                           |                      |         | x                |         |         | x          |
| Florida Forest Service                                       |                            |        |            |                           |                      |         |                  |         |         |            |
| Myakka State Forest                                          | x                          | x      | x          |                           |                      | x       | x                | x       | x       | x          |
| Peace River State Forest                                     | Currently no public access |        |            |                           |                      |         |                  |         |         |            |
| Florida Park Service                                         |                            |        |            |                           |                      |         |                  |         |         |            |
| Charlotte Harbor Preserve<br>State Park                      | x                          |        |            |                           | x                    | x       | x                |         |         |            |
| Don Pedro Island<br>State Park                               |                            | x      | x          | x                         |                      |         | x                |         |         |            |
| Lake Manatee State Park                                      | x                          | x      | x          | x                         | x                    | x       | x                | x       |         | x          |
| Oscar Scherer State Park                                     | x                          | x      | x          | x                         | x                    | x       | x                | x       |         |            |
| Stump Pass Beach<br>State Park                               |                            | x      | x          | x                         | x                    | x       | x                |         |         |            |
| Wingate Creek State Park                                     |                            | x      |            |                           |                      |         | x                |         |         |            |
| Sarasota County                                              |                            |        |            |                           |                      |         |                  |         |         |            |
| Big Slough Preserve                                          | x                          | x      | x          |                           |                      |         | x                |         |         | x          |
| Carlton Reserve                                              | x                          | x      | x          |                           | x                    |         | x                | x       |         | x          |
| Legacy Trail                                                 | x                          | x      | x          |                           |                      |         | x                |         |         |            |
| Myakkahatchee Creek<br>Environmental Park                    | x                          | x      | x          |                           |                      |         | x                | x       |         | x          |
| Pinelands Reserve                                            |                            |        | x          |                           |                      |         | x                |         |         |            |
| Walton Ranch                                                 | x                          | x      | x          |                           |                      |         | x                |         |         | x          |











## **Past and Current Uses of the Park**

### **Past Uses**

The Myakka Valley was used as open range for cattle ranch operations as early as 1843. Many changes took place during the early 1900s. Ms. Potter Palmer established Meadow Sweet Pastures, a large cattle ranching operation, and the Atlantic Coastline Railroad laid tracks for a line from Nocatee to Sarasota through land now within the park. After acquisition of park property by the state, the CCC began construction of park facilities, and were active at Myakka from 1934-1941. The Department of Juvenile Justice subleased a five-acre tract on the northeast corner of the wilderness area from 1977 to 2003 to operate a wilderness youth camp as part of the Short-Term Offenders Program (STOP). This facility is no longer in operation.

### **Other Uses**

Sarasota County maintains several water monitoring wells in the park on the south side of State Road 72. The Florida Power and Light Company holds an easement through the property allowing them to construct, operate, and maintain overhead and underground electric utilities on a portion of the park.

### **Current Uses**

Myakka River State Park provides a wide range of outdoor activities including hiking, nature study, photography, fishing, boating, wildlife observation, picnicking, canoeing, horseback riding, bicycling, camping (both full facility and primitive), and overnight cabins. Interpretive opportunities are enhanced by a visitor center and guided boat and tram tours conducted by one of the park's concessionaires. The park's canopy walkway, is an elevated boardwalk that provides visitors with close-up views of the forest canopy and panoramic views of the entire park. Use of the Myakka River Wilderness Preserve requires a backcountry permit and recreational use is limited to 30 visitors per day.

The primary entrance is located off State Road 72 in the west-central portion of the park (see Existing Facilities Map). A paved park drive extends nearly seven miles between entrances and provides access to picnic areas, campgrounds, cabins and the boat basin. The State Road 72 entrance area includes the park administrative offices, the main ranger

station, and visitor center. A portion of the visitor center provides office space for park staff. Four picnic areas provide picnicking opportunities throughout the park. Opportunities for extended stays are available at three full facility campgrounds and the CCC-era palm log cabins. Six hike-in primitive camping areas and an equestrian camping area enhance backcountry access. A primitive group camp near the STOP Camp and on the edge of the wilderness preserve serves youth or other organized groups.

Water access is provided at Upper Myakka Lake, where a boat ramp and concessionaire facilities are located. Canoes and kayaks are available for rental and boat tours of Upper Myakka Lake are provided by the concessionaire. Paddlers can also launch from the south picnic area and bridge area. The Birdwalk is a boardwalk on Upper Myakka Lake that enhances views of the lake, provides interpretive information, and is a popular birding spot.

A concessionaire-operated tram tour shuttles visitors into the interior of the park using existing unpaved park management roads. Additional opportunities for exploring the park interior are available via the park's extensive network of hiking, biking, and equestrian trails. Trails in the southern portion of the park are linked to the Carlton Trail and the T. Mabry Carlton, Jr. Memorial Reserve. The Myakka Canopy Walkway is unique to the state park system and allows visitors to ascend into the treetops. An 84-foot long suspension bridge is supported by two towers, the tallest of which rises 74 feet above the forest canopy. Access to the Canopy Walkway is provided from the Boylston Nature Trail.

The park shop area is located due north of the visitor center, and contains multiple structures to meet park maintenance, operations, and housing needs. Additional park residences are concentrated off State Road 72 at the entrance to the wilderness preserve. Facilities associated with the defunct STOP Camp are located on the south side of State Road 72. Two sewage treatment plants handle wastewater in the park, and water is supplied by a 45,000 GPD chlorinating plant.

## **Facility Inventory**

### **Recreation Facilities**

#### South Entrance Area

Entrance station  
Visitor center

#### South Picnic Area

Large picnic pavilion  
BBQ Pit  
Scattered tables and grills  
Playground equipment  
Restroom  
Event Stage

#### Upper Myakka Lake Use Area

Concession buildings (2)  
Boat ramp/paddling/tour launch  
Restroom  
Large picnic pavilion  
Scattered tables and grills  
Shelter/ticket booth

#### Log Pavilion Picnic Area

Stone memorial  
Amphitheater  
Log Pavilion  
Log Restroom  
Scattered tables and grills

#### Clay Gully Picnic Area

Medium picnic pavilion  
Restroom  
Scattered tables and grills  
Playground equipment

#### Old Prairie Campground

Full facility campsites (22)  
Bathhouse  
Sewage treatment plant

#### Big Flats Campground

Full facility campsites (26)  
Tent campsites (2)  
Bathhouse  
Sewage treatment plant

#### Palmetto Ridge Campground

Full facility campsites (42)  
Bathhouse (2)

#### CCC Log Cabins

Rental cabins (5)

#### Primitive Group Camp

Campsites (3)  
Restroom  
Fire circle (3)

#### Equestrian Camping Area

Fenced paddock  
Pit latrine  
Water hand pump

#### Primitive Camping Areas (6)

Tent campsites (18)  
Water hand pump (6)  
Fire rings (18)

#### Trails

Birdwalk boardwalk  
Nature trails (1.25 miles)  
Hiking trails (38 miles)  
Shared-use trails (80.5 miles)  
Hiking/Biking (59 miles)  
Hiking/Equestrian (6 miles)  
Hiking/Biking/Equestrian (15.5 miles)

### **Support Facilities**

#### South Entrance

Administrative offices/storage

#### South Entrance Shop Area

2-bay shop  
4-bay pole barn  
6-bay pole barn  
Maintenance shed  
Storage buildings (4)  
Residences (2)  
Volunteer laundry  
Volunteer campsites (7)  
Volunteer office (portable trailer)  
Water treatment plant

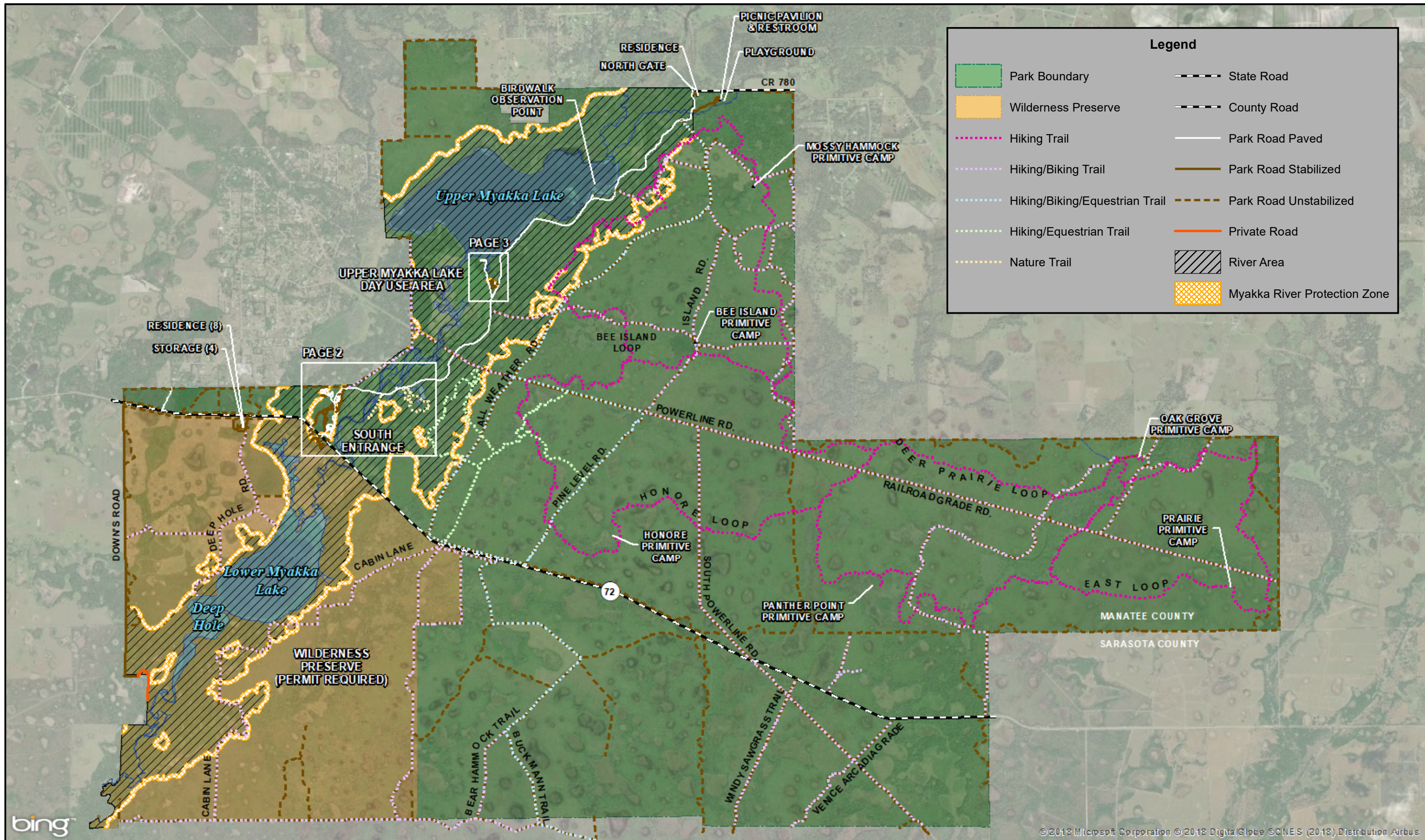
#### STOP Camp

Residence (1)  
Dormitory/apartment  
Restrooms/shower/laundry  
Kitchen/dining  
Meeting room/training building  
Storage buildings (2)  
Basketball court  
Sewer lift station  
Volunteer Campsites (6)

#### Hill Residence Area

Residences (3)  
Employee-owned mobile home sites (4)  
Volunteer campsite (1)  
Storage buildings (4)

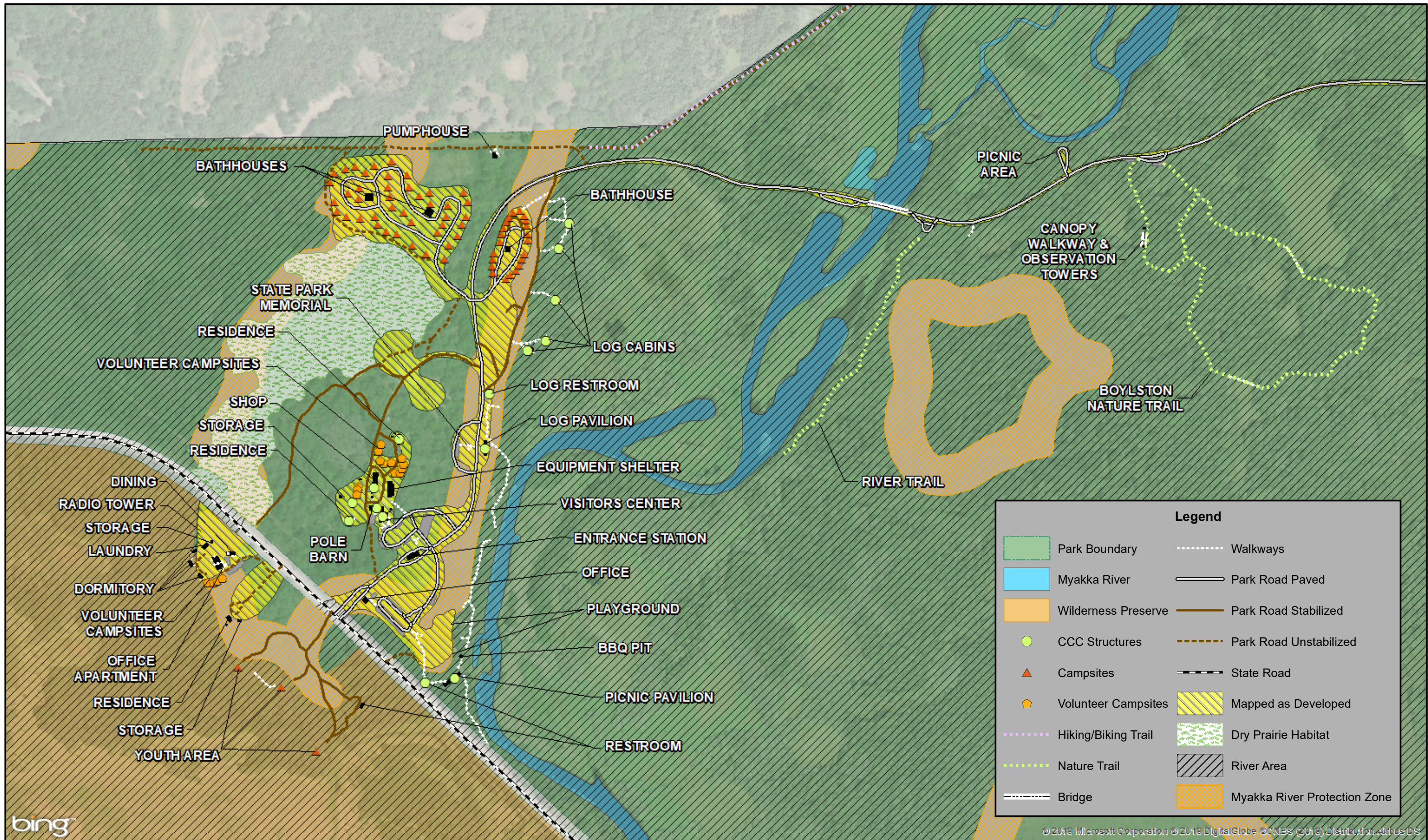








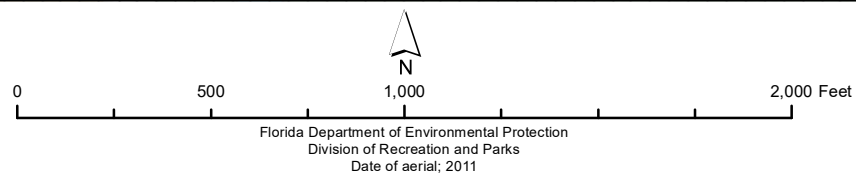




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MYAKKA RIVER STATE PARK

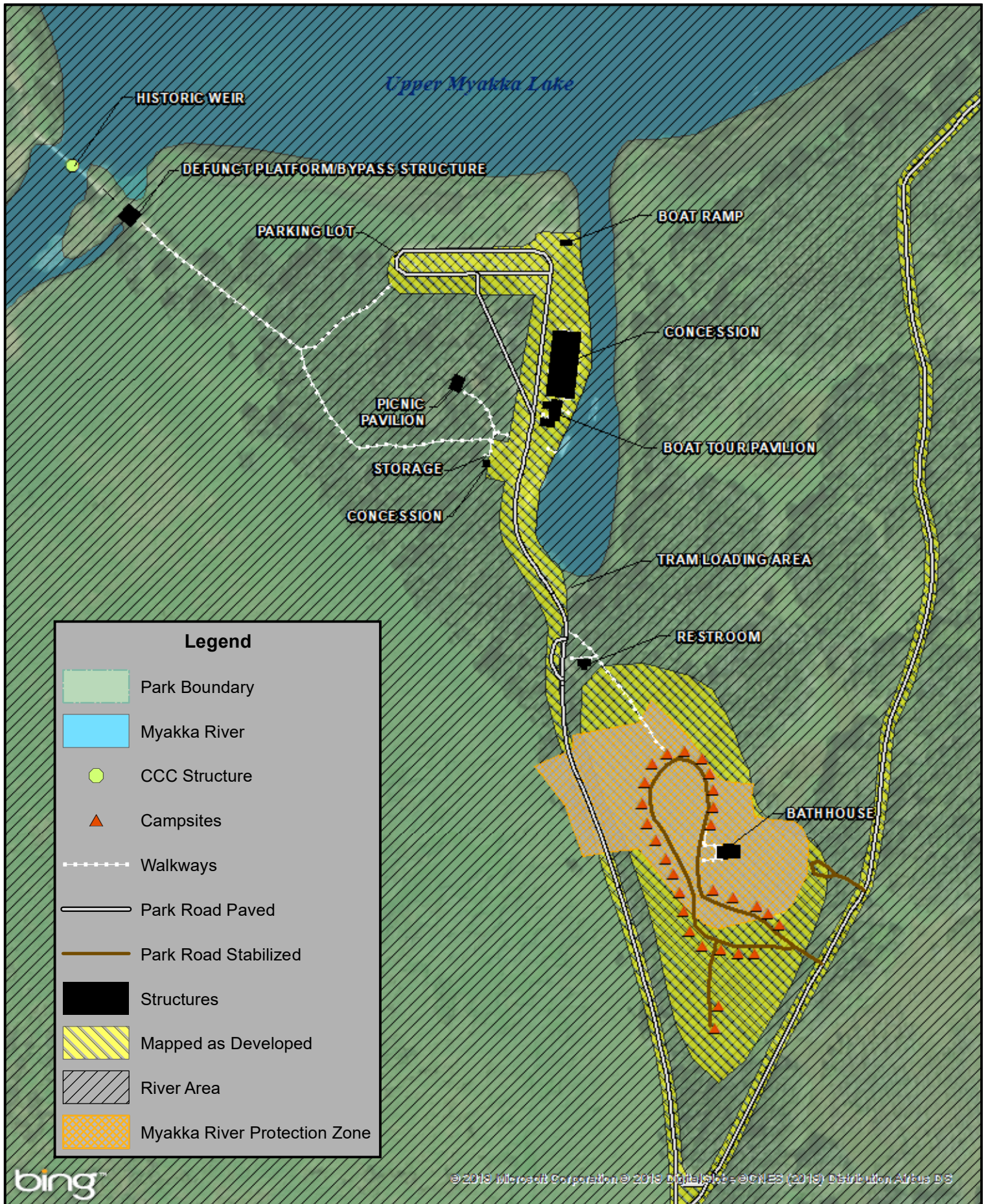


EXISTING FACILITIES MAP  
SOUTH ENTRANCE AREA

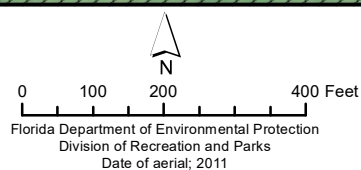








MYAKKA RIVER  
STATE PARK



EXISTING FACILITIES MAP  
UPPER MYAKKA LAKE  
DAY USE AREA





## Regional State Park Attendance

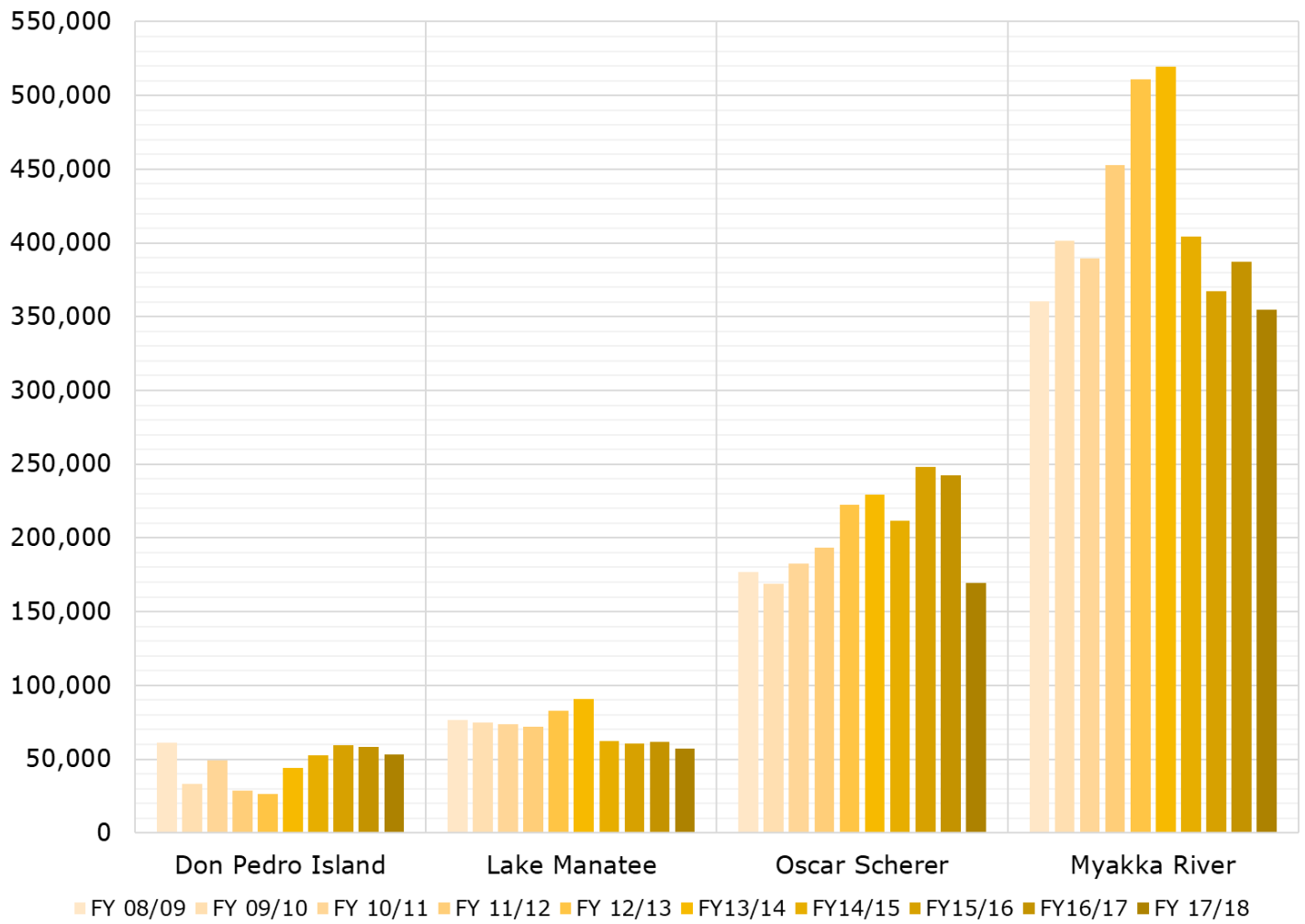
**Attendance Analysis**

Table 9 shows annual attendance at Myakka River State Park over the past ten years. For context, the accompanying chart shows annual attendance over the same time period for other state parks in the region.

Attendance at Myakka River State Park, as well as the Florida Park System in general, has ebbed and flowed over the past ten years. Historically, Myakka has been one of the most highly visited parks in its district within the park system, which includes 35 other parks throughout southwest Florida. In the most recent fiscal year, Myakka River State Park ranked 5th in attendance in its district behind Honeymoon Island (1,504,167 visitors), Lovers Key (914,618), Delnor-Wiggins Pass (460,006), and Weeki Wachee Springs (388,512). By DRP estimates, the FY 17/18 visitors to Myakka contributed approximately \$30.3 million in direct economic impact, the

**Table 9. Myakka River State Park Annual Attendance**

| Fiscal Year (FY) | Attendance |
|------------------|------------|
| FY 08/09         | 360,321    |
| FY 09/10         | 401,533    |
| FY 10/11         | 389,771    |
| FY 11/12         | 452,690    |
| FY 12/13         | 510,888    |
| FY 13/14         | 519,617    |
| FY 14/15         | 404,341    |
| FY 15/16         | 367,126    |
| FY 16/17         | 387,119    |
| FY 17/18         | 354,911    |



equivalent of adding 425 jobs to the local economy (FDEP 2018).

Data for the park shows that the busy season is between November and April, with March being by far the busiest month of the year. Average visitor attendance during the month of March over the past ten years is approximately 64,000, compared to a ten-year average of nearly 51,000 visitors in February and 48,000 in April. In the most recent fiscal year, attendance percentage by day of the week was split 50/50 with 50% of visitors coming to the park on the weekend (Friday-Sunday) and 50% coming during the weekdays. In regard to camping opportunities, 18% of visitors took advantage of the park's overnight amenities while 82% came for day-use activities. The average annual campground occupancy for the park in FY 17/18 was 65%, with the campgrounds being nearly full (97%-98% occupancy) between January and March. December (88% occupancy) and April (85%) are also popular months for camping. The park's five historic cabins had an annual average occupancy of 81% in FY 17/18.

### Recreational Carrying Capacity

Recreational carrying capacity is an estimate of the number of visitors each recreational use area can accommodate and still provide a high quality recreational experience and preserve the natural values of the site. The recreational carrying capacity for Myakka River State Park has been determined by identifying the recreational uses and activities available to visitors, approximating the physical constraints associated with accessing those uses, and applying a median number of visitors per unit of measurement. This calculation establishes a "visitors at one time" number for each recreational use area. The one-time number is then multiplied by a daily turnover rate that estimates how often an area will be used by different groups of visitors throughout the day. The totals for each use area are added together to determine total visitors at one time and total daily visitors. These calculations have been conducted for the recreational uses at the park, and the results are shown in Table 10.

Table 10 inventories all of the recreational use areas at the park according to four distinct use area categories: day use, overnight use, trails, and special use. For these categories, the physical or operational constraints of

accessing and utilizing the use areas are the constant, non-variable inputs of the recreational carrying capacity equation. Parking spaces are the constants for day use areas and trailheads, while the number of campsites are considered for overnight uses and permits issued per day regulate the wilderness preserve. These constants are then multiplied by visitors per vehicle/site/permit to determine the visitors at one time estimate, and the one-time estimate is multiplied by the turnover rate to calculate estimated daily visitors. The visitors per vehicle/site and the turnover rate are considered variable inputs that are determined by an established assumption. For the visitors per vehicle/site (with the exception of the primitive group camping areas), the established assumption is each vehicle and campsite contains four visitors. In reality, it is known that some vehicles and campsites will have one or two visitors while others contain six to eight. Likewise, it is assumed that day use visitors will spend around three to four hours in the park and non-overnight trail users will hike or ride for two to three hours. It is also acknowledged that these use areas are not mutually exclusive and, for example, an overnight camper may hike on the trails and visit the Upper Myakka Lake in the same day. However, parking spaces are considered physical constraints that only allow a certain number of visitors to access a use area at one time. Those parking spaces cannot be used simultaneously by multiple vehicles. Although vehicles can contain a variable amount of visitors, the number of parking spaces physically limits the number of vehicles that can access a given use area. Previous iterations of the recreational carrying capacity for the park considered only the recreational activities available at the park without regarding the physical constraints associated with accessing those activities. Without an increase to the physical space allocated to parking, an increase in recreational carrying capacity cannot take place.

Although the formulas are constructed to take into account the connection between visitor experiences and natural resources, the DRP's recreational carrying capacities should not be considered an ecological carrying capacity for the park's natural resources. In the event that funding becomes available, the DRP will support interagency and stakeholder partnerships to develop a rigorous and scientific recreational carrying capacity study for the Myakka River.

**Table 10. Recreational Use Area Carrying Capacities**

| <b>Day Use Areas</b>                | <b>Parking Spaces</b> | <b>Visitors Per Vehicle</b> | <b>Visitors at One Time</b> | <b>Turnover Rate</b> | <b>Daily Visitors</b> |
|-------------------------------------|-----------------------|-----------------------------|-----------------------------|----------------------|-----------------------|
| <i>Visitor Center/Entrance Area</i> | 25                    | 4                           | 100                         | 3                    | 300                   |
| <i>South Picnic Area</i>            | 35                    | 4                           | 140                         | 3                    | 420                   |
| <i>Log Pavilion Area</i>            | 10                    | 4                           | 40                          | 3                    | 120                   |
| <i>Myakka River Bridge</i>          | 30                    | 4                           | 120                         | 3                    | 360                   |
| <i>Canopy Walkway/Tower</i>         | 25                    | 4                           | 100                         | 3                    | 300                   |
| <i>Upper Myakka Day Use Area</i>    | 145                   | 4                           | 580                         | 3                    | 1,740                 |
| <i>Birdwalk Observation Area</i>    | 10                    | 4                           | 40                          | 3                    | 120                   |
| <i>Clay Gully Picnic Area</i>       | 5                     | 4                           | 20                          | 3                    | 60                    |
| <b>Overnight Use Areas</b>          | <b>Camp Sites</b>     | <b>Visitors Per Site</b>    | <b>Visitors at One Time</b> | <b>Turnover Rate</b> | <b>Daily Visitors</b> |
| <i>Historic CCC Cabins</i>          | 5                     | 4                           | 20                          | 1                    | 20                    |
| <i>Palmetto Ridge Campground</i>    | 42                    | 4                           | 168                         | 1                    | 168                   |
| <i>Old Prairie Campground</i>       | 22                    | 4                           | 88                          | 1                    | 88                    |
| <i>Big Flats Campground</i>         | 26                    | 4                           | 104                         | 1                    | 104                   |
| <i>Backcountry Tent Camping</i>     | 6                     | 4                           | 24                          | 1                    | 24                    |
| <i>Primitive Group Camping</i>      | 4                     | 20                          | 80                          | 1                    | 80                    |
| <b>Trails</b>                       | <b>Parking Spaces</b> | <b>Visitors Per Vehicle</b> | <b>Visitors at One Time</b> | <b>Turnover Rate</b> | <b>Daily Visitors</b> |
| <i>Powerline Road Trailhead</i>     | 10                    | 4                           | 40                          | 4                    | 160                   |
| <i>Ranch House Road Trailhead</i>   | 10                    | 4                           | 40                          | 4                    | 160                   |
| <i>Fox's Road Trailhead</i>         | 10                    | 4                           | 40                          | 4                    | 160                   |
| <i>Martin's Gate Trailhead</i>      | 5                     | 4                           | 20                          | 4                    | 80                    |
| <b>Special Use Area</b>             | <b>Permits</b>        | <b>Visitors Per Permit</b>  | <b>Visitors at One Time</b> | <b>Turnover Rate</b> | <b>Daily Visitors</b> |
| <i>Wilderness Preserve</i>          | 30                    | 1                           | 30                          | 1                    | 30                    |

| <b>Recreational Use Areas</b> | <b>Visitors at One Time</b> | <b>Daily Visitors</b> |
|-------------------------------|-----------------------------|-----------------------|
| <i>Day Use Areas</i>          | 1,140                       | 3,420                 |
| <i>Overnight Use Areas</i>    | 484                         | 484                   |
| <i>Trails</i>                 | 140                         | 560                   |
| <i>Special Use Area</i>       | 30                          | 30                    |
| <b>Park Total</b>             | <b>1,794</b>                | <b>4,494</b>          |

## **Myakka Wild and Scenic River Designation**

The Myakka River Wild and Scenic River Designation and Preservation Act and the Myakka Wild and Scenic River Rule (Chapter 62D-15) can be found in Appendix 10.

### **The Act, the Rule, and the Plan**

In 1985, the Florida Legislature enacted the Myakka River Wild and Scenic River Designation and Preservation Act. This legislation designated 34 miles of the Myakka River as a state Wild and Scenic River, approximately 12 miles of which is within the boundary of Myakka River State Park. The Act places additional layers of protection in the area defined as the "River Area". The River Area is defined as the corridor of land beneath and surrounding the Myakka River from river mile 7.5 to river mile 41.5, together with a corridor including the maximum upland extent of wetland vegetation (Section 528.501, Florida Statutes). Additionally, the "Wild and Scenic River Protection Zone" defined by the Act creates a buffer that extends 220 feet landward from the River Area. The Act instructed DEP to adopt rules and a permitting program to regulate activities within these protected areas and established the Myakka River Management Coordinating Council to develop a management plan, in conjunction with DEP, for the entirety of the protected portion of the Myakka River.

### **Myakka Wild and Scenic River Rule Chapter 62D-15, Florida Administrative Code**

As instructed by the Act, DEP established a regulatory program that includes a permit program intended to protect and enhance the resource values of the Myakka River. Chapter 62D-15 in the Florida Administrative Code (FAC) governs prohibition, permits, and exemptions within the River Area. Several activities are designated as prohibited; however, exemptions can be made if proper permits are obtained. For a complete list of prohibited activities and exemptions, please refer to Appendix 10.

The intention of the Rule is to outline which activities, structures, or practices will need to obtain a Myakka River permit and describe the standards that will be used to determine if a permit is issued or denied.

The main factors that are considered are whether the activity is consistent with the Act, Rule, and Myakka River management plan and whether the activity will affect resource values. There are several considerations associated with affecting resource values (see Appendix 10 for a complete list) and the DRP takes all of these considerations into account, but a few examples that guide land use goals and strategies at Myakka River State Park include:

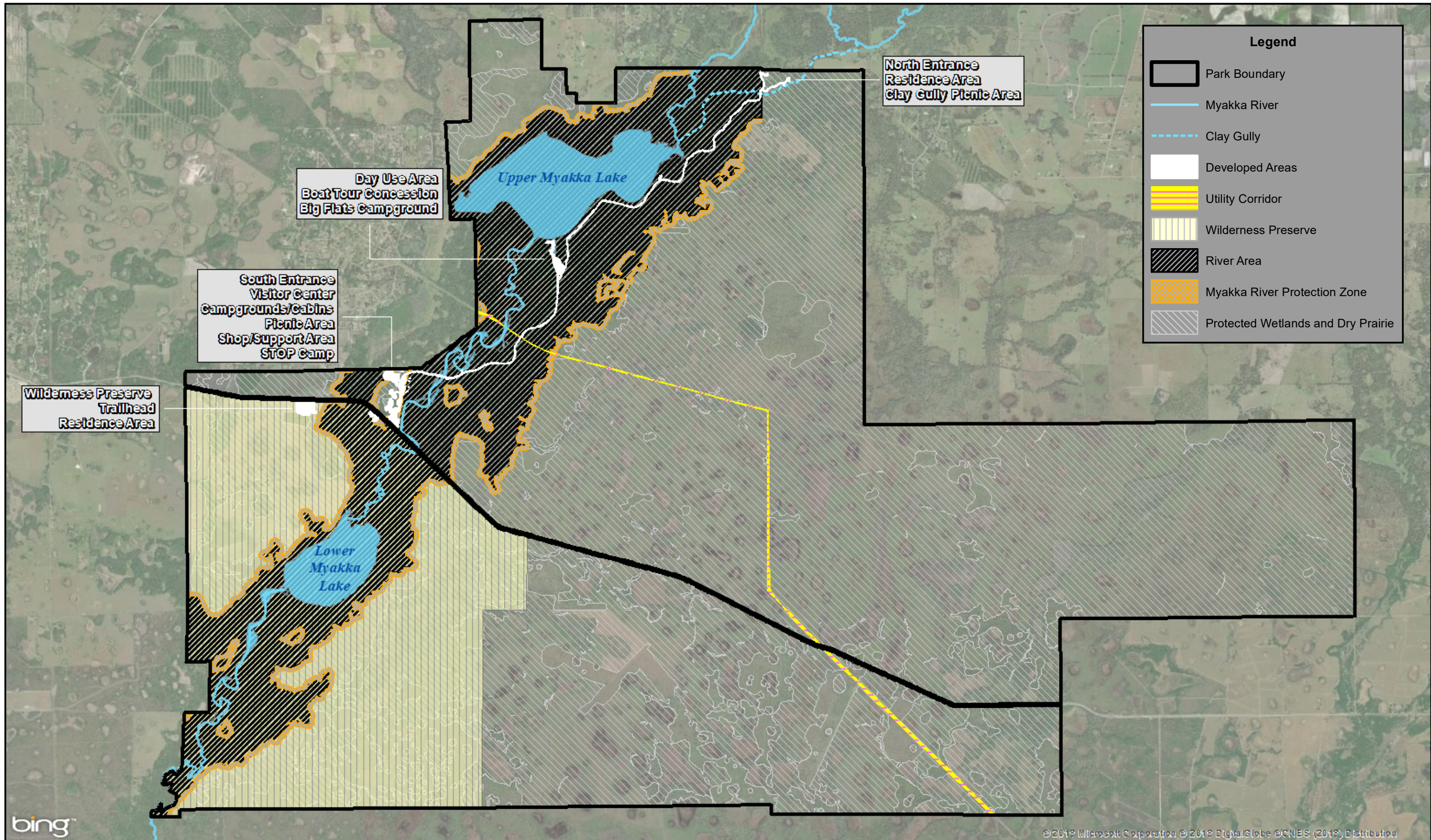
- Increasing impervious surface area or stormwater runoff;
- Reducing wetland buffers or wetland filtrative functions;
- Increasing access to the Myakka River;
- Decreasing recreational opportunities;
- Causing or contributing to the overuse of the river's recreational resources;
- Blocking, obstructing, lessening, or interfering with the river area's viewshed;
- Impacting fish and wildlife habitat;
- Causing or contributing to unsafe conditions for boats or boaters;
- Encouraging unauthorized use of public and private lands.

It should be noted that this permitting program applies to all of the designated Myakka River Area, about two-thirds of which falls outside of the park boundary. For any activity not covered under a preexisting use exemption, the DRP will complete the necessary process to obtain a Myakka River permit. A broad determination of when the DRP will need to complete the process to obtain a permit is discussed below. Activities or structures within the adjacent Myakka River Protection Zone may also require obtaining a permit from Sarasota County.

### **Myakka Wild and Scenic River Management Plan**

The most recent update of the Myakka Wild and Scenic River Management Plan was completed in 2011. This plan outlines the resource values of the Myakka River, describes existing conditions, and establishes specific objectives and actions to protect and enhance the Myakka River. Several action items discussed in the Myakka Wild and Scenic River Management Plan inform the land use objectives in this management plan update for Myakka River State Park. Major themes associated with these action items are enhancing the natural resources in the river









area through land acquisition and determining an appropriate level of recreational use, confining new infrastructure to existing development footprints, and improving education on the importance of the Myakka River through new signage and interpretive opportunities. In the land use objectives section below, the DRP will outline how it plans to support the Myakka Wild and Scenic River Management Plan.

## Historical Siting of Facilities

Given the park's historic structures built by the CCC and other structures built in the 1960s, a majority of the structures at the park predate the Myakka Wild and Scenic River Act. Although these structures fall within the protected River Area as defined by the Act, the structures are exempt from the permitting process in most cases. Routine maintenance and repair of these structures does not require a Myakka River permit, as long as the structure's footprint is not expanded. However, as stated by the Rule, "In the event that an exempted structure in existence prior to the effective date of this rule is damaged or destroyed by 50 percent or more...the person owning or operating such structure, in order to re-establish the structure, must submit a permit application". The DRP will continue to maintain the park structures within the river area and will abide by the permitting process if a given structure needs to be expanded or replaced. Existing structures within the protected river area are shown on the existing facilities maps above.

## Restrictions and Regulations on Future Land Use

With the exception of structures predating the enactment of the Act, all new development within the River Area will be required to complete the permitting process prior to breaking ground. The Protected and Developed Areas Map shows the River Area and the Myakka River Protection Zone, as well as the currently developed areas of the park. Proposed developments applying for a Myakka River permit will be considered for approval or denial based on parameters set out by the Rule. Recreational carrying capacity concerns should also be considered prior to applying for a Myakka River permit. It will be specified which proposed developments will be required to complete the Myakka River permitting process.

## Conceptual Land Use Plan

The following narrative represents the conceptual land use proposal for Myakka River State Park. The conceptual land use plan is the long-term, optimal development plan for the park, based on current conditions and knowledge of the park's resources, landscape, and social setting. The conceptual land use plan is modified or amended every ten years, as new information becomes available regarding the park's natural and cultural resources or trends in recreational uses, to adapt to changing conditions. Additionally, the acquisition of new parkland may provide opportunities for alternative or expanded land uses. The DRP develops a detailed development plan for the park and a site plan for specific facilities based on this conceptual land use plan, as funding becomes available.

During the development of the conceptual land use plan, the DRP assessed the potential impact of proposed uses or development on the park resources and applied that analysis to determine the future physical plan of the park as well as the scale and character of proposed development. Potential resource impacts are also identified and assessed as part of the site planning process once funding is available for facility development. At that stage, design elements (such as existing topography and vegetation, sewage disposal and stormwater management) and design constraints (such as imperiled species or cultural site locations) are investigated in greater detail. Municipal sewer connections, advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal.

Creation of impervious surfaces is minimized to the greatest extent feasible in order to limit the need for stormwater management systems, and all facilities are designed and constructed using best management practices to limit and avoid resource impacts. Federal, state, and local permit and regulatory requirements are addressed during facility development. This includes the design of all new park facilities consistent with the universal access requirements of the Americans with Disabilities Act (ADA). After new facilities are constructed, park staff monitors conditions to ensure that impacts remain within acceptable levels.



## Vision for Future Land Use and Recreation

Given the conceptual nature of this management plan, site-specific plans and designs are not included in this update. The development vision for Myakka River State Park is largely focused on improving the visitor experience within the current facilities footprint, and new infrastructure proposals are not intended to increase the capacity of the park. Visitor mobility within and between use areas will be the central theme that needs to be addressed in this management plan update. Visitor use patterns and recreational activities are well established at the park, and developing new recreational uses will be considered secondary to repairing or upgrading existing facilities.

The following sections help articulate the vision for Myakka River State Park by zoning the park according to ideal visitor experiences, identifying visitor management and land use issues, and outlining objectives to achieve the overall vision of improving the visitor experience by addressing mobility issues.

## Visitor Experience Zones

The Visitor Experience Zones (VEZ) are a series of geographic designations that will help guide future land use and resource management decision-making. These designations will shape the types of recreation opportunities offered within an area and help determine the contextual design of recreational facilities in each area. This allows DRP to improve communication with stakeholders by providing facility improvement and development guidelines based on five designations: urban, developed, natural, undeveloped, and wilderness. The VEZ designations established by DRP can help guide management of visitor use patterns, facility design and placement, and recreational carrying capacity, while also working to ensure a diversity of recreational opportunities and experiences. Management zones and natural community ecotones are used to delineate designations (see VEZ map).

### Developed

This is where the majority of conventional state park recreation activities are focused. The developed areas include the large majority of day-use and support areas within

parks. Recreation infrastructure (including parking, roads, walking paths, picnic areas, campgrounds) are paved and provide a standard level of visitor comfort associated with conventional day-use and overnight activities in a modified natural setting. Socialization within and outside one's group is typical, and the presence of other visitors is expected. The developed area is typically attractive for day-use by weekend visitors from nearby communities, campground users, and groups within a day's drive. This designation typically incorporates a primarily automobile-oriented site layout with substantial parking and meandering roads. There is an obvious and highly visible management presence with signage, restrooms, and trashcans throughout the visitor areas with groupings of support buildings including staff housing, shop buildings, and equipment storage separated from the main visitor use areas.

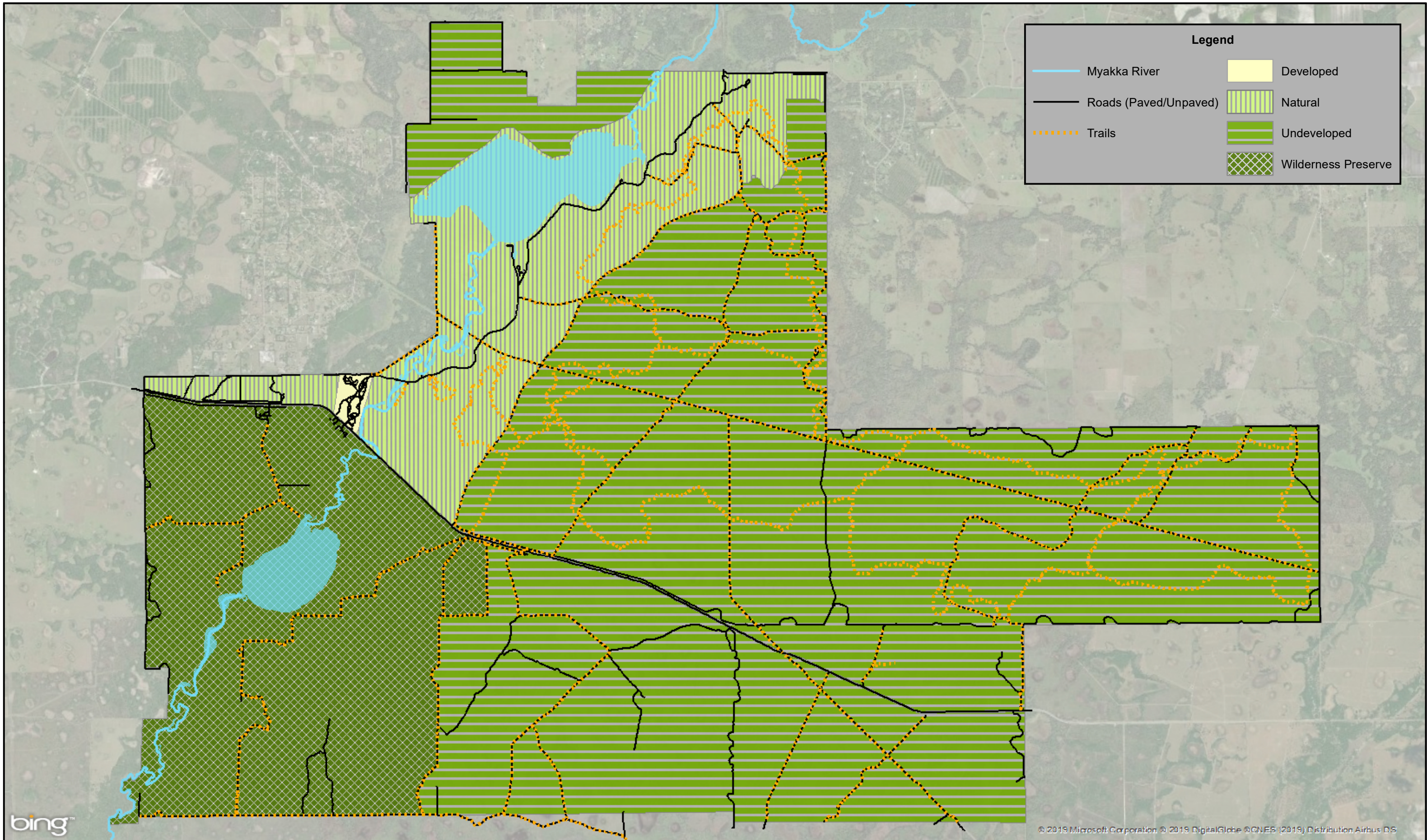
### Natural

The natural designation is most often associated with a scenic transportation corridor such as a main park drive. It is the area between developed use areas and the more primitive experience associated with the undeveloped designation. The average park user will experience this setting from a vehicle travelling to a use area along a park road. Socialization with others outside one's group is not very important, although the presence of others is expected and tolerated. Most visitor activities are limited to passive day-use recreation opportunities including hiking, biking, paddling, and wildlife viewing. Other than paved park roads, the majority of park facilities under the natural designation, including trailheads and kayak launches, are unpaved in order to minimize impacts to natural resources. Occasional support facilities are found in the natural area. The natural area can enhance the overall visitor experience in a park through the facilitation of a distinct entranceway that communicates to visitors that they are entering a state park separate from adjacent land uses.

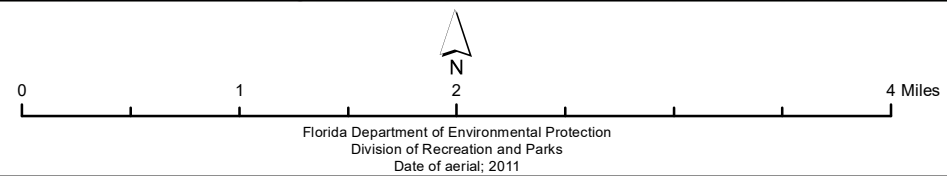
### Undeveloped

A sense of independence, freedom, tranquility, relaxation, appreciation of nature, testing of outdoor skills, and responsibility for resource stewardship is typical. The opportunity to experience a natural ecosystem with little human imprint, a sense of challenge,





MYAKKA RIVER STATE PARK



VISITOR EXPERIENCE ZONES MAP







adventure, risk, self-reliance, and a feeling of solitude are all important characteristics of the undeveloped designation. This is where longer distance hiking trails and primitive camping opportunities are located. It is an area of limited development with any development utilizing permeable surfaces and prioritizing the minimization of human impact visually and physically to help create as austere and rustic of a visitor experience as is practical. There is little evidence of management presence with a leave-no-trace policy promoted. Park visitors in this area are likely to stay overnight in the park due to the time and effort needed to experience this level of solitude in a natural environment. With the exception of service roads and firebreaks, support facilities are rare to non-existent.

### Wilderness

The opportunity to experience natural ecosystems with very little and no apparent human imprint is paramount. A sense of solitude, peacefulness, tranquility, humility, challenge, adventure, risk, and self-reliance is highly important, as is the lack of sight, sound, and smells of other humans. Resource stewardship is central and dominant. The primitive recreation experience provides opportunities for human-powered activities such as canoeing, kayaking, fly-fishing, floating, and backpacking. Visitation often requires considerable trip planning and preparation, travel distance, physical exertion, and duration. Overnight visitors use tents in settings with no conveniences or facilities. Adventure travelers and ecotourists from distant locations are often attracted to the undisturbed wildland setting. There is no obvious evidence of management activities and users should be prepared to recreate without assistance from others during their time in the wilderness area.

### **Issues Identification**

Myakka River State Park is one of the most visited parks in the state, and a majority of the issues associated with the park stem from its popularity. The main entrance to the park, known as the south entrance, is located off State Road 72 less than half a mile west of road crossing over the Myakka River. This entrance has minimal stacking space for cars entering the park, with approximately 535 feet between State Road 72 and the park's ranger station. On busy days, this lack of stacking space causes cars waiting to enter

the park to spill out onto the state road.

Another factor contributing to the congestion issue at the south Entrance is the traffic configuration immediately after passing the ranger station. The overnight check-in and visitor center parking areas are congregated in the same general location with limited parking that does not adequately accommodate the number of people using the entrance area. Combined with limited parking spaces that causes vehicles to linger in this area searching for parking, on-the-road directional paintings can be confusing and create a circular traffic pattern that exacerbates congestion.

The three major use areas outside of the south entrance area can experience overcrowding during the busy season for the park. These three areas, which include the bridge on the main park road crossing the Myakka River, the canopy walkway area, and the Upper Myakka Lake area, are the most popular destinations and have parking areas that cannot accommodate the recreational demand. As such, vehicles often park along the shoulder of the road around these use areas. Additionally, given this parking situation, visitors are frequently walking in the main road to get to their preferred destination and can be in direct conflict with vehicles seeking to drive to areas further into the interior of the park. The starkest example of overcrowding can be seen at the Upper Myakka Lake area, as a result of the confluence of the area's popularity with visitors and its haphazard parking situation.

Park management support facilities are located in various areas throughout the property. Most of these support areas are in appropriate locations; however, the shop and residence area directly behind the visitor center is sited in an area of the park that should be reserved for entrance administration and day-use recreation purposes. Although a privacy fence is currently separating the recreation and support areas, support activities and structures can be seen from the visitor center's entrance and detracts from the visitor experience.

## **Recreational Management Program**

The vision for the park and the issues identified above are the basis for the land use objectives below. Thematic land use objectives include improving the visitor experience in the main use areas and improving facilities. Action items associated with the land use objectives are described below.

### ***Objective A: Improve the visitor experience in the main use areas***

Given the popularity of Myakka River State Park and projected population increases in the region, improving the visitor experience in the main use areas will require the DRP to implement new visitor use management strategies. These strategies could involve reassessing how visitors travel through the park and could affect access to day-use areas. A master planning process beyond the scope of this management plan update should consider a variety of mobility options and interpretive solutions to address visitor use management. The DRP should also prioritize working with the Myakka River Management Coordinating Council and other relevant stakeholders to develop a recreational carrying capacity study for the Myakka River.

**Action 1**      Seek funding and partnerships to conduct a recreational carrying capacity study for the Myakka River

The 2011 Myakka Wild and Scenic River Management Plan (MWSRMP) identified the need to determine and monitor the amount and kinds of recreational uses that are permitted on the Myakka Wild and Scenic River. For the purposes of determining a carrying capacity of the Myakka River, the MWSRMP identifies four distinct river segments. The first segment consists of the state park, including the Upper and Lower Myakka Lakes.

Previous iterations of this plan's recreational carrying capacity attempted to determine an estimated carrying capacity for the segment of the Myakka River within the park. However, those attempts were not based on an agreed upon set of measurement standards and data. Those previous carrying capacity estimates were simply based on a set number of visitors per mile of river multiplied by the length of the river within the park (excluding the

wilderness preserve, which has a maximum capacity of 30 permitted visitors per day). As noted previously, this plan's recreational carrying capacity is based on access points and the allocated parking spaces at each recreational use area. At present, there are two easily accessible canoe and kayak launching points: the Myakka River bridge area and the Upper Myakka Lake. These access points to the Myakka River are constrained by the number of parking spaces at each area.

In order to facilitate the development of a recreational carrying capacity study for the Myakka River, the DRP should work with the Myakka River Management Coordinating Council to establish the parameters and desired outcomes of a study. Once the outline of a study has been determined, the DRP should seek funding and partnerships to conduct the study.

**Action 2**      Develop a conceptual master plan for the park

Current recreational demand indicates that gradual redevelopment of the park's existing use areas will be needed to maintain the balance between safe public access and protection of park resources. To address this challenge, the DRP will create a comprehensive vision for the park through the development of a new conceptual master plan. The master plan will address potential redesign of the park's most popular day use destinations through careful consideration of interpretative programming, recreational activities, park operations, pedestrian and bicycle circulation, accessibility, critical viewsheds, and potential impacts to the park's natural and cultural resources. Items to be considered during the master planning process include, but are not limited to:

- South entrance design/traffic circulation
- Parking considerations
- Recreational use patterns
- Mobility options between use areas
- Interpretive programming

The DRP will develop the new conceptual master plan with public input received through a series of public workshops and key stakeholder meetings. The conceptual master plan will then be used to guide the implementation of any proposed improvements and additions.

## Action 3 Continue, improve, and develop new interpretive programs

Myakka River State Park currently offers 30 interpretive, recreational, and educational programs and events. Programs are offered on a daily, weekly, and monthly basis, some seasonally (winter/spring) and others throughout the year. The interpretive and educational programs focus primarily on the park's natural resources, with programs on the history of the park playing an important but smaller role. The goal of these programs is to foster an appreciation and understanding of the natural and cultural resources within Myakka River State Park.

Current programs offered by park rangers, the citizen support organization, and the concessionaire include guided boat and tram tours, bird and wildlife identification walks, history walks, natural community tours, campfire presentations, and special guest presentations. Interpretive exhibits and displays are located at the visitor center, the canopy walkway, the birdwalk observation area, Meadow Sweet Pastures historic site, and nature trails. The Junior Ranger Program provides an opportunity for young people to learn about and protect the park's natural and cultural resources through a series of self-paced activity worksheets and ranger led programs. Educational and curriculum-based programs on a variety of topics are provided upon request for area schools and special groups.

Recreational programming offered at the park gives visitors a chance to have outdoor adventures and learn about potential new hobbies and activities. Currently, the park's recreational programs include guided kayak and canoe tours, a fishing clinic, guided bicycle tours, and a concert series.

The park plans to develop an interpretive master plan to guide the development of new interpretive programs for the next ten years. Examples include living history programs focused on the role of the Myakka region in Florida history, and a "Link to the Past" interpretive trail throughout the use areas of the park featuring stories from the Civilian Conservation Corp at Myakka. The park also plans to upgrade exhibits and displays within the current visitor center. The "Myakka Movies" film series will be updated and new exhibits will be provided to better interpret the park's significant cultural history and the

natural processes of the park's diverse ecosystem.

The park would also like to pursue long-term partnerships with area schools and organizations through coordination with teachers and organizers to develop educational and interpretive programming that promotes environmental stewardship. An example might include a water-monitoring program for students, highlighting the state-designated Myakka Wild and Scenic River. New interpretive signage explaining the importance of maintaining dark skies within the park will be developed for installation at appropriate locations within the park, beginning with the park's campgrounds and cabin area.

To provide staff and volunteers with appropriate training opportunities and conduct yearly park interpretive need assessments, the park will conduct regular in-park interpretive training/development workshops and pursue other training opportunities from outside sources. Myakka River State Park also plans to improve ADA accessibility to existing and newly created interpretive programs and exhibits for persons with special needs and special populations.

## **Objective B: Improve recreation and support facilities**

Deferred maintenance and gradual deterioration of the park's facilities will require the DRP to repair, renovate, or replace recreation and support structures as funding becomes available over the next ten years. Relocation of some support facilities may also be needed, and additional recreation facilities should be considered if they are approved during the master planning process. As stated previously, most of the park's use areas are within the protected river area. Any improvement that expands the footprint of an existing structure or new development, including road paving, within the protected river area will require a Myakka River permit. The DRP will complete the permitting process as needed and will comply with all regulations governing the river area.

## Action 1 Maintain all recreation and support facilities in the park

The existing facilities of this state park are appropriate to the natural and cultural resources contained in the park and should be



maintained. All capital facilities, trails and roads within the park will be kept in proper condition through the daily or regular work of park staff and/or contracted help.

### Action 2 Relocate park management support facilities

Currently, there are four support areas that contain park management facilities such as shops, storage shelters, volunteer campsites, and staff residences. These support areas are located at the wilderness preserve trailhead, STOP camp area, south entrance, and north entrance. In order to redesign and improve the south entrance area, it is recommended that support facilities at the south entrance be either consolidated in another support area or relocated to a newly developed support area. Some of the structures at the south entrance support area are CCC-era historic structures, and proper DHR review will be needed in the event that these structures are relocated, modified, or removed. Potential locations for a new support area include a spoil area to the west of the south entrance or a currently undeveloped area east of the utility corridor trailhead.

### Action 3 Address facility repair and renovation needs

Over the next several years, efforts will focus on repairs and renovations to address maintenance, accessibility, and public safety. Major repair projects for park facilities may be accomplished within the ten-year term of this management plan, if funding is made available. These include the modification of existing park facilities to bring them into compliance with the Americans with Disabilities Act (a top priority for all facilities maintained by DRP). To conserve the park's dark skies the development of all new park facilities will comply with the lighting standards set forth by the International Dark-Sky Association. Inexpensive modifications to current lighting fixtures such as motion sensors will be completed. Implementation of all proposed park improvements will need to carefully evaluate potential impacts to the viewshed of the Myakka Wild and Scenic River. Designs should minimize the intrusion of manmade elements into the river's critical viewshed.

The DRP is currently in the process of conducting a comprehensive facility assessment for the structures at Myakka River

State Park. This assessment will evaluate seven components of park facilities: structural, exterior, roofing, HVAC, electrical, plumbing, and interior finishes. Each component is weighted by a percentage of the total replacement cost associated with a facility type, and each structure will receive a score between one and five with one being the lowest. Preliminary evaluations indicate the following structures need to be repaired or renovated over the next ten-year planning period:

- Big Flats Campground bathhouse
- Big Flats Campground sewage system
- Upper Myakka Lake boat ramp
- Old Prairie Campground bathhouse
- Primitive Group Camp restroom
- Five staff residences

Park roads should also be improved during this planning period. In particular, the road in the Big Flats Campground should be paved, and the road leading to the equestrian camping area should be stabilized. The Big Flats Campground road is within the River Area and Myakka River Protection Zone, and since this project would increase the impervious surface within the River Area, a Myakka River permit will be required to conduct the road paving. The road leading to the equestrian camping area, known as All Weather Road, is within the Myakka River Protection Zone about half a mile north of the utility corridor. If this portion of the All Weather Road is to be stabilized, a permit from Sarasota County will need to be obtained. The main park road is firmly within the Myakka River floodplain and is frequently flooded following heavy rain events. As such, an engineering study is needed to guide improvements that could include road raising, road resurfacing, installation of culverts, and culvert replacement. Structural improvements to the main park road bridge crossing over the Myakka River may also need improvements. Depending on the outcome of the engineering study, a Myakka River permit may be needed to implement the suggested park road improvements.

### Action 4 Consider developing additional recreational facilities

As stated in the vision for the park, new recreational development is secondary to the primary purposes of this management plan's land use objectives. However, additional

recreational facilities can be considered during the master planning process. New picnicking amenities could potentially benefit the visitor experience at the park. For example, the picnic tables to the north of the concession building at the Upper Myakka Lake area are frequently used by visitors waiting for the boat tour. These tables are not sheltered, and a pavilion could provide shade to visitors on sunny days. Additional picnic pavilions in the southern day use areas could also accommodate more group and family gathering functions. The meeting facility at the former STOP Camp area could be used to expand the range of interpretive programming available at the park. This facility can support an array of special activities, meetings, and programs that feature the natural resources, wildlife, and history of the park and surrounding region. All of these new recreational developments, if approved by the master planning process, would require Myakka River permits.

### **Optimum Boundary**

The optimum boundary map reflects lands considered desirable for direct management by the DRP as part of the state park. These parcels may include public or privately-owned land that would improve the continuity of existing parklands, provide the most efficient boundary configuration, improve access to the park, provide additional natural and cultural resource protection or allow for future expansion of recreational activities.

Identification of parcels on the optimum boundary map is intended solely for planning purposes. It is not to be used in connection with any regulatory purposes. Any party or governmental entity should not use a property's identification on the optimum boundary map to reduce or restrict the lawful rights of private landowners. Identification on the map does not empower or suggest that any government entity should impose additional or more restrictive environmental land use or zoning regulations. Identification should not be used as the basis for permit denial or the imposition of permit conditions.

The Down's parcel consists of approximately 235 acres along the southwestern corner of the park. The Myakka River abuts this property for nearly one mile. Inclusion in the optimum boundary identifies the importance of securing the health of the Wild and Scenic River corridor within the park. Acquisition

would also facilitate removal of a dam on the river and more thorough hydrologic restoration of the river and park.

The Gulsby parcel consists of approximately 110 acres along the northern park boundary. The property is significant for a large red maple swamp and seepage slope from which drainage flows into the park. It is also one of the few locations in Sarasota County that has surficial exposed limestone outcrops associated with seeps. Fire management and restoration of the park property north of Upper Myakka Lake will be greatly aided if this property is obtained.

The Lanier parcel (Sheps' Island) consists of approximately 710 acres on the western boundary of the park. Acquisition of this parcel would allow for the restoration of Vanderipe Slough.

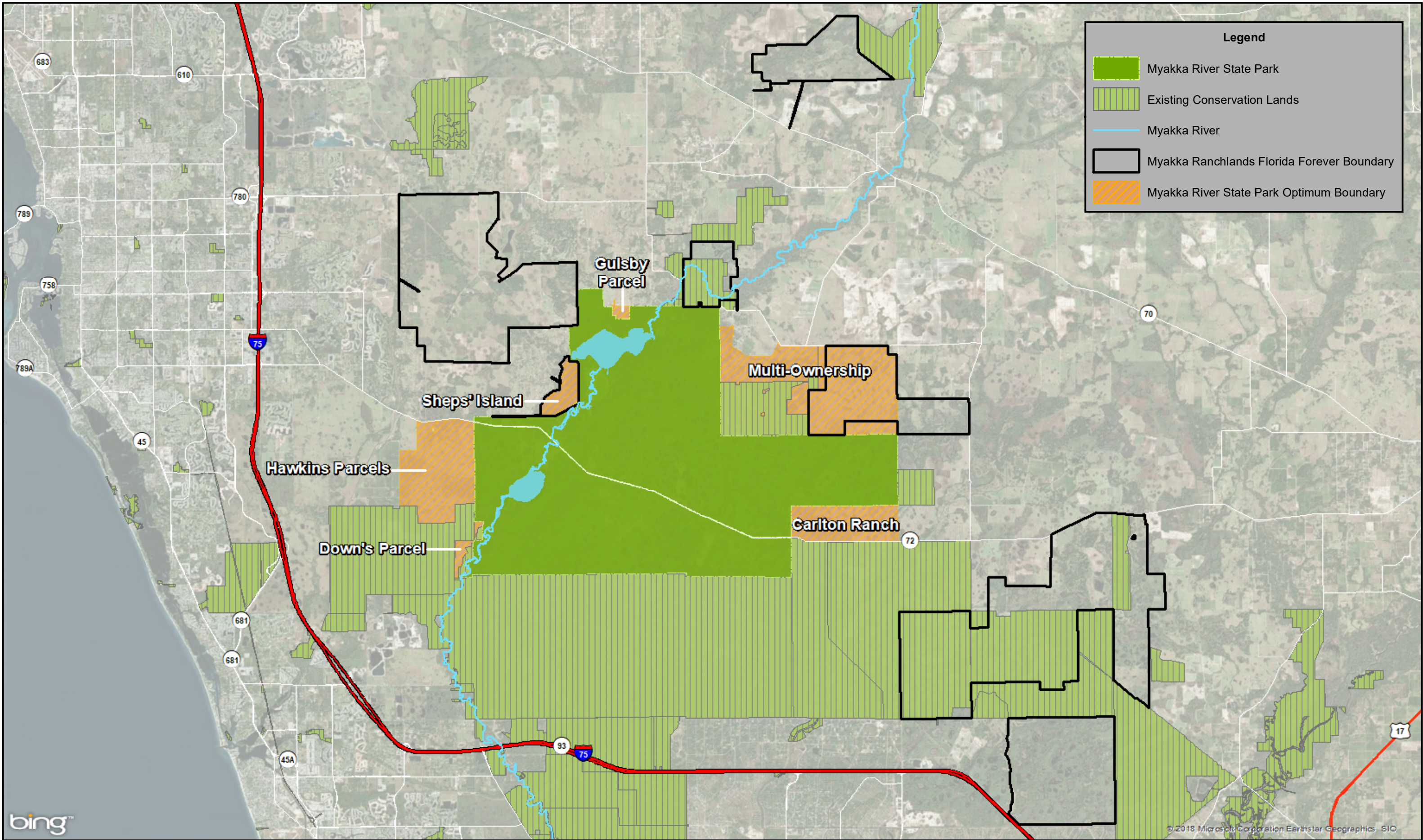
The multi-ownership parcel abutting the park panhandle consists of approximately 6,000 acres along nearly 7.5 miles of shared boundary. Fire management is current difficult along this boundary owing to the many large wetlands, which flow into the park and are bisected by the boundary. The headwaters of both Deer Prairie Slough and Mossy Hammock Slough are within these recommended parcels. Hydrological restoration of these wetlands is essential for successful restoration of thousands of acres of dry prairie in the park.

The Carlton Ranch parcels consist of approximately 1,900 acres along the southeastern boundary, adjacent to the panhandle of the park. These parcels would extend the eastern boundary south to SR 72 and would provide additional management access to the far eastern portions of the park. Deer Prairie Slough and Mud Slough could potentially benefit from enhanced conservation and landscape restoration efforts.

The Hawkins parcels consist of approximately 3,300 acres along the west boundary of the park, adjacent to the park's wilderness preserve. The acquisition of these parcels would provide a buffer between potentially developable areas of Sarasota County and the park's wilderness preserve. Preservation of the solitude and tranquility of the wilderness preserve is paramount to the purpose of this portion of the park.













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# Myakka River State Park Unit Management Plan Appendix 1–12







# Appendix 1

## Acquisition History

### Purpose of Acquisition

The Board of Trustees of the Internal Improvement Fund (Trustees) of the State of Florida acquired the initial area of Myakka River State Park for the establishment of a park area to provide public, resource-based recreation.

### Sequence of Acquisition

In 1934, 1,920 acres was donated to the State of Florida by the Potter family. The Florida Board of Forestry (FBF), predecessor in interest to Florida Board of Parks and Historic Memorials (FBPHM), purchased approximately 17,070 acres from the estate of Adrian Honore. Since this initial donation and initial purchase, several parcels have been acquired through dedication, management agreement, and Florida Forever/Additions and Inholdings (FF/A & I) and added to Myakka River State Park. Presently, the park contains 37,197.68 acres.

### Title Interest

The Trustees and the Southwest Florida Water Management District (SWFWMD) hold title to different portions of Myakka River State Park.

### Lease Agreement

On January 23, 1968, the Trustees leased Myakka River State Park to the Florida Board of Parks and Historic Memorials, predecessor to the Division of Recreation and Parks (DRP), under Lease number 2324. This 99-year lease will expire on January 22, 2067. According to the lease, the DRP manages the park for the purpose of public outdoor recreation, park, conservation, historic and related purposes. A legal description of the park property can be made available upon request to the Department of Environmental Protection.

In 1998, the Trustees assigned a new lease number, Lease No. 3636, to the Myakka River State Park, without changing any of the terms and conditions of Lease No. 2324.

On March 25, 1997, the DRP assumed management of an 8,260.76-acre property owned by the SWFWMD.

According to the lease, the DRP manages Myakka River State Park for the purposes of developing, improving, operating, maintaining and otherwise managing said land for public outdoor recreational, park, historic conservation and related purposes. The DRP manages the SWFWMD property as part of Myakka River State Park for the purpose of water management, natural resource management, and outdoor recreational and related public purposes.

### Special Conditions on Use

At Myakka River State Park, public outdoor recreation and conservation is the designated single-use of the property. Uses such as water resource development projects, water supply projects, storm-water management projects, and linear facilities and sustainable agriculture and forestry are not consistent with the purposes for which the DRP manages the park.

### Outstanding Reservations

The following is a list of outstanding rights, reservations and encumbrances that apply to Myakka River State Park.

**Type of Instrument:** Deed (No. 21926)

**Grantor:** TIITF

**Grantee:** FBPHM

**Beginning Date:** September 30, 1958

**Ending Date:** When no longer used for its intended purpose.

**Outstanding Reservation:** The deed states that this property will be used solely for public park purposes. If the property is ceased to be used for the intended purposes, it shall revert to the grantor or grantor's successor in interest.





# Appendix 2

## Advisory Group List and Summary Report

### **Elected Officials\***

The Honorable Michael Moran, Chair  
Sarasota County  
Board of County Commissioners

The Honorable Betsy Banac, Chair  
Manatee County  
Board of County Commissioners

### **Business Representatives**

Vanessa Baugh, Chair  
Manatee County  
Tourism Development Council

Ken Harrison  
Local Businessman

### **Agency Representatives\***

Jennifer Brunty, Chair  
Manatee River Soil and Water  
Conservation District

Todd Underhill, Chair  
Sarasota County Soil and Water  
Conservation District

Mike Kemmerer  
Regional Biologist  
Florida Fish and Wildlife  
Conservation Commission

Stephen Giguere, Park Manager  
Division of Recreation and Parks  
Myakka River State Park

Carmen Sanders  
Southwest Florida  
Water Management District

Duane Weis, District Manager  
Florida Forest Service

Mike Wisenbaker  
Archaeology Supervisor, Public Lands  
Bureau of Archaeological Research  
Division of Historical Resources

### **Environmental and Cultural Resource Representatives\***

Geraldine Swormstedt, Group Chair  
Sierra Club – Manatee/Sarasota

Jeanne Dubi, President  
Sarasota Audubon Society

Jono Miller, Chair  
Myakka River Management  
Coordinating Council

John McCarthy  
Historical Society of Sarasota County  
Historic Spanish Point

### **Citizen Support Group Representative**

Miles Millwee, President  
Friends of Myakka River, Inc.

### **User Group Representatives**

Dick Praff, Kayaker

Kevin Webb, President  
Myakka River Riders

Bill Martin, Section Leader  
Florida Trail Association  
Suncoast Chapter

Laurel Schiller, Cyclist

### **Adjacent Landowner\***

Becky Hullinger

\*Members required by statute

## Appendix 2—Advisory Group Report

The advisory group meeting to review the proposed unit management plan (UMP) for Myakka River State Park was held at the Myakka River State Park Training Room in Sarasota on Friday, March 3, 2017, at 9:00 AM.

Jon Robinson represented Commissioner Michael Moran for Sarasota County. Michael Elswick represented Commissioner Betsy Banac for Manatee County. Bill Lewis represented Geraldine Swormstedt for the Manatee-Sarasota Sierra Club. Steve Shattler represented Mike Kemmerer for the Florida Fish and Wildlife Conservation Commission (FWC). Harold Joslin represented Miles Millwee for the Friends of Myakka River. John O'Connor represented Jennifer Brunty (Manatee County Soil and Water District) Mike Wisenbaker (Florida Department of State – Division of Historic Resources (DHR) was not in attendance, but submitted email comments on the proposed UMP. Vanessa Baugh (Manatee County Tourist Development Council), Todd Underhill (Sarasota County Soil and Water Conservation District), Carmen Sanders (Southwest Florida Water Management District), and Jeanne Dubi (Sarasota Audubon Society) did not attend or submit comments, although a member from the Sarasota Audubon Society did speak during the public comment period. All other appointed advisory group members were present at the meeting.

Division of Recreation and Parks (DRP) staff members who attended the meeting included Sine Murray, Jason Mahon, Stephen Giguere, Valinda Subic, David Copps, Chris Becker, Chris Oliver, and Parks Small. Greg Vaughn (Atkins) and Gene Stillman (F4 Tech) were also in attendance to facilitate the meeting on behalf of DRP.

Mr. Vaughn began the meeting by explaining the purpose of the advisory group and reviewing the meeting agenda. He then afforded advisory group members an opportunity to introduce themselves. Following introductions, he provided a brief overview of the DRP's planning process and asked Ms. Murray to provide opening remarks and an overview of the proposed UMP.

Ms. Murray commented on the public meeting held the previous night and how well attended it was with 260 people. She commented how she appreciated the passion and support of those in attendance. Many of the comments were directed at the language associated with

secondary use resources generating revenue from consumptive uses. She added that this analysis is required by statute and that the Florida Park Service (FPS) will not remove timber or anything else unless it is directly related to restoration objectives. The FPS's primary goal is restoration and not generating revenue. Based on the confusion related to this, the language in the UMP will be revised to provide better clarification of its intent.

Key Goals of this UMP update include:

- Monitoring and assessing the hydrologic situation of the park
- Prescribed fire
- Natural community restoration
- Monitoring and protection of imperiled species
- Protection of cultural resources
- Management of nuisance and invasive species
- Peak visitation management
- Widen park road for pedestrian and cyclist safety
- Encourage parking at a satellite location
- Provide tram service to encourage a safe visitor experience and reduce traffic congestion
- Ec lodge for meetings and tour groups
- Ranger led tours
- Focus on park improvements
- Relocate Visitor Center to Upper Myakka Day Use Lake Area since many visitors bypass the existing Visitor Center and proceed to Upper Myakka Lake (too much congestion).

She continued by commenting on the format of the previous night's public meeting, stating that an open house is a common planning forum. Staff were located at each station and there are "pros" and "cons" to the meeting format. Public comments are accepted for two weeks after the meeting. The open house format of the public meeting was meant to provide additional opportunity for comment by having staff available to establish a dialogue. This format has led to FPS receiving more public input and hearing from a broader audience than a traditional public hearing format.

During the two-week public comment period following the advisory group meeting, the DRP received numerous comments from members of the public about the Myakka River State Park unit management plan.

The major themes of these comments are as follows:

- Members of the public opposed language in the plan referring to potential revenue generation and secondary management purposes such as timber harvesting, stump harvesting, and palmetto frond harvesting due to potential impacts to the park's wildlife and natural communities.
- Many comments concerned the lack of funding provided to public land managers for park operations and resource management efforts.
- Some members of the public expressed support for the land use concepts presented in the plan but many members of the public were concerned about the possible overdevelopment, overcrowding, and over commercialization of the park.
- Many comments urged DRP to recognize the unique character of the park and to maintain the park in its current condition.

### **Summary of Advisory Group Comments**

**Bill Martin** (*Florida Trail Association – Suncoast Chapter*) indicated that he spends most of his time in the back country at the park and is concerned with the consumptive use issue. Would like to see the park move back to what it must have been like when Desoto was in Florida and away from a “city” park. He was not in favor of consumptive uses for picking berries or palm fronds. He commented that things should not be placed in the back country that do not belong there and FPS should leave things alone.

**Bill Lewis** (*Manatee-Sarasota Sierra Club*) mentioned that he supported the purpose of the park and stated that Myakka has set the example for prescribed burning and continues to be very effective with this management activity. He had concerns with the consumptive use language and wants the secondary uses removed from the new UMP, specifically timber harvesting. Mr. Lewis also expressed concerns with development at the Stop Camp and felt that it would be better to build a conference center adjacent to the park versus within the park. Interpretive center needs to be located near the park entrance to identify educational opportunities and set the tone for visitors to the park. Discussion within

the UMP concerning invasive plant and wildlife is inadequate and needs to be strengthened to show more aggressive monitoring of species. Mr. Lewis stated that plowing of the firelines creates opportunities for alien and invasive species. When considering infrastructure needs, the FPS should consider/monitor visitor viewshed, citing Bee Island now has cell phone towers. He also commented that the use of contractors has increased for various things given the lack of available resources, and language should be included in the UMP to ensure that park staff have control over contractors at all times and are allowed to closely monitor their activities.

**Kevin Webb** (*Myakka River Riders*) commented that improvements are needed to All Weather Road and he was glad to see that they are included in the UMP. He also suggested parking areas to accommodate larger horse trailers.

**Steve Shattler** (*FWC*) said that Myakka River State Park is great and offers an amazing landscape. The park also provides wildlife viewing and interpretation opportunities. He suggested improving the discussion concerning monitoring listed species. Citizen science is an opportunity to improve educational opportunities at the park and monitoring of species. He is in support of having fire completed safely as a wildlife management tool. He stated that fire management is the most cost-effective form of habitat management and the large burn units located at Myakka are good. However, he also mentioned that mechanical management methods should be considered when appropriate. Mr. Shattler said that limited timber harvests should be left in the “toolbox” for FPS to utilize for the management of natural communities.

**Jon Robinson** (*Sarasota County*) acknowledged that overall there is a lot to like about the proposed UMP, but there are a lot of inconsistencies throughout the document. Mr. Robinson provided multiple examples of the updates that were needed throughout the UMP. He mentioned that the current and historical staffing levels need to be updated. Visitation trend data is not current. Major projects shown as pending in the proposed UMP have already been completed. The lease for property owned by the Southwest Florida Water Management District (SWFWMD) ends soon and should be referenced. The UMP should also mention potential shared use of



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resources from SWFWMD for better management, as well as the significance of volunteers to the management of the park. Suggested the evaluation of restoration of the Upper Myakka and removal of the weir. Mr. Robinson commented that he did not feel the Resource Management and the Land Use Components worked well together within the UMP. He was in favor of the Visitor Center relocation for potential tram use and asked for consideration of the relocation to the dredge spoil site of the park, following the National Park Service Model. Mr. Robinson was concerned with the consumptive use language and stated that it should be revised to ensure that it is conducted for resource management purposes only. He added that it is not necessary to remove stumps, as vehicles driven in the park create more impacts. Mr. Robinson went throughout the draft UMP and cited several locations where information was dated, incomplete, or inconsistent. He expressed concerns over plans to increase visitation to Upper Myakka Lake. He stated that recreational carrying capacity shown in the UMP is inaccurate and only parking capacity can accurately reflect carrying capacity. He was supportive of the idea of partnering with the local school district to create new interpretive programs and mentioned the need for Americans with Disabilities Act (ADA) facility upgrades. Mr. Robinson mentioned that the optimum boundary does not mention Sheps Island. He commented that the cultural resource data listed in the plan is out of date and the sites cannot be managed with the current staffing levels. He also mentioned that the UMP states the property was acquired in 1936, when it was actually acquired in 1934. He stated that the UMP needs to be updated in order to improve the document. He also commented that discussion about the firelines within the UMP is awkwardly worded. Expansion of firebreaks can reduce hedge effect. Disking lines over and over can increase soil erosion and potentially sedimentation into adjacent water bodies. Language should be improved to explain their need and to consider disking on one side and mowing on the other and then switched.

**John O'Connor** (*Manatee River Soil and Water Conservation District*) was concerned with the visibility and understanding of the maps within the document. Specifically, the vicinity map and reference maps were confusing regarding county lines. He also commented that within the UMP there is no

reference to coordination with Manatee County. Mr. O'Connor commented that one of the cattle vats listed in the cultural resources table was not evaluated for the National Register of Historic Places.

Mr. O'Connor mentioned that the Optimum Boundary map is hard to read and does not identify the target properties by name. He suggested that the report needs a general listing of abbreviations utilized within the UMP, as well as a map of tributaries and other referenced water resources. Mr. O'Connor had questions regarding the status of trees and general hydrology within the park and wanted to see more about what was being done with Tatum Sawgrass Marsh. He commented that there are several reports mentioned within the UMP and wanted to know if copies of these referenced reports could be obtained. He also questioned references within the UMP of runoff from phosphate mining.

**Ken Harrison** (*Local Businessman*) commented how he grew up in the area and is proud of the park, as it provides a glimpse of what the area used to be. He believed that the FPS is doing a good job and the park is well managed. The burn program utilized by the park is great and enough vegetation is generated within two years. Suggested more monies to be spent on fighting invasive species, specifically cogon grass. Mr. Harrison expressed support of efforts to control wild hog population, including the use of helicopters. He indicated that he was in favor of the multiple use designation as stated within the draft UMP as part of the land management "toolbox".

**Becky Hullinger** (*Local Private Property Owner*) commented how she owns property that abuts the state park and the park does an outstanding job communicating when a prescribed burn event is occurring. She mentioned how she loves the wildlife in the area, as many people come to her property for the deer and turkey, but she is concerned with wild hogs. While she is in favor of controlling their population, she expressed concerns over the park's use of helicopters to hunt hogs, especially on the opening day of hunting season. Ms. Hullinger indicated that she could be open to the use of helicopters if they were utilized outside traditional hunting seasons.

**Jono Miller** (*Myakka River Management Coordinating Council*) spoke about his history of involvement with the park, dating back to 1974. He expressed strong opposition to harvesting within the state park. Mr. Miller expressed his concern that he and other individual citizens did not have the opportunity to speak at the public meeting. He indicated that he was going to restrict his comments to the Advisory Group to the directive he received from the Myakka River Management Coordinating Council. He stated that he was concerned over the trust between the Florida Department of Environmental Protection (FDEP) and the public and that the lure of marketable revenue from state parks could skew management decisions. He stated that language concerning secondary uses has created suspicion and these types of activities erode confidence. North Florida slash pines could be removed before they mature. Allowing them to mature is contrary to natural community restoration goals. He mentioned there may be concern about snags and scattered trees within prairie habitat becoming perches for raptors but that any revenue generated from removal of these trees would be minimal. Pine stump removal operations is tremendously impactful, as these stumps are imperative for burrowing animals. The problem is the remnant hard pine creates hazards for vehicles while removing these hazards via chainsaws could minimize the hazard. Mr. Miller remarked that there is no known management proposal that palm frond harvesting would benefit, and therefore, there was no legitimate need to remove fronds from the park. He is concerned that these proposals create a situation where managers are tempted to make decisions based on revenue instead of the best management practice for maintaining the resource. Mr. Miller commented about the visual experience of the recreational kayaker in regard to infrastructure and there should be consideration of the user experience from the water.

**Harold Joslin** (*Friends of Myakka River, Inc.*) stated that he wanted to see the new language concerning consumptive use once it was updated. However, he also stated that consumptive use is not compatible with his organization's goals.

**John McCarthy** (*Historical Society of Sarasota County/Historic Spanish Point*) commented that throughout the UMP there are numerous mentions to eligibility for the

National Register of Historic Places, but there appears to be no plan for submitting an application to the Florida Department of State to get these sites named to the National Register. He would like to see the UMP updated with a plan to have these sites, especially the Civilian Conservation Corps (CCC) sites, added to the National Register. He commented that the park has never had a systematic archaeological/historical society survey completed and would like to see that added to the UMP. Mr. McCarthy suggested that training was needed to help park staff and volunteers identify archaeological sites. He commented that he did not see within the UMP, any references to the African American CCC workers which had been instrumental back in the 1930s. This provides a great interpretive opportunity for the park. He expressed concerns with how the FPS is communicating with and weaving the history into the overall park experience. He expressed concerns with the architectural style of any new buildings to ensure that it is consistent with and does not detract from the historical character of existing facilities. He questioned the location of historical items that have been collected from the park, who is curating them, and according to what procedure. Mr. McCarthy questioned if this curation plan could not be included in the UMP. Remaining turpentine pine trees with cat-faced scars are living history. He commented about increasing historical interpretation opportunities for the general public, especially pre-historic time period. FPS needs to investigate and identify opportunities for partnerships in managing cultural and historic resources. Consider identifying and designating an informal advisory panel to assist with overarching issues (i.e., removal of the weir). He also pointed out ownership inconsistencies within the draft UMP. Mr. McCarthy commented that the park is a world-class resource, but is not being managed in that same manner. He expressed concerns of consumptive uses within the park and potential impacts to historical resources. He mentioned that widening the roadway within the park will not reduce the speed and will not increase public safety. He also expressed opposition to the open house format of the public hearing.

**Laurel Schiller** (*Recreational User Group – Bicyclist*) expressed her passion for recreational bicycling in the park. She commented how she was fearful of the secondary uses for the park and that FPS needed to provide clarification to the public.

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She addressed the lack of mapping within the park and suggested some enhancements to get people out of their cars and onto the trails. She suggested that each trailhead should have a large graphic map and individual paper maps to take out on the trail. Many people come to the park and are afraid to leave the paved road. Need a better mapping system that identifies the level of difficulty for each trail (i.e., family friendly trails). The park also needs to improve maintenance of the existing trails, particularly the more popular ones.

**Dick Pfaff** (*Recreational User Group – Kayaker*) expressed his history of recreational paddling on the Myakka River and commented about how special the Myakka River is for recreational paddling. Exotic species can cause problems on the river and can shut it down for paddling. Mr. Pfaff expressed the need for better education from the concessionaire to individuals regarding the well-being and physical condition or requirements of potential paddlers. He suggested signage and/or charts along the river to provide guidance to safe “pull offs”. Perhaps, the FPS should identify a “stopping off point” where wildlife can be observed and identified. He commented about the need for an ADA-compatible launch near the airboat docks and a better location for the current trash container. Lastly, he suggested increased education and outreach about the river, including education on what to do when encountering alligators.

**Duane Weis** (*Florida Forest Service – Myakka District*) complimented the FPS on the use of fire ecology. Firebreaks are imperative for the execution of the fire program. Mr. Weis supported the intent for the inclusion of consumptive uses, particularly timbering, but supported the FPS updating the language within the UMP to provide clarification. He remarked that the park should not select only one management option given that it may result in revenue, but instead identify and implement the method that best meets the overall natural resource management goal.

It was stated that all public comments received as part of the public hearing and advisory group meeting will be placed on FDEP’s website, as will the advisory group summary report.

### Summary of Public Comments

**Steven Schaefer** (*Concerned Citizen*) volunteers at the park to kill melaleuca and expressed concerns over consumptive use. He stated that the park is a single-use site. Multiple use sites are treated differently than single use properties, and single use properties do not need to address secondary uses. Mr. Schaefer stated that the consumptive use discussion should be addressed and asked if the updated UMP language regarding consumptive use would be made available to the public prior to submittal of the UMP to the Acquisition and Restoration Council. Ms. Murray responded that the update to the draft UMP will be published on FDEP’s website.

**Adam Wiegand** (*Florida Trail Association*) commented that the park should be a single use property and natural areas around the trails should be maintained.

**Mike Cosentino** (*Concerned citizen*) commented that the meeting format for the public hearing held the previous evening night was a disgrace and was designed to squelch public input. He expressed concern with the process and suggested that the FPS was only concerned with revenue generating potential and not the management of the natural resources. He also commented that there are errors within the Draft UMP that should be addressed. He read a passage from Ken Burn’s book “The National Parks: America’s Best Idea”, adding that we in regard to our parks, we should “take nothing but pictures and leave nothing but footprints”. Ernie Winn (*Concerned Citizen*) expressed concerns with the designated Wilderness Area within the park and placing an ecolodge within it, adding that action would not be appropriate. He stated his concerns on conducting eco-tours and the impact of the carrying capacity of the park within the Wilderness Area. Mr. Winn also stated that he felt there are currently enough vendors within the park.

In response to Mr. Winn’s concerns, Ms. Murray discussed Ranger-led hikes and taking advantage of existing resources. She acknowledged the special designation for the Wilderness Area, which limits the carrying capacity of this area and stated that the FPS would continue to limit capacity in this area of the park.



**Paula Benshoff** (*Concerned Citizen*) expressed concerns that contractors, not park staff, are making decisions in regard to prescribed burns, invasive species, etc. According to Ms. Benshoff, park staff does not write or review prescriptions. Removal of invasive cogon grass at the park requires local park management input and not just contractors and park management needs to have control over their contractors. She commented that Sheps Island is not on the acquisition list and should be included. She also stated that the last hydrological study was completed in the early 1980s and needs to be updated.

**Rob Wright** (*Sarasota Audubon/Concerned Citizen*) stated that he agreed with a lot of what had been suggested during the advisory group meeting. He supported efforts to maintain the area as “Wild and Scenic” and felt that should be the main priority. He expressed concerns to hear that wildlife habitat is being removed to increase parking and suggested consideration of options for temporary parking to save long-term impacts to wildlife. He expressed support for moving the Visitor Center and making it more educational. However, focus of the park should be on wildlife and not making it easier for people who come to the park.

**Becky Ayech** (*Environmental Confederation of Southwest Florida*) stated that she agreed with the comments expressed by advisory group member, Jon Robinson of Sarasota County. After providing some history of Old Myakka and the establishment of the park, she stated her concerns over providing a conference center and its light pollution. She also expressed her opinions regarding the open house format of the previous night’s public hearing, stating that it did not provide good communication. She expressed that the proposed expansion of Clay Gully was ridiculous. She also expressed concerns with potential noise impacts to adjoining neighborhoods from timbering and stump removal operations. She stated that she does not want to dodge cars and buses, and supports less traffic and development. She is concerned with traffic impacts in adjacent neighborhoods if vehicular traffic increases and is opposed to the idea of utilizing a tram system for park visitors. Ms. Ayech also expressed concerns with utilizing helicopters for hog removal and the impact the noise will have on nearby sheep and horses. She added that the park is significantly understaffed and

needs additional staff to handle the additional responsibilities. As a person who lives near the park, she stated that she does not want to live next door to Disney World and asked that the FPS not place more development in the floodplain.

**Tamara Williams** (*Concerned Citizen*) expressed concerns that the UMP is this far along in the process and the advisory group is just now providing feedback. She commented on how it is our responsibility to preserve the eco-system and cultural resources within the park for future generations. Ms. Williams also stated that she would like to see public involvement earlier in the planning process.

**Terri Lewis** (*Myakka Wildlife Tours*) commented on the removal of headwaters which would lead to Myakka Lake drying up. She commented on the benefit the tours could provide by affording the public an opportunity to learn about the natural resources. Myakka Lake is getting shallow and filling up with silt. She commented on hydrological concerns of Myakka Lake (silt, removal of the weir). Ms. Lewis expressed concerns that “Tallahassee” is making decisions for the park and they are not good decisions.

**Mark Finehout** (*Concerned Citizen*) provided some comments concerning the history of the area and his involvement with Myakka. Mr. Finehout stated that the CCC placed the weir for recreational benefits. Clay Gully was built by original settlers to drain fields for cows. He also praised the FPS for their management of the natural resources of the park and expressed support for efforts to increase and enhance visitation in the park. Mr. Finehout also expressed support for improvements to trails within the park.

**Frank Levey** (*Concerned Citizen*) explained that he moved to the area in 1974. He stated that fire is an essential part of the ecology of the area and was supportive of public educational efforts about the benefits of prescribed burnings. Mr. Levey suggested a boating safety course for those who rent boats on the lake. He also discussed the benefits of placement of the Visitor Center off site on newly acquired land and visitors taking a tram to the park to minimize parking impacts.

After public comments, there was discussion about next steps in the planning process, specifically concerning updates to the UMP and distribution of the advisory group

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summary report. Ms. Murray said the summary report from the advisory group meeting could be available in a couple of weeks and DRP staff will be able identify sections of the UMP which will be updated based on comments from the public and the advisory group. The current schedule has the UMP going before the Acquisition and Restoration Council in Tallahassee in October 2017 and there is public comment at that meeting. However, the updated UMP will be submitted and available online three months prior to the October 2017 meeting. Ms. Murray stated that she appreciated everyone's comments and that public input is a hallmark of the planning process utilized by DRP. Updates and information concerning the revised UMP will be available on FDEP's website so everyone can follow the scheduled timeline.

### **Summary of Advisory Group Written Comments**

**Bill Lewis** (*Manatee-Sarasota Sierra Club*) submitted written comments that further detailed the comments he made during the advisory group meeting (see attached). Jono Miller (*Myakka River Management Coordinating Council*) asked that the official motion of the Myakka River Management Coordinating Council concerning Myakka River State Park draft unit management plan be included with the advisory group staff report (see attached).

**Jon Robinson** (*Sarasota County*) submitted a written version that further detailed the comments he made during the advisory group meeting (see attached).

**Mike Wisenbaker** (*Florida Department of State – DHR*) provided email comments on February 24, 2017 (see attached). Mr. Wisenbaker commended the FPS for meeting several of its cultural resource goals from the previous plan. He also pointed out discrepancies in the number of archaeological and historic sites within the state park based on their records. Mr. Wisenbaker concurred with FPS efforts to record all buildings within the park that are now considered historic and encouraged the park staff to monitor all archaeological sites as frequently as possible, preferably annually. Lastly, Mr. Wisenbaker encouraged the FPS to pursue interpretation of historic resources within the park, especially those sites connected with the CCC and/or the Works Progress Administration.

### **Staff Recommendations**

The staff recommends approval of the proposed management plans for Myakka River State Park as presented, with the following significant changes:

- Dated, incomplete, and inconsistent information in the plan will be updated and revised.
- Plan language will be clarified to describe the Florida statute requirement that single-use designated state parks over 1,000 acres consider secondary management purposes that could support resource management objectives.
- The reference to fuel and stump harvesting and palm or palmetto frond harvesting as secondary management purposes or as potential sources of revenue will be removed from the plan.
- Florida Park Service policy regarding the use of helicopter hunting to remove feral hogs will be clarified.
- Sheps Island will be included on the Optimum Boundary Map.
- Management plan maps will be revised to clarify county boundaries and add significant tributaries.
- Cultural resource information will be updated and made consistent with information in the Florida Master Site File.
- Language will be added to address the potential listing of the park's cultural resources on the National Register of Historic Places.
- Land-use proposals for an ecolodge/meeting facility and the relocation of the current visitor center will be re-evaluated. All land use concepts will be further evaluated through a public visioning workshop to be scheduled in the Spring of 2018.
- The addition of an improved trailhead and trail wayfinding information will be provided in the plan.
- Paddling facility improvements such as an accessible launch at the Upper Myakka Lake Day Use Area and pull-offs with wayfinding information along the Myakka River will be added to the plan.
- The fishing platform proposed for the Clay Gulley Picnic Area will be removed from the plan.

The following pages show the written advisory group and public comments received during the two-week review period.

# Appendix 2

## Advisory Group Written Comments

To whom it may Concern:

Thank you for the opportunity to serve on the Advisory Board. Please find below my summarized comments regarding the Draft Myakka River Unit Management Plan.

### General Comments:

- It would be helpful to best understand the plan if more historical information could be included. Some helpful topics would be information on current and historical staffing, visitation trends, budget and revenue trends, etc. This is particularly necessary in regards the park's Carrying Capacity. The Florida Park Service states "Carrying Capacities are established for each park unit within the park's unit management plan. The purpose of carrying capacities is to determine the number of people an individual park or facility can accommodate at any given time **to preclude the degradation to resources, facilities or visitor experience.**" The challenge is that, in most cases, the Florida Park Service does not enforce their carrying capacities. To my knowledge, only the parks with very specific parking requirements, primarily beach parks, actively enforce the carrying capacity. Based on the attendance data collected, it should be fairly easy to determine how many days, in any given period, Myakka exceeded their carrying capacity. If this is benchmarked with real time observations of park conditions, a determination could be made as to the degradation to resources, facilities or visitor experiences. A more appropriate way to increase visitation for this very popular park would be to concentrate on building visitation during the shoulder seasons.
- When reading the document the Land Use Component and the Resource Management Component seem to have two different authors and do not work well together. For example, if all topics in the Resource Management Component are achieved, the Upper Myakka Lake Day Use Area may no longer be the "hub" of the park.
- Most information is at least 2 years old and in many cases inconsistently stated throughout the plan.
- The Plan would benefit from more openly addressing Accessibility, both in regards to facilities and programming.
- The plan fails to address the lease between FDEP and SWFWMD regarding the Myakka Prairie. To the best of my recollection, this lease expires in 2017. Prior to extending the lease, FDEP should get a commitment for assistance with management costs of this parcel.
- I don't believe the plan goes into enough detail regarding hydrological restoration. Without this information the remainder of the plan cannot be fully considered.
- The Sarasota County Comprehensive plan was updated in 2016. Any references should be to the current plan.
- Although mentioned briefly in the plan, the aging park infrastructure is not equipped to keep up with the growing popularity. The park's water and wastewater treatment plants are currently operating at maximum capacity. Numerous changes have been implemented to stretch their capacity, but any additional development needs to start with this critical infrastructure.



### Conceptual Thoughts:

- Language regarding “compatible secondary management purposes” needs to be cleaned up. Although it was mentioned in the Public Meeting and the Advisory Group Meeting that it was not the intent to complete these activities as revenue generation activities. The plan language is confusing. It should be clear these uses would be strictly for approved resource management projects, any revenue received would be of secondary benefit.
- Thoughts regarding the relocation of the Nature Center to the Upper Myakka Lake Day Use Area may make conceptual sense, but due to flooding issues, construction costs, overcrowding, and potential changes in use patterns this does not make practical sense. In fact a DEP representative stated “we would not normally build a park in a floodplain.” I agree with the statement and would also say we should not invest in a major capital addition in a floodplain. Another option would be to follow the National Park Service model. Placing Visitor Centers outside of the entrance, allowing potential visitors to find out about the park prior to entering. There is potential to relocate the Visitor Center to a location on State Road 72. Two possible locations include the already disturbed area just west of Vanderipe Slough (known as the dump) or the area of fragmented habitat just west of Myakka Valley Trail.
- I applaud the idea of a tram, but based on societal norms, it will not be utilized unless it is mandatory. If the appropriate location, along SR 72, is utilized, a mandatory tram for day-use visitors could go a long way towards helping with congestion challenges.

### Specific Comments:

- Page 9 Management Coordination. SWFWMD does NOT control aquatic invasive exotics on the Myakka Prairie.
- Page 79, third paragraph. The elevation of the CCC cabins was completed in late 2015/early 2016. This information is out of date.
- Page 88, fourth paragraph. Old data, not consistent with 2010 FNAI, not consistent with information on page 91.
- Page 104, third paragraph. Only a small portion of the Pineland Reserve is open to the public. The Crowley Museum and Nature Center is privately owned.
- Page 106, second paragraph. The development spreading towards the park will have significant impacts on resource management techniques. **It is imperative park and district staff be involved in reviews and making sure appropriate “Notice of Proximity” is provided to future land owners.**
- Page 108, Natural Features. A recent study of Deep Hole by Sarasota County and Mote showed a depth of 140 feet, page 14 indicates 130 feet deep. Please maintain consistency.
- Page 113, Current Recreational Use and Visitor Programs. Please update this section. Information is several years out of date.
- Page 115, South Picnic Area. Recreation Facilities is inconsistent. In some places it mentions Sewage Treatment Plants and Lift Stations and in other places fails to mention them.

- Pages 121, Potential Uses are inconsistent. One says maintain current recreational carrying capacity. The very next one says increase by 660 per day. This is inconsistent with page 128, table 6 showing proposed additional capacity of 360 and also with Table 7, Sheet 4 of 5. Where it shows an increase of 260.
- PAGE 122, Develop 5 new interpretive, educational and recreational programs. Excellent section. All good ideas.
- Page 124, Big Flats Campground. If significant work is planned, the campground should be master planned. If a new bathhouse is planned, it should be centrally located. This would allow for an additional campsite or two. Also the sewage treatment plant should be better buffered for sight and noise. Planting vegetative buffers has been attempted many times. Due to flooding and heavy usage the plantings have never flourished.
- Page 124, Myakka River Bridge. Striping will not help. All other options are good suggestions.
- Page 124, South Entrance Area. Please see General Comments above.
- Page 125, Boating Access Areas. Strongly recommend creating an accessible paddling launch both on the Upper Myakka Lake and along the Myakka River.
- Page 125 Residence Areas and Volunteer Campsites should have locations identified. Mentioning in such a general format does not build confidence that this is a priority.
- PAGE 125, Lodging and Conference Center. Has there been any research to determine if this is a needed facility? I spoke to Visit Sarasota, the local experts in this regard, and they were unfamiliar with the need. Also, what impacts would this have on the existing uses of the STOP Camp? Current uses for training center, volunteer sites, Americorps and researcher housing have added to the success of the park. Losing these options, without adequate replacement would be detrimental.
- Page 129, Optimum Boundary. Shep's Island is not identified in this section. It is probably one of the most important properties to acquire/protect to maintain the character of the Park. A significant portion, 160 acres, of the former Down's Parcel, now the ObarO Ranch is currently protected through a conservation easement with Sarasota County.
- Page 133 Management Progress. I question the data. The time frame is not specific and most date is from 2015 and earlier. This should be verified for accuracy.
- Page 134 Cultural Resources section is outdated.
- Page 135, first sentence of the last paragraph. I question the statement that many of the actions of the plan can be completed using "existing staff." As fantastic as the staff is at "doing more with less" they are at their limits on what they can accomplish. Also I believe staffing has been reduced since the statement was written.
- Table 7 indicates all projected costs are in 2015 dollars. This should be updated. Costs are rapidly increasing, why start with two year old data.
- Table 7, Goal II, Objective A, Action 2. Somewhere in the plan it should acknowledge the conflict between natural resource management and cultural resource management. The weir at the Upper Myakka Lake is a cultural resource. Which is going to take precedence? Also, there may be a conflict between restoring historical sheet flow and historical recreational use. Which is going to take precedence? The plan should address these topics.

- Table 7, sheet 3 of 5, Goal V Objective A is not aggressive enough or may need clarification. Is there any language indicating the current level of infestation?

Sincerely:



Jon M. Robinson, Natural Area Parks, Preserve, and Trails Division Manager

Sarasota County Parks, Recreation and Natural Resources



**From:** Barber, Alicia W  
**Sent:** Friday, February 24, 2017 2:28 PM  
**To:** Vaughn, Greg A  
**Subject:** FW: Myakka River State Park - Advisory Group  
**Attachments:** MRSPArc.xlsx; MYRSPHS.xlsx

See below.

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**From:** Wisenbaker, Mike [<mailto:Mike.Wisenbaker@DOS.MyFlorida.com>]  
**Sent:** Friday, February 24, 2017 2:15 PM  
**To:** Barber, Alicia W <[Alicia.Barber@atkinsglobal.com](mailto:Alicia.Barber@atkinsglobal.com)>  
**Cc:** Duggins, Julia <[Julia.Duggins@DOS.MyFlorida.com](mailto:Julia.Duggins@DOS.MyFlorida.com)>; O'Donoughue, Jason M. <[Jason.ODonoughue@dos.myflorida.com](mailto:Jason.ODonoughue@dos.myflorida.com)>; McFadden, Paulette S. <[Paulette.McFadden@dos.myflorida.com](mailto:Paulette.McFadden@dos.myflorida.com)>  
**Subject:** RE: Myakka River State Park - Advisory Group

Good afternoon, Alicia

First, we commend the Florida Park Service for inviting us to participate as an advisory group member for preparing the draft management plan for Myakka River State Park. As usual, the Florida Park Service has done a good job in preparing this document and appear to have a very good handle on the archaeological and historical resources found within the park boundaries. They also did well in preparing their narrative in which they describe and explain these resources. Our comments and suggestions on this plan are as follows:

- 1) On page 68, the plan states 16 archaeological sites exist there whereas our recent GIS analysis of the park reveals 17, according to the Florida Master Site File, archaeological sites as being partially or wholly within Myakka River State Park. In this vein, we also are showing 26 recorded historic structures as being located within the park. Please see the two attached spread sheets that were derived by searching the FMSF.
- 2) With regard to mentioning the potential National Register nomination on page 73, the Public Lands Archaeology program in the DHR is currently working to assist the Florida Park Service in nominating the CCC/WPA structures into the National Register of Historic Places. Also, the plan mentions here that there are 19 recorded historic resources within the park whereas our analysis revealed that there are currently 26 of these historic resources within the park. Please see above comment and spread sheet.
- 3) Regarding Table IV, the plan shows 16 archaeological sites whereas we are showing 17 based on our GIS analyses. Beyond that, for some reason we are not showing MA1433 as being within the park. Conversely, this table does not show either MA1466 (Mossy Silo Bases) or SO611 (Lincer 2) as being in the park but our data indicate that they are. There are similar discrepancies in Table IV regarding historic structures: the table shows that SO2282, SO6141, SO6144, SO6145, SO6146 and SO6607 are within the park but they do not show up in our GIS data analysis of the park. On the other hand, our analysis shows the following sites: SO6986, SO6988, SO6989, SO6990, SO6992 and SO7028 as being with the park but they do not appear in Table IV. Again, we here at PLA in DHR are not sure why these differences of inventory exist. For that reason, we suggest that the Florida Park Service work directly with our Florida Master Site File to fix, or at least provide a good explanation, as to with these apparent discrepancies are occurring.
- 4) On page 98, we strongly concur that FPS should follow up with recording (in the FMSF) all buildings in the park that are now considered historic.

- 5) As for monitoring archaeological sites (page 99), we recommend that the park monitor all its archaeological sites as frequently as possible—preferably monitor all of them at least annually.
- 6) We encourage the Florida Park Service to pursue interpretation of historical resources (page 122) at Myakka River State Park—especially those sites and features associated with the Civil Conservation Corps and/or the Works Progress Administration.
- 7) We are pleased to see that the park has made considerable progress in meeting several of its cultural resource goals at MRSP.

Please let us know if you have any questions or concerns regarding our comments.

Regards,

Mike Wisenbaker  
Public Lands Archaeology  
Division of Historical Resources

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**From:** Barber, Alicia W [<mailto:Alicia.Barber@atkinsglobal.com>]  
**Sent:** Thursday, February 16, 2017 9:39 AM  
**To:** Wisenbaker, Mike; Wisenbaker, Mike  
**Subject:** Myakka River State Park - Advisory Group

The Florida Park Service has compiled an advisory group as part of the update to the management plan for the Myakka River State Park. Per our phone conversation, you have been designated to serve as a representative of your organization or agency.

Management plan advisory groups for Florida State Parks are composed of elected officials, staff from other land management agencies, managers of state parks, representatives of environmental groups, park volunteers, adjacent land owners, and representatives of recreational user groups. We find a focus group review of our plans to be very beneficial to both our long-term visioning process and short-term planning for state parks.

The advisory group for the Myakka River State Park will meet only one time, for about three hours, on **Friday, March 3, 2017, at 9:00 AM (EST) at the Myakka River State Park Training Room located at 13208 State Road 72, Sarasota, Florida 34241.** The meeting agenda and a digital copy of the draft management plan (hard copy may be provided upon request) are attached for your review prior to the meeting. An official appointment letter will also be sent via U.S. Postal Service.

Staff of the Division of Recreation and Parks will answer questions and discuss the plan at the meeting. The advisory group will be asked to participate by providing comments and contributing their knowledge of the park and surrounding environment. After the meeting, each member will receive a report summarizing the group's comments and the Division's staff recommendation on any proposed changes to the draft management plan. Any additional comments by advisory group members would need to be provided in writing. This is the extent of the obligation for appointed advisory group members.

Please let me know if you or an alternate are unable to participate. If no member of your organization or agency is able to attend, we can certainly gather input via phone, email, or conventional mail. Your review of the plan will be much appreciated.



**William Lewis, Representative**  
**Manatee-Sarasota Sierra Club**  
P.O. Box 3485  
Sarasota FL 34236

### **Myakka River State Park Updated Management Plan**

To: Office of Park Planning  
Florida Department of Environmental Protection  
Division of Recreation and Parks  
3900 Commonwealth Boulevard, MS 525  
Tallahassee, FL 32399-3000  
[FL\\_StateParkPlanning@dep.state.fl.us](mailto:FL_StateParkPlanning@dep.state.fl.us)

March 10, 2017

Myakka River State Park is a unique resource that was set aside to meet a critical purpose as stated on page 1 of the Plan: "The purpose of Myakka River State Park is to preserve the natural beauty, wildlife, and historical features of the property, to serve as an important link in the chain of protected lands in the southern portion of the state, and to provide outstanding outdoor recreation and natural resource interpretation for the benefit of the people of Florida." Within the plan there are many elements that work towards this goal. However, there are some areas of serious concern that you will be able to address in your revisions.

Some of the most important elements include the ongoing restoration of the prairie habitat, emphasizing a wilderness experience for recreational users, improved visitor center, use of a tram to alleviate traffic congestion and other visitor items. Modifications to these items include:

- 1) For restoration fire is the most critical element. The fire frequencies should mimic what Florida Natural Areas Inventory (FNAI) recommends which are different from what is written in the plan.
- 2) The language on firelanes should not be a road with a plowed area on both sides. That is much too wide for the height of the vegetation, disrupts the visitor experience, inhibits small bird and mammal movement and opens up areas to greater infestation of invasive and alien plant species.
- 3) Carefully work to protect the experience for users by limiting viewshed obstructions from the trails and river. Language needs to be inserted to define and require this. This would include moving the dumpster away from the edge of the upper lake.
- 4) As mentioned in the last update of the management plan a continuously running tram during peak visitation months would alleviate traffic and minimize infrastructure costs for parking and vehicles. This would need to be linked to the new interpretive center – see next point.
- 5) All new infrastructure should avoid native habitats. The native habitats are the reason visitors come to the park, not to see parking areas and buildings.
- 6) A new interpretive center should be at the entrance to the park where visitors would be oriented as they begin their experience. The areas around the entrance station have significant parking areas and other impacted zones which could be effectively used for this. From this location a tram could take visitors along the park drive with stops at key visitor points. The proposal to build a new interpretive center at the lakeside is not appropriate. The area floods frequently, native hammock would be adversely impacted or destroyed, and most visitors would have already stopped several times before ever being oriented to the park.



## Appendix 2—Advisory Group Report

- 7) Recreational uses did not fully recognize the Myakka Island Trail which crosses the entire park and the adjacent T. Mabry Carlton Preserve. This trail has been identified as a possible link that could extend to the Peace River.
- 8) At this time the projected population of Florida and increased tourism will bring significant increases in visitors over the next decade. Therefore, there does not need to be anything done to 'market' the park to entice more visitors.

There are other areas that are serious problems. These include:

- 1) On page 7 of the draft plan it states: "For this park it was determined that timber harvesting, fuel and stump harvesting, and palm or palmetto frond harvesting could be accommodated." These are not compatible with protection of the natural resources and recreation as stated in the purpose of the park. This language should either be deleted in its entirety or re-phrased to state that these uses have been evaluated and could not be accommodated without damaging the natural resources and visitor experience.
- 2) There is a proposal to build a conference center/lodge in the designated wilderness area. To put this in the wilderness area is absolutely not appropriate. In addition, this is an expensive and risky business proposal. Many conference centers and lodges struggle financially. If this were a feasible profit generating opportunity, a private vendor could acquire land adjacent to the park and work with the park for reasonable visitor access. This would avoid the millions of dollars needed to build such a facility and eliminate the ongoing operating costs. Once built the park would have to maintain the facility regardless of whether it made a profit or not.
- 3) The plan would allow up to 6% of the habitat to be overrun with invasive alien species. This would be over 2,000 acres and effectively prevents these species from being controlled or eradicated. These invasives damage habitat, crowd out native species and disrupt wildlife. The percentage needs to be much lower with a very aggressive goal.
- 4) Due to the hydrology of the lower lake and the Myakka River, Vanderipe Slough and Sheps Island should be included as part of the optimum boundary. Currently the park only owns half of Sheps Island.
- 5) On the maps that show adjacent lands several significant parcels are omitted. The map should include Myakka Conservancy property which borders the park and has significant river frontage and Tatum Sawgrass which is a conservation easement just north of the park.
- 6) The use of contractors and vendors are important relationships for the park. However, there is often a challenge for staff to manage and adjust the role or actions of a contractor. Strong language giving staff this responsibility would be important to include.
- 7) Finally, much of the historical data in the plan is not consistent or accurate. In addition, the management guidelines for natural habitats should mimic FNAI guidelines. This document will guide the park management until at least the next plan is finalized which could be up to 20 years. The accuracy is vital to a usable and effect plan.

We appreciate the opportunity to provide input into the planning process. If you need further clarification or have any questions on these items, please do not hesitate to contact me. Otherwise, we look forward to seeing these revisions in the next draft.

Sincerely,  
William Lewis  
Representative  
Manatee Sarasota Sierra Club  
(941)355-2156  
Billewis78@gmail.com

**Myakka River Management Coordinating Council  
SWFWMD Sarasota Service Office  
6750 Fruitville Road  
Sarasota, FL 34240  
February 24, 2017  
9:30 A. M. – 12:30 P.M.**

### MINUTES

The meeting began at 9:30 A. M. with Jono Miller presiding. This meeting was advertised in the Herald Tribune on Friday, February 10, 2017.

### MEMBERS IN ATTENDANCE

|                                           |                                 |
|-------------------------------------------|---------------------------------|
| Jono Miller – Sierra Club                 | Corky Pezzati – SC LWV          |
| Mike Chouinard – Homeowner                | Marlene Guffey - Homeowner      |
| Tara Poulton – SWFWMD                     | Rob Wright- Sarasota Audubon    |
| Gillian Carney – City of Venice           | Howard Berna - SCNR             |
| Allain Hale – ECOSWF                      | Steve Giguere- FDEP/FPS         |
| Elizabeth Wong – City of North Port       | Glenn Compton – ManaSota-88     |
| Heather Young – TBRPC                     | Greg Blanchard – Manatee County |
| Bill Byle – Charlotte County              | Lee Amos – CFGC                 |
| Jennifer Hecker – CHNEP                   | Eric Strickland - FFS           |
| Tim Walker-SW Regional Planning Council   | Bob Clark – Venice Area Audubon |
| Steven Schaefer – Friends of Myakka River | Juliette Jones – Friends of WMS |

### INTERESTED PARTIES

|                                              |                                 |
|----------------------------------------------|---------------------------------|
| Chris Oliver – FDEP/FPS                      | Nadine Hallenbeck – FDEP/FPS    |
| Chris Becker – FDEP/FPS                      | Diana Donaghy – Sarasota County |
| Jean Blackburn - citizen                     | Becki Babb - citizen            |
| Lisann Morris - SWFWMD                       | Donald Ellis – SWFWMD           |
| Jon Meyer – FDEP/FPS/Myakka River State Park |                                 |

- **Call to Order was made.**
- **Approval of the Meeting Minutes from December 2, 2016 Council Meeting.**  
Glenn Compton moved adoption of the Minutes. Steve Schaefer seconded. The Minutes were adopted.

### OLD BUSINESS:

Jono updated everyone on the letter he sent to the Sarasota County Commission. He met with all five commissioners. He has two copies of the letter available to read.

Chris Oliver gave an update on the pilot rowing program at Senator Bob Johnson's Landing. Shawn Yeager advised Chris that Sarasota County has not submitted an application for a permit

for this activity to the (FDEP) South District Regulatory Office yet. They are still considering their options and reviewing options for rowing activities for that area.

### **NEW BUSINESS:**

The new members introduced themselves. Rob Wright is the conservation chair with Sarasota Audubon Society. They are becoming more active in environmental issues within Sarasota, Manatee and Charlotte Counties.

Bob Clark is the representative for the Venice Area Audubon Society. They cover North Port up through Nokomis. They are trying to get representation in the North Port area.

Lee Amos is with the Conservation Foundation of the Gulf Coast. They are a private, not for profit land conservancy based in Osprey. One of their focus areas is the Myakka River watershed. Their goal is to protect another 10,000 acres on the Myakka in the next 5 years. Triangle Ranch was completed in 2016 and Orange Hammock Ranch should be completed in 2017.

Juliette Jones is one of the directors of the Friends of Warm Mineral Springs. Their mission is to preserve, protect and educate people about Warm Mineral Springs as well as other springs in Florida. They are members of the Florida Springs Institute, which is an educational organization run by scientists, environmentalists and educators from the University of Florida.

Chris added that Dixie Resnick will represent Crowley Museum and Nature Center.

### **Updates:**

#### **Howard Berna-Sarasota County Update:**

Howard had nothing new to report.

Jono asked if he knew what the status of acquiring the oyster bar.

Howard does not have any new information on that.

#### **Greg Blanchard-Manatee County Update:**

The board approved the rezone of the Master Mine Plan for the Wingate Mine expansion. The county is waiting for the operating permit before moving forward. This should occur within a year.

Jono asked when the money from Mosaic was going to be given to acquire land along the Myakka River

Greg stated that he was not sure.

#### **Bill Byle-Charlotte County Community Development Update:**

Charlotte County is considered one of the fastest growing areas. There is a lot of new development happening on the West side of the Myakka River below the 776 bridge. This area



is called South Gulf Cove. It has canals with locks and is monitored very carefully, even though, the county did not choose to be part of the (Wild and Scenic River) program. As this area grows, they are expecting more interest in removing the locks. He suggested the Council keep an eye on this issue.

Glen Compton asked what Charlotte County's take on Mosaic was.

Bill replied that at one time the county may have made comments on Mosaic's purposed activities but they met with the county commission and came up with an agreement where the county would stop criticizing phosphate mining.

Discussion continued about mining in the watershed.

**Elizabeth Wong-City of North Port Update:**

They are working with USGS to install a gage to measure the flow at Warm Mineral Springs. SWFWMD is funding half of it. They are going to constantly monitor the flow and see how it is changing over time.

Juliette asked if the gage is measuring total content.

Elizabeth replied it is measuring flow in terms of CFS (cubic feet per second) from the whole spring.

Jono asked if it will measure temperature or water quality.

Elizabeth stated that it will measure temperature and conductivity. She discussed that the septic system has been abandoned and the site is connected to the central sewer now. Low impact development is very important to North Port. A new garden with native Florida vegetation and new playground with all pervious material, including the connecting sidewalks is being put in. A new walking trail, in pervious concrete, at Pine Park is being put in. An old nature trail along the Myakkahatchee Creek on the East side is being restored.

Bob asked about connecting Center Road in Venice and Price Boulevard in North Port.

Elizabeth replied it is not in the city's 5-year plan but they are trying to widen Price Boulevard.

Bill asked if there are any water quality studies being done at WMS. His concern was with the radioactive materials in the first 100 feet of the land due to the geothermals coming up through the layers.

Elizabeth replied that she is not sure. The Department of Health monitors the water quality of the springs but she does not know if they monitor the radioactivity as well.

**Gillian Carney-City of Venice Update:**

The total of 1377 units were approved for the Venice Golf and River Club (VGRC) and the last 12 units are currently under way. They expect to be completed by the end of 2017. The Woods property has been rezoned as PUD, nothing has been submitted yet for preliminary plan review.

Marlene raised a concern about draining 1300 homes into the Myakka River.

Chris clarified by adding that the VGRC drains into a stormwater system, which is a group of connected vegetative lakes for treatment.

Marlene was concerned that the Council is not being heard about impacts on the river and asked about the developments that are being purposed for Border Road near Jacaranda Boulevard area (the Neal Communities parcels).

Elizabeth explained that with a stormwater pond, nothing goes directly into the river. The ponds store the water so the pollutants can settle to the bottom.

Marlene questioned what will be done when the river comes up and floods the ponds.

Jono noted that he does not agree with the assessment but the designers of the purposed stormwater system would say that area is slow to flood, explaining that it takes days for water to come down from Tatum Sawgrass and the Myakka Lakes, so by the time that area does receive these flood waters, the stormwater ponds will be low enough to accommodate the extra water.

Discussion continued on regulation on flooding, nutrient pollution, and stormwater BMPs; as well as, ways to change policies and rules at the local and state levels.

Glen asked about the City's comprehensive plan update. He also asked about any changes to existing protections noting that he heard some were being deleted and combined.

Gillian stated she is not involved in that process and does not have any information on that. She offered to email Chris so it could be distributed to the members so they may comment.

Glen requested that the City of Venice Comprehensive Plan be placed on the next agenda so the Council can receive an update.

Jono encouraged members to draft a document with any concerns they have and, at future meetings, it can be voted on.

Allain suggested that the Council contact Neal (Communities) and SWFWMD and ask them to come to the next meeting as a starting point.

Gillian advised that the planning commission is meeting on March 7, 2017 at 1:30 p.m. and there are workshops planned for March 13<sup>th</sup> and 16<sup>th</sup> and a public hearing on April 12<sup>th</sup>. (**Editor's note:** the March 16<sup>th</sup> workshop was changed to 22<sup>nd</sup> after the meeting. Current information may be found on City's website at:

[http://venicegov.com/Municipal\\_links/Plann\\_zoning/CompPlanUpdate.asp](http://venicegov.com/Municipal_links/Plann_zoning/CompPlanUpdate.asp).)

### **Jennifer Hecker-Charlotte Harbor National Estuary Program (CHNEP) Update:**

The CHNEP has a brand-new website and Facebook page. They will be sponsoring a biodiversity conference at the Florida Gulf Coast University on March 7-9. The Charlotte Harbor Watershed Summit is 3/28-3/30. This is where scientific experts throughout the region are brought together to present the latest scientific information on water resources and aquatic life. The event is free but you have to pay for lunch. They are planning a sea level rise workshop for local governments in June 2017. The CHNEP from Venice to Bonita Springs to Winter Haven was designated in 1995 and, as a result, over half a million dollars was received every year for scientific research and restoration projects. If future funding is cut for this program it would be a great loss to the community.

### **Tara Poulton-SWFWMD (WMD) Update:**

The WMD is working closely with Sarasota County on the Dona Bay project and staff could come in a future meeting from SWFWMD to discuss the project in detail.

### **Eric Strickland-Florida Forest Service:**

Tom Mallet is now with Sarasota County. His position is currently open but they are actively looking for someone to fill it. The state forest had 10,430 day-use visitors since November 2016. There have been 1,394 overnight primitive campers. They have had 1,001 acres of prescribed burns. The hog removal program has had 31 hogs removed, 26.4 acres of cogon grass, 184 acres of melaleuca and 1.2 acres of rosary peas have been treated.

Allain asked about the restoration of long leaf pine habitats.

Eric replied that the Long Leaf Alliance has been an asset in getting that ecosystem improved.

Bill asked if there have been any panthers or red-cockaded woodpeckers in the forest.

Eric replied that he has not seen any of either and added that he does not anticipate seeing any red-cockaded woodpeckers because they need large pines which the state forest does not have.

### **Chris Oliver-Myakka Wild & Scenic River (MWSR) Update:**

The MWSR Program continues to work with the South District Regulatory Office on existing applications and permits with compliance issues. The program recently submitted a Cooperative Funding application to the WMD to study the Upper Myakka Lake bypass and weir area. The bypass culvert area was blown out from rains in May of 2016. The application has been withdrawn, but they are looking with the WMD and FWC about other possibilities to fund a feasibility study. Water conditions remain low, since November 2016 the range has been between 2 feet and 1.75 feet. This is good for the wildlife. On February 21, 2017, state park staff burned the Big Flats Marsh area. The burn was 227 acres and there were 1,800 visitors that day. The closure period on the Myakka Rookery/Critical Wildlife Area has been moved recently from March 1<sup>st</sup> to January 1<sup>st</sup>. On January 19, 2017, there were already 134 birds including 111 wood storks. They were already preparing nest and mating. In February, there were approximately 80 nests.



Glen asked with the increase in coyotes is there a decline in feral hogs.

Steve Giguere replied that the state park continues to actively trap and remove hogs. They are not seeing as much hog sign as they have historically. A combination of resource management activities, outside predators, and poor food conditions due to long flood periods in previous years may be suppressing feral hog populations.

Lee mentioned there was some illegal vegetation cutting at the Tarpon Point Landing area and wondered if Chris had seen anything else like this along the river.

Chris responded that usually happens between Border Road and above Laurel toward the South boundary of Myakka River State Park. He passed Tarpon Point Landing on February 14<sup>th</sup> but did not see clear signs of illegal cutting. He suggested they coordinate with the sheriff range deputies and the FWC.

**Break 10:57 a.m. - 11:12 a.m.**

### PRESENTATIONS

**Flatford Swamp Update: Lisann Morris (Project Manager), Senior Professional Engineer and Don Ellison (Technical Lead), Senior Hydrogeologist**

Lisann asked how many people were aware of the issues in Flatford Swamp. She explained that there is excess water effecting the swamp. A few years ago, they were looking to send the excess water up to the Mosaic mine to be used instead of ground water. That option was deemed unfeasible. They are now doing a feasibility study of aquifer recharge instead.

Mike Choinard asked why that was unfeasible.

Lisann replied that the cost outweighed the benefit but she would cover that more later.

Lisann showed a PowerPoint presentation regarding the proposal starting with a brief overview of Flatford Swamp which is located in the upper portion of the Myakka River Watershed in Eastern Manatee County, 2300 acres of it is owned by the WMD. In the 80s and 90s, abnormal tree die off was being reported, studies were done and it was revealed that there was too much excess water due to agricultural irrigation, land use changes and hydraulic alterations, like ditching that effected the rise and fall of water levels in the swamp. She explained that the swamp is like a series of bowls at the bottom of a hill. The Myakka River comes in from the North, tributaries come in from the East and the West and the river leaves and heads South. In the surrounding area, not far from the surface, is a spodic layer, which is like a coffee filter that has been clogged. When water infiltrates and hits the spodic layer, soil starts to fill up and the water starts to go down gradient. The WMD's water budget model for the Upper Myakka River Watershed indicated that excess flows, depending on if in the dry or wet season, could range from 7 to 30 mgd.

Construction of diversion structures is proposed at the Myakka River at Maple Creek and the confluence of Coker and Ogleby Creeks. By maintaining the minimum aquifer level, they can slow down and reduce the rate of saltwater intrusion inland. They are looking at recharging the excess water at Flatford into the aquifer, so they can see the rise in the ground water levels for

the SWIMAL wells and help the swamp hydroperiod. A consultant has been charged with exploring the permeability of recharge and optimizing the diversion structures. The feasibility study is done, they are waiting for the final deliverables and a draft FDEP permit has been submitted for a test well with a zone of discharge. DEP has been granting a zone of discharge for certain projects such as aquifer recharge and aquifer recharge and recovery. A zone of discharge is where the permittee must meet water quality standards at their property boundary. The public meeting was January 9, 2017. The test well is located off Wauchula Road and Taylor Road in the Flatford Swamp. The proposed recharge well would be drilled approximately 1,000 feet down. The source water will be the excess water coming in to Flatford Swamp. There are two monitor wells. One drilled down into the recharge zone and the other one is about 600 feet in the zone above. There are some domestic and irrigation wells within a one mile radius but they are deeper than 800 feet. None of these wells are in the recharge zone.

The water quality must be tested and a request to DEP will be made for approval prior to starting the recharge of the surface water down the well. The source water has to be tested for primary and secondary drinking water standards. So far, coliform is the only one above the drinking water standards but that is where the zone of discharge comes in and die off occurs within 90 days.

They will begin with very small quantities, less than 1 mgd, and work up from there depending on the results during the test recharge protocol. The permit requires two monitor wells but they are considering another one, 350 feet away, to keep better track of what is happening, as well as, testing the water quality more often.

Some modeling was done to get a better idea of how long the water will take to get to the property boundary, ranging from 1 year to 5 years.

The recharge well will be cased down 950 feet and the drilling will be 1,000 feet or more. They also wanted to see what kind of results they would get in the SWIMAL wells. If they recharge 10 mgd at Flatford, they found they can get .819 feet. The deficit in the minimum aquifer level is about 1 foot. There is the possibility for great gains in meeting the minimum aquifer level that would reduce the rate of salt water intrusion inland.

The process for this project was to submit the permit application, the private and agricultural well users were contacted, one on one meetings with stakeholders were held, presentations to the advisory committees were done and the public meeting for the permit was held in January. There is additional information at [watermatters.org/Flatford](http://watermatters.org/Flatford). Once the WMD receives the permit, the test well and monitor wells will be drilled. Then the water quality will be tested and we may determine aquifer recharge characteristics to see if what is in the field is what the modeling predicted. DEP was contacted for permission to move forward to recharging surface water. The testing period is anticipated to go on for about 2 years.

Allain asked what this has to do with the Wild & Scenic designation of the Myakka River.

Jono replied that this project would move hydroperiods to more historic levels below.



Marlene asked if a study has been done on what chance that the aquifer will be contaminated by doing this.

Don Ellison replied that there has been. The goal is to eject lightly treated surface water. The water needs to meet drinking water quality standards. The naturally occurring coliform is the only one they have to contend with and it is not necessarily dangerous. This bacteria has been studied extensively in Australia and at USF. The City of North Port is doing an ASR project and putting water into their aquifer storage and recovery well. They are not detecting the coliform bacteria, which is an indicator bacteria. If there is oil, grease or gas, then the project is off.

Bill questioned if the problem was too much pumping of ground water that is used for agriculture, why not address the source of the problem rather figuring out how to get rid of the excess through such a process with taxpayers paying to put it back.

Lisann responded that it is not just ground water withdrawal but other sources too. She gave an example of natural habitat cleared for crops stating that this decreases evapotranspiration rates and increases streamflow. The modeling shows build out for that area is low density residual which will also produce excess water but with a different seasonality.

Jono added that Bill is right, the fact is there were no laws in place to protect the Flatford Swamp back when these uses were allowed. Now is too difficult to change the laws. It is too difficult to require the vegetation to be put back or limit water use permits. So, they are trying to do a fix and intercept the water to put it back in the ground in order resolve the problem.

Discussion continued regarding the issues with excess water, water use permits, and existing WMD efforts to have solutions to these problems.

### **Draft Unit Management Plan (UMP) Review**

Jono mentioned that on March 2, 2017 at the Suncoast Community Church Activity Center, there will be an open house meeting relating to the draft UMP for Myakka River State Park (MRSP) at 5 pm. On March 3, 2017, there will be an advisory group meeting. Public comment will be allowed at both meetings but a court reporter will be at the March 2, 2017 meeting so public comment would be more effective at that meeting. Comments can also be submitted by email, phone or regular mail until March 16, 2017. Jono will be representing the MRMCC and he would like input from the members on the stance on different areas of the draft UMP.

The proposed language is MRSP is designated single-use in accordance with 253.034(2)a F. S. to provide “public outdoor recreation and other park-related uses”, which would replace language from the 2004 UMP that MRSP would “public outdoor recreation and conservation” as a designated single use of the property.

From page 7, “uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park.” Jono clarified that this means that cattle and water supply development will not be moving forward in the park. They are required to



consider secondary management by statute, however. “Timber harvesting, fuel and stump harvesting and palm or palmetto frond harvesting would be appropriate as additional sources of revenue since the draft would be compatible and not interfere with the primary purpose of resource based recreation and conservation.” The former chief naturalist of the Florida State Park system is critical of this. With the exception of fishing, the parks have been non-consumptive for more than 80 years and allowing people to take stuff out for profit is contrary to that. Former chief biologist for the Florida park service said that park staff have gone through all potential uses and refused them all and the same could be done at Myakka.

If it is more than 1,000 acres, then timber management assessments are required. In 2014, work was done on timber management issues that would be reevaluated at this time. A former Park Specialist said that an area of North Florida slash (pines) were removed. It is best to remove them young because if they are left to mature they are going to produce seeds and then more North Florida slash pines would have to be dealt with. In Myakka, these pines are so widely scattered that it would not be profitable for a timber company to harvest them.

On stump removal, they are a non-renewable resource which provides significant wildlife value. Jonathan Dickinson and Lake Kissimmee State Parks have denied the harvest of stumps deeming it inappropriate.

No justification was provided for the removal of palm fronds. This practice weakens the tree and reduces their roles for wildlife. Getting to the site and removing them creates impacts and compromises the aesthetics and health of the tree so that should be removed.

Jono stated that harvesting the stumps and cutting the fronds reduces the habitat value and most of the pines have already been dealt with so doing those things is not about improving the resources. Manatee and Sarasota Counties are already sending \$35 million a year to Tallahassee as part of the doc stamp transactions and some of the money is coming back and helping management at Myakka River State Park. Adjustments to seasonal camping rates or rates for large RVs would bring in far more dollars to the park than these limited harvests proposed. This is about establishing a premise that it is appropriate to take natural resources from the park and converting those exported resources into private dollars.

There is concern about the fire interval, the impacts of widening the fire lanes and impacts on wildlife.

At the South entrance, there is a proposal to add a tollbooth and tram to take people to Upper Myakka Lake (UML). They want the visitor center to be relocated from the South entrance to the UML area, remove the old concession building. There is a concern that the Myakka Wild & Scenic River (MWSR) Management Plan says that “Any manmade or man-induced artifact that provides a visual impact to or impairment of the otherwise natural setting within the viewshed of the Myakka River is considered to be aesthetically offensive.” It is possible that adding all these facilities adjacent to the lake is contrary to the (MWSR) plan. Another concern is that by moving the visitor center, people have to drive half-way through the park to find out what the opportunities are. During high water periods, parts of the park are closed so the interpretive center would be inaccessible if it was at the UML.

## Appendix 2—Advisory Group Report

Jono briefly discussed the optimum boundary section of the UMP and that the Stop Camp may be converted to an eco-lodge before the topic moved back to Council business (prior to losing a quorum).

Chris noted in the by-laws and statute there is language that encourages specific type of membership on the Council. There are agencies that are statutorily designated including the FDEP, WMD and the local municipalities. Environmental organizations, business organizations and agricultural organizations can be added at the Council's discretion through a nomination process. This can only be done at the first meeting of each year. Currently there are no business or agricultural interests on the committee. There are 3 homeowners, there have been 4 in the past, so adding another homeowner could be considered.

Steven Schaeffer asked if any interest has been shown from an agricultural or business group.

Chris replied that the O Bar O Ranch has expressed interest. Chuck Johnston, the ranch manager, has attended a couple recent meetings.

Jono asked how everyone felt about adding the ranch.

(The topic was switched back to the officer elections and Chris summarized the election process from the adopted bylaws.)

Lee Amos nominated Jono Miller as chair, Marlene Guffey seconded. No other nominations were made. Jono was voted chair unanimously.

Steven nominated Jim Beever as co-chair, Tim Walker seconded. No other nominations were added. Jim was voted co-chair unanimously.

(Discussion returned to potential new Council nominees)

The Council voted unanimously to approach O Bar O Ranch for membership.

Lee suggested Thomas Ranch.

Discussion occurred about Thomas Ranch noting that Marty Black currently represents the ranch and has served on the Council for the City of Venice in the past.

The Council voted unanimously to approach Thomas Ranch for membership.

Tara asked about Mosaic's interest in joining the Council.

Chris replied that nomination was reviewed by the legal department in Tallahassee and, because of the heavy level of regulation, the nomination was not confirmed.

Lee also suggested the consideration of the concessionaire at Snook Haven (Park).

There was discussion and a consensus could not be reached. Jono suggested a motion be made.

**Motion:**

**Lee Amos motioned to send an invitation to the concessionaire at Snook Haven to the serve on the Myakka River Management Coordinating Council. Greg Blanchard seconded. The Motion failed.**

Marlene suggested the manufactured home associations South of U.S.41 on the East side of the river be approached about serving on the Council.

Mike added that they do not own the property on the river, they are leasing it and if properties on the river are going to be added they should be land owners.

Steven added that different perspectives should be allowed to serve on the Council to educate the other members and add a different viewpoint.

Discussion continued regarding the best make-up of the Council. Then discussion returned to the draft UMP for MRSP.

Jono summarized the main concerns in the draft UMP as: (1) allowing the harvest of natural resources that belong to the public for sale to private parties – people view this a change in the perspective. Then there are questions about (2) increasing development at the Upper Lake, and (3) the idea of putting an eco-lodge at the Stop Camp in the wilderness area. If I had to pick just a few things, this would be the biggest.

Diana Donaghy brought up that part of the stump discussion during planning (for UMP development) with the goal of meeting natural resource objectives – I think here for restoration. That is the portion that is missing from the harvesting language. If you fight against it completely then you may be hampering efforts to restore. She then suggested more specific language for when you can use those types of tools, as opposed to just commercial gain.

Jono said he did not think anyone has said that the park should be prohibited from removing stumps or North Florida Slash pine. I think what people were objecting to the finding that we are going to do it for financial reasons.

Diana replied that she believed that verbiage is in the section for restoration of natural habitats.

Jono read (from the Draft UMP) “it was determined that these activities would be appropriate as additional sources of revenue” noting it does not say it was determined these activities will improve the land management.

Diana added that the language indicates only as compatible with natural resource management. She suggested to take out “sources of revenue” but keep in for the primary purpose of resources based conservation.



Jono asked Diana if there is any known natural resource objective by removing palm fronds.

Diana responded no, not commercially based amount or for sale.

Marlene stated that our state park can support themselves other ways besides harvesting our resources.

Diana noted that there are times when stump removal does serve an ecological purpose in parks.

Chris Becker added that timber harvesting and roller chopping are consumptive but necessary tools to maintain the parks. He stated that the language here confuses the situation. In order to meet our desired future conditions in the plan, we need these tools to get the job done.

Steven stated that the focus here is that these activities would be appropriate as additional “sources of revenue”, but it should not be done for revenue – unless it is peripheral.

Steve Giguere – as part of revenue generation, when consumptive resources are taken out of the park. The money stays in the land use proceeds (fund) which goes back into the resource program for that park. It does not go to Tallahassee.

Jono replied that there are two sides to this. Someone pays the park to take a resource. They are taking that resource and making money. Taking the public resources and park’s landscape and exporting them, while some of the money is going into account for MRSP, some of that money goes to enriching private vendors. The reason why people are upset about this is because this has not been a part of earlier recent UMP updates, this is showing up first at Myakka. There are 174 park units, people feel like allowing this at Myakka is not simply impacting Myakka but setting a precedent for this sort of thing. There is not a lot of money to be made by these activities with fronds and stumps or even with North Florida slash pine. You would have to wait ten years for them to be big enough to be merchantable. Even then not much money would come to the park.

Discussion continued on historic timbering practices at the park.

Bob brought up the draft UMP language about harvesting and read aloud the section on page 7; “For this park, it was determined that timber harvesting, fuel and stump harvesting, and palm or palmetto frond harvesting could be accommodated in a manner that would be compatible and not interfere with the primary purpose of resource-based outdoor recreation and conservation.” Bob then stated even in this (language) there is an implication that this is not in primary interest of the park. It is to accommodate another interest to do something for a profit in the park. He then moved to authorize Jono to advocate for not including this language in the plan or any other language against the primary purpose of the park.

Discussion continued on the topic of profit from park resources.

Jono stated that by saying that it is “additional sources of revenues”, it does not sound like it is offsetting costs, it sounds like it’s allowing outside people to come in and make money off public resources.

Elizabeth proposed that the language be modified by deleting the part about “additional sources of revenue” and changing the following sentence to “would be appropriate at this park as compatible with the parks primary purpose of resource based outdoor recreation and conservation. If these activities result in revenue generation, such revenue shall be used for land management in the same park.”

Juliette replied that you do not want to open the door and set a precedent for outside companies to come in and make money from park resources.

Jono added that it also opens the door for people to start taking things like Spanish moss that have no effect on the resource management objectives.

Marlene suggested that a vote be taken to see who is in favor of harvesting resources from the park and who is not.

Discussion continued to motion language on the issue. Lee Amos proposed a motion.

**Motion:**

**The Myakka River Management Coordinating Council directs Jono Miller to work with park service staff to wordsmith sections of the management plan in order to limit consumptive sources of revenue to those that are consistent with the ecological health of the park’s natural resources.**

**Allain Hale seconded.**

**Discussion continued on the motion. The motion failed.**

**Motion:**

**The Myakka River Management Coordinating Council directs Jono Miller to advocate for no harvesting activities as an additional revenue source for the park.**

**Bob Clark made the motion and Marlene Guffey seconded. The motion passed.**

Steve Giguere requested that people come to the public hearing to voice their opinions.

**The Meeting was adjourned at 12:30 p.m.**

## AFFIDAVIT OF PUBLICATION

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SARASOTA, SARASOTA COUNTY, FLORIDA

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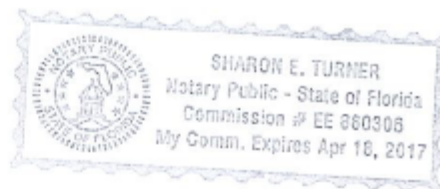
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Mary Jo Cottingham

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BY MARY JO COTTINGHAM WHO IS PERSONALLY KNOWN TO ME.

[Signature]  
Notary Public





# Appendix 3

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# Appendix 4

## Soils Descriptions

**(4) Bradenton fine sand** - This is a poorly drained soil on low-lying ridges and hammocks in both Manatee and Sarasota counties. Slopes are smooth and range from 0 to 2 percent.

Typically, the surface layer is dark gray fine sand about 4 inches thick. The subsurface layer is grayish brown fine sand 5 inches thick. The subsoil is dark gray and gray fine sand loam about 18 inches thick. Below the subsoil there is a layer of gray loamy fine sand 11 inches thick, and below that, there is a light gray marl to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Parkwood, Floridana, Chobee, Felda, and Manatee soils. Also included are a few areas where the subsoil is finer textured than that of this Bradenton soil and a few areas where a brown sandy layer overlies the subsoil.

If this Bradenton soil is not drained, the water table is within 10 inches of the surface for 2 to 6 months out of the year and at a depth between 10 and 40 inches for much of the remainder of the year. In dry seasons the water table recedes to a depth of 40 inches. Permeability is rapid in the surface and the subsurface layers and moderate in the subsoil and substratum. The available water capacity is low in the surface layer and substratum, very low in the subsurface layer, and medium in the subsoil.

In many areas this soil is used for citrus and for urban development. In some areas the soil is in vegetables, and in some areas it is in improved pasture. The native vegetation consists of slash pine, laurel and live oak, cabbage palm, wax myrtle, magnolia, bluestem, saw palmetto and various vines.

**(7) Canova Ancloste, and Okeelanta soils** - This Manatee map unit consists of nearly level, very poorly drained mineral and organic soils in freshwater swamps and in broad, poorly defined drainageways. In a typical mapped area, Okeelanta soils are in the

lowest places; Ancloste soils in the highest places, generally near the edges; and Canova soils in an intermediate position. In the poorly defined drainageways, the Ancloste soils and to a lesser extent the Canova soils are adjacent to the streams. Slopes are less than 2 percent.

Typically, the surface layer of Canova soils is dark reddish brown muck 8 inches thick and dark gray fine sand 9 inches thick. The subsurface layer is gray fine sand 7 inches thick. The subsoil is gray sandy clay loam about 39 inches thick. The substratum is gray fine sandy loam.

In most years, Canova soils are ponded, or the water table is at or near the surface for 9 months or more out of the year. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is high in the surface layer, very low in the subsurface layer, and medium in the subsoil.

Typically, the surface layer of Ancloste soils is black fine sand 16 inches thick. Below that, to a depth of 80 inches or more, there is grayish brown, gray, and light gray fine sand.

In most years, Ancloste soils are ponded, or the water table is at or near the surface for 9 months or more out of the year. Permeability is rapid throughout. The available water capacity is medium in the surface layer and low in the other layers.

Typically, the surface layer of Okeelanta soils is black muck 20 inches thick. Below the surface layer, there is black sand 7 inches thick, grayish brown sand 4 inches thick, and light brownish gray sand 29 inches thick.

In most years, Okeelanta soils are ponded, or the water table is at or near the surface for 9 months or more out of the year. Permeability is rapid throughout. The available water capacity is very high in the surface layer and low in the other layers.

## Appendix 4—Soils Descriptions

The most extensive minor soils are the Chobee, Floridana, and Manatee soils.

The soils making up this map unit are mainly in natural vegetation consisting of bay, gum, ash, swamp maple, water oak, scattered cypress, and some slash pine. In many areas they support a thick undergrowth of vines, briars, and water-loving plants.

**(11) Cassia fine sand** - This is a nearly level, somewhat poorly drained soil, on low ridges and knolls that are slightly higher than the adjacent flatwoods found in Manatee and Sarasota counties. Slopes range from 0 to 2 percent.

Typically, the surface layer is gray fine sand about 3 inches thick. The subsurface layer is light gray to white fine sand about 21 inches thick. The subsoil is black to dark reddish brown fine sand coated with organic material and is about 9 inches thick. The substratum to a depth of 80 inches or more is very pale brown and light gray fine sand.

Included with this soil in mapping are areas of Myakka and Pomello soils and soils that are similar to Cassia soils except that they are weakly cemented in the subsoil.

The water table is at a depth of 15 to 40 inches for about 6 months out of the year and below a depth of 40 inches during dry periods. The available water capacity is very low except in the subsoil, where it is medium. Natural fertility is low. Permeability is rapid in the subsurface layers and moderate to moderately rapid in the subsoil.

The native vegetation consists of scattered slash and longleaf pine, dwarf oak and sand live oak, saw palmetto, pineland threeawn, running oak, and broomsedge bluestem.

**(8) Delray fine sand, depressional** - This nearly level, very poorly drained soil is in depressions on flatwoods in Sarasota County. Individual areas are oval, irregularly shaped, or elongated and range from 5 to 200 acres in size. Slopes are concave and are less than 2 percent.

Typically, the surface layer is black fine sand about 30 inches thick. The subsurface layer is light brownish gray fine sand to a depth of about 54 inches. The subsoil to a depth of 80 inches or more is olive gray fine sandy loam.

Included with this soil in mapping are small areas of Astor, Felda, Gator, and Pompano soils. Also included are soils that are similar to the Delray soil but have a thin surface layer of muck.

Under natural conditions, the Delray soil is ponded for 6 to 9 months or more each year. For much of the remainder of most years, the seasonal high water table is within a depth of 12 inches. Permeability is rapid in the surface layer and subsurface layer and moderate or moderately rapid in the subsoil. The available water capacity is moderate. Natural fertility is medium, and the organic matter content is moderate or high.

Most areas of this soil support natural vegetation of cypress, pickerelweed, maidencane, arrowhead, cutgrass, sand cordgrass, sedges, ferns, and other water-tolerant grasses. This soil provides excellent habitat for wading birds and other wetland wildlife.

**(9) Delray and Astor soils, frequently flooded** - These level and nearly level, very poorly drained soils are on the flood plain along the Myakka River and in the swamps adjacent to park's lakes in Sarasota County. The soils are frequently flooded after prolonged heavy rains. Individual areas are irregularly shaped or elongated and range from 10 to 100 acres in size. Slopes are smooth or concave and range from 0 to 2 percent.

There is no regular and repeating pattern in this map unit. Some areas are entirely Delray and similar soils, some are entirely Astor and similar soils, and some are made up of Delray, Astor, and other soils.

Typically, the surface layer of the Delray soil is black fine sand about 30 inches thick. The subsurface layer is dark gray fine sand to a depth of about 54 inches. The subsoil to a depth of 80 inches or more is gray sandy loam.

Typically, the surface layer of the Astor soil is 32 inches thick. The upper 2 inches is black mucky fine sand. The next 20 inches is very dark gray mucky fine sand. The lower 10 inches is very dark gray fine sand. The underlying material extends to a depth of about 80 inches or more. The upper 15 inches is grayish brown loamy sand. The next 7 inches is light brownish gray loamy sand. The

lower 26 inches or more is light brownish gray fine sand.

Included with these soils in mapping are small areas of Felda and Floridana soils. The Delray and Astor soils have a seasonal high water table at or above the surface during the summer rainy season. During dry periods the water table may recede to a depth of 30 inches or more. Sheet flow occurs during periods of heavy rainfall. The duration and extent of flooding vary, depending on the intensity and frequency of rainfall.

Permeability is rapid in the Astor soil and moderate or moderately rapid in the subsoil of the Delray soil. The available water capacity is moderate in both soils. Natural fertility is high in both soils, and the organic matter content is very high or high.

Most areas of these soils support natural vegetation of cypress, sweet gum, water and laurel oak, red maple, cabbage palm, wax myrtle, greenbrier, poison ivy, maidencane, chalky bluestem, sedges, and other water-tolerant grasses.

These soils provide habitat for wetland and woodland wildlife. Shallow water areas can be easily developed, and the vegetation provides abundant food and shelter.

**(16) Delray complex** - This complex consists of several nearly level, very poorly drained soils on flats and in sloughs that are moderately broad, low, and grassy in Manatee County. The soils are so intermixed that they could not be shown separately at the scale selected for mapping.

Typically, the surface layer of Delray soils is black fine sand about 15 inches thick. The subsurface layer is grayish brown and light brownish gray fine sand to a depth of about 55 inches. The subsoil is grayish brown and greenish gray fine sandy loam and sandy clay loam to a depth of 80 inches or more.

In most years, if these Delray soils and the similar soils are not drained, a water table is at or near the soil surface for 6 months or more out of the year. The available water capacity is high in the surface layer, medium in the subsoil, and low in the subsurface layer. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. Natural fertility is medium.

The natural vegetation consists mainly of water-tolerant grasses such as bluestem, lopsided indiagrass, maidencane, and pineland threeawn. In some places it also consists of wax myrtle and widely spaced gum and cypress.

**(15) Delray mucky loam fine sand** - This is a very poorly drained, nearly level soil in shallow depressions in flatwoods in Manatee County. Individual areas are irregularly shaped. Slopes are 0 to 2 percent.

Typically, the surface layer is black. In the upper part it is mucky loamy fine sand 8 inches thick. In the lower part it is loamy fine sand 8 inches thick. A thin layer of muck and litter on the surface is common. The subsurface layer is fine sand. The upper 5 inches is grayish brown, the next 22 inches is light brownish gray, and the lower 5 inches is grayish brown. The subsoil in the upper 3 inches is grayish brown fine sandy loam. In the next 15 inches it is grayish brown sandy clay loam. In the next 9 inches it is greenish gray sandy clay loam. Below that, to a depth of 80 inches or more it is grayish brown sandy clay loam.

Included with this soil in mapping are small areas of Felda, Floridana, Manatee, and Chobee soils.

In most years, if this soil is not drained, a water table is generally at or slightly above the surface for 6 months or more out of the year. The available water capacity is high in the surface layer, medium in the subsoil, and low in the subsurface layer. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. Natural fertility is medium.

The natural vegetation in some places is maidencane and sawgrass in dense stands. In other places it is bay, sweet gum, and maple.

**(10) EauGallie and Myakka fine sands** - These nearly level, poorly drained soils are on broad flatwoods in Sarasota County. Individual areas are long and broad or are irregular in shape and range from 20 to more than 700 acres in size. Slopes are smooth and range from 0 to 2 percent.

There is no regular and repeating pattern in this map unit. Some areas are entirely EauGallie and similar soils, some are entirely Myakka and similar soils, and some are made



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up of EauGallie, Myakka, and other soils.

Typically, the surface layer of the EauGallie soil is black fine sand. The subsurface layer is gray fine sand to a depth of about 22 inches. The subsoil extends to a depth of about 66 inches. The upper 22 inches is fine sand coated with organic matter. It is dark reddish brown grading to dark brown. The next 4 inches is light gray fine sand. The lower 18 inches is grayish brown sandy loam. The substratum to a depth of about 80 inches or more is gray fine sandy loam.

Typically, the surface layer of the Myakka soil is dark grayish brown fine sand about 6 inches thick. The subsurface layer is light gray fine sand about 18 inches thick. The subsoil to a depth of 60 inches is fine sand. The upper 11 inches is very dark gray, and the lower 18 inches is light yellowish brown. The substratum to a depth of 80 inches or more is pale brown fine sand.

Included with these soils in mapping are areas of Ona, Smyrna, and Wabasso soils. Also included are small areas of soils that are similar to the EauGallie and Myakka soils but have a subsoil that is low in content of organic matter and is less than 12 inches thick.

Under natural conditions, the EauGallie and Myakka soils have a seasonal high water table at a depth of 6 to 18 inches for 1 to 3 months and within a depth of 40 inches for 2 to 6 months. The water table recedes to a depth of more than 40 inches during the extended dry periods. The available water capacity is low in both soils. Natural fertility also is low. Permeability is rapid in the sandy surface layer, subsurface layer, and substratum. It is moderate or moderately rapid in the sandy subsoil of both soils and slow or moderately slow in the loamy part of the EauGallie soil.

The natural vegetation is slash pine, longleaf pine, and scattered cabbage palm and oak. The understory includes inkberry, saw palmetto, chalky bluestem, creeping bluestem, pineland threeawn, and various other grasses.

**(20) EauGallie fine sand** - This somewhat poorly drained sandy soil of the saw palmetto prairies and pine flatwood forests in Manatee County, has a characteristic organic pan layer below 30 inches. It developed from thick stratified beds of acid sands in flat or nearly level areas. Runoff is very slow. Internal

drainage is slow to rapid and is influenced seasonally by the high water table.

The ground cover on EauGallie fine sand consists mostly of saw palmetto, gallberry, runner oak, huckleberry, and wiregrass and other grasses. The principal trees are longleaf pine and slash pine.

**(13) Felda and Pompano fine sand, frequently flooded** - These nearly level, poorly drained soils are on floodplains throughout Sarasota County. They are frequently flooded following prolonged, heavy rains. Individual areas are elongated and range from 10 to more than 100 acres in size. Slopes are smooth or concave and range from 0 to 2 percent.

There is no regular and repeating pattern in this map unit. Some areas are entirely Felda and similar soils, some are entirely Pompano and similar soils, and some are made up of Felda, Pompano, and other soils.

Typically, the surface layer of the Felda soil is very dark gray fine sand about 4 inches thick. The subsurface layer is dark grayish brown fine sand to a depth of about 24 inches. The subsoil to a depth of 65 inches is sandy clay loam. The upper 24 inches is dark grayish brown, and the lower 17 inches is grayish brown. The substratum to a depth of about 80 inches is light gray loamy sand.

Typically, the surface layer of the Pompano soil is black fine sand about 3 inches thick. The underlying material to a depth of about 80 inches is gray, light brownish gray, and grayish brown fine sand.

Included with these soils are areas of Astor, Bradenton, Delray, and Holopaw soils. Also included are a few areas of soils that are similar to the Felda soil but have an organic surface layer as much as 15 inches thick.

The Felda and Pompano soils have a seasonal high water table within 12 inches of the surface for 2 to 6 months in most years. These soils usually are flooded every year and more than once in most years. The duration and extent of flooding vary, depending on the intensity and frequency of rainfall. Permeability is rapid or very rapid in the sandy layers and moderate or moderately rapid in the loamy layers. The available water capacity is low. Natural fertility also is low.

The natural vegetation is bald cypress, laurel and water oak, pond pine, slash pine, longleaf pine, and cabbage palm. The understory vegetation is wax myrtle, pineland threeawn, maidencane, greenbrier, poison ivy, and other water-tolerant grasses.

**(22) Felda fine sand** - This is a nearly level, poorly drained soil on low hammocks in Manatee and Sarasota counties. Slopes are generally smooth and range from 0 to 2 percent.

Typically, the surface layer is very dark gray fine sand about 3 inches thick. The subsurface layer is grayish brown fine sand 21 inches thick. It is mottled with gray and brown. The subsoil is 40 inches thick. It is mottled with brown and yellow. The upper 3 inches is grayish brown fine sandy loam, the next 6 inches is gray sandy clay loam, and the lower 29 inches is light gray sandy clay loam. Below the subsoil there is light gray sandy loam to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Bradenton soil.

In most years, if this Felda soil is not drained, the water table is within a depth of 10 inches for 2 to 4 months out of the year and at a depth of 10 to 40 inches for about 6 months out of the year. It recedes to a depth of more than 40 inches in dry seasons. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil.

The natural vegetation consists of live oak, cabbage palm, slash pine, pineland threeawn,, and bluestem.

**(23) Felda-Palmetto complex** - This complex consists of soils in broad sloughs where stream channels are poorly defined and soils around some of the larger ponds in the eastern and central parts of Manatee County. Felda and Pompano soils are so intricately mixed that they could not be mapped separately for mapping. Slopes are less than 2 percent.

Typically, the surface layer of Felda soils is very dark gray fine sand about 3 inches thick. The subsurface layer is grayish brown fine sand 21 inches thick. The subsoil in the upper part is grayish brown fine sandy loam 3 inches

thick. In the middle part it is gray sandy clay loam 6 inches thick, and in the lower part it is light gray sandy clay loam 29 inches thick. The substratum is at a depth of about 62 inches and is light gray sandy loam.

Felda soils are poorly drained. In most years, if the soils are not drained, the water table is within a depth of 10 inches for 2 to 4 months out of the year and at a depth of 10 to 40 inches for about 6 months out of the year. It recedes to below a depth of 40 inches in dry seasons. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. The available water capacity is very low in the surface and the subsurface layers and medium in the subsoil.

Typically, the surface layer of Palmetto soils is black sand about 8 inches thick. The subsurface layer is dark gray or gray sand to a depth of 25 inches. The subsoil is dark grayish brown and very dark grayish brown sand to a depth of 45 inches. It is grayish brown and dark grayish brown sandy clay loam and sandy loam to a depth of about 64 inches and dark grayish brown loamy sand to a depth of 68 inches. The soils that are similar to Palmetto soils have a thicker, dark colored surface layer.

Palmetto soils are poorly drained. In most years, if the soils are not drained, the water table is within 10 inches of the surface for 2 to 6 months out of the year. In some areas water stands on the surface briefly after heavy rainfall. Permeability is rapid in the surface and subsurface layers and moderately slow in the subsoil. The available water capacity is low to medium in the surface and subsurface layers and medium in the subsoil.

The most common minor soils included in the complex are the Myakka, Delray, and Floridana soils.

The natural vegetation consists of slash pine, water and live oak, saw palmetto, runner's oak, gallberry, and pineland threeawn.

**(15) Floridana and Gator soils, depressional** - These very poorly drained, nearly level soils are in depressions in Sarasota County. They are subject to ponding. Individual areas are oval or irregular in shape and range from 5 to about 100 acres in size. Slopes are dominately concave and are less than 2 percent.

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There is no regular and repeating pattern in this map unit. Some areas are entirely Floridana and similar soils, some are entirely Gator and similar soils, and some are made up of Floridana, Gator, and other soils.

Typically, the surface layer of the Floridana soil is about 14 inches of black mucky fine sand and fine sand. The subsurface layer to a depth of about 22 inches is gray and light gray fine sand. The subsoil to a depth of about 52 inches is grayish brown sandy clay loam.

Typically, the surface layer of Gator soil is very dark brown muck about 22 inches thick. The upper 4 inches of the underlying material is very dark gray loamy sand, the next 34 inches is dark gray sandy clay loam, and the lower part to a depth of 80 inches is greenish gray sand.

The Floridana and Gator soils are ponded for 6 to 9 months during most years. The water table is within 12 inches of the surface for much of the remainder of the year. Permeability is rapid in the surface layer and subsurface layer and moderately slow or very slow in the loamy subsoil and underlying material. The available water capacity is dominately moderate to very high.

Natural fertility is medium.

Most areas of these soils support natural vegetation of sand cordgrass, maidencane, St. John's wort, scattered wax myrtle, and other water-tolerant herbaceous plants. They provide excellent habitat for wading birds and other wetland wildlife.

**(16) Floridana and Gator soils, frequently flooded** - These poorly drained, nearly level soils are on Sarasota County's floodplains. They are frequently flooded after prolonged, heavy rains. Individual areas are oblong or are narrow and elongated. They range from 5 to 60 acres in size. Slopes are smooth or concave and range from 0 to 2 percent.

There is no regular and repeating pattern to this map unit. Some areas are entirely Floridana and similar soils, some are entirely Gator and similar soils, and some are made up of Floridana, Gator, and other soils.

Typically, the surface layer of the Floridana soil is about 14 inches of very dark gray mucky fine sand and fine sand. The subsurface layer is gray and grayish brown

fine sand to a depth of about 36 inches. The subsoil to a depth of about 52 inches is grayish brown fine sandy loam. The substratum to a depth of 80 inches or more is grayish brown sandy loam.

Typically, the surface layer of the Gator soil is very dark brown muck about 22 inches thick. The upper 4 inches of the underlying material is very dark gray loamy sand. The next 34 inches is dark gray sandy clay loam. The lower part to a depth of 80 inches is greenish gray sand.

The Floridana and Gator soils are frequently flooded during the rainy season in most years. The water table is within 12 inches of the surface for much of the year. Permeability is rapid in the surface and subsurface layers and slow or very slow in the loamy subsoil and underlying material. The available water capacity is moderate or high. Natural fertility is medium.

The natural vegetation is black gum, red maple, sweet gum, cabbage palm, cypress, laurel and water oak, and loblolly bay. The understory is smartweed, fern, sedges and other water-tolerant grasses.

**(25) Floridana fine sand** - This is a nearly level, very poorly drained soil in the low flats that have been drained by ditches and channels in many places in Manatee County. Slopes are smooth to concave and are less than 2 percent.

Typically, the surface layer is about 15 inches thick. In the upper part it is black fine sand 4 inches thick, and in the lower part it is very dark gray fine sand 11 inches thick. The subsurface layer is gray fine sand 17 inches thick. The subsoil is dark sandy clay loam to a depth of 44 inches and gray sandy loam to a depth of 65 inches. The substratum is light gray fine sand to a depth of 80 inches or more. Included with this soil are areas of Delray and Felda soils and a few areas of organic soils.

In most years, if this Floridana soil is not drained, the water table is at a depth of less than 10 inches for about 6 months out of the year. Permeability is rapid in the surface and subsurface layers and slow in the subsoil. The available water capacity is medium in the surface layer and subsoil and low in the subsurface layer.



The natural vegetation consists of cattails and dense stands of maidencane and sawgrass.

**(26) Floridana-Immokalee-Okeelanta association** - This map unit consists of nearly level, very poorly drained Floridana soils, poorly drained Immokalee soils, and very poorly drained Okeelanta soils. These soils are in small to large shallow grassy ponds mainly in the central and eastern parts of Manatee County. Generally, Okeelanta soils are in the lowest places near in the center of the ponds; Floridana soils are in an intermediate position; and Immokalee soils are along the edges of ponds. Slopes are less than 2 percent. Areas of the individual soils are large enough to map separately, but in considering the present and predicted use they were mapped as one unit. Most of the mapped areas are circular or oblong. The composition of this map unit is more variable than that of most other map units in Manatee County; nevertheless, valid interpretations for expected uses of the soil can still be made.

Typically, the surface layer of Floridana soils is black and very dark gray fine sand about 19 inches thick. The subsurface layer is gray fine sand about 17 inches thick. The subsoil is dark gray sandy clay loam 17 inches thick. The substratum is light gray fine sand that extends to a depth of 80 inches or more.

In most years, in undrained areas Floridana soils are ponded for 6 to 9 months of more out of the year. The water table is at a depth within 40 inches for the rest of the year except in extended dry periods. Permeability is rapid in the surface layer, subsurface layer, and substratum; it is slow in the subsoil. The available water capacity is medium in the surface layer and subsoil and low in the other layers.

Typically, the surface layer of Immokalee soils is black fine sand about 5 inches thick. The subsurface layer is dark gray, gray, and light gray fine sand 29 inches thick. The subsoil is dark reddish brown and dark brown fine sand 9 inches thick. The substratum to a depth of 80 inches or more is grayish brown fine sand.

Immokalee soils are ponded for 6 months or more in most years. The water table is at a depth within 40 inches for much of the remainder of the year. Permeability is moderate in the subsoil and rapid in all other layers. The available water capacity is medium in the subsoil, low in the surface

layer, and very low in the other layers.

Typically, Okeelanta soils in the uppermost 20 inches are black muck. Below that, to a depth of 54 inches or more, there is black and light brownish gray sand.

In most years, in undrained areas Okeelanta soils are ponded for 9 months or more, and the water table is near the surface for the rest of the time. Permeability is rapid throughout the soil. The available water capacity is very high in the organic layer and low in the sandy layers.

Included with the soils in this map unit are areas of Anclote, Chobee, Delray, Manatee, Myakka, and Pomona soils.

The natural vegetation in the lowest places is sawgrass, maidencane, willow, and, in places, a few cypress. In other areas, the vegetation is maidencane, St. Johns wort, various bluestems, smooth cordgrass, and sedges.

**(21) Ft. Green fine sand** - This deep, nearly level, poorly drained soil is on broad flatwoods in Sarasota County. Individual areas range from 10 to 150 acres in size. Slopes are smooth and range from 0 to 2 percent.

Typically, the surface layer is dark gray fine sand about 3 inches thick. The subsurface layer is light brownish gray and grayish brown fine sand to a depth of about 80 inches. It is gray cobbly sandy loam in the upper 12 inches, gray and light gray sandy clay loam in the next 10 inches, and light gray sandy loam in the lower 32 inches. Small areas of EuGallie, Holopaw, Malabar, and Wabasso soils are included with this soil. Also included are wet soils in scattered small depressions.

The water table is at a depth of 6 to 18 inches for 2 to 4 months during the wet periods and within a depth of 40 inches for more than 6 months. Permeability is rapid in the surface and subsurface layers and slow or moderately slow in the subsoil. The water capacity is low. Natural fertility is also low.

Natural vegetation consist of slash and longleaf pine, cabbage palm, saw palmetto, inkberry, rusty lyonia, blackroot, pennyroyal, pineland threeawn, chalky bluestem, panicum, and other herbaceous plants.

**(27) Gator muck** - This is a very poorly drained, nearly level soil in depressions in

## Appendix 4—Soils Descriptions

Manatee County. Slopes are 1 percent or less. Typically, the surface layer is black muck about 18 inches thick. Below the surface layer there is a light gray, dark grayish brown, and grayish brown sandy loam to a depth of 55 inches. Below that, there is grayish brown loamy sand to a depth of 72 inches and stratified layers of light gray sand and loamy sand to a depth of 80 inches or more.

Included with this soil are small areas of Chobee, Bradenton and Floridana soils. Also included are soils with sandy layers between the organic layers and the loamy substratum and soils where the organic material is less than 16 inches thick or more than 40 inches thick.

The soil ponds or the water table is within a depth of 10 inches except in extended dry seasons. The available water capacity is very high in the organic layers, medium in the loamy layers, and low in the underlying sandy material. Permeability is rapid in the organic layer and moderate in the loamy layer. Natural fertility is medium to high.

Natural vegetation consists of willows, red maple, sawgrass, pickerelweed, sedges, ferns, maidencane, and other water-tolerant grasses.

**(22) Holopaw fine sand** - Occurring in depressions in Sarasota County, this fine sand is underlain by sandy loam or sandy clay loam at depths of 30 to 42 inches. It developed from moderately thick deposits of sandy sediments. For a few months each year the soil is normally covered with shallow water.

Most areas of Holopaw Fine Sand are treeless. They have a sparse to moderate growth of St. John's wort, broomsedge, rushes' and other herbaceous plants having a tolerance for long hydroperiods or waterlogged substrate.

**(26 in Sarasota) Manatee loamy fine sand, depressional** - This nearly level, very poorly drained soil is in depressions in Sarasota County. Slopes are concave and are less than 1 percent.

Typically, the surface layer is black loamy fine sand about 18 inches thick. The subsoil is very dark gray sandy loam in the upper 11 inches and light gray sandy loam in the lower 13 inches. The substratum to a depth of 80 inches is gray and dark greenish gray sandy loam, sandy clay loam, and fine sand. Small

areas of Felda, Floridana, Holopaw, Malabar, and Pineada soils are included in this soil.

This soil is ponded for 6 to 9 months or more during most years. The water table is within 12 inches of the surface the remainder of the year. Permeability is moderately rapid in the surface layer and moderate in the subsoil and substratum. The available water capacity is moderate, natural fertility is medium, and the organic content is high.

Natural vegetation consists of sawgrass, maidencane and pickerelweed. Some areas support red maple, cypress, black gum, cabbage palm, loblolly bay, sweet bay, scattered wax myrtle, sedges, and ferns. Areas of this soil provide excellent habitat for wading birds and other wetland wildlife.

**(30) Myakka fine sand, 0 To 2 Percent Slopes** - This is a nearly level, poorly drained soil in areas of broad flatwoods in Manatee County. Slopes are smooth to concave.

Typically, the surface layer is dark gray fine sand about 5 inches thick. The subsurface layer is fine sand. In the upper 8 inches it is gray, and below that, it is light gray. The subsoil is fine sand 22 inches thick. In the upper 6 inches it is black, in the next 8 inches it is dark reddish brown, and in the lower 8 inches it is dark brown. Below the subsoil there is brown fine sand to a depth of 61 inches, and below that, there is very dark brown fine sand to a depth of 75 inches or more.

Included with this soil in mapping are small areas of EauGallie, Ona, Pomona, St. Johns, Wabasso, Wauchula, and Waveland soils. In most years, the water table is at a depth of less than 10 inches for 1 to 4 months out of the year. It recedes to a depth of more than 40 inches in very dry seasons. The available water capacity is medium in the subsoil and very low in the other layers. Permeability is rapid in the surface and subsurface layers and substratum and moderate or moderately rapid in the subsoil. Internal drainage is slow, and runoff is slow. Natural fertility is low.

The natural vegetation consists of longleaf and slash pines and an undergrowth of saw palmetto, running oak, gallberry, waxmyrtle, huckleberry, pineland threeawn, and scattered fetter bushes.

**(35) Ona fine sand** - This is a nearly level, poorly drained soil that is in areas of broad flatwoods in Manatee County. Slopes are smooth and range from 0 to 2 percent.

Typically, the surface layer is black fine sand about 5 inches thick. The subsoil in the upper part is very dark brown and dark reddish brown fine sand 11 inches thick. The next layer is brown and light brownish gray fine sand 36 inches thick. The subsoil in the lower part is black fine sand that is weakly cemented to a depth of 68 inches and black friable fine sand to a depth of 80 inches. Included with this soil are small areas of Myakka, Pompano, St Johns, Waveland, and Wauchula soils.

A water table is at a depth of 10 to 40 inches for 4 to 6 months out of the year. It rises to a depth of less than 10 inches for 1 to 2 months a year. It may recede to a depth of more than 40 inches in very dry seasons. Permeability is moderate in the upper part of the subsoil, slow or very slow in the lower part of the subsoil, and rapid in the other layers. The available water capacity is medium in the surface layer and subsoil, and low in the layer between the two parts of the subsoil.

Native vegetation consists of pine trees and an understory of saw palmetto, runner's oak, pineland threeawn, and gallberry.

**(38) Palmetto sand** - This is nearly level, poorly drained soil in flatwoods in Manatee County. The soil is in sloughs, in poorly drained drainageways, and in narrow bands around some ponds. Slopes are smooth to slightly concave and are less than 2 percent. Included with this soil are areas of similar soils that have a yellowish subsurface layer, that do not have a loamy subsoil, or that have a slightly more developed, brownish subsurface layer. Also included are small areas of Delray soils.

The water table is within 10 inches of the surface for 2 to 6 months a year. In some areas the soil may be ponded briefly after a heavy rainfall. Permeability is rapid in the surface and subsurface areas and moderately slow in the subsoil. The available water capacity is low to medium in the surface and subsurface layers and medium in the subsoil.

The native vegetation consists of chalky bluestem, blue maidencane, sand cordgrass, pineland threeawn, low panicums, scattered slash pines and clumps of saw palmetto.

**(39) Parkwood Variant complex** - This complex consists of nearly level, poorly drained, and very poorly drained soils on cabbage palm hammocks, in drainageways, and around the edges of ponds in Manatee County. The soils are intermixed and could not be mapped separately.

The water table is within 10 inches of the surface for 2 to 4 months during the rainy season. The available water capacity is low in the surface layer and medium in the subsoil. Permeability is very rapid in the surface layer and moderately rapid in the subsoil. Natural fertility is medium.

The natural vegetation consists of cabbage palm, a few live oak, slash pine, water oak, magnolia and an undergrowth of shrubs, vines, grasses and saw palmetto.

**(31) Pineda fine sand** - A poorly drained soil closely associated with flatwoods and very similar to EauGallie fine sand except that it has developed from beds of sand 42 inches or more deep that overlie finer textured alkaline materials. This soil is found in Sarasota County.

**(40) Pinellas fine sand** - This is a nearly level, poorly drained soil in the areas of flatwoods bordering sloughs and depressions in Manatee County. Slopes are smooth. Included in this map unit are small areas of similar soil that have a subsoil at a depth of more than 40 inches, areas of similar soils that have a dark colored surface layer more than 6 inches thick, and areas of soils that have a yellowish layer above the subsoil and limestone below. Also included are small areas of Bradenton, Broward Variant, EauGallie, and Wabasso soils.

The water table is at a depth within 10 inches of the surface for less than 3 months out of the year and at a depth of 10 to 40 inches for 4 to 6 months out of the year. It may recede to a depth of more than 40 inches during extended dry periods. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is very low in the surface layer and medium in the subsurface layer and subsoil. Natural fertility and the content of the organic matter are low.

The natural vegetation consists of slash pine, cabbage palm, saw palmetto, wax myrtle, gallberry, broomsedge, chalky bluestem, blue



## Appendix 4—Soils Descriptions

maidencane, lopsided indiagrass, sand cordgrass, and pineland threeawn.

**(42) Pomello fine sand** - This moderately well drained to somewhat excessively drained soil of the flatwoods in Manatee County, has a well-developed organic pan at depths greater than 42 inches. Its parent materials were thick beds of unconsolidated, acid sand. Pomello fine sand occurs on a nearly level to level relief along with Immokalee, Leon, Ona, and St. Lucie soils.

Moisture conditions are more favorable than those in St. Lucie fine sand. Ona, Leon and Immokalee soils have a pan layer at higher levels than Pomello fine sand and are darker in the surface soil.

Little rainfall flows from the surface; most of the moisture soaks into the ground and drains downward. During some rainy periods the soil is saturated to the surface. During dry months the moisture content may be low and the soil droughty.

The native cover consists principally of saw palmetto, pine, runner oak, pricklypear cactus, small scrub oak, gallberry, and wiregrass.

**(36) Pople fine sand** - This nearly level, poorly drained soil is on low hammocks and in poorly defined drainageways and broad sloughs in Sarasota County. Slopes are smooth or concave and range from 0 to 2 percent.

Typically, the surface layer is very dark grayish brown fine sand about 4 inches thick. The subsurface layer is light brownish gray fine sand about 3 inches thick. The subsoil is brown and brownish yellow fine sand in the upper 21 inches and gray fine sandy loam in the lower 28 inches.

Included in this soil are small areas of Bradenton, EauGallie, and Wabasso soils. Also included are areas of soils that have a weakly stained layer of organic material above the subsoil and extending into the subsoil and areas of soils that have small fragments of iron-cemented sandstone or calcareous material at a depth of 10 to 30 inches.

The water table is within 12 inches of the surface for 1 to 6 months and at a depth of 12 to 40 inches for more than 6 months. It recedes to a depth of more than 40 inches

during extended dry periods and is above the surface for short periods after a heavy rainfall. The water capacity is low. Permeability is rapid in the surface and subsurface layers, slow or very slow in the loamy part of the subsoil, and moderate or moderately slow in the substratum. Natural fertility and the organic matter content are low.

Natural vegetation includes slash and longleaf pine, cabbage palm, wax myrtle, scattered saw palmetto, laurel oak, blue maidencane, pineland threeawn, creeping bluestem, sand cordgrass, and low panicum.

**(48) Wabasso fine sand** - This is a nearly level, poorly drained soil in areas of broad flatwoods in Manatee County. Slopes are less than 2 percent. Included in this map unit are small areas of EauGallie and Felda soils.

The water table is within 10 to 40 inches of the surface for more than 6 months a year. It is at a depth of less than 10 inches for less than 60 days in wet seasons and at a depth of more than 40 inches in very dry seasons. The available water capacity is low in the sandy layers and medium in the loamy subsoil. Permeability is rapid in the sandy surface and subsurface layers, slow in the loamy layers, and very rapid in the substratum. The natural fertility is low.

The natural vegetation consists of longleaf and slash pines, scattered cabbage palms, and an understory of saw palmetto, inkberry, wax myrtle, creeping bluestem, indiagrass, little bluestem, Florida paspalum, pineland threeawn, panicums, deertongue, grassleaf goldaster, huckleberry, and runner's oak.

# Appendix 5

## Plant and Animal Species List

### PTERIDOPHYTES

|                                                              |                                                         |
|--------------------------------------------------------------|---------------------------------------------------------|
| Giant leatherfern .....                                      | <i>Acrostichum danaeifolium</i>                         |
| American waterfern.....                                      | <i>Azolla filiculoides</i>                              |
| Swamp fern .....                                             | <i>Blechnum serrulatum</i>                              |
| Long strap fern.....                                         | <i>Campyloneurum phyllitidis</i>                        |
| Water horn fern.....                                         | <i>Ceratopteris pteridoides</i>                         |
| Southern wood fern .....                                     | <i>Dryopteris ludoviciana</i>                           |
| Foxtail club-moss.....                                       | <i>Lycopodiella alopecuroides</i>                       |
| Southern bog club-moss .....                                 | <i>Lycopodiella appressa</i>                            |
| Nodding club-moss .....                                      | <i>Lycopodiella cernua</i>                              |
| Japanese climbing fern * .....                               | <i>Lygodium japonicum</i>                               |
| Old World climbing fern;<br>Small-leaf climbing fern * ..... | <i>Lygodium microphyllum</i>                            |
| Marianna maiden fern *.....                                  | <i>Macrothelypteris torresiana</i>                      |
| Tuberous sword fern *.....                                   | <i>Nephrolepis cordifolia</i>                           |
| Sword fern.....                                              | <i>Nephrolepis exaltata</i>                             |
| Stalked adder's-tongue.....                                  | <i>Ophioglossum petiolatum</i>                          |
| Cinnamon fern .....                                          | <i>Osmunda cinnamomea</i>                               |
| Royal fern.....                                              | <i>Osmunda regalis</i> var. <i>spectabilis</i>          |
| Golden polypody .....                                        | <i>Phlebodium aureum</i>                                |
| Resurrection fern .....                                      | <i>Pleopeltis polypodioides</i> var. <i>michauxiana</i> |
| Bracken fern .....                                           | <i>Pteridium aquilinum</i>                              |
| Water spangles * .....                                       | <i>Salvinia minima</i>                                  |
| Downy shield fern * .....                                    | <i>Thelypteris dentata</i>                              |
| Hairy maiden fern .....                                      | <i>Thelypteris hispidula</i> var. <i>versicolor</i>     |
| Hottentot fern .....                                         | <i>Thelypteris interrupta</i>                           |
| Shoestring fern.....                                         | <i>Vittaria lineata</i>                                 |

### GYMNOSPERMS

|                               |                                          |
|-------------------------------|------------------------------------------|
| Red cedar .....               | <i>Juniperus virginiana</i>              |
| Sand pine .....               | <i>Pinus clausa</i>                      |
| South Florida slash pine..... | <i>Pinus elliottii</i> var. <i>densa</i> |
| Longleaf pine .....           | <i>Pinus palustris</i>                   |
| Bald-cypress .....            | <i>Taxodium distichum</i>                |

### ANGIOSPERMS

|                                 |                                    |
|---------------------------------|------------------------------------|
| Rosary pea *.....               | <i>Abrus precatorius</i>           |
| Slender threeseed mercury ..... | <i>Acalypha gracilens</i>          |
| Red maple .....                 | <i>Acer rubrum</i>                 |
| Shyleaf.....                    | <i>Aeschynomene americana</i>      |
| Indian jointvetch * .....       | <i>Aeschynomene indica</i>         |
| Seminole false foxglove.....    | <i>Agalinis filifolia</i>          |
| Flaxleaf false foxglove .....   | <i>Agalinis linifolia</i>          |
| Purple false foxglove .....     | <i>Agalinis purpurea</i>           |
| Hammock snakeroot .....         | <i>Ageratina jucunda</i>           |
| Woman's tongue * .....          | <i>Albizia lebbbeck</i>            |
| Yellow colicroot .....          | <i>Aletris lutea</i>               |
| Alligatorweed * .....           | <i>Alternanthera philoxeroides</i> |

\* Non-native species

## Appendix 5—Plant and Animal List

|                                    |                                                     |
|------------------------------------|-----------------------------------------------------|
| Southern amaranth.....             | <i>Amaranthus australis</i>                         |
| Purple amaranth * .....            | <i>Amaranthus blitum</i> subsp. <i>emarginatus</i>  |
| Spiny amaranth * .....             | <i>Amaranthus spinosus</i>                          |
| Common ragweed.....                | <i>Ambrosia artemisiifolia</i>                      |
| Clusterspike false indigo .....    | <i>Amorpha herbacea</i>                             |
| Peppervine.....                    | <i>Ampelopsis arborea</i>                           |
| Blue maidencane .....              | <i>Amphicarpum muhlenbergianum</i>                  |
| Chaffweed .....                    | <i>Anagallis minima</i>                             |
| Purple bluestem.....               | <i>Andropogon glomeratus</i> var. <i>glaucopsis</i> |
| Bushy bluestem.....                | <i>Andropogon glomeratus</i> var. <i>pumilus</i>    |
| Elliott's Bluestem .....           | <i>Andropogon gyrans</i>                            |
| Splitbeard bluestem .....          | <i>Andropogon ternarius</i>                         |
| Chalky bluestem .....              | <i>Andropogon virginicus</i> var. <i>glaucus</i>    |
| Broomsedge bluestem .....          | <i>Andropogon virginicus</i>                        |
| Groundnut .....                    | <i>Apios americana</i>                              |
| Nodding nixie .....                | <i>Apteria aphylla</i>                              |
| Marlberry.....                     | <i>Ardisia escallonioides</i>                       |
| Mexican pricklypoppy .....         | <i>Argemone mexicana</i>                            |
| Jack-in-the-pulpit .....           | <i>Arisaema triphyllum</i>                          |
| Woollysheath threeawn .....        | <i>Aristida lanosa</i>                              |
| Tall threeawn .....                | <i>Aristida patula</i>                              |
| Hillsboro threeawn.....            | <i>Aristida purpurascens</i> var. <i>tenuispica</i> |
| Arrowfeather threeawn.....         | <i>Aristida purpurascens</i> var. <i>virgata</i>    |
| Bottlebrush threeawn.....          | <i>Aristida spiciformis</i>                         |
| Wiregrass .....                    | <i>Aristida stricta</i> var. <i>beyrichiana</i>     |
| Ovateleaf indian plantain .....    | <i>Arnoglossum ovatum</i>                           |
| Largeflower milkweed.....          | <i>Asclepias connivens</i>                          |
| Scarlet milkweed * .....           | <i>Asclepias curassavica</i>                        |
| Florida milkweed.....              | <i>Asclepias feayi</i>                              |
| Swamp milkweed.....                | <i>Asclepias incarnata</i>                          |
| Fewflower milkweed.....            | <i>Asclepias lanceolata</i>                         |
| Savannah milkweed .....            | <i>Asclepias pedicellata</i>                        |
| Swamp milkweed.....                | <i>Asclepias perennis</i>                           |
| Butterflyweed.....                 | <i>Asclepias tuberosa</i>                           |
| Showy milkwort.....                | <i>Asemeia violacea</i>                             |
| Smallflowered pawpaw .....         | <i>Asimina parviflora</i>                           |
| Netted pawpaw .....                | <i>Asimina reticulata</i>                           |
| Fernleaf yellow false foxglove ... | <i>Aureolaria pedicularia</i> var. <i>pectinata</i> |
| Common carpetgrass .....           | <i>Axonopus fissifolius</i>                         |
| Big carpetgrass .....              | <i>Axonopus furcatus</i>                            |
| Silverling .....                   | <i>Baccharis glomeruliflora</i>                     |
| Groundsel tree .....               | <i>Baccharis halimifolia</i>                        |
| Blue waterhyssop .....             | <i>Bacopa caroliniana</i>                           |
| Tropical waterhyssop.....          | <i>Bacopa innominata</i>                            |
| Herb-of-grace.....                 | <i>Bacopa monnieri</i>                              |
| Coastalplain honeycombhead ...     | <i>Balduina angustifolia</i>                        |
| Bamboo * .....                     | <i>Bambusa</i> sp.                                  |
| White screwstem .....              | <i>Bartonia verna</i>                               |
| Tarflower .....                    | <i>Bejaria racemosa</i>                             |
| Rattan vine .....                  | <i>Berchemia scandens</i>                           |
| Beggarticks.....                   | <i>Bidens alba</i> var. <i>radiata</i>              |
| Spanish needles .....              | <i>Bidens bipinnata</i>                             |
| Burrmarigold .....                 | <i>Bidens laevis</i>                                |
| Smallfruit beggarticks .....       | <i>Bidens mitis</i>                                 |
| Pineland Rayless goldenrod .....   | <i>Bigelowia nudata</i> subsp. <i>australis</i>     |
| Bog hemp; false nettle .....       | <i>Boehmeria cylindrica</i>                         |
| Smallhead doll's daisy .....       | <i>Boltonia diffusa</i>                             |
| Rape * .....                       | <i>Brassica rapa</i>                                |
| American Blueheart.....            | <i>Buchnera americana</i>                           |



|                                |                                                           |        |
|--------------------------------|-----------------------------------------------------------|--------|
| Capillary hairsedge .....      | <i>Bulbostylis ciliatifolia</i>                           |        |
| Sandyfield hairsedge .....     | <i>Bulbostylis stenophylla</i>                            |        |
| Bluethread .....               | <i>Burmannia biflora</i>                                  |        |
| Southern bluethread .....      | <i>Burmannia capitata</i>                                 |        |
| American beautyberry .....     | <i>Callicarpa americana</i>                               |        |
| Florida scrub roseling .....   | <i>Callisia ornata</i>                                    |        |
| Manyflowered grasspink .....   | <i>Calopogon multiflorus</i>                              | DP, MF |
| Pale grasspink .....           | <i>Calopogon pallidus</i>                                 |        |
| Straggler daisy * .....        | <i>Calyptocarpus vialis</i>                               |        |
| Florida bellflower .....       | <i>Campanula floridana</i>                                |        |
| Trumpet creeper .....          | <i>Campsis radicans</i>                                   |        |
| Golden canna .....             | <i>Canna flaccida</i>                                     |        |
| Giant sedge .....              | <i>Carex gigantea</i>                                     |        |
| Long's sedge .....             | <i>Carex longii</i>                                       |        |
| False Hop sedge .....          | <i>Carex lupuliformis</i>                                 |        |
| Walter's sedge .....           | <i>Carex stipata</i>                                      |        |
| Warty sedge .....              | <i>Carex verrucosa</i>                                    |        |
| Florida paintbrush .....       | <i>Carphephorus corymbosus</i>                            |        |
| False vanillaleaf .....        | <i>Carphephorus odoratissimus</i> var. <i>subtropicus</i> |        |
| Hairy Chaffhead .....          | <i>Carphephorus paniculatus</i>                           |        |
| American Devilwood .....       | <i>Cartrema americana</i>                                 |        |
| Pignut hickory .....           | <i>Carya glabra</i>                                       |        |
| Love vine .....                | <i>Cassytha filiformis</i>                                |        |
| Madagascar periwinkle * .....  | <i>Catharanthus roseus</i>                                |        |
| Hackberry .....                | <i>Celtis laevigata</i>                                   |        |
| Coast sandspur .....           | <i>Cenchrus spiniflex</i>                                 |        |
| Spadeleaf .....                | <i>Centella asiatica</i>                                  |        |
| Spurred butterfly-pea .....    | <i>Centrosema virginianum</i>                             |        |
| Buttonbrush .....              | <i>Cephalanthus occidentalis</i>                          |        |
| Coontail .....                 | <i>Ceratophyllum demersum</i>                             |        |
| Partridge pea .....            | <i>Chamaecrista fasciculata</i>                           |        |
| Sensitive pea .....            | <i>Chamaecrista nictitans</i> var. <i>aspera</i>          |        |
| Heartleaf sandmat .....        | <i>Chamaesyce cordifolia</i>                              |        |
| Pillpod sandmat .....          | <i>Chamaesyce hirta</i>                                   |        |
| Hyssopleaf sandmat .....       | <i>Chamaesyce hyssopifolia</i>                            |        |
| Florida Alicia .....           | <i>Chapmannia floridana</i>                               |        |
| Pineland daisy .....           | <i>Chaptalia tomentosa</i>                                |        |
| Lambs-quarters * .....         | <i>Chenopodium album</i>                                  |        |
| Mexican tea* .....             | <i>Chenopodium ambrosioides</i>                           |        |
| White fringetree .....         | <i>Chionanthus virginicus</i>                             |        |
| Maryland goldenaster .....     | <i>Chrysopsis mariana</i>                                 |        |
| Scrubland goldenaster .....    | <i>Chrysopsis subulata</i>                                |        |
| Florida false beardgrass ..... | <i>Chrysopogon pauciflorus</i>                            |        |
| Spotted Water hemlock .....    | <i>Cicuta maculata</i>                                    |        |
| Camphortree * .....            | <i>Cinnamomum camphora</i>                                |        |
| Purple thistle .....           | <i>Cirsium horridulum</i>                                 |        |
| Nuttall's thistle .....        | <i>Cirsium nuttallii</i>                                  |        |
| Sour orange * .....            | <i>Citrus x aurantium</i>                                 |        |
| Lemon * .....                  | <i>Citrus x limon</i>                                     |        |
| Sawgrass .....                 | <i>Cladium jamaicense</i>                                 |        |
| Pine hyacinth .....            | <i>Clematis baldwinii</i>                                 |        |
| Leather flower .....           | <i>Clematis crispa</i>                                    |        |
| Turk's turban* .....           | <i>Clerodendrum indicum</i>                               |        |
| Tread-softly .....             | <i>Cnidoscolus stimulosus</i>                             |        |
| Carolina jointtailgrass .....  | <i>Coelorachis cylindrica</i>                             |        |
| Wrinkled jointtailgrass .....  | <i>Coelorachis rugosa</i>                                 |        |
| Wild taro * .....              | <i>Colocasia esculenta</i>                                |        |
| Dayflower * .....              | <i>Commelina diffusa</i>                                  |        |
| Whitemouth dayflower .....     | <i>Commelina erecta</i>                                   |        |

\* Non-native species

## Appendix 5—Plant and Animal List

|                                |                                                   |
|--------------------------------|---------------------------------------------------|
| Blue mistflower .....          | <i>Conoclinium coelestinum</i>                    |
| Canadian horsetweed .....      | <i>Conyza canadensis</i>                          |
| Florida tickseed .....         | <i>Coreopsis floridana</i>                        |
| Leavenworth's tickseed.....    | <i>Coreopsis leavenworthii</i>                    |
| Swamp dogwood .....            | <i>Cornus foemina</i>                             |
| String-lily .....              | <i>Crinum americanum</i>                          |
| Pinebarren frostweed .....     | <i>Crocanthemum corymbosum</i>                    |
| Smooth rattlebox* .....        | <i>Crotalaria pallida</i> var. <i>obovata</i>     |
| Rabbitbells .....              | <i>Crotalaria rotundifolia</i>                    |
| Vente Conmigo.....             | <i>Croton glandulosus</i> var. <i>glandulosus</i> |
| Rushfoil .....                 | <i>Croton michauxii</i>                           |
| Columbian waxweed *.....       | <i>Cuphea carthagenensis</i>                      |
| Fiveangled dodder .....        | <i>Cuscuta pentagona</i>                          |
| Leafless swallowwort.....      | <i>Cynanchum scoparium</i>                        |
| Bermudagrass * .....           | <i>Cynodon dactylon</i>                           |
| Jointed flatsedge .....        | <i>Cyperus articulatus</i>                        |
| Poorland flatsedge .....       | <i>Cyperus compressus</i>                         |
| Baldwin's flatsedge .....      | <i>Cyperus croceus</i>                            |
| Swamp flatsedge .....          | <i>Cyperus distinctus</i>                         |
| Redroot flatsedge .....        | <i>Cyperus erythrorhizos</i>                      |
| Yellow nutgrass * .....        | <i>Cyperus esculentus</i>                         |
| Wiry flatsetge.....            | <i>Cyperus filiculmis</i>                         |
| Haspan flatsedge .....         | <i>Cyperus haspan</i>                             |
| Swamp flatsedge .....          | <i>Cyperus ligularis</i>                          |
| Fragrant flatsedge .....       | <i>Cyperus odoratus</i>                           |
| Pinebarren flatsedge .....     | <i>Cyperus ovatus</i>                             |
| Manyspike flatsedge.....       | <i>Cyperus polystachyos</i>                       |
| Nutgrass * .....               | <i>Cyperus rotundus</i>                           |
| Strawcolored flatsedge .....   | <i>Cyperus stenolepis</i>                         |
| Tropical flatsedge .....       | <i>Cyperus surinamensis</i>                       |
| Fourangle flatsedge.....       | <i>Cyperus tetragonus</i>                         |
| Durban crowfootgrass *.....    | <i>Dactyloctenium aegyptium</i>                   |
| Whitetassels.....              | <i>Dalea carnea</i>                               |
| Feay's prairieclover .....     | <i>Dalea feayi</i>                                |
| Summer farewell .....          | <i>Dalea pinnata</i> var. <i>adenopoda</i>        |
| Western tansymustard .....     | <i>Descurainia pinnata</i>                        |
| Zarabacoa comun * .....        | <i>Desmodium incanum</i>                          |
| Panicked ticktrefoil.....      | <i>Desmodium paniculatum</i>                      |
| Slimleaf ticktrefoil .....     | <i>Desmodium tenuifolium</i>                      |
| Dixie ticktrefoil * .....      | <i>Desmodium tortuosum</i>                        |
| Threeflower ticktrefoil *..... | <i>Desmodium triflorum</i>                        |
| Needleleaf witchgrass.....     | <i>Dichanthelium aciculare</i>                    |
| Variable witchgrass .....      | <i>Dichanthelium commutatum</i>                   |
| Cypress witchgrass .....       | <i>Dichanthelium dichotomum</i>                   |
| Cypress witchgrass .....       | <i>Dichanthelium ensifolium</i>                   |
| Erectleaf witchgrass .....     | <i>Dichanthelium erectifolium</i>                 |
| Hemlock witchgrass .....       | <i>Dichanthelium portoricense</i>                 |
| Roughhair witchgrass .....     | <i>Dichanthelium strigosum</i>                    |
| Ponysfoot .....                | <i>Dichondra caroliniensis</i>                    |
| Sixangle foldwing.....         | <i>Dicliptera sexangularis</i>                    |
| Southern crabgrass.....        | <i>Digitaria ciliaris</i>                         |
| Pangolagrass * .....           | <i>Digitaria eriantha</i>                         |
| Blanket crabgrass .....        | <i>Digitaria serotina</i>                         |
| Poor joe.....                  | <i>Diodia teres</i>                               |
| Buttonweed .....               | <i>Diodia virginiana</i>                          |
| Air-potato * .....             | <i>Dioscorea bulbifera</i>                        |
| Persimmon .....                | <i>Diospyros virginiana</i>                       |
| Pink sundew.....               | <i>Drosera capillaris</i>                         |
| West Indian chickweed * .....  | <i>Drymaria cordata</i>                           |

|                                  |                                  |
|----------------------------------|----------------------------------|
| Oblongleaf twinflower.....       | <i>Dyschoriste oblongifolia</i>  |
| Barnyardgrass * .....            | <i>Echinochloa crus-galli</i>    |
| Coast cockspur.....              | <i>Echinochloa walteri</i>       |
| False daisy.....                 | <i>Eclipta prostrata</i>         |
| Water-hyacinth * .....           | <i>Eichhornia crassipes</i>      |
| Roadgrass.....                   | <i>Eleocharis baldwinii</i>      |
| Slim spikerush.....              | <i>Eleocharis elongata</i>       |
| Jointed spikerush.....           | <i>Eleocharis equisetoides</i>   |
| Yellow spikerush.....            | <i>Eleocharis flavescens</i>     |
| Canada spikerush .....           | <i>Eleocharis geniculata</i>     |
| Black spikerush * .....          | <i>Eleocharis nigrescens</i>     |
| Viviparous spikerush .....       | <i>Eleocharis vivipara</i>       |
| Tall elephantsfoot .....         | <i>Elephantopus elatus</i>       |
| Indian goosegrass * .....        | <i>Eleusine indica</i>           |
| Florida tasselflower * .....     | <i>Emilia fosbergii</i>          |
| Lilac tasselflower * .....       | <i>Emilia sonchifolia</i>        |
| Florida butterfly orchid .....   | <i>Encyclia tampensis</i>        |
| Thalia lovegrass * .....         | <i>Eragrostis atrovirens</i>     |
| Elliott lovegrass .....          | <i>Eragrostis elliottii</i>      |
| Teal lovegrass .....             | <i>Eragrostis hypnoides</i>      |
| Purple lovegrass .....           | <i>Eragrostis spectabilis</i>    |
| Fireweed.....                    | <i>Erechtites hieraciifolius</i> |
| Centipedegrass * .....           | <i>Eremochloa ophiuroides</i>    |
| Oakleaf fleabane.....            | <i>Erigeron quercifolius</i>     |
| Early whitetop fleabane .....    | <i>Erigeron vernus</i>           |
| Flattened pipewort.....          | <i>Eriocaulon compressum</i>     |
| Tenangle pipewort .....          | <i>Eriocaulon decangulare</i>    |
| Ravenel's pipewort.....          | <i>Eriocaulon ravenelii</i>      |
| Fragrant eryngo.....             | <i>Eryngium aromaticum</i>       |
| Baldwin's eryngo .....           | <i>Eryngium baldwinii</i>        |
| Button rattlesnakemaster .....   | <i>Eryngium yuccifolium</i>      |
| Coralbean .....                  | <i>Erythrina herbacea</i>        |
| Eucalyptus * .....               | <i>Eucalyptus</i> sp.            |
| White stopper.....               | <i>Eugenia axillaris</i>         |
| Surinam cherry * .....           | <i>Eugenia uniflora</i>          |
| Wild coco.....                   | <i>Eulophia alta</i>             |
| Dogfennel .....                  | <i>Eupatorium capillifolium</i>  |
| Falsefennel .....                | <i>Eupatorium leptophyllum</i>   |
| Mohr's boneset.....              | <i>Eupatorium mohrii</i>         |
| False hoarhound .....            | <i>Eupatorium rotundifolium</i>  |
| Lateflowering thoroughwort ..... | <i>Eupatorium serotinum</i>      |
| Saltmarsh fingergrass .....      | <i>Eustachys glauca</i>          |
| Pinewoods fingergrass .....      | <i>Eustachys petraea</i>         |
| Slender flattop goldenrod.....   | <i>Euthamia caroliniana</i>      |
| Strangler fig.....               | <i>Ficus aurea</i>               |
| Weeping Fig * .....              | <i>Ficus benamina</i>            |
| Slender fimbry .....             | <i>Fimbristylis autumnalis</i>   |
| Carolina fimbry.....             | <i>Fimbristylis caroliniana</i>  |
| Hurricane-grass.....             | <i>Fimbristylis cymosa</i>       |
| Ditch fimbry * .....             | <i>Fimbristylis schoenoides</i>  |
| Marsh fimbry.....                | <i>Fimbristylis spadicea</i>     |
| Pop ash, Water ash.....          | <i>Fraxinus caroliniana</i>      |
| Cottonweed .....                 | <i>Froelichia floridana</i>      |
| Dwarf umbrellasedge .....        | <i>Fuirena pumila</i>            |
| Southern umbrellasedge.....      | <i>Fuirena scirpoidea</i>        |
| Elliott's milkpea .....          | <i>Galactia elliottii</i>        |
| Downy milkpea.....               | <i>Galactia regularis</i>        |
| Eastern milkpea.....             | <i>Galactia volubilis</i>        |
| Stiff marsh bedstraw .....       | <i>Galium tinctorium</i>         |

\* Non-native species



## Appendix 5—Plant and Animal List

|                                   |                                                   |         |
|-----------------------------------|---------------------------------------------------|---------|
| Delicate everlasting.....         | <i>Gamochaeta antillana</i>                       |         |
| Pennsylvania cudweed.....         | <i>Gamochaeta pensylvanica</i>                    |         |
| Southern beeblossom.....          | <i>Gaura angustifolia</i>                         |         |
| Dwarf huckleberry .....           | <i>Gaylussacia dumosa</i>                         |         |
| Blue huckleberry.....             | <i>Gaylussacia frondosa</i> var. <i>tomentosa</i> |         |
| Yellow jessamine .....            | <i>Gelsemium sempervirens</i>                     |         |
| Cranesbill .....                  | <i>Geranium carolinianum</i>                      |         |
| Tampa mock vervain.....           | <i>Glandularia tampensis</i>                      | DP, MF  |
| Water locust.....                 | <i>Gleditsia aquatica</i>                         |         |
| Prostrate globe amaranth *.....   | <i>Gomphrena serrata</i>                          |         |
| Angularfruit milkvine.....        | <i>Gonolobus suberosus</i>                        | MEH, FS |
| Loblolly bay .....                | <i>Gordonia lasianthus</i>                        |         |
| Rough hedgehyssop .....           | <i>Gratiola hispida</i>                           |         |
| Shaggy hedgehyssop .....          | <i>Gratiola pilosa</i>                            |         |
| Branched hedgehyssop.....         | <i>Gratiola ramosa</i>                            |         |
| Chapman's skeletongrass .....     | <i>Gymnopogon chapmanianus</i>                    |         |
| False reinorchid .....            | <i>Habenaria floribunda</i>                       |         |
| Waterspider false reinorchid..... | <i>Habenaria repens</i>                           |         |
| Firebush .....                    | <i>Hamelia patens</i>                             |         |
| Threadroot orchid .....           | <i>Harrisella porrecta</i>                        | BS, BG  |
| Bitterweed; Spanish daisy.....    | <i>Helenium amarum</i>                            |         |
| Southeastern sneezeweed .....     | <i>Helenium pinnatifidum</i>                      |         |
| Southeastern sunflower.....       | <i>Helianthus agrestis</i>                        |         |
| Swamp sunflower .....             | <i>Helianthus angustifolius</i>                   |         |
| Pineland heliotrope .....         | <i>Heliotropium polyphyllum</i>                   |         |
| Camphorweed .....                 | <i>Heterotheca subaxillaris</i>                   |         |
| Swamp rosemallow .....            | <i>Hibiscus grandiflorus</i>                      |         |
| Coastalplain hawkweed .....       | <i>Hieracium megacephalon</i>                     |         |
| Innocence.....                    | <i>Houstonia procumbens</i>                       |         |
| Hydrilla *.....                   | <i>Hydrilla verticillata</i>                      |         |
| Floating marshpennywort .....     | <i>Hydrocotyle ranunculoides</i>                  |         |
| Manyflower marsh pennywort...     | <i>Hydrocotyle umbellata</i>                      |         |
| Whorled marshpennywort.....       | <i>Hydrocotyle verticillata</i>                   |         |
| Skyflower .....                   | <i>Hydrolea corymbosa</i>                         |         |
| West Indian marshgrass * .....    | <i>Hymenachne amplexicaulis</i>                   |         |
| Alligatorlily.....                | <i>Hymenocallis palmeri</i>                       |         |
| Florida spiderlily .....          | <i>Hymenocallis tridentata</i>                    |         |
| Coastal plain St. John's wort ... | <i>Hypericum brachyphyllum</i>                    |         |
| Roundpod St. John's-wort.....     | <i>Hypericum cistifolium</i>                      |         |
| St. Peter's-wort .....            | <i>Hypericum crux-andreae</i>                     |         |
| Sandweed.....                     | <i>Hypericum fasciculatum</i>                     |         |
| Pineweeds .....                   | <i>Hypericum gentianoides</i>                     |         |
| St. Andrew's cross .....          | <i>Hypericum hypericoides</i>                     |         |
| Dwarf St. John's-wort.....        | <i>Hypericum mutilum</i>                          |         |
| Myrtleleaf St. John's-wort .....  | <i>Hypericum myrtifolium</i>                      |         |
| Atlantic St. John's-wort .....    | <i>Hypericum tenuifolium</i>                      |         |
| Fourpetal St. John's-wort.....    | <i>Hypericum tetrapetalum</i>                     |         |
| Common yellow stargrass .....     | <i>Hypoxis curtissii</i>                          |         |
| Fringed yellow stargrass .....    | <i>Hypoxis juncea</i>                             |         |
| Musky mint.....                   | <i>Hyptis alata</i>                               |         |
| Bush mint * .....                 | <i>Hyptis mutabilis</i>                           |         |
| Carolina holly; Sand holly .....  | <i>Ilex ambigua</i>                               |         |
| Dahoon holly.....                 | <i>Ilex cassine</i>                               |         |
| Inkberry; Gallberry .....         | <i>Ilex glabra</i>                                |         |
| Cogon grass * .....               | <i>Imperata cylindrica</i>                        |         |
| Hairy indigo *.....               | <i>Indigofera hirsuta</i>                         |         |
| Tievine .....                     | <i>Ipomoea cordatotriloba</i>                     |         |
| Man-of-the-earth.....             | <i>Ipomoea pandurata</i>                          |         |
| Cypressvine * .....               | <i>Ipomoea quamoclit</i>                          |         |

|                                  |                                                   |        |
|----------------------------------|---------------------------------------------------|--------|
| Saltmarsh morning-glory .....    | <i>Ipomoea sagittata</i>                          |        |
| Juba's bush.....                 | <i>Iresine diffusa</i>                            |        |
| Prairie iris .....               | <i>Iris hexagona</i>                              |        |
| Virginia willow .....            | <i>Itea virginica</i>                             |        |
| Piedmont marshelder .....        | <i>Iva microcephala</i>                           |        |
| Forked rush .....                | <i>Juncus dichotomus</i>                          |        |
| Soft rush .....                  | <i>Juncus effusus</i> var. <i>solutus</i>         |        |
| Shore rush.....                  | <i>Juncus marginatus</i>                          |        |
| Bighead rush.....                | <i>Juncus megacephalus</i>                        |        |
| Manyhead rush.....               | <i>Juncus polycephalos</i>                        |        |
| Lesser creeping rush .....       | <i>Juncus repens</i>                              |        |
| Needlepod rush .....             | <i>Juncus scirpoides</i>                          |        |
| Pineland waterwillow .....       | <i>Justicia angusta</i>                           |        |
| Saltmarsh mallow .....           | <i>Kosteletzkya pentacarpos</i>                   |        |
| Shortleaf sedge *                | <i>Kyllinga brevifolia</i>                        |        |
| Fragrant spikesedge.....         | <i>Kyllinga odorata</i>                           |        |
| Redroot .....                    | <i>Lachnanthes caroliana</i>                      |        |
| Whitehead bogbutton .....        | <i>Lachnocaulon anceps</i>                        |        |
| Grassleaf lettuce.....           | <i>Lactuca graminifolia</i>                       |        |
| Dotted duckweed *                | <i>Landoltia punctata</i>                         |        |
| Shrub verbena *                  | <i>Lantana camara</i>                             |        |
| Drysand pinweed .....            | <i>Lechea divaricata</i>                          |        |
| Pineland pinweed.....            | <i>Lechea sessiliflora</i>                        |        |
| Piedmont pinweed .....           | <i>Lechea torreyi</i>                             |        |
| Southern cutgrass.....           | <i>Leersia hexandra</i>                           |        |
| Little duckweed .....            | <i>Lemna obscura</i>                              |        |
| Valdivia duckweed .....          | <i>Lemna valdiviana</i>                           |        |
| Virginia pepperweed.....         | <i>Lepidium virginicum</i>                        |        |
| Bearded sprangletop .....        | <i>Leptochloa fusca</i> subsp. <i>fasicularis</i> |        |
| Savanna gayfeather .....         | <i>Liatris savannensis</i>                        |        |
| Garber's gayfeather .....        | <i>Liatris garberi</i>                            |        |
| Slender gayfeather .....         | <i>Liatris gracilis</i>                           |        |
| Shortleaf gayfeather .....       | <i>Liatris tenuifolia</i> var. <i>quadriflora</i> |        |
| Gopher apple .....               | <i>Licania michauxii</i>                          |        |
| Pine lily .....                  | <i>Lilium catesbaei</i>                           | DP, MF |
| Frog's-bit.....                  | <i>Limnobium spongia</i>                          |        |
| Canadian toadflax .....          | <i>Linaria canadensis</i>                         |        |
| Malayasian false pimpernel *.... | <i>Lindernia crustacea</i>                        |        |
| Savannah false pimpernel.....    | <i>Lindernia grandiflora</i>                      |        |
| Stiff yellow flax.....           | <i>Linum medium</i> var. <i>texanum</i>           |        |
| American halfchaff sedge.....    | <i>Lipocarpa maculata</i>                         |        |
| Smallflower halfchaff sedge..... | <i>Lipocarpa micrantha</i>                        |        |
| Southern twayblade .....         | <i>Listera australis</i>                          | MEH    |
| Bay lobelia .....                | <i>Lobelia feayana</i>                            |        |
| Glade lobelia .....              | <i>Lobelia glandulosa</i>                         |        |
| Pineland lobelia .....           | <i>Lobelia homophylla</i>                         |        |
| White lobelia .....              | <i>Lobelia paludosa</i>                           |        |
| Piedmont primrosewillow .....    | <i>Ludwigia arcuata</i>                           |        |
| Yerba de jicotea.....            | <i>Ludwigia erecta</i>                            |        |
| Lanceleaf primrosewillow .....   | <i>Ludwigia lanceolata</i>                        |        |
| Anglestem primrosewillow.....    | <i>Ludwigia leptocarpa</i>                        |        |
| Southeastern primrosewillow....  | <i>Ludwigia linifolia</i>                         |        |
| Seaside primrosewillow .....     | <i>Ludwigia maritima</i>                          |        |
| Smallfruit primrosewillow .....  | <i>Ludwigia microcarpa</i>                        |        |
| Mexican primrosewillow .....     | <i>Ludwigia octovalvis</i>                        |        |
| Marsh seedbox .....              | <i>Ludwigia palustris</i>                         |        |
| Peruvian primrosewillow *        | <i>Ludwigia peruviana</i>                         |        |
| Hairy primrosewillow .....       | <i>Ludwigia pilosa</i>                            |        |
| Creeping primrosewillow .....    | <i>Ludwigia repens</i>                            |        |

\* Non-native species

## Appendix 5—Plant and Animal List

|                                  |                                                        |              |
|----------------------------------|--------------------------------------------------------|--------------|
| Shrubby primrosewillow .....     | <i>Ludwigia suffruticosa</i>                           |              |
| Southern watergrass .....        | <i>Luziola fluitans</i>                                |              |
| Rose-rush, Skeletonplant .....   | <i>Lygodesmia aphylla</i>                              |              |
| Rusty Iyonia, Staggerbush .....  | <i>Lyonia fruticosa</i>                                |              |
| Maleberry .....                  | <i>Lyonia ligustrina</i> var. <i>foliosiflora</i>      |              |
| Shiny Iyonia, Fetterbush .....   | <i>Lyonia lucida</i>                                   |              |
| Winged loosestrife .....         | <i>Lythrum alatum</i> var. <i>lanceolatum</i>          |              |
| Lowland loosestrife .....        | <i>Lythrum flagellare</i>                              | DM, FM, RFLK |
| Wild Bushbean *                  | <i>Macroptilium lathyroides</i>                        |              |
| Sweetbay .....                   | <i>Magnolia virginiana</i>                             |              |
| Axilflower .....                 | <i>Mecardonia acuminata</i> subsp. <i>peninsularis</i> |              |
| Black medic *                    | <i>Medicago lupulina</i>                               |              |
| Punktree *                       | <i>Melaleuca quinquenervia</i>                         |              |
| Snow squarestem .....            | <i>Melanthera nivea</i>                                |              |
| White sweetclover *              | <i>Melilotus albus</i>                                 |              |
| Rose Natalgrass *                | <i>Mellinis repens</i>                                 |              |
| Bretonica peluda .....           | <i>Melochia spicata</i>                                |              |
| Creeping cucumber .....          | <i>Melothria pendula</i>                               |              |
| Manatee mudflower .....          | <i>Micranthemum glomeratum</i>                         |              |
| Florida Keys hempvine .....      | <i>Mikania cordifolia</i>                              |              |
| Climbing hempvine .....          | <i>Mikania scandens</i>                                |              |
| Powderpuff .....                 | <i>Mimosa strigillosa</i>                              |              |
| Four-o' clock *                  | <i>Mirabilis jalapa</i>                                |              |
| Partridge berry; Twinberry ..... | <i>Mitchella repens</i>                                |              |
| Swamp Hornpod .....              | <i>Mitreola sessilifolia</i>                           |              |
| Balsampear; balsam apple * ....  | <i>Momordica charantia</i>                             |              |
| Red mulberry .....               | <i>Morus rubra</i>                                     |              |
| Hairawn muhly .....              | <i>Muhlenbergia capillaris</i>                         |              |
| Nakedstem dewflower *            | <i>Murdannia nudiflora</i>                             |              |
| Dwarf banana *                   | <i>Musa acuminata</i>                                  |              |
| Wax myrtle .....                 | <i>Myrica cerifera</i>                                 |              |
| Parrot feather *                 | <i>Myriophyllum aquaticum</i>                          |              |
| Twoleaf watermilfoil .....       | <i>Myriophyllum heterophyllum</i>                      |              |
| Myrsine .....                    | <i>Myrsine cubana</i>                                  |              |
| Spatterdock .....                | <i>Nuphar advena</i>                                   |              |
| Jameson's waterlily .....        | <i>Nymphaea jamesoniana</i>                            | DM, DS       |
| Yellow waterlily .....           | <i>Nymphaea mexicana</i>                               |              |
| American White waterlily .....   | <i>Nymphaea odorata</i>                                |              |
| Big floating heart .....         | <i>Nymphoides aquatica</i>                             |              |
| Swamp Tupelo .....               | <i>Nyssa sylvatica</i> var. <i>biflora</i>             |              |
| Whitetopped aster .....          | <i>Oclemena reticulata</i>                             |              |
| Cutleaved eveningprimrose .....  | <i>Oenothera laciniata</i>                             |              |
| Flattop mille grains * .....     | <i>Oldenlandia corymbosa</i>                           |              |
| Clustered mille grains .....     | <i>Oldenlandia uniflora</i>                            |              |
| Woodgrass; Basketgrass .....     | <i>Oplismenus hirtellus</i>                            |              |
| Prickly pear .....               | <i>Opuntia humifusa</i>                                |              |
| Goldenclub .....                 | <i>Orontium aquaticum</i>                              |              |
| Creeping woodsorrel .....        | <i>Oxalis corniculata</i>                              |              |
| Cuban bulrush *                  | <i>Oxycaryum cubense</i>                               |              |
| Butterweed .....                 | <i>Packera glabella</i>                                |              |
| Coastalplain palafoxia .....     | <i>Palafoxia integrifolia</i>                          |              |
| Beaked Panicum .....             | <i>Panicum anceps</i>                                  |              |
| Fall Panicgrass .....            | <i>Panicum dichotomiflorum</i>                         |              |
| Maidencane .....                 | <i>Panicum hemitomom</i>                               |              |
| Gaping Panicum .....             | <i>Panicum hians</i>                                   |              |
| Guineagrass *                    | <i>Panicum maximum</i>                                 |              |
| Torpedograss *                   | <i>Panicum repens</i>                                  |              |
| Redtop Panicum .....             | <i>Panicum rigidulum</i>                               |              |
| Bluejoint panicum .....          | <i>Panicum tenerum</i>                                 |              |



|                                  |                                                      |        |
|----------------------------------|------------------------------------------------------|--------|
| Warty Panicgrass .....           | <i>Panicum verrucosum</i>                            |        |
| Switch grass .....               | <i>Panicum virgatum</i>                              |        |
| Florida pellitory .....          | <i>Parietaria floridana</i>                          |        |
| Virginia creeper .....           | <i>Parthenocissus quinquefolia</i>                   |        |
| Egyptian paspalidium .....       | <i>Paspalidium geminatum</i>                         |        |
| Blue crowngrass .....            | <i>Paspalum caespitosum</i>                          |        |
| Sour paspalum .....              | <i>Paspalum conjugatum</i>                           |        |
| Mudbank crowngrass.....          | <i>Paspalum distichum</i>                            |        |
| Florida paspalum .....           | <i>Paspalum floridanum</i>                           |        |
| Field paspalum .....             | <i>Paspalum laeve</i>                                |        |
| Bahia grass * .....              | <i>Paspalum notatum</i>                              |        |
| Early paspalum.....              | <i>Paspalum praecox</i>                              |        |
| Water paspalum .....             | <i>Paspalum repens</i>                               |        |
| Thin paspalum.....               | <i>Paspalum setaceum</i>                             |        |
| Vaseygrass * .....               | <i>Paspalum urvillei</i>                             |        |
| May-pop passionflower .....      | <i>Passiflora incarnata</i>                          |        |
| Corkystemmed passionflower ...   | <i>Passiflora suberosa</i>                           |        |
| Florida cinchweed .....          | <i>Pectis linearifolia</i>                           |        |
| Spreading cinchweed .....        | <i>Pectis prostrata</i>                              |        |
| Green arrow arum .....           | <i>Peltandra virginica</i>                           |        |
| Manyflower beardtongue .....     | <i>Penstemon multiflorus</i>                         |        |
| Hale's pentodon.....             | <i>Pentodon pentandrus</i>                           |        |
| Red bay.....                     | <i>Persea borbonia</i>                               |        |
| Swamp bay.....                   | <i>Persea palustris</i>                              |        |
| Florida false sunflower.....     | <i>Phoebanthus grandiflorus</i>                      |        |
| Senegal date palm * .....        | <i>Phoenix reclinata</i>                             |        |
| Oak Mistletoe .....              | <i>Phoradendron leucarpum</i>                        |        |
| Common Reed .....                | <i>Phragmites australis</i>                          |        |
| Turkey Tangle fogfruit .....     | <i>Phyla nodiflora</i>                               |        |
| Mascarene Island leafflower * .. | <i>Phyllanthus tenellus</i>                          |        |
| Chamber bitter * .....           | <i>Phyllanthus urinaria</i>                          |        |
| Cutleaf groundcherry.....        | <i>Physalis angulata</i>                             |        |
| Cypresshead groundcherry.....    | <i>Physalis arenicola</i>                            |        |
| Husk tomato .....                | <i>Physalis pubescens</i>                            |        |
| Walter's groundcherry .....      | <i>Physalis walteri</i>                              |        |
| Eastern false dragonhead .....   | <i>Physostegia purpurea</i>                          |        |
| American pokeweed .....          | <i>Phytolacca americana</i>                          |        |
| Wild pennyroyal.....             | <i>Piloblephis rigida</i>                            |        |
| Blueflower butterwort.....       | <i>Pinguicula caerulea</i>                           | MF, DM |
| Yellow butterwort .....          | <i>Pinguicula lutea</i>                              | MF, DM |
| Small butterwort.....            | <i>Pinguicula pumila</i>                             |        |
| Florida Needlegrass.....         | <i>Piptochaetium avenacioides</i>                    |        |
| Pitted stripe seed.....          | <i>Piriqueta cistoides</i> subsp. <i>caroliniana</i> |        |
| Water-lettuce * .....            | <i>Pistia stratiotes</i>                             |        |
| Narrowleaf silkgrass .....       | <i>Pityopsis graminifolia</i>                        |        |
| Common plantain * .....          | <i>Plantago major</i>                                |        |
| Southern plantain .....          | <i>Plantago virginica</i>                            |        |
| Rosy camphorweed.....            | <i>Pluchea baccharis</i>                             |        |
| Sweetscent .....                 | <i>Pluchea odorata</i>                               |        |
| Painted leaf.....                | <i>Poinsettia cyanthophora</i>                       |        |
| Baldwin's milkwort.....          | <i>Polygala balduinii</i>                            |        |
| Drumheads .....                  | <i>Polygala cruciata</i>                             |        |
| Tall pinebarren milkwort .....   | <i>Polygala cymosa</i>                               |        |
| Procession flower.....           | <i>Polygala incarnata</i>                            |        |
| Orange milkwort.....             | <i>Polygala lutea</i>                                |        |
| Candyroot.....                   | <i>Polygala nana</i>                                 |        |
| Low pinebarren milkwort .....    | <i>Polygala ramosa</i>                               |        |
| Yellow milkwort .....            | <i>Polygala rugelii</i>                              |        |
| Coastal plain milkwort .....     | <i>Polygala setacea</i>                              |        |

\* Non-native species

## Appendix 5—Plant and Animal List

|                                 |                                   |         |
|---------------------------------|-----------------------------------|---------|
| Hairy jointweed .....           | <i>Polygonella ciliata</i>        |         |
| Denseflower knotweed .....      | <i>Polygonum glabrum</i>          |         |
| Mild waterpepper .....          | <i>Polygonum hydropiperoides</i>  |         |
| Dotted smartweed .....          | <i>Polygonum punctatum</i>        |         |
| Bog smartweed .....             | <i>Polygonum setaceum</i>         |         |
| Rabbitfootgrass * .....         | <i>Polypogon monspeliensis</i>    |         |
| Rustweed.....                   | <i>Polypremum procumbens</i>      |         |
| Pickerelweed .....              | <i>Pontederia cordata</i>         |         |
| Pink purslane .....             | <i>Portulaca pilosa</i>           |         |
| Small pondweed .....            | <i>Potamogeton pusillus</i>       |         |
| Marsh mermaidweed .....         | <i>Proserpinaca palustris</i>     |         |
| Comleaf mermaidweed .....       | <i>Proserpinaca pectinata</i>     |         |
| Carolina laurelcherry .....     | <i>Prunus caroliniana</i>         |         |
| Dogs-tongue * .....             | <i>Pseudelephantopus spicatus</i> |         |
| Guava * .....                   | <i>Psidium guajava</i>            |         |
| Wild coffee.....                | <i>Psychotria nervosa</i>         |         |
| Shortleaf wild coffee .....     | <i>Psychotria sulzneri</i>        |         |
| Blackroot .....                 | <i>Pterocaulon pycnostachyum</i>  |         |
| Giant orchid .....              | <i>Pteroglossaspis ecristata</i>  | MF, SCF |
| Mock bishop's weed .....        | <i>Ptilimnium capillaceum</i>     |         |
| Desertchickory .....            | <i>Pyrrhopappus carolinianus</i>  |         |
| Chapman's oak.....              | <i>Quercus chapmanii</i>          |         |
| Sand live oak .....             | <i>Quercus geminata</i>           |         |
| Bluejack oak .....              | <i>Quercus incana</i>             |         |
| Turkey oak .....                | <i>Quercus laevis</i>             |         |
| Laurel oak.....                 | <i>Quercus laurifolia</i>         |         |
| Dwarf live oak .....            | <i>Quercus minima</i>             |         |
| Myrtle oak .....                | <i>Quercus myrtifolia</i>         |         |
| Water oak.....                  | <i>Quercus nigra</i>              |         |
| Running oak.....                | <i>Quercus pumila</i>             |         |
| Live oak .....                  | <i>Quercus virginiana</i>         |         |
| Buckthorn.....                  | <i>Rhamnus caroliniana</i>        |         |
| West Indian meadowbeauty .....  | <i>Rhexia cubensis</i>            |         |
| Pale meadowbeauty .....         | <i>Rhexia mariana</i>             |         |
| Nuttall's meadowbeauty .....    | <i>Rhexia nuttallii</i>           |         |
| Fringed meadowbeauty .....      | <i>Rhexia petiolata</i>           |         |
| Winged sumac.....               | <i>Rhus copallinum</i>            |         |
| Michaux's snoutbean .....       | <i>Rhynchosia michauxii</i>       |         |
| Anglestem beaksedge .....       | <i>Rhynchospora caduca</i>        |         |
| Bunched beaksedge .....         | <i>Rhynchospora cephalantha</i>   |         |
| Chapman's beaksedge.....        | <i>Rhynchospora chapmanii</i>     |         |
| Fringed beaksedge.....          | <i>Rhynchospora ciliaris</i>      |         |
| Starrush whitetop .....         | <i>Rhynchospora colorata</i>      |         |
| Shortbristle horned beaksedge . | <i>Rhynchospora corniculata</i>   |         |
| Fascicled beaksedge.....        | <i>Rhynchospora fascicularis</i>  |         |
| Threadleaf beaksedge .....      | <i>Rhynchospora filifolia</i>     |         |
| Horned beaksedge .....          | <i>Rhynchospora inundata</i>      |         |
| Giant whitetop.....             | <i>Rhynchospora latifolia</i>     |         |
| Sandyfield beaksedge.....       | <i>Rhynchospora megalocarpa</i>   |         |
| Southern beaksedge .....        | <i>Rhynchospora microcarpa</i>    |         |
| Bunched beaksedge .....         | <i>Rhynchospora microcephala</i>  |         |
| Millet beaksedge.....           | <i>Rhynchospora miliacea</i>      |         |
| Baldrush .....                  | <i>Rhynchospora nitens</i>        |         |
| Fragrant beaksedge .....        | <i>Rhynchospora odorata</i>       |         |
| Plumed beaksedge .....          | <i>Rhynchospora plumosa</i>       |         |
| Tracy's beaksedge .....         | <i>Rhynchospora tracyi</i>        |         |
| Tropical Mexican clover * ..... | <i>Richardia brasiliensis</i>     |         |
| Rough Mexican clover * .....    | <i>Richardia scabra</i>           |         |
| Rouge plant .....               | <i>Rivinia humilis</i>            |         |

|                                   |                                                    |
|-----------------------------------|----------------------------------------------------|
| Southern marsh yellowcress.....   | <i>Rorippa teres</i>                               |
| Toothcup .....                    | <i>Rotala ramosior</i>                             |
| Sawtooth blackberry .....         | <i>Rubus pensilvanicus</i>                         |
| Southern dewberry .....           | <i>Rubus trivialis</i>                             |
| Blackeyed Susan .....             | <i>Rudbeckia hirta</i>                             |
| Browne's blechum * .....          | <i>Ruellia blechum</i>                             |
| Carolina wild petunia.....        | <i>Ruellia caroliniensis</i>                       |
| Britton's wild petunia * .....    | <i>Ruellia simplex</i>                             |
| Hastateleaf dock.....             | <i>Rumex hastatulus</i>                            |
| Fiddle dock * .....               | <i>Rumex pulcher</i>                               |
| Swamp dock .....                  | <i>Rumex verticillatus</i>                         |
| Dwarf palmetto .....              | <i>Sabal minor</i>                                 |
| Cabbage palm .....                | <i>Sabal palmetto</i>                              |
| Shortleaf rosegentian .....       | <i>Sabatia brevifolia</i>                          |
| Bartam's rosegentian .....        | <i>Sabatia decandra</i>                            |
| Lanceleaf rosegentian.....        | <i>Sabatia difformis</i>                           |
| Largeflower rosegentian .....     | <i>Sabatia grandiflora</i>                         |
| Rose-of-Plymouth .....            | <i>Sabatia stellaris</i>                           |
| Sugarcane plumegrass .....        | <i>Saccharum giganteum</i>                         |
| India cupscale * .....            | <i>Sacciolepis indica</i>                          |
| American cupscale .....           | <i>Sacciolepis striata</i>                         |
| Leafless beaked orchid .....      | <i>Sacoila lanceolata</i> MF                       |
| Smallflower mock buckthorn ....   | <i>Sageretia minutiflora</i>                       |
| Narrow-leaved sagittaria.....     | <i>Sagittaria graminea</i>                         |
| Bulltongue;                       |                                                    |
| Lanceleaf arrowhead .....         | <i>Sagittaria lancifolia</i>                       |
| Duckpotato .....                  | <i>Sagittaria latifolia</i>                        |
| Water arrowhead.....              | <i>Sagittaria subulata</i>                         |
| Carolina willow .....             | <i>Salix caroliniana</i>                           |
| Lyreleaf sage .....               | <i>Salvia lyrata</i>                               |
| Elderberry.....                   | <i>Sambucus nigra</i> subsp. <i>canadensis</i>     |
| Water pimpernel.....              | <i>Samolus ebracteatus</i>                         |
| Pineland pimpernel .....          | <i>Samolus valerandi</i> subsp. <i>parviflorus</i> |
| White twinevine.....              | <i>Sarcostemma clausum</i>                         |
| Lizard's tail .....               | <i>Saururus cernuus</i>                            |
| Brazilian pepper * .....          | <i>Schinus terebinthifolius</i>                    |
| Little bluestem .....             | <i>Schizachryium scoparium</i>                     |
| Drooping bulrush .....            | <i>Scirpus lineatus</i>                            |
| Threesquare bulrush .....         | <i>Schoenoplectus pungens</i>                      |
| Softstem bulrush .....            | <i>Schoenoplectus tabernaemontani</i>              |
| Baldwin's Nutrush .....           | <i>Scleria baldwinii</i>                           |
| Fewflower nutrush .....           | <i>Scleria ciliata</i> var. <i>pauciflora</i>      |
| Slenderfruit nutrush .....        | <i>Scleria georgiana</i>                           |
| Netted nutrush .....              | <i>Scleria reticularis</i>                         |
| Whip nutrush .....                | <i>Scleria triglomerata</i>                        |
| Sweetbroom .....                  | <i>Scoparia dulcis</i>                             |
| Helmet skullcap .....             | <i>Scutellaria integrifolia</i>                    |
| Privet wild sensitive plant ..... | <i>Senna ligustrina</i>                            |
| Sicklepod .....                   | <i>Senna obtusifolia</i>                           |
| Coffee senna * .....              | <i>Senna occidentalis</i>                          |
| Saw palmetto .....                | <i>Serenoa repens</i>                              |
| Whitetop aster.....               | <i>Sericocarpus tortifolius</i>                    |
| Danglepod .....                   | <i>Sesbania herbacea</i>                           |
| Bladderpod .....                  | <i>Sesbania vesicaria</i>                          |
| Foxtail, Giant bristlegrass ..... | <i>Setaria magna</i>                               |
| Knotroot foxtail .....            | <i>Setaria parviflora</i>                          |
| Senna .....                       | <i>Seymeria pectinata</i>                          |
| Llima; Heartleaf sida * .....     | <i>Sida cordifolia</i>                             |
| Indian hemp .....                 | <i>Sida rhombifolia</i>                            |

\* Non-native species



## Appendix 5—Plant and Animal List

|                                  |                                                 |             |
|----------------------------------|-------------------------------------------------|-------------|
| Common wireweed .....            | <i>Sida ulmifolia</i>                           |             |
| Florida Bully .....              | <i>Sideroxylon reclinatum</i>                   |             |
| Blue-eyed grass.....             | <i>Sisyrinchium angustifolium</i>               |             |
| Earleaf greenbrier .....         | <i>Smilax auriculata</i>                        |             |
| Saw Greenbrier .....             | <i>Smilax bona-nox</i>                          |             |
| Cat greenbrier .....             | <i>Smilax glauca</i>                            |             |
| Bamboo vine; laurel greenbrier   | <i>Smilax laurifolia</i>                        |             |
| Sarsaparilla vine .....          | <i>Smilax pumila</i>                            |             |
| Hogbrier .....                   | <i>Smilax tamnoides</i>                         |             |
| Coral greenbrier .....           | <i>Smilax walteri</i>                           |             |
| Common nightshade .....          | <i>Solanum americanum</i>                       |             |
| Soda apple.....                  | <i>Solanum capsicoides</i>                      |             |
| Black nightshade .....           | <i>Solanum chenopodioides</i>                   |             |
| Twoleaf Nightshade * .....       | <i>Solanum diphyllum</i>                        |             |
| Tropical soda apple * .....      | <i>Solanum viarum</i>                           |             |
| Pinebarren goldenrod .....       | <i>Solidago fistulosa</i>                       |             |
| Chapaman's goldenrod .....       | <i>Solidago odora</i> var. <i>chapmanii</i>     |             |
| Wand goldenrod .....             | <i>Solidago stricta</i>                         |             |
| Twistedleaf goldenrod .....      | <i>Solidago tortifolia</i>                      |             |
| Common sowthistle * .....        | <i>Sonchus oleraceus</i>                        |             |
| Yellow indiagrass .....          | <i>Sorghastrum nutans</i>                       |             |
| Lopsided indiagrass .....        | <i>Sorghastrum secundum</i>                     |             |
| Johnsongrass * .....             | <i>Sorghum halepense</i>                        |             |
| Sand cordgrass .....             | <i>Spartina bakeri</i>                          |             |
| Woodland false buttonweed .....  | <i>Spermacoce assurgens</i>                     |             |
| Wedelia; creeping oxeye * .....  | <i>Sphagneticola trilobata</i>                  |             |
| Prairie wedgescale .....         | <i>Sphenopholis obtusata</i>                    |             |
| Giantspiral ladiestresses .....  | <i>Spiranthes longilabris</i>                   | DM          |
| Fragrant ladiestresses .....     | <i>Spiranthes odorata</i>                       |             |
| Greenvein ladiestresses .....    | <i>Spiranthes praecox</i>                       |             |
| Spring ladiestresses .....       | <i>Spiranthes vernalis</i>                      |             |
| Smutgrass * .....                | <i>Sporobolus indicus</i>                       |             |
| Pineywoods dropseed .....        | <i>Sporobolus junceus</i>                       |             |
| Florida Betony; Hedgenettle..... | <i>Stachys floridana</i>                        |             |
| Sweet shaggytuft.....            | <i>Stenandrium dulce</i>                        |             |
| Crowpoison .....                 | <i>Stenanthium densum</i>                       |             |
| St. Augustine grass.....         | <i>Stenotaphrum secundatum</i>                  |             |
| Queen's delight .....            | <i>Stillingia sylvatica</i>                     |             |
| Pineland scalypink .....         | <i>Stipulicida setacea</i> var. <i>lacerata</i> |             |
| American snowbell .....          | <i>Styrax americanus</i>                        |             |
| Scaleleaf aster.....             | <i>Symphyotrichum adnatum</i>                   |             |
| Climbing aster .....             | <i>Symphyotrichum carolinianum</i>              |             |
| Rice button aster .....          | <i>Symphyotrichum dumosum</i>                   |             |
| Annual satmarsh aster .....      | <i>Symphyotrichum subulatum</i>                 |             |
| Yellow hatpins .....             | <i>Syngonanthus flavidulus</i>                  |             |
| American evergreen * .....       | <i>Syngonium podophyllum</i>                    |             |
| Sprawling hoarypea .....         | <i>Tephrosia hispidula</i>                      |             |
| Spiked hoarypea.....             | <i>Tephrosia spicata</i>                        |             |
| Wood sage.....                   | <i>Teucrium canadense</i>                       |             |
| Fireflag, Alligatorflag .....    | <i>Thalia geniculata</i>                        |             |
| Water cowbane.....               | <i>Tiedemannia filiformis</i>                   |             |
| Northern Needleleaf .....        | <i>Tillandsia balbisiana</i>                    | BS, BG, MEH |
| Cardinal airplant .....          | <i>Tillandsia fasciculata</i>                   | BS, BG, MEH |
| Ballmoss .....                   | <i>Tillandsia recurvata</i>                     |             |
| Southern Needleleaf.....         | <i>Tillandsia setacea</i>                       |             |
| Spanish moss.....                | <i>Tillandsia usneoides</i>                     |             |
| Giant airplant .....             | <i>Tillandsia utriculata</i>                    | BS, BG, MEH |
| Poison ivy .....                 | <i>Toxidendron radicans</i>                     |             |
| Spiderwort; Bluejacket .....     | <i>Tradescantia ohiensis</i>                    |             |

|                                   |                               |
|-----------------------------------|-------------------------------|
| Marsh St. John's-wort.....        | <i>Triadenum virginicum</i>   |
| Forked bluecurls .....            | <i>Trichostema dichotomum</i> |
| Tall redtop, Purpletop.....       | <i>Tridens flavus</i>         |
| White clover * .....              | <i>Trifolium repens</i>       |
| Eastern gammagrass.....           | <i>Tripsacum dactyloides</i>  |
| Southern cattail.....             | <i>Typha domingensis</i>      |
| Broadleaf cattail .....           | <i>Typha latifolia</i>        |
| American elm.....                 | <i>Ulmus americana</i>        |
| Caesarweed * .....                | <i>Urena lobata</i>           |
| Paragrass *.....                  | <i>Urochloa mutica</i>        |
| Browntop millet * .....           | <i>Urochloa ramosa</i>        |
| Horned bladderwort .....          | <i>Utricularia cornuta</i>    |
| Leafy bladderwort.....            | <i>Utricularia foliosa</i>    |
| Humped bladderwort.....           | <i>Utricularia gibba</i>      |
| Floating bladderwort .....        | <i>Utricularia inflata</i>    |
| Southern bladderwort.....         | <i>Utricularia juncea</i>     |
| Eastern purple bladderwort .....  | <i>Utricularia purpurea</i>   |
| Little floating bladderwort ..... | <i>Utricularia radiata</i>    |
| Zigzag bladderwort .....          | <i>Utricularia subulata</i>   |
| Sparkleberry .....                | <i>Vaccinium arboreum</i>     |
| Highbush blueberry.....           | <i>Vaccinium corymbosum</i>   |
| Glaucous blueberry .....          | <i>Vaccinium darrowii</i>     |
| Shiny blueberry .....             | <i>Vaccinium myrsinites</i>   |
| Deerberry .....                   | <i>Vaccinium stamineum</i>    |
| Brazilian vervain * .....         | <i>Verbena brasiliensis</i>   |
| Harsh verbena.....                | <i>Verbena scabra</i>         |
| Frostweed.....                    | <i>Verbesina virginica</i>    |
| Florida Ironweed.....             | <i>Vernonia blodgettii</i>    |
| Possum aw .....                   | <i>Viburnum nudum</i>         |
| Small-leaf Viburnum .....         | <i>Viburnum obovatum</i>      |
| Fourleaf vetch .....              | <i>Vicia acutifolia</i>       |
| Yellow cowpea.....                | <i>Vigna luteola</i>          |
| Bog white violet.....             | <i>Viola lanceolata</i>       |
| Early blue violet.....            | <i>Viola palmata</i>          |
| Primroseleaf violet .....         | <i>Viola primulifolia</i>     |
| Common blue violet .....          | <i>Viola sororia</i>          |
| Summer grape .....                | <i>Vitis aestivalis</i>       |
| Scuppernong, Muscadine .....      | <i>Vitis rotundifolia</i>     |
| Callose grape.....                | <i>Vitis shuttleworthii</i>   |
| Algal bulrush.....                | <i>Websteria confervoides</i> |
| Netted chain fern.....            | <i>Woodwardia areolata</i>    |
| Virginia chain fern.....          | <i>Woodwardia virginica</i>   |
| Tallow wood, Hog plum .....       | <i>Ximenia americana</i>      |
| Coastalplain yelloweyed grass ..  | <i>Xyris ambigua</i>          |
| Shortleaf yelloweyed grass .....  | <i>Xyris brevifolia</i>       |
| Carolina yelloweyed grass.....    | <i>Xyris caroliniana</i>      |
| Elliott's yelloweyed grass .....  | <i>Xyris elliotii</i>         |
| Fringed yelloweyed grass.....     | <i>Xyris fimbriata</i>        |
| Savannah yelloweyed grass .....   | <i>Xyris flabelliformis</i>   |
| Florida yelloweyed grass.....     | <i>Xyris floridana</i>        |
| Richard's yelloweyed grass .....  | <i>Xyris jupicai</i>          |
| Small's yelloweyed grass .....    | <i>Xyris smalliana</i>        |
| Oriental false hawksbeard * ..... | <i>Youngia japonica</i>       |
| Spanish bayonet; Aloe yucca....   | <i>Yucca aloifolia</i>        |
| Adam's needle.....                | <i>Yucca filamentosa</i>      |
| Wild lime .....                   | <i>Zanthoxylum fagara</i>     |
| Redmargin zephyrlily.....         | <i>Zephyranthes simpsonii</i> |
| Lawn orchid *.....                | <i>Zeuxine strateumatica</i>  |

MF, DM

\* Non-native species

## BUTTERFLIES AND MOTHS

|                                  |                                |    |
|----------------------------------|--------------------------------|----|
| Sleepy orange .....              | <i>Abaeis nicippe</i>          |    |
| Gulf fritillary .....            | <i>Agraulis vanillae</i>       |    |
| White peacock .....              | <i>Anartia jatrophae</i>       |    |
| Delaware skipper .....           | <i>Anatrytone logan</i>        |    |
| Monk skipper .....               | <i>Asbolis capucinus</i>       |    |
| Great southern white .....       | <i>Ascia monuste</i>           |    |
| Sachem .....                     | <i>Atalopedes campestris</i>   |    |
| Arogos skipper .....             | <i>Atrytone arogos</i>         | DP |
| Polydamas swallowtail .....      | <i>Battus polydamas</i>        |    |
| Brazilian skipper .....          | <i>Calpodas ethlius</i>        |    |
| Red-banded hairstreak .....      | <i>Calycopis cecrops</i>       |    |
| Southern skipperling .....       | <i>Copaeodes minima</i>        |    |
| Queen .....                      | <i>Danaus gilippus</i>         |    |
| Monarch .....                    | <i>Danaus plexippus</i>        |    |
| Horace's duskywing .....         | <i>Erynnis horatius</i>        |    |
| Juvenal's duskywing .....        | <i>Erynnis juvenalis</i>       |    |
| Zarucco duskywing .....          | <i>Erynnis zarucco</i>         |    |
| Palmetto skipper .....           | <i>Euphyes arpa</i>            |    |
| Palatka skipper .....            | <i>Euphyes pilatka</i>         |    |
| Barred yellow .....              | <i>Eurema daira</i>            |    |
| Zebra swallowtail .....          | <i>Eurytides marcellus</i>     |    |
| Zebra longwing .....             | <i>Heliconius charithonia</i>  |    |
| Ceraunus blue .....              | <i>Hemiargus ceraunus</i>      |    |
| Eastern meskes skipper .....     | <i>Hesperia meskei straton</i> | DP |
| Fiery skipper .....              | <i>Hylephila phyleus</i>       |    |
| Common buckeye .....             | <i>Junonia coenia</i>          |    |
| Clouded skipper .....            | <i>Lerema accius</i>           |    |
| Dainty sulphur .....             | <i>Nathalis iole</i>           |    |
| Twin-spot skipper .....          | <i>Oligoria maculata</i>       |    |
| Ocola skipper .....              | <i>Panoquina ocola</i>         |    |
| Giant swallowtail .....          | <i>Papilio cresphontes</i>     |    |
| Eastern tiger swallowtail .....  | <i>Papilio glaucus</i>         |    |
| Palamedes swallowtail .....      | <i>Papilio palamedes</i>       |    |
| Black swallowtail .....          | <i>Papilio polyxenes</i>       |    |
| Spicebush swallowtail .....      | <i>Papilio troilus</i>         |    |
| Orange barred sulphur .....      | <i>Phoebis philea</i>          |    |
| Cloudless sulphur .....          | <i>Phoebis sennae</i>          |    |
| Phaon crescent .....             | <i>Phyciodes phaon</i>         |    |
| Pearl crescent .....             | <i>Phyciodes tharos</i>        |    |
| Aaron's skipper .....            | <i>Poanes aaroni</i>           |    |
| Tawny-edged skipper .....        | <i>Polites themistocles</i>    |    |
| Whirlabout .....                 | <i>Polites vibex</i>           |    |
| Checkered white .....            | <i>Pontia protodice</i>        |    |
| Common checkered skipper .....   | <i>Pyrgus communis</i>         |    |
| Tropical checkered-skipper ..... | <i>Pyrgus oileus</i>           |    |
| Little yellow .....              | <i>Pyrisitia lisa</i>          |    |
| Oak hairstreak .....             | <i>Saturium favonius</i>       |    |
| Gray hairstreak .....            | <i>Strymon melinus</i>         |    |
| Gray hairstreak .....            | <i>Strymon melinus</i>         |    |
| Viceroy .....                    | <i>Limenitis archippus</i>     |    |
| Dorantes longtail .....          | <i>Urbanus dorantes</i>        |    |
| Long-tailed skipper .....        | <i>Urbanus proteus</i>         |    |
| Red Admiral .....                | <i>Vanessa atalanta</i>        |    |
| American lady .....              | <i>Vanessa virginiensis</i>    |    |
| Southern broken-dash .....       | <i>Wallengrenia otho</i>       |    |
| Southern dogface .....           | <i>Zerene cesonia</i>          |    |



**FISH**

|                                     |                                      |
|-------------------------------------|--------------------------------------|
| Yellow bullhead .....               | <i>Ameiurus natalis</i>              |
| Brown bullhead .....                | <i>Ameiurus nebulosus</i>            |
| Bowfin .....                        | <i>Amia calva</i>                    |
| American eel .....                  | <i>Anguilla rostrata</i>             |
| Common snook .....                  | <i>Centropomus undecimalis</i>       |
| Walking catfish * .....             | <i>Clarias batrachus</i>             |
| Grass carp * .....                  | <i>Ctenopharyngodon idella</i>       |
| Gizzard shad .....                  | <i>Dorosoma cepedianum</i>           |
| Everglades pigmy sunfish .....      | <i>Elassoma evergladei</i>           |
| Blue-spotted sunfish .....          | <i>Enneacanthus gloriosus</i>        |
| Lake chubsucker .....               | <i>Erimyzon sucetta</i>              |
| Swamp darter .....                  | <i>Etheostoma fusiforme</i>          |
| Golden topminnow .....              | <i>Fundulus chrysotus</i>            |
| Seminole killifish .....            | <i>Fundulus seminolis</i>            |
| Eastern mosquitofish .....          | <i>Gambusia holbrooki</i>            |
| African jewelfish * .....           | <i>Hemichromis letourneuxi</i>       |
| Least killifish .....               | <i>Heterandria formosa</i>           |
| Brown hoplo * .....                 | <i>Hoplosternum littorale</i>        |
| White catfish .....                 | <i>Ictalurus catus</i>               |
| Channel catfish .....               | <i>Ictalurus punctatus</i>           |
| Flagfish .....                      | <i>Jordanella floridae</i>           |
| Brook silverside .....              | <i>Labidesthes sicculus</i>          |
| Florida gar .....                   | <i>Lepisosteus platyrhincus</i>      |
| Warmouth .....                      | <i>Lepomis gulosus</i>               |
| Bluegill .....                      | <i>Lepomis macrochirus</i>           |
| Dollar sunfish .....                | <i>Lepomis marginatus</i>            |
| Redear sunfish .....                | <i>Lepomis microlophus</i>           |
| Spotted sunfish .....               | <i>Lepomis punctatus</i>             |
| Bluefin killifish .....             | <i>Lucania goodei</i>                |
| Atlantic Tarpon .....               | <i>Megalops atlanticus</i>           |
| Largemouth bass .....               | <i>Micropterus salmoides</i>         |
| Golden shiner .....                 | <i>Notemigonus crysoleucas</i>       |
| Iron-colored shiner .....           | <i>Notropis chalybaeus</i>           |
| Tailight shiner .....               | <i>Notropis maculatus</i>            |
| Tadpole madtom .....                | <i>Noturus gyrinus</i>               |
| Blue tilapia * .....                | <i>Oreochromis aureus</i>            |
| Sailfin molly .....                 | <i>Poecilia latipinna</i>            |
| Black crappie .....                 | <i>Pomoxis nigromaculatus</i>        |
| Vermiculated sailfin catfish * .... | <i>Pterygoplichthys disjunctivus</i> |
| Hogchoker .....                     | <i>Trinectes maculatus</i>           |

**AMPHIBIANS**

|                                |                                              |
|--------------------------------|----------------------------------------------|
| Two-toed amphiuma .....        | <i>Amphiuma means</i>                        |
| Dwarf salamander .....         | <i>Eurycea quadridigitata</i>                |
| Peninsula newt .....           | <i>Notophthalmus viridescens piaropicola</i> |
| Everglades dwarf siren .....   | <i>Pseudobranchius striatus belli</i>        |
| Eastern lesser siren .....     | <i>Siren intermedia</i>                      |
| Greater siren .....            | <i>Siren lacertina</i>                       |
| Oak toad .....                 | <i>Anaxyrus quercicus</i>                    |
| Southern toad .....            | <i>Anaxyrus terrestris</i>                   |
| Greenhouse frog * .....        | <i>Eleutherodactylus planirostris</i>        |
| Eastern narrowmouth toad ..... | <i>Gastrophryne carolinensis</i>             |
| Green treefrog .....           | <i>Hyla cinerea</i>                          |
| Pinewoods treefrog .....       | <i>Hyla femoralis</i>                        |
| Barking treefrog .....         | <i>Hyla gratiosa</i>                         |
| Squirrel treefrog .....        | <i>Hyla squirella</i>                        |

\* Non-native species

## Appendix 5—Plant and Animal List

|                             |                                   |        |
|-----------------------------|-----------------------------------|--------|
| Florida gopher frog .....   | <i>Lithobates capito</i>          | DP, MF |
| American Bullfrog .....     | <i>Lithobates catesbeiana</i>     |        |
| Pig frog .....              | <i>Lithobates grylio</i>          |        |
| Southern leopard frog ..... | <i>Lithobates sphenoccephala</i>  |        |
| Cuban treefrog * .....      | <i>Osteopilus septentrionalis</i> |        |
| Southern chorus frog .....  | <i>Pseudacris nigrita</i>         |        |
| Little grass frog .....     | <i>Pseudacris ocularis</i>        |        |
| Eastern spadefoot toad..... | <i>Scaphiopus holbrooki</i>       |        |

### REPTILES

|                                          |                                            |             |
|------------------------------------------|--------------------------------------------|-------------|
| American alligator.....                  | <i>Alligator mississippiensis</i>          | MTC         |
| Green anole .....                        | <i>Anolis carolinensis</i>                 |             |
| Six-lined racerunner.....                | <i>Cnemidophorus sexlineatus</i>           |             |
| Indo-Pacific gecko* .....                | <i>Hemidactylus garnotii</i>               |             |
| Tropical house gecko * .....             | <i>Hemidactylus mabouia</i>                |             |
| Brown anole * .....                      | <i>Norops sagrei</i>                       |             |
| Eastern slender glass lizard .....       | <i>Ophisaurus attenuatus longicaudus</i>   |             |
| Island glass lizard .....                | <i>Ophisaurus compressus</i>               |             |
| Eastern glass lizard .....               | <i>Ophisaurus ventralis</i>                |             |
| Southeastern five-lined skink ...        | <i>Plestiodon inexpectatus</i>             |             |
| Ground skink.....                        | <i>Scincella lateralis</i>                 |             |
| Florida softshell .....                  | <i>Apalone ferox</i>                       |             |
| Florida snapping turtle.....             | <i>Chelydra serpentina osceola</i>         |             |
| Gopher tortoise .....                    | <i>Gopherus polyphemus</i>                 | DP, MF, SCF |
| Striped mud turtle .....                 | <i>Kinosternon bauri</i>                   |             |
| Florida mud turtle .....                 | <i>Kinosternon subrubrum steindachneri</i> |             |
| Peninsula cooter .....                   | <i>Pseudemys peninsularis</i>              |             |
| Florida redbelly turtle .....            | <i>Pseudemys nelsoni</i>                   |             |
| Stinkpot .....                           | <i>Sternotherus odoratus</i>               |             |
| Florida box turtle .....                 | <i>Terrapene carolina bauri</i>            |             |
| Florida cottonmouth .....                | <i>Agkistrodon piscivorus conanti</i>      |             |
| Florida scarlet snake .....              | <i>Cemophora coccinea</i>                  |             |
| Southern black racer .....               | <i>Coluber constrictor priapus</i>         |             |
| Eastern diamondback<br>rattlesnake ..... | <i>Crotalus adamanteus</i>                 |             |
| Southern ringneck snake .....            | <i>Diadophis punctatus</i>                 |             |
| Eastern indigo snake .....               | <i>Drymarchon couperi</i>                  | MTC         |
| Eastern mud snake .....                  | <i>Farancia abacura</i>                    |             |
| Florida kingsnake.....                   | <i>Lampropeltis getula floridana</i>       |             |
| Scarlet kingsnake .....                  | <i>Lampropeltis elapsoides</i>             |             |
| Eastern coachwhip .....                  | <i>Masticophis flagellum</i>               |             |
| Eastern coral snake.....                 | <i>Micrurus fulvius</i>                    |             |
| Florida water snake.....                 | <i>Nerodia fasciata pictiventris</i>       |             |
| Florida green water snake.....           | <i>Nerodia floridana</i>                   |             |
| Brown water snake .....                  | <i>Nerodia taxispilota</i>                 |             |
| Rough green snake .....                  | <i>Opheodrys aestivus</i>                  |             |
| Corn snake .....                         | <i>Pantherophis guttata</i>                |             |
| Eastern rat snake .....                  | <i>Pantherophis alleghaniensis</i>         |             |
| Striped crayfish snake .....             | <i>Regina alleni</i>                       |             |
| Pine woods snake .....                   | <i>Rhadinaea flavilata</i>                 |             |
| Black swamp snake.....                   | <i>Seminatrix pygaea</i>                   |             |
| Dusky pigmy rattlesnake .....            | <i>Sistrurus miliarius barbouri</i>        |             |
| Florida brown snake .....                | <i>Storeria victa</i>                      |             |
| Peninsula ribbon snake .....             | <i>Thamnophis sauritus sackeni</i>         |             |
| Common garter snake .....                | <i>Thamnophis sirtalis sirtalis</i>        |             |

## BIRDS

|                                  |                                         |                       |
|----------------------------------|-----------------------------------------|-----------------------|
| Cooper's hawk.....               | <i>Accipiter cooperii</i>               |                       |
| Sharp-shinned hawk .....         | <i>Accipiter striatus</i>               |                       |
| Spotted sandpiper.....           | <i>Actitis macularius</i>               |                       |
| Red-winged blackbird .....       | <i>Agelaius phoeniceus</i>              |                       |
| Bachman's sparrow.....           | <i>Aimophila aestivalis</i>             |                       |
| Wood duck.....                   | <i>Aix sponsa</i>                       |                       |
| Saltmarsh sparrow.....           | <i>Ammodramus caudacutus</i>            |                       |
| Grasshopper sparrow .....        | <i>Ammodramus savannarum pratensis</i>  |                       |
| Florida grasshopper sparrow .... | <i>Ammodramus savannarum floridanus</i> | DP                    |
| Northern pintail .....           | <i>Anas acuta</i>                       |                       |
| American wigeon .....            | <i>Anas americana</i>                   |                       |
| White-cheeked pintail.....       | <i>Anas bahamensis</i>                  |                       |
| Northern shoveler .....          | <i>Anas clypeata</i>                    |                       |
| Green-winged teal .....          | <i>Anas crecca</i>                      |                       |
| Cinnamon teal.....               | <i>Anas cyanoptera</i>                  |                       |
| Blue-winged teal.....            | <i>Anas discors</i>                     |                       |
| Mottled duck .....               | <i>Anas fulvigula</i>                   |                       |
| Eurasian wigeon .....            | <i>Anas penelope</i>                    |                       |
| Mallard .....                    | <i>Anas platyrhynchos</i>               |                       |
| American black duck .....        | <i>Anas rubripes</i>                    |                       |
| Gadwall .....                    | <i>Anas strepera</i>                    |                       |
| Anhinga.....                     | <i>Anhinga anhinga</i>                  |                       |
| Great white-fronted goose .....  | <i>Anser albifrons</i>                  |                       |
| American pipit.....              | <i>Anthus rubescens</i>                 |                       |
| Florida scrub-jay.....           | <i>Aphelocoma coerulescens</i>          | SCF                   |
| Golden eagle .....               | <i>Aquila chrysaetos</i>                |                       |
| Limpkin .....                    | <i>Aramus guarauna</i>                  | FM, RFLK, BST         |
| Ruby-throated hummingbird ....   | <i>Archilochus colubris</i>             |                       |
| Great egret.....                 | <i>Ardea alba</i>                       |                       |
| Great blue heron .....           | <i>Ardea herodias</i>                   |                       |
| Great white heron.....           | <i>Ardea herodias occidentalis</i>      | BM, DM, FM, RFLK, BST |
| Florida burrowing owl.....       | <i>Athene cunicularia floridana</i>     | DP                    |
| Lesser scaup .....               | <i>Aythya affinis</i>                   |                       |
| Redhead .....                    | <i>Aythya americana</i>                 |                       |
| Ring-necked duck .....           | <i>Aythya collaris</i>                  |                       |
| Canvasback .....                 | <i>Aythya valisineria</i>               |                       |
| Cedar waxwing .....              | <i>Bombycilla cedrorum</i>              |                       |
| American bittern.....            | <i>Botaurus lentiginosus</i>            |                       |
| Canada goose .....               | <i>Branta canadensis</i>                |                       |
| Great horned owl.....            | <i>Bubo virginianus</i>                 |                       |
| Cattle egret.....                | <i>Bubulcus ibis</i>                    |                       |
| Bufflehead .....                 | <i>Bucephala albeola</i>                |                       |
| Short-tailed hawk .....          | <i>Buteo brachyurus</i>                 |                       |
| Red-tailed hawk .....            | <i>Buteo jamaicensis</i>                |                       |
| Red-shouldered hawk.....         | <i>Buteo lineatus</i>                   |                       |
| Broad-winged hawk .....          | <i>Buteo platypterus</i>                |                       |
| Green heron.....                 | <i>Butorides virescens</i>              |                       |
| Muscovy duck*.....               | <i>Cairina moschata</i>                 |                       |
| Lapland longspur .....           | <i>Calcarius lapponicus</i>             |                       |
| Dunlin .....                     | <i>Calidris alpina</i>                  |                       |
| Stilt sandpiper .....            | <i>Calidris himantopus</i>              |                       |
| Western sandpiper .....          | <i>Calidris mauri</i>                   |                       |
| Pectoral sandpiper .....         | <i>Calidris melanotos</i>               |                       |
| Least sandpiper .....            | <i>Calidris minutilla</i>               |                       |
| Semipalmated sandpiper .....     | <i>Calidris pusilla</i>                 |                       |
| Chuck-will's-widow.....          | <i>Caprimulgus carolinensis</i>         |                       |
| Whip-poor-will.....              | <i>Caprimulgus vociferus</i>            |                       |

\* Non-native species



## Appendix 5—Plant and Animal List

|                                   |                                               |                          |
|-----------------------------------|-----------------------------------------------|--------------------------|
| Crested caracara .....            | <i>Caracara cheriway</i>                      | DP                       |
| Northern cardinal.....            | <i>Cardinalis cardinalis</i>                  |                          |
| American goldfinch .....          | <i>Carduelis tristis</i>                      |                          |
| Purple finch.....                 | <i>Carpodacus purpureus</i>                   |                          |
| Turkey vulture.....               | <i>Cathartes aura</i>                         |                          |
| Veery .....                       | <i>Catharus fuscescens</i>                    |                          |
| Hermit thrush.....                | <i>Catharus guttatus</i>                      |                          |
| Gray-cheeked thrush.....          | <i>Catharus minimus</i>                       |                          |
| Swainson's thrush.....            | <i>Catharus ustulatus</i>                     |                          |
| Chimney swift .....               | <i>Chaetura pelagica</i>                      |                          |
| Semipalmated plover .....         | <i>Charadrius semipalmatus</i>                |                          |
| Snow goose .....                  | <i>Chen caerulescens</i>                      |                          |
| Black tern .....                  | <i>Chlidonias niger</i>                       |                          |
| Lark sparrow .....                | <i>Chondestes grammacus</i>                   |                          |
| Common nighthawk .....            | <i>Chordeiles minor</i>                       |                          |
| Northern harrier .....            | <i>Circus cyaneus</i>                         |                          |
| Marsh wren .....                  | <i>Cistothorus palustris</i>                  |                          |
| Sedge wren.....                   | <i>Cistothorus platensis</i>                  |                          |
| Yellow-billed cuckoo .....        | <i>Coccyzus americanus</i>                    |                          |
| Northern flicker .....            | <i>Colaptes auratus</i>                       |                          |
| Northern bobwhite .....           | <i>Colinus virginianus</i>                    |                          |
| Rock pigeon* .....                | <i>Columba livia</i>                          |                          |
| Common ground-dove.....           | <i>Columbina passerina</i>                    |                          |
| Olive-sided flycatcher.....       | <i>Contopus cooperi</i>                       |                          |
| Eastern wood-pewee .....          | <i>Contopus virens</i>                        |                          |
| Black vulture .....               | <i>Coragyps atratus</i>                       |                          |
| American crow .....               | <i>Corvus brachyrhynchos</i>                  |                          |
| Fish crow .....                   | <i>Corvus ossifragus</i>                      |                          |
| Blue jay.....                     | <i>Cyanocitta cristata</i>                    |                          |
| Black-bellied whistling-duck .... | <i>Dendrocygna autumnalis</i>                 |                          |
| Fulvous whistling-duck .....      | <i>Dendrocygna bicolor</i>                    |                          |
| Bobolink .....                    | <i>Dolichonyx oryzivorus</i>                  |                          |
| Pileated woodpecker .....         | <i>Dryocopus pileatus</i>                     |                          |
| Gray catbird.....                 | <i>Dumetella carolinensis</i>                 |                          |
| Little blue heron .....           | <i>Egretta caerulea</i>                       | BM, DM, FM, RFLK, BST    |
| Reddish egret.....                | <i>Egretta rufescens</i>                      | BM, DM, FM, RFLK, BST    |
| Snowy egret.....                  | <i>Egretta thula</i>                          | BM, DM, FM, RFLK, BST    |
| Tricolored heron .....            | <i>Egretta tricolor</i>                       | BM, DM, FM, RFLK, BST    |
| Swallow-tailed kite.....          | <i>Elanoides forficatus</i>                   | DP, MF, BM, DM, FM, RFLK |
| White-tailed kite .....           | <i>Elanus leucurus</i>                        | BM, DM, FM               |
| Acadian flycatcher.....           | <i>Empidonax virescens</i>                    |                          |
| White ibis .....                  | <i>Eudocimus albus</i>                        | MTC                      |
| Rusty blackbird.....              | <i>Euphagus carolinus</i>                     |                          |
| Brewer's blackbird .....          | <i>Euphagus cyanocephalus</i>                 |                          |
| Merlin.....                       | <i>Falco columbarius</i>                      | DP, BM, DM               |
| Peregrine falcon.....             | <i>Falco peregrinus tundrius</i>              | MTC                      |
| American kestrel.....             | <i>Falco sparverius</i>                       |                          |
| Southeastern American kestrel .   | <i>Falco sparverius paulus</i>                | DP, BM, DM, FM           |
| Magnificent frigatebird.....      | <i>Fregata magnificens</i>                    | OF                       |
| American coot .....               | <i>Fulica americana</i>                       |                          |
| Wilson's snipe .....              | <i>Gallinago delicata</i>                     |                          |
| Common gallinule .....            | <i>Gallinula chloropus</i>                    |                          |
| Gull-billed tern .....            | <i>Gelochelidon nilotica</i>                  |                          |
| Common yellowthroat .....         | <i>Geothlypis trichas</i>                     |                          |
| Florida sandhill crane .....      | <i>Grus canadensis pratensis</i>              | DP, MF, BM, DM, FM       |
| Greater sandhill crane .....      | <i>Grus canadensis tabida</i>                 |                          |
| American oystercatcher .....      | <i>Haematopus palliatus</i>                   | RFLK                     |
| Southern bald eagle .....         | <i>Haliaeetus leucocephalus leucocephalus</i> |                          |
| Worm-eating warbler .....         | <i>Helmitheros vermivorum</i>                 | MEH                      |

|                                 |                                    |           |
|---------------------------------|------------------------------------|-----------|
| Black-necked stilt .....        | <i>Himantopus mexicanus</i>        |           |
| Barn swallow .....              | <i>Hirundo rustica</i>             |           |
| Caspian tern .....              | <i>Hydroprogne caspia</i>          | FM, RFLK  |
| Wood thrush .....               | <i>Hylocichla mustelina</i>        |           |
| Baltimore oriole .....          | <i>Icterus galbula</i>             |           |
| Least bittern .....             | <i>Ixobrychus exilis</i>           |           |
| Loggerhead shrike .....         | <i>Lanius ludovicianus</i>         |           |
| Herring gull.....               | <i>Larus argentatus</i>            |           |
| Ring-billed gull .....          | <i>Larus delawarensis</i>          |           |
| Bonaparte's gull.....           | <i>Larus philadelphia</i>          |           |
| Laughing gull .....             | <i>Leucophaeus atricilla</i>       |           |
| Short-billed dowitcher .....    | <i>Limnodromus griseus</i>         |           |
| Hooded merganser.....           | <i>Lophodytes cucullatus</i>       |           |
| Belted kingfisher.....          | <i>Megaceryle alcyon</i>           |           |
| Red-bellied woodpecker.....     | <i>Melanerpes carolinus</i>        |           |
| Eastern screech-owl .....       | <i>Megascops asio</i>              |           |
| Red-headed woodpecker.....      | <i>Melanerpes erythrocephalus</i>  |           |
| Osceola wild turkey.....        | <i>Meleagris gallopavo osceola</i> |           |
| Swamp sparrow.....              | <i>Melospiza georgiana</i>         |           |
| Song sparrow .....              | <i>Melospiza melodia</i>           |           |
| Common merganser.....           | <i>Mergus merganser</i>            |           |
| Red-breasted merganser .....    | <i>Mergus serrator</i>             |           |
| Northern mockingbird.....       | <i>Mimus polyglottos</i>           |           |
| Black-and-white warbler .....   | <i>Mniotilta varia</i>             |           |
| Brown-headed cowbird .....      | <i>Molothrus ater</i>              |           |
| Wood stork .....                | <i>Mycteria americana</i>          | RFLK, BST |
| Great crested flycatcher .....  | <i>Myiarchus crinitus</i>          |           |
| Yellow-crowned night-heron..... | <i>Nyctanassa violacea</i>         |           |
| Black-crowned night-heron ..... | <i>Nycticorax nycticorax</i>       |           |
| Connecticut warbler .....       | <i>Oporornis agilis</i>            |           |
| Ruddy duck.....                 | <i>Oxyura jamaicensis</i>          |           |
| Osprey .....                    | <i>Pandion haliaetus</i>           |           |
| Northern waterthrush.....       | <i>Parkesia noveboracensis</i>     |           |
| Tufted titmouse .....           | <i>Parus bicolor</i>               |           |
| House sparrow*.....             | <i>Passer domesticus</i>           |           |
| Savannah sparrow .....          | <i>Passerculus sandwichensis</i>   |           |
| Painted bunting .....           | <i>Passerina ciris</i>             |           |
| Blue grosbeak .....             | <i>Passerina caerulea</i>          |           |
| Indigo bunting.....             | <i>Passerina cyanea</i>            |           |
| American white pelican.....     | <i>Pelecanus erythrorhynchos</i>   |           |
| Brown pelican .....             | <i>Pelecanus occidentalis</i>      | RFLK      |
| Cliff swallow .....             | <i>Petrochelidon pyrrhonota</i>    |           |
| Double-crested cormorant .....  | <i>Phalacrocorax auritus</i>       |           |
| Great cormorant.....            | <i>Phalacrocorax carbo</i>         |           |
| Ring-necked pheasant* .....     | <i>Phasianus colchicus</i>         |           |
| Rose-breasted grosbeak .....    | <i>Pheucticus ludovicianus</i>     |           |
| Greater flamingo*.....          | <i>Phoenicopterus ruber</i>        |           |
| Red-cockaded woodpecker.....    | <i>Picoides borealis</i>           | MF        |
| Downy woodpecker.....           | <i>Picoides pubescens</i>          |           |
| Southern hairy woodpecker.....  | <i>Picoides villosus audubonii</i> |           |
| Eastern towhee .....            | <i>Pipilo erythrophthalmus</i>     |           |
| Roseate spoonbill.....          | <i>Platalea ajaja</i>              | RFLK, BST |
| Glossy ibis .....               | <i>Plegadis falcinellus</i>        |           |
| Black-bellied plover.....       | <i>Pluvialis squatarola</i>        |           |
| Horned grebe .....              | <i>Podiceps auritus</i>            |           |
| Pied-billed grebe.....          | <i>Podilymbus podiceps</i>         |           |
| Blue-gray gnatcatcher .....     | <i>Polioptila caerulea</i>         |           |
| Vesper sparrow .....            | <i>Pooecetes gramineus</i>         |           |
| Purple gallinule.....           | <i>Porphyrio martinica</i>         |           |

\* Non-native species

## Appendix 5—Plant and Animal List

|                                   |                                   |            |
|-----------------------------------|-----------------------------------|------------|
| Sora .....                        | <i>Porzana carolina</i>           |            |
| Purple martin .....               | <i>Progne subis</i>               |            |
| Prothonotary warbler.....         | <i>Protonotaria citrea</i>        |            |
| Vermilion flycatcher .....        | <i>Pyrocephalus rubinus</i>       |            |
| Boat-tailed grackle.....          | <i>Quiscalus major</i>            |            |
| Common grackle.....               | <i>Quiscalus quiscula</i>         |            |
| King rail.....                    | <i>Rallus elegans</i>             |            |
| Virginia rail .....               | <i>Rallus limicola</i>            |            |
| Clapper rail .....                | <i>Rallus longirostris</i>        |            |
| American avocet.....              | <i>Recurvirostra americana</i>    | FM, RFLK   |
| Ruby-crowned kinglet.....         | <i>Regulus calendula</i>          |            |
| Golden-crowned kinglet.....       | <i>Regulus satrapa</i>            |            |
| Bank swallow .....                | <i>Riparia riparia</i>            |            |
| Snail kite .....                  | <i>Rostrhamus sociabilis</i>      | BM, DM, FM |
| Black skimmer.....                | <i>Rynchops niger</i>             | FM, RFLK   |
| Eastern phoebe .....              | <i>Sayornis phoebe</i>            |            |
| American woodcock .....           | <i>Scolopax minor</i>             |            |
| Ovenbird .....                    | <i>Seiurus aurocapilla</i>        |            |
| American redstart.....            | <i>Setophaga ruticilla</i>        | MTC        |
| Black-throated blue warbler ..... | <i>Setophaga caerulescens</i>     |            |
| Yellow-rumped warbler.....        | <i>Setophaga coronata</i>         |            |
| Prairie warbler.....              | <i>Setophaga discolor</i>         |            |
| Yellow-throated warbler.....      | <i>Setophaga dominica</i>         |            |
| Magnolia warbler .....            | <i>Setophaga magnolia</i>         |            |
| Palm warbler .....                | <i>Setophaga palmarum</i>         |            |
| Northern parula .....             | <i>Setophaga americana</i>        |            |
| Yellow warbler.....               | <i>Setophaga petechia</i>         |            |
| Pine warbler.....                 | <i>Setophaga pinus</i>            |            |
| Blackpoll warbler .....           | <i>Setophaga striata</i>          |            |
| Cape May warbler .....            | <i>Setophaga tigrina</i>          |            |
| Black-throated green warbler ...  | <i>Setophaga virens</i>           |            |
| Eastern bluebird .....            | <i>Sialia sialis</i>              |            |
| Red-breasted nuthatch .....       | <i>Sitta canadensis</i>           |            |
| White-breasted nuthatch .....     | <i>Sitta carolinensis</i>         | MF         |
| Brown-headed nuthatch .....       | <i>Sitta pusill</i>               |            |
| Yellow-bellied sapsucker .....    | <i>Sphyrapicus varius</i>         |            |
| Dickcissel.....                   | <i>Spiza americana</i>            |            |
| Chipping sparrow.....             | <i>Spizella passerina</i>         |            |
| Field sparrow .....               | <i>Spizella pusilla</i>           |            |
| Northern rough-winged swallow     | <i>Stelgidopteryx serripennis</i> |            |
| Least tern .....                  | <i>Sternula antillarum</i>        | FM, RFLK   |
| Forster's tern .....              | <i>Sterna forsteri</i>            |            |
| Common tern .....                 | <i>Sterna hirundo</i>             |            |
| Royal tern.....                   | <i>Thalasseus maximus</i>         |            |
| Sandwich tern .....               | <i>Thalasseus sandvicensis</i>    | FM, RFLK   |
| Eurasian collared dove *          | <i>Streptopelia decaocto</i>      |            |
| Ringed turtle-dove *              | <i>Streptopelia risoria</i>       |            |
| Barred owl .....                  | <i>Strix varia</i>                |            |
| Eastern meadowlark.....           | <i>Sturnella magna</i>            |            |
| European starling*                | <i>Sturnus vulgaris</i>           |            |
| Tree swallow .....                | <i>Tachycineta bicolor</i>        |            |
| Carolina wren.....                | <i>Thryothorus ludovicianus</i>   |            |
| Brown thrasher.....               | <i>Toxostoma rufum</i>            |            |
| Lesser yellowlegs .....           | <i>Tringa flavipes</i>            |            |
| Greater yellowlegs .....          | <i>Tringa melanoleuca</i>         |            |
| Willet .....                      | <i>Tringa semipalmatus</i>        |            |
| Solitary sandpiper.....           | <i>Tringa solitaria</i>           |            |
| House wren.....                   | <i>Troglodytes aedon</i>          |            |
| American robin .....              | <i>Turdus migratorius</i>         |            |



|                                |                                      |
|--------------------------------|--------------------------------------|
| Gray kingbird .....            | <i>Tyrannus dominicensis</i>         |
| Scissor-tailed flycatcher..... | <i>Tyrannus forficatus</i>           |
| Eastern kingbird .....         | <i>Tyrannus tyrannus</i>             |
| Western kingbird .....         | <i>Tyrannus verticalis</i>           |
| Barn owl .....                 | <i>Tyto alba</i>                     |
| Yellow-throated vireo .....    | <i>Vireo flavifrons</i>              |
| White-eyed vireo .....         | <i>Vireo griseus</i>                 |
| Red-eyed vireo .....           | <i>Vireo olivaceus</i>               |
| Blue-headed vireo.....         | <i>Vireo solitarius</i>              |
| Orange-crowned warbler .....   | <i>Vermivora celata</i>              |
| Nashville warbler .....        | <i>Vermivora ruficapilla</i>         |
| Hooded warbler .....           | <i>Wilsonia citrina</i>              |
| Yellow-headed blackbird .....  | <i>Xanthocephalus xanthocephalus</i> |
| Mourning dove .....            | <i>Zenaida macroura</i>              |
| White-throated sparrow.....    | <i>Zonotrichia albicollis</i>        |
| White-crowned sparrow.....     | <i>Zonotrichia leucophrys</i>        |

## MAMMALS

|                                  |                                        |           |
|----------------------------------|----------------------------------------|-----------|
| Short-tailed shrew .....         | <i>Blarina brevicauda</i>              |           |
| Coyote * .....                   | <i>Canis latrans</i>                   |           |
| Least shrew .....                | <i>Cryptotis parva</i>                 |           |
| Nine-banded armadillo * .....    | <i>Dasypus novemcinctus</i>            |           |
| Virginia opossum .....           | <i>Didelphis virginiana</i>            |           |
| Southern flying squirrel.....    | <i>Glaucomys volans</i>                |           |
| River otter .....                | <i>Lontra canadensis</i>               |           |
| Bobcat.....                      | <i>Lynx rufus</i>                      |           |
| Striped skunk.....               | <i>Mephitis mephitis</i>               |           |
| House mouse * .....              | <i>Mus musculus</i>                    |           |
| Florida long-tailed weasel ..... | <i>Mustela frenata peninsula</i>       |           |
| Round-tailed muskrat.....        | <i>Neofiber alleni</i>                 |           |
| Eastern woodrat .....            | <i>Neotoma floridana</i>               |           |
| Evening bat.....                 | <i>Nycticeius humeralis</i>            |           |
| White-tailed deer.....           | <i>Odocoileus virginianus</i>          |           |
| Marsh rice rat.....              | <i>Oryzomys palustris</i>              |           |
| Cotton mouse.....                | <i>Peromyscus gossypinus</i>           |           |
| Old-field mouse .....            | <i>Peromyscus polionotus</i>           |           |
| Raccoon .....                    | <i>Procyon lotor</i>                   |           |
| Florida panther.....             | <i>Puma concolor coryi</i>             | MTC       |
| Eastern harvest mouse.....       | <i>Reithrodontomys humulis</i>         |           |
| Eastern mole.....                | <i>Scalopus aquaticus</i>              |           |
| Gray squirrel.....               | <i>Sciurus carolinensis</i>            |           |
| Sherman's fox squirrel .....     | <i>Sciurus niger shermani</i>          | MF, MEH   |
| Hispid cotton rat.....           | <i>Sigmodon hispidus</i>               |           |
| Southeastern shrew .....         | <i>Sorex longirostris longirostris</i> |           |
| Eastern spotted skunk.....       | <i>Spilogale putorius</i>              |           |
| Feral hog; wild pig * .....      | <i>Sus scrofa</i>                      |           |
| Eastern cottontail .....         | <i>Sylvilagus floridanus</i>           |           |
| Marsh rabbit.....                | <i>Sylvilagus palustris</i>            |           |
| Brazilian free-tailed bat .....  | <i>Tadarida brasiliensis</i>           |           |
| Florida manatee .....            | <i>Trichechus manatus latirostris</i>  | RFLK, BST |
| Gray fox .....                   | <i>Urocyon cinereoargenteus</i>        |           |
| Florida black bear .....         | <i>Ursus americanus floridanus</i>     | MTC       |
| Red fox * .....                  | <i>Vulpes vulpes</i>                   |           |

## TERRESTRIAL

|                             |     |
|-----------------------------|-----|
| Beach Dune .....            | BD  |
| Coastal Berm .....          | CB  |
| Coastal Grassland .....     | CG  |
| Coastal Strand .....        | CS  |
| Dry Prairie .....           | DP  |
| Keys Cactus Barren.....     | KCB |
| Limestone Outcrop.....      | LO  |
| Maritime Hammock .....      | MAH |
| Mesic Flatwoods .....       | MF  |
| Mesic Hammock .....         | MEH |
| Pine Rockland.....          | PR  |
| Rockland Hammock.....       | RH  |
| Sandhill .....              | SH  |
| Scrub .....                 | SC  |
| Scrubby Flatwoods.....      | SCF |
| Shell Mound .....           | SHM |
| Sinkhole .....              | SK  |
| Slope Forest .....          | SPF |
| Upland Glade .....          | UG  |
| Upland Hardwood Forest..... | UHF |
| Upland Mixed Woodland.....  | UMW |
| Upland Pine.....            | UP  |
| Wet Flatwoods.....          | WF  |
| Xeric Hammock .....         | XH  |

## PALUSTRINE

|                                |      |
|--------------------------------|------|
| Alluvial Forest .....          | AF   |
| Basin Marsh .....              | BM   |
| Basin Swamp .....              | BS   |
| Baygall .....                  | BG   |
| Bottomland Forest .....        | BF   |
| Coastal Interdunal Swale ..... | CIS  |
| Depression Marsh .....         | DM   |
| Dome Swamp.....                | DS   |
| Floodplain Marsh.....          | FM   |
| Floodplain Swamp.....          | FS   |
| Glades Marsh .....             | GM   |
| Hydric Hammock .....           | HH   |
| Keys Tidal Rock Barren.....    | KTRB |
| Mangrove Swamp .....           | MS   |
| Marl Prairie .....             | MP   |
| Salt Marsh .....               | SAM  |
| Seepage Slope .....            | SSL  |
| Shrub Bog .....                | SHB  |
| Slough .....                   | SLO  |
| Slough Marsh .....             | SLM  |
| Strand Swamp .....             | STS  |
| Wet Prairie .....              | WP   |

## LACUSTRINE

|                             |      |
|-----------------------------|------|
| Clastic Upland Lake .....   | CULK |
| Coastal Dune Lake.....      | CDLK |
| Coastal Rockland Lake ..... | CRLK |
| Flatwoods/Prairie.....      | FPLK |
| Marsh Lake.....             | MLK  |
| River Floodplain Lake ..... | RFLK |
| Sandhill Upland Lake .....  | SULK |
| Sinkhole Lake .....         | SKLK |
| Swamp Lake .....            | SWLK |

## RIVERINE

|                         |      |
|-------------------------|------|
| Alluvial Stream .....   | AST  |
| Blackwater Stream ..... | BST  |
| Seepage Stream.....     | SST  |
| Spring-run Stream ..... | SRST |

## SUBTERRANEAN

|                       |     |
|-----------------------|-----|
| Aquatic Cave .....    | ACV |
| Terrestrial Cave..... | TCV |

## ESTUARINE

|                                |      |
|--------------------------------|------|
| Algal Bed.....                 | EAB  |
| Composite Substrate .....      | ECPS |
| Consolidated Substrate .....   | ECNS |
| Coral Reef .....               | ECR  |
| Mollusk Reef .....             | EMR  |
| Octocoral Bed .....            | EOB  |
| Seagrass Bed.....              | ESGB |
| Sponge Bed.....                | ESPB |
| Unconsolidated Substrate ..... | EUS  |
| Worm Reef .....                | EWR  |

# Appendix 6

## Imperiled Species Ranking Information

The Nature Conservancy and the Natural Heritage Program Network (of which FNAI is a part) define an element as any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave or other ecological feature. An element occurrence (EO) is a single extant habitat that sustains or otherwise contributes to the survival of a population or a distinct, self-sustaining example of a particular element. Using a ranking system developed by The Nature Conservancy and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks to each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element occurrences, estimated abundance (number of individuals for species; area for natural communities), range, estimated adequately protected EOs, relative threat of destruction, and ecological fragility.

### **FNAI GLOBAL RANK DEFINITIONS**

|      |                                                                                                                                                                                                            |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G1   | Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or fabricated factor. |
| G2   | Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.                                 |
| G3   | Either very rare or local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.                   |
| G4   | apparently secure globally (may be rare in parts of range)                                                                                                                                                 |
| G5   | demonstrably secure globally                                                                                                                                                                               |
| GH   | of historical occurrence throughout its range may be rediscovered (e.g., ivory-billed woodpecker)                                                                                                          |
| GX   | believed to be extinct throughout range                                                                                                                                                                    |
| GXC  | extirpated from the wild but still known from captivity or cultivation                                                                                                                                     |
| G#?  | Tentative rank (e.g., G2?)                                                                                                                                                                                 |
| G#G# | range of rank; insufficient data to assign specific global rank (e.g., G2G3)                                                                                                                               |

|       |                                                                                                                                                                                                                            |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G#T#  | rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1) |
| G#Q   | rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)                                                                   |
| G#T#Q | same as above, but validity as subspecies or variety is questioned.                                                                                                                                                        |
| GU    | due to lack of information, no rank or range can be assigned (e.g., GUT2).                                                                                                                                                 |
| G?    | Not yet ranked (temporary)                                                                                                                                                                                                 |
| S1    | Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.                 |
| S2    | Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.                                               |
| S3    | Either very rare or local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.                                   |
| S4    | apparently secure in Florida (may be rare in parts of range)                                                                                                                                                               |
| S5    | demonstrably secure in Florida                                                                                                                                                                                             |
| SH    | of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)                                                                                                                         |
| SX    | believed to be extinct throughout range                                                                                                                                                                                    |
| SA    | accidental in Florida, i.e., not part of the established biota                                                                                                                                                             |
| SE    | an exotic species established in Florida may be native elsewhere in North America                                                                                                                                          |
| SN    | regularly occurring but widely and unreliably distributed; sites for conservation hard to determine                                                                                                                        |
| SU    | due to lack of information, no rank or range can be assigned                                                                                                                                                               |
| S?    | Not yet ranked (temporary)                                                                                                                                                                                                 |
| N     | Not currently listed, nor currently being considered for listing, by state or federal agencies.                                                                                                                            |



## **LEGAL STATUS**

### **Federal—USFWS**

|          |                                                                                                                                                                                                                                                                                                      |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LE       | Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.                                           |
| PE       | Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.                                                                                                                                                                                            |
| LT       | Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.                                                                                                                     |
| PT       | Proposed for listing as Threatened Species.                                                                                                                                                                                                                                                          |
| C        | Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened. |
| E(S/A)   | Endangered due to similarity of appearance.                                                                                                                                                                                                                                                          |
| T(S/A)   | Threatened due to similarity of appearance.                                                                                                                                                                                                                                                          |
| EXPE, XE | Experimental essential population. A species listed as experimental and essential.                                                                                                                                                                                                                   |
| EXPN, XN | Experimental non-essential population. A species listed as experimental and non-essential. Experimental, nonessential populations of endangered species are treated as threatened species on public land, for consultation purposes.                                                                 |

### **State—FWC (Animals)**

|         |                                                                                                                                                                                                                                                                                                                                                                                 |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FE      | Federally-designated Endangered                                                                                                                                                                                                                                                                                                                                                 |
| FT      | Federally-designated Threatened                                                                                                                                                                                                                                                                                                                                                 |
| FXN     | Federally-designated Threatened Nonessential Experimental Population                                                                                                                                                                                                                                                                                                            |
| FT(S/A) | Federally-designated Threatened species due to similarity of appearance                                                                                                                                                                                                                                                                                                         |
| ST      | Listed as Threatened Species by the FWC. Defined as a species, subspecies, or isolated population, which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat, is decreasing in area at a rapid rate and therefore is destined or very likely to become an endangered species within the near future.              |
| SSC     | Listed as Species of Special Concern by the FWC. Defined as a population which warrants special protection, recognition or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance or substantial human exploitation that, in the near future, may result in its becoming a threatened species. |

### **State—FDACS (Plants)**

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LE | Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973, as amended. |
| LT | Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered.                                                                                                                                                       |

# Appendix 7

## Management Procedures for Cultural Resources

### A. General Discussion

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, 'Historic property' or 'historic resource' means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state."

### B. Agency Responsibilities

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency. Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered. State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

### C. Statutory Authority

Statutory Authority and more in depth information can be found at: <http://www.flheritage.com/preservation/>

### D. Management Implementation

Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review.

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination. In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.

Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.

### E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at: <http://www.flheritage.com/preservation/>

Questions relating to the treatment of archaeological and historic resources on state lands should be directed to:

Deena S. Woodward  
Division of Historical Resources  
Bureau of Historic Preservation  
Compliance and Review Section  
R. A. Gray Building  
500 South Bronough Street  
Tallahassee, FL 32399-0250

Phone: (850) 245-6425  
Toll Free: (800) 847-7278  
Fax: (850) 245-6435

# Appendix 7—Cultural Resources Info

## **National Register of Historic Places Eligibility Criteria**

The criteria to be used for evaluating eligibility for listing in the National Register of Historic Places are as follows:

- 1) Districts, sites, buildings, structures, and objects may be considered to have significance in American history, architecture, archaeology, engineering, and/or culture if they possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
  - a) are associated with events that have made a significant contribution to the broad patterns of our history; and/or
  - b) are associated with the lives of persons significant in our past; and/or
  - c) embody the distinctive characteristics of type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
  - d) have yielded, or may be likely to yield, information important in prehistory or history.
- 2) Ordinarily cemeteries, birthplaces, or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; properties primarily commemorative in nature; and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:
  - a) a religious property deriving its primary significance from architectural or artistic distinction or historical importance; or
  - b) a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
  - c) a birthplace or grave of an historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or
  - d) a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, distinctive design features, or association with historic events; or
  - e) a reconstructed building, when it is accurately executed in a suitable

environment and presented in a dignified manner as part of a restoration master plan, and no other building or structure with the same association has survived; or a property primarily commemorative in intent, if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or

- f) a property achieving significance within the past 50 years, if it is of exceptional importance.

## **Preservation Treatments**

**Restoration** is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

**Rehabilitation** is defined as the act or process of making possible a compatible use for a property through repair, alterations and additions while preserving those portions or features that convey its historical, cultural or architectural values.

**Stabilization** is defined as the act or process of applying measures designed to reestablish a weather resistant enclosure and the structural stability of an unsafe or deteriorated property while maintaining the essential form as it exists at present.

**Preservation** is defined as the act or process of applying measures necessary to sustain the existing form, integrity and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.



# Appendix 8

## Timber Management Analysis

### Inventory Data

MRSP comprises 37,198 acres in Manatee and Sarasota Counties. Upland natural communities total 18,696 acres consisting of mesic flatwoods, scrubby flatwoods, and dry prairie. In August 2017, an inventory based on plots and remotely sensed imagery was conducted across and within these areas to quantify the condition of the overstory timber resources at MRSP. Site photographs were also taken and used, in conjunction with publicly-available aerial photographs, to generally assess conditions in areas with limited access. No canopy is desired for dry prairie, therefore no data was collected over these acres.

This timber assessment was based on GIS data (management zone and natural community boundary data) provided by DRP in June 2016. Given the dynamic nature of property ownership and land management activities at MRSP, together with the time frame required to create or update a UMP, it is possible that some tabular data may be dated. Therefore, natural community acreages and recent treatments that occurred after the June 2016 period may not be reflected in the tables herein.

The following contains a general description of each management zone within MRSP that contains forested upland natural communities as well as their general condition.

### **Mesic Flatwoods (3,766 acres)**

The preferred tree species in MRSP mesic flatwoods are South Florida slash (*P. elliotii* var. *densa*) or longleaf pine (*Pinus palustris*). The following table shows management zones that contain mesic flatwoods.

*\*Un-sampled upland areas are present in this analysis and could require vegetation management in the future.*

## Appendix 8—Timber Analysis

| Management Zone(s) | Mesic Flatwoods (Acres) | Basal Area (ft <sup>2</sup> /acre) | Basal Area Preferred Species | Basal Area Non-Preferred Species | Average Diameter at breast height (inches) |
|--------------------|-------------------------|------------------------------------|------------------------------|----------------------------------|--------------------------------------------|
| MR-01A             | 114                     | 4                                  | 4                            | --                               | 13.9                                       |
| MR-01B             | 162                     | 1                                  | 1                            | --                               | 12                                         |
| MR-02B*            | 16                      | --                                 | --                           | --                               | --                                         |
| MR-03A             | 36                      | 5                                  | 5                            | --                               | 10.4                                       |
| MR-03B             | 32                      | 13                                 | 12                           | 0                                | 19.3                                       |
| MR-03C             | 19                      | 15                                 | 14                           | 0                                | 8.5                                        |
| MR-04A             | 15                      | 12                                 | 8                            | 3                                | 16.1                                       |
| MR-04B*            | 3                       | --                                 | --                           | --                               | --                                         |
| MR-05A             | 117                     | 5                                  | 5                            | --                               | 10.6                                       |
| MR-05B             | 157                     | 11                                 | 11                           | --                               | 13.1                                       |
| MR-06              | 11                      | 7                                  | 7                            | --                               | 14                                         |
| MR-07              | 44                      | 2                                  | 2                            | --                               | 15.8                                       |
| MR-08              | 40                      | 8                                  | 8                            | --                               | 13.4                                       |
| MR-09A             | 10                      | 0                                  | 0                            | --                               | 11.1                                       |
| MR-09B             | 134                     | 10                                 | 10                           | --                               | 10.6                                       |
| MR-10A             | 59                      | 3                                  | 3                            | --                               | 16                                         |
| MR-10B             | 23                      | 3                                  | 3                            | --                               | 12.1                                       |
| MR-11A             | 45                      | <1                                 | <1                           | --                               | 13.3                                       |
| MR-11B             | 243                     | 1                                  | 1                            | --                               | 10.8                                       |
| MR-11C             | 16                      | 3                                  | 3                            | --                               | 14.7                                       |
| MR-11D             | 273                     | 1                                  | 1                            | --                               | 10.3                                       |
| MR-12              | 195                     | 4                                  | 4                            | --                               | 11.8                                       |
| MR-13A             | 555                     | 5                                  | 5                            | --                               | 12                                         |
| MR-13B             | 25                      | 6                                  | 6                            | --                               | 11.8                                       |
| MR-13C             | 83                      | 6                                  | 6                            | --                               | 11.8                                       |
| MR-13D             | 301                     | 9                                  | 9                            | --                               | 11                                         |
| MR-14              | 17                      | 11                                 | 11                           | --                               | 14.7                                       |
| MR-15*             | 26                      | --                                 | --                           | --                               | --                                         |
| MR-17              | 16                      | 3                                  | 3                            | --                               | 11.8                                       |
| MR-18              | 96                      | 2                                  | 2                            | --                               | 12.3                                       |
| MR-19A             | 16                      | 8                                  | 8                            | --                               | 11.6                                       |
| MR-20              | 389                     | 4                                  | 4                            | --                               | 9.9                                        |
| MR-21              | 86                      | 2                                  | 2                            | --                               | 10.1                                       |
| MR-22A             | 24                      | 5                                  | 5                            | --                               | 12.8                                       |
| MR-22B             | 28                      | 15                                 | 15                           | --                               | 16.6                                       |
| MR-23A             | 70                      | 4                                  | 4                            | --                               | 11.1                                       |
| MR-23B             | 130                     | 5                                  | 5                            | --                               | 11.2                                       |
| MR-24A             | 104                     | 9                                  | 9                            | --                               | 11.5                                       |
| MR-24B             | 17                      | 3                                  | 3                            | --                               | 9.3                                        |

# Appendix 9

## Land Management Review—DRP Response



### FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

MARJORY STONEMAN DOUGLAS BUILDING  
3900 COMMONWEALTH BOULEVARD  
TALLAHASSEE, FLORIDA 32399-3000

RICK SCOTT  
GOVERNOR

CARLOS LOPEZ-CANTERA  
LT. GOVERNOR

HERSCHEL T. VINYARD JR.  
SECRETARY

### MEMORANDUM

**TO:** Keith Singleton, Land Acquisition and Management Planner  
Division of State Lands

**FROM:** Parks Small, Chief, Bureau of Natural and Cultural Resources   
Division of Recreation and Parks

Lew Scruggs, Chief, Office of Park Planning   
Division of Recreation and Parks

**SUBJECT:** Response to Draft Land Management Review (LMR) Myakka River State Park

**DATE:** October 10, 2014

The Land Management Review draft report provided to DRP determined that management of Myakka River State Park by the Division of Recreation and Parks met the two tests prescribed by law. Namely, the review team concluded that the land is being managed for the purposes for which it was acquired and in accordance with the land management plan.

Below are Additional Recommendations and Checklist Findings (items the LMR determined should be further addressed in the management plan update) of the draft LMR report, with our manager's response to each. The responses were prepared via a coordinated effort of the park, district office, and our offices.

**The team recommends that the Park Service conduct a timber assessment and inventory at the park. (6+, 0-)**

*Managing Agency Response: Agree. One month after the LMR, In July 2014, staff met with a FFS forester regarding the feasibility of timber management activities in the park. It was determined that the primary management objectives of the unit could be met without conducting timber management activities for this management plan cycle. Timber management will be re-evaluated during the next revision of the management plan.*



**The team recommends that park efforts be augmented through contracting for exotic species control. (6+, 0-)**

*Managing Agency Response:* Agree. Although the park's exotic species control program has made good strides in the effort of combatting the problem, additional contracting will be of great value. Grant funding will be pursued and costs for contracting exotic species control will be included in the Unit Management Plan, but can only be allocated as funds become available on a statewide priority needs basis.

**The team recognizes the increased visitation to the area, and the team recommends that carrying capacity and infrastructure needs be studied, and solutions be explored. (6+, 0-)**

*Managing Agency Response:* Agree. A study of the park's carrying capacity and infrastructure needs will be addressed in the next Unit Management Plan. Costs associated with the study will be included in the plan, but can only be allocated as funds become available on a statewide priority needs basis.

**The team recommends that a scientific study be conducted to understand the hydrological and ecological impacts of removing the weir and dam structures and restoring the hydrologic regime of the river. (6+, 0-)**

*Managing Agency Response:* Agree. A scientific study of the hydrological and ecological impacts of removing the weir and dam structure will be of great benefit in determining the best course of action. The study will be addressed in the next Unit Management Plan. Costs associated with the study will be included in the plan, but can only be allocated as funds become available on a statewide priority needs basis.

### FIELD REVIEW

**Forest Management, specifically timber inventory, received a below average score. The review team is asked to evaluate, based on information provided by the managing agency whether forest management is sufficient.**

*Managing Agency Response:* Agree - Forest management activities, timber thinning and clearing of planted pine occurred during fiscal year 2010-2011 as suggested by the timber assessment of the 2004 Unit Management Plan. In July 2014, staff met with a FFS forester regarding the feasibility of timber management activities in the park. It was determined that the primary management objectives of the unit could be met without conducting timber management activities for this management plan cycle. Timber management will be re-evaluated during the next revision of the management plan.

**Resources Protection, specifically law enforcement presence, received a below average score. The review team is asked to evaluate, based on information provided by the managing agency, whether resources are sufficient to protect the property.**

**Managing Agency Response:** Agree - The Unit Management Plan update will address law enforcement needs. The Division must request additional assistance through Florida Fish and Wildlife Conservation Commission or from a local law enforcement agency.

**Public Access & Education, specifically road, parking and boat access, received below average scores. The review team is asked to evaluate, based on information provided by the managing agency, whether public access & education are sufficiently.**

**Managing Agency Response:** Agree – Roads, parking areas and boat access receive high visitor use, conditions will be evaluated, taking into consideration the environmental constraints, during the next management plan update.

**Management Resources, specifically buildings, equipment and funding, received below average scores. The review team is asked to evaluate, based on information provided by the managing agency, whether management resources are sufficient.**

**Managing Agency Response:** Agree- The updated unit management plan will address buildings, equipment and funding. However, Division funding is determined annually by the Florida Legislature and funds are allocated to the 171 state parks and trails according to priority needs.

## PLAN REVIEW

**Non-native, Invasive & Problem Species, specifically prevention of pests/pathogens, received a below average score. This is an indication that the management plan does not sufficiently address prevention of invasive species.**

**Managing Agency Response:** Non-native, invasive and problem species will be more thoroughly addressed in the next management plan update. The current management plan was reviewed by the relevant agencies and was in full compliance with Chapters 253 and 259, F.S. and Chapter 18-2 FAC when it was approved by ARC. The next update of this plan will be in full compliance with changes made to the statutes noted above by the Florida Legislature in 2008.

**Resource Protection, specifically law enforcement presence, received a below average score. This is an indication that the management plan does not sufficiently address resource protection.**

**Managing Agency Response:** Resource protection related to law enforcement presence will be more thoroughly addressed in the next management plan update. The current management plan was reviewed by the relevant agencies and was in full compliance with Chapters 253 and 259, F.S. and Chapter 18-2 FAC when it was approved by ARC. The next update of this plan will be in full compliance with changes made to the statutes noted above by the Florida Legislature in 2008.

**Adjacent Property Concerns, specifically discussion of potential surplus land determination, received a below average score. This is an indication that the management plan does not sufficiently address surplus lands.**

*Managing Agency Response: Adjacent property concerns and the determination of surplus lands will more thoroughly addressed in the next management plan update. The current management plan was reviewed by the relevant agencies and was in full compliance with Chapters 253 and 259, F.S. and Chapter 18-2 FAC when it was approved by ARC. The next update of this plan will be in full compliance with changes made to the statutes noted above by the Florida Legislature in 2008.*

Thank you for your attention.

/gk

CC: Valinda Subic, Chief, Bureau of Parks District 4  
Ezell (BJ) Givens, Assistant Chief, Bureau of Parks District 4  
Jon Robinson, Park Manager, Myakka River State Park  
Chris Becker, Environmental Specialist, Bureau of Parks District 4



# Appendix 10

## Myakka Wild and Scenic River Designation and Preservation Act

### MYAKKA RIVER WILD AND SCENIC DESIGNATION AND PRESERVATION ACT

258.501 Myakka River; wild and scenic segment.--

(1) **SHORT TITLE.**--This section may be cited as the "Myakka River Wild and Scenic Designation and Preservation Act."

(2) **LEGISLATIVE DECLARATION.**--The Legislature finds and declares that a certain segment of the Myakka River in Manatee, Sarasota, and Charlotte Counties possesses outstandingly remarkable ecological, fish and wildlife, and recreational values which are unique in the State of Florida. These values give significance to the river as one which should be permanently preserved and enhanced for the citizens of the State of Florida, both present and future. The permanent management and administration of the river involves a complex interaction of state, regional, and local interests which require balancing and coordination of purpose. It is the intention of the Legislature to provide for the permanent preservation of the designated segment of the Myakka River by way of development of a plan for permanent administration by agencies of state and local government which will ensure the protection necessary but retain that degree of flexibility, responsiveness, and expertise which will accommodate all of the diverse interests involved in a manner best calculated to be in the public interest.

(3) **DEFINITIONS.**--As used in this section, the term:

- (a) "Activity" means the doing of any act or the failing to do any act, whether by a natural person or a corporation.
- (b) "Agreement" means the interagency operating agreement between the department, the Department of Community Affairs, and Sarasota County or the City of North Port.
- (c) "Coordinating council" means the council created by subsection (7).
- (d) "Department" means the Department of Environmental Protection.
- (e) "Division" means the Division of Recreation and Parks of the Department of Environmental Protection.
- (f) "Major infrastructure facility" means a manmade structure which serves the common needs of the population, such as a central sewage disposal system, potable water system, potable water well serving a system, solid waste disposal site or retention area, stormwater system, utility, causeway, marina, bridge, or roadway.
- (g) "Person" means an individual, corporation, governmental agency or institution thereof, business trust, estate, trust, partnership, association, two or more persons having a joint or common interest, or other legal entity.
- (h) "Resource value" means any one or more of the specific economic, scenic, recreational, geologic, fish and wildlife, historic, cultural, or ecological features associated with the river area as determined by the coordinating council.
- (i) "River area" means that corridor of land beneath and surrounding the Myakka River from river mile 7.5 to river mile 41.5, together with a corridor including the maximum upland extent of wetlands vegetation as determined by the former Department of Environmental Regulation pursuant to chapter 403 and chapters 17-3 and 17-312, Florida Administrative Code.

(j) "Wild and scenic protection zone" means an area which extends 220 feet landward from the river area.

#### (4) DESIGNATION OF WILD AND SCENIC RIVER.--

(a) The corridor of land surrounding and beneath the Myakka River between river mile 7.5 and river mile 41.5 is hereby designated as a Florida wild and scenic river for the purposes of this section and is subject to all of the provisions of this section. Such designated portion is more particularly described as that portion of the Myakka River located between State Road 780 in Sarasota County and the Sarasota-Charlotte County line.

(b) The governments of Sarasota County and the City of North Port shall manage the Myakka River wild and scenic protection zone under their existing authorities for comprehensive planning, the regulation of land development activities, and other necessary or appropriate ordinances and in conformance with this section, the management plan required under subsection (5), and the agreements adopted by the department and the Department of Community Affairs with the city and county pursuant to this section.

#### (5) DEVELOPMENT OF MANAGEMENT PLAN.--

(a) The department and the coordinating council shall jointly develop a proposed management plan for the designated segment of the Myakka River, subject to and consistent with the provisions of this section.

(b) The development of the proposed management plan shall be by public hearing and shall include participation by all appropriate state agencies and by all appropriate or interested local governments and private organizations.

(c) The proposed management plan shall include provision for:

1. Permanent protection and enhancement of the ecological, fish and wildlife, and recreational values within the river area, primary emphasis being given to protecting agricultural, aesthetic, scenic, historic, archaeologic, and scientific features.
2. Continuation of land uses and developments on private lands within the river area which are in existence on January 1, 1986.
3. Periodic studies to determine the quantity and mixture of recreation and other public uses which can be permitted without adverse impact on the resource values of the river area.
4. Regulation, control, and distribution of public access where necessary to protect and enhance the resource values of the river area.
5. Consideration of need for basic facilities to absorb user impact on the river area, including necessary toilet or refuse containers, but if found to be necessary, located in order to minimize their intrusive impact.
6. Restriction of motorized travel by land vehicle or boat where necessary to protect the resource values in the river area.
7. Agricultural and forestry practices similar in nature to those in the river area on January 1, 1986.
8. Resource management practices for the protection, conservation, rehabilitation, or enhancement of river area resource values.
9. Monitoring of existing water quality.

10. Continuance of existing drainage and water management practices, unless such existing practices will adversely affect, degrade, or diminish existing water quality or existing resource values in the river area, and allowance of new water resource management practices which will not have an adverse impact on resource values in the river area.

11. Review and regulation of all activities conducted or proposed to be conducted within the river area which will or may have an adverse impact on any of the resource values in the river area as provided in this section.

12. Review and regulation, by Sarasota County and the City of North Port under their respective authorities, of activities within the wild and scenic protection zone; and subsequent prohibition, or approval with or without conditions, of such activities in order to minimize potential adverse physical and visual impacts on resource values in the river area and to minimize adverse impacts on private landowners' use of land for residential purposes.

(d) To the extent not inconsistent with this section, the proposed management plan may also include any other provisions deemed by the department to be necessary or advisable for the permanent protection of the river as a component of the Florida Wild and Scenic Rivers System.

### (6) AMENDMENT OF REGULATIONS AND COMPREHENSIVE PLANS.--

(a) Sarasota County and the City of North Port shall amend their comprehensive plans so that the parts of such plans that affect the wild and scenic protection zone conform to, or are more stringent than, this section, the river management plan, and management guidelines and performance standards to be developed and contained within agreements to be adopted by the department, the Department of Community Affairs, and the city and county. The guidelines and performance standards must be used by the department and the Department of Community Affairs to review and monitor the regulation of activities by the city and county in the wild and scenic protection zone. Amendments to those comprehensive plans must include specific policies and guidelines for minimizing adverse impacts on resources in the river area and for managing the wild and scenic protection zone in conformance with this section, the river management plan, and the agreement. Such comprehensive plans must be amended within 1 year after the adoption date of the agreement, and thereafter, within 6 months following an amendment to this section, the river management plan, or the agreement, as may be necessary. For the purposes established in this subsection, such amendments need not conform to statutory or local ordinance limitations on the frequency of consideration of amendments to local comprehensive plans.

(b) Sarasota County and the City of North Port shall adopt or amend, within 1 year after the department and the Department of Community Affairs adopt with the city and with the county agreements for regulating activities in the wild and scenic protection zone, any necessary ordinances and land development regulations so that those ordinances and regulations conform to the purposes of this section, the river management plan, and the agreement. Thereafter, following any amendment to this section, the river management plan, or the agreement, the city and county must amend or adopt, within 1 year, appropriate ordinances and land development regulations to maintain such local ordinances and regulations in conformance with this section, the river management plan,



and the agreement. Those ordinances and regulations must provide that activities must be prohibited, or must undergo review and either be denied or permitted with or without conditions, so as to minimize potential adverse physical and visual impacts on resource values in the river area and to minimize adverse impacts on private landowners' use of land for residential purposes. The resource values of concern are those identified in this section and by the coordinating council in the river management plan. Activities which may be prohibited, subject to the agreement, include, but are not limited to, landfills, clear cuttings, major new infrastructure facilities, major activities that would alter historic water or flood flows, multifamily residential construction, commercial and industrial development, and mining and major excavations. However, appurtenant structures for these activities may be permitted if such structures do not have adverse visual or measurable adverse environmental impacts to resource values in the river area.

(c) If the Department of Community Affairs determines that the local comprehensive plan or land development regulations, as amended or supplemented by the local government, are not in conformance with the purposes of this section, the river management plan, and the agreement, the Department of Community Affairs shall issue a notice of intent to find the plan not in compliance and such plan shall be subject to the administrative proceedings in accordance with s. 163.3184.

### (7) MANAGEMENT COORDINATING COUNCIL.--

(a) Upon designation, the department shall create a permanent council to provide interagency and intergovernmental coordination in the management of the river. The coordinating council shall be composed of one representative appointed from each of the following: the department, the Department of Transportation, the Fish and Wildlife Conservation Commission, the Department of Community Affairs, the Division of Forestry of the Department of Agriculture and Consumer Services, the Division of Historical Resources of the Department of State, the Tampa Bay Regional Planning Council, the Southwest Florida Water Management District, the Southwest Florida Regional Planning Council, Manatee County, Sarasota County, Charlotte County, the City of Sarasota, the City of North Port, agricultural interests, environmental organizations, and any others deemed advisable by the department.

(b) The coordinating council shall review and make recommendations on all proposals for amendments or modifications to this section and to the permanent management plan, as well as on other matters which may be brought before the council by the department, any local government, or any member of the council, and shall render its nonbinding advisory opinion to the Southwest Florida Water Management District, the department, and affected local governments.

(c) The council may adopt bylaws to provide for election of such officers as it deems necessary, removal of officers for just cause, meetings, quorum, procedures, and other such matters as its members may deem advisable in the conduct of its business. Such bylaws shall be approved by the department.

(d) Such professional staff as the coordinating council may require shall be provided by the department.

(8) PRESERVATION OF EXISTING GOVERNMENTAL AUTHORITY.--

(a) Nothing contained in this section shall operate to divest any agency, water management district, municipality, county, or special district of any authority or jurisdiction in existence on January 1, 1986.

(b) Notwithstanding paragraph (a), Sarasota County and the City of North Port must, in exercising their authority and jurisdiction over any part of the wild and scenic protection zone, act in conformance with this section, the management plan, and the agreements entered into pursuant to this section.

(9) RULEMAKING AUTHORITY.--

(a) The department is authorized to adopt rules to regulate activities within the river area which have adverse impact on resource values as adopted by the coordinating council within the river area.

(b) The department shall coordinate all activities related to rule adoption and enforcement with the regulatory and management programs of other agencies in order to avoid to the maximum extent possible any conflicts or duplication arising therefrom.

(c) The department and the Department of Community Affairs must enter into agreements with the City of North Port and Sarasota County that provide for guiding and monitoring the regulation of activities by the city and county, in accordance with subsection (6). Such agreements shall include guidelines and performance standards for regulating proposed activities so as to minimize adverse environmental and visual impacts of such activities on the resource values in the river area, and to minimize adverse impacts to landowners' use of land for residential purposes.

(10) PERMITTING AUTHORITY.--

(a) No person or entity shall conduct any activity within the river area which will or may have an adverse impact on any resource value in the river area without first having received a permit from the department.

(b) A permit may be granted only after a finding by the department that the activity for which a permit has been requested will not have an adverse impact on resource values in the river area.

(c) The department may adopt an application fee schedule providing for payment of reasonable fees to defray the cost of processing applications.

(11) NOTIFICATION BY REGULATORY AGENCIES.--All state, regional, and local regulatory agencies shall provide to the department notification of applications received by the agency for approval to conduct activities in the river area and protection zone.

(12) LEGAL STATUS OF COMPREHENSIVE PLAN AMENDMENTS.--It is the intent of this section that the city and county amend their comprehensive plans, land development regulations, and other appropriate ordinances and regulations to be in conformance with this section, the river management plan, and guidelines and performance standards to be developed and adopted by agreement pursuant to this section. Such amendments shall have legal status as provided under s. 163.3194 and must be implemented through appropriate local regulations in accordance with s. 163.3201.

(13) **STANDING TO ENFORCE AMENDED COMPREHENSIVE PLANS.**--It is the intent of this section that any aggrieved or adversely affected person may maintain an action for injunction or other relief against the city or county to prevent any such local government from taking action in regulating activities not consistent with the comprehensive plan, land development regulations, and other appropriate ordinances and regulations, as amended, pursuant to this section and s. 163.3215.

(14) **PERMITTED ACTIVITIES.**--

(a) Nothing in this section shall be construed to prohibit or regulate any activity taking place outside the river area and the wild and scenic protection zone for which necessary permits and licenses are obtained as required by other provisions of federal, state, or local law.

(b) Nothing in this section shall be construed to prohibit or limit public utilities from improving, maintaining, modifying, or expanding existing facilities or constructing new facilities in the river area or the wild and scenic protection zone, provided the necessary federal, state, and local permits and licenses are obtained.

(15) **PROHIBITED ACTIVITY.**--Airboats are prohibited from operating in the river area north of U.S. Highway 41 (State Road 45), except for uses officially allowed by government agencies.

(16) **ENFORCEMENT.**--Officers of the department shall have full authority to enforce any rule adopted by the department under this section with the same police powers given them by law to enforce the rules of state parks and the rules pertaining to saltwater areas under the jurisdiction of the Florida Marine Patrol.

(17) **PENALTIES.**--Violation of this section or of any rule adopted under this section constitutes a misdemeanor of the second degree, punishable as provided in s. 775.082 or s. 775.083. Continuing violation after notice constitutes a separate violation for each day so continued.

History.--ss. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, ch. 85-363; s. 30, ch. 86-163; s. 1, ch. 90-173; s. 101, ch. 94-356; s. 79, ch. 99-245.



# Appendix 10

## Myakka Wild and Scenic River Designation

### The Myakka River Rule: Chapter 62D-15 FAC

#### 62D-15.002 Definitions.

- (1) “Act” means the Myakka River Wild and Scenic Designation and Preservation Act.
- (2) “Activity” means the doing of any act or the failing to do any act by a person.
- (3) “Adverse impact” means the permanent, long-term or significant degradation, impairment, or loss of resource values in the river area caused by the conduct of activities, practices, or land uses.
- (4) “Coordinating Council” means the Myakka River Management Coordinating Council created by Section 258.501(7), Florida Statutes.
- (5) “Department” means the Department of Environmental Protection.
- (6) “Division” means the Division of Recreation and Parks of the Department of Environmental Protection.
- (7) “Dock” means a fixed or floating structure, including moorings, used for the purpose of berthing buoyant vessels, either temporarily or indefinitely, or used as structures for participating in recreational activities.
- (8) “Dredging” means the excavating of materials, by any method, in the river area.
- (9) “Executive Director” means the Executive Director of the Department of Environmental Protection.
- (10) “Filling” is the deposition, by any means, of materials in the river area.
- (11) “Government agency” means all federal and state agencies, the Southwest Florida Water Management District, and local governments.
- (12) “Idle speed/no-wake” means a watercraft speed not greater than that speed which is necessary to maintain steerageway.
- (13) “Impacted areas” means portions of the river area that have been disturbed prior to the effective date of this rule by the placement of manmade structures or conduct of activities.
- (14) “Marina” means a commercial docking facility that provides facilities for mooring or storage of watercraft, or making watercraft available for use, for revenue generating purposes.
- (15) “Maximum upland extent of wetlands vegetation” means for purposes of determining the extent of the department’s permitting jurisdiction, those areas defined by the Department of Environmental Protection as “wetlands” pursuant to Section 373.019, Florida Statutes, and is determined as specified in Sections 373.421 and 373.4211, Florida Statutes, and Rule 62-340, Florida Administrative Code, as of April, 1990, except that the term shall not include tributaries of the Myakka River, and shall not include isolated wetlands.
- (16) “Myakka Wild and Scenic River Management Plan” or “Plan” means the plan described in subsection 258.501(5), Florida Statutes, as developed by the department and the Coordinating Council and as accepted on May 22, 1990 by the Governor and Cabinet sitting as head of the Department of Natural Resources.
- (17) “Native vegetation” means a plant which is indigenous to the river area.
- (18) “Nuisance species” means any species of flora or fauna whose noxious characteristics or presence in sufficient number, biomass, or areal extent that prevents, or interferes with, uses or management of resources, and which are native or naturalized in the area where it occurs.
- (19) “Person” means an individual, corporation, governmental agency or institution thereof, business trust, estate, trust, partnership, association, two or more persons having a joint or common interest, or other legal entity.
- (20) “Pollutant” means any substance, contaminant, noise, or artificial condition which is or may be potentially harmful or injurious to human health and welfare, animal or plant life, or property, or which interferes with the enjoyment of life, or property, or outdoor recreation.
- (21) “Preempted area” means the portion of the river area occupied by a dock or docks or other structures, the area between the docks or other structures and including any mooring pilings, and the area between the docks or other structures and the shoreline.
- (22) “Private multi-family docking facility” means a docking facility located on or adjacent to upland property having riparian access that is or will be developed to accommodate multiple living units. The term is applied only in reference to residential subdivisions and yacht clubs whose owners or members have real property interest in the upland property having riparian access.
- (23) “Public interest” means demonstrable environmental, social, and economic benefits which would accrue to the public at large as a result of a proposed action, and which would clearly exceed all demonstrable environmental, social, and economic impacts of the proposed action.
- (24) “Public utility” means the utilities defined in subsection 366.02(1), Florida Statutes.
- (25) “Renovation” means activities undertaken to restore a structure when 50 percent or more of the materials or construction have been damaged or destroyed, or if use of the structure has been discontinued and 50 percent or more of the structure must be

replaced in order to make it functional for its intended purpose or safely useable.

(26) “Repair” means activities undertaken to maintain structures in a safely useable and functional condition which result in the repaired structure being within the same footprint and of the same dimensions as the original structure.

(27) “Resource value” means any one or more of the specific economic, scenic, recreational, geologic, fish and wildlife, historic, cultural, or ecological features associated with the river area as determined by the Coordinating Council and as set forth in the Myakka Wild and Scenic River Management Plan.

(28) “River area” means that corridor of land beneath and surrounding the Myakka River from river mile 7.5 to river mile 41.5, together with a corridor including the maximum upland extent of wetlands vegetation which is or will be delineated by the Department of Environmental Protection pursuant to its authority under Chapter 403, Florida Statutes, and Chapter 62-340, Florida Administrative Code.

(29) “Shore protection structure” means a type of construction designed to minimize erosion. Such construction includes any work or activity which is likely to have an effect on existing conditions or natural shore or riverbank processes.

(30) “Slow/minimum wake” means a speed such that watercraft must not be on a plane, must be level in the water, and not be operating at a speed greater than that which is reasonable and prudent to avoid an excessive wake or condition under the existing circumstances as specified in Rule 62D-15.012, Florida Administrative Code.

(31) “Structure” means something built, erected, assembled or installed, or the arrangement of natural or artificial materials in an ordered scheme.

(32) “Tributary” means a stream or watercourse whether natural or artificial which flows into the Myakka River, directly or indirectly, continuously or intermittently.

(33) “Unimpacted areas” means portions of the river area largely in their natural state not disturbed prior to the effective date of this rule by land uses, activities, practices, or the placement of manmade structures except those structures that have been permitted or are exempt under these rules.

(34) “Vessel” means any type of boat or floating craft and includes watercraft.

(35) “Watercraft” means any type of boat or floating craft which is propelled or powered by an engine or motor.

(36) “Water-dependent activity” means an activity which can only be conducted on, in, over, or adjacent to, water areas because the activity requires primary and direct access to the water body for transportation, recreation, energy production or transmission, or that uses the river as a source of water and where the use of the water is an integral part of the activity.

*Specific Authority 258.501 FS. Law Implemented 258.501 FS. History—New 7-22-91, Formerly 16D-15.002.*

## **62D-15.003 Statement of Purpose and Applicability.**

(1) The purpose of this chapter is to implement a regulatory program which includes a permit program to protect and enhance the resource values as identified in the Myakka Wild and Scenic River Management Plan as adopted by the Governor and Cabinet on May 22, 1990, which is hereby incorporated by reference. Copies of the Plan may be obtained by writing to the Bureau Chief, District 4 Administration, Division of Recreation and Parks, 1843 South Tamiami Trail, Osprey, Florida 34229, or contacting the Bureau Chief at (941) 483-5944.

(2) The rules governing prohibitions, permits, and exemptions, as set forth in this part apply to any activity as further delineated in Rules 62D-15.005, 62D-15.006, and 62D-15.007, Florida Administrative Code, within the river area, which will adversely impact resource values in the river area.

(3) Standards for the issuance or denial of permits for the conduct of activities and practices, and construction of structures are provided.

*Specific Authority 258.501 FS. Law Implemented 258.501 FS. History—New 7-22-91, Formerly 16D-15.003.*

## **62D-15.004 Delineation of Regulatory Responsibilities and Jurisdiction.**

(1) The conduct of any activity by a person within the river area which will have an adverse impact on any resource values in the river area shall be regulated by the department.

(2) The “maximum upland extent of wetlands vegetation” for purposes of determining the landward boundary of the river area, is defined by a corridor which shall be determined pursuant to the methodology set forth in Sections 373.421 and 373.4211, Florida Statutes, and Chapter 62-340, Florida Administrative Code, for determining the “landward extent of surface waters of the State,” but



shall not include tributaries of the Myakka River or isolated wetlands. Existing wetland jurisdictional determinations or validations on specific parcels by the Department of Environmental Protection established, under its authority to delineate wetlands, in accordance with Chapter 62-340, Florida Administrative Code, are effective and enforceable for the purposes of defining the maximum upland extent of wetlands vegetation. The boundary of the river area where it crosses a tributary shall be the shortest and most direct continuation of the line demarcating the maximum upland extent of vegetation of the river area on either side of the tributary.

*Specific Authority 258.501 FS. Law Implemented 258.501 FS. History—New 7-22-91, Formerly 16D-15.004.*

## **62D-15.005 Prohibitions.**

The activities in this rule, conducted by a person, are presumed to have adverse impacts on resource values in the river area and will be prohibited unless otherwise provided by law. However, persons may submit permit applications in accordance with Rules 62D-15.006, 62D-15.009 and 62D-15.011, Florida Administrative Code, for the following prohibited activities, with required non-refundable fees, for review and consideration of applications by the department as specified under Rules 62D-15.006 and 62D-15.008, Florida Administrative Code:

- (1) Discharging, through a pipe, ditch or similar conveyance, pollutants, including but not limited to domestic and industrial wastes or effluents, or untreated stormwater;
- (2) Removing or cutting native vegetation except as a function of an activity permitted under Rule 62D-15.006, Florida Administrative Code, or that has received a Myakka River Permit prior to the effective date of this rule, and except for the minimum required to provide riparian ingress and egress necessary for docking, boating, bathing and fishing access;
- (3) Constructing, in unimpacted areas, new road or bridge crossings, or utility crossings except crossings by public utilities as that term is defined in subsection 366.02(1), Florida Statutes, and those crossings that would not adversely impact resource values;
- (4) Excavating minerals or drilling for gas or oil;
- (5) Constructing, erecting, or installing any form of structure not related to a water-dependent activity;
- (6) Constructing roads or utilities, except for facilities of public utilities as that term is defined in subsection 366.02(1), Florida Statutes, to islands where such access did not previously exist;
- (7) Operating airboats north (upstream) of U.S. Highway 41, except for uses officially allowed by governmental agencies;
- (8) Constructing new marinas;
- (9) Engaging in any other activity or practice which adversely impacts resource values in the river area, and for which no permit has been obtained under Rule 62D-15.006, Florida Administrative Code;
- (10) Nothing in this rule shall be construed to prohibit or limit public utilities from improving, maintaining, modifying, or expanding existing facilities or constructing new facilities in the river area or the wild and scenic protection zone, provided the necessary federal, state, and local permits and licenses are obtained.

*Specific Authority 258.501 FS. Law Implemented 258.501 FS. History—New 7-22-91, Formerly 16D-15.005.*

## **62D-15.006 Permits.**

(1) A Myakka River permit is required from the department before a person may engage in certain activities. An application form titled, State of Florida Joint Application for Permit, DEP FORM 62-312.900(1), November 30, 1982, which is incorporated by reference, may be obtained from and submitted to: Bureau Chief, District 4 Administration, Division of Recreation and Parks, 1843 South Tamiami Trail, Osprey, Florida 34229.

(2) Activities, structures or practices for which permit applications must be submitted for review include any of the following within the river area:

- (a) Dredging or filling;
- (b) Creating, repairing, or maintaining shore protection structures;
- (c) Maintaining existing navigational channels and aids to navigation or installing new aids to navigation;
- (d) Constructing, installing, expanding, or renovating marinas, landings, boat ramps, docks, mooring buoys, pilings, dolphins, decks, or piers;
- (e) Renovating, replacing, or expanding facilities required for utilities, bridges, or roads;



(f) Removing or cutting native vegetation only for riparian ingress and egress necessary for docking, boating, bathing and fishing access;

(g) Relocation or setting of bulkhead lines waterward of mean high water;

(h) Engaging in agricultural and forestry practices and activities not conducted prior to the effective date of the rule within the river area on the subject site;

(i) Engaging in water resource management practices not conducted prior to the effective date of this rule including constructing stormwater management systems as that term is defined in Section 373.403, Florida Statutes, or other drainage discharges, except that the water management district, under emergency conditions, may submit an application after-the-fact;

(j) Constructing or creating after the effective date of this rule utility, bridge or road crossings in impacted areas, or utility crossings in unimpacted areas;

(k) Constructing, erecting, installing any form of structure related to a water-dependent activity, or any other structures in the river area;

(l) Replacing or reconstructing any damaged or destroyed exempted structure, land use or activity;

(m) Establishing recreational facilities on publicly owned portions of the river area; and

(n) Any other activity not subject to Rule 62D-15.006, Florida Administrative Code, conducted or proposed to be conducted after the effective date of this rule within the river area which adversely impacts resource values in the river area.

(3) The existence of provisions for exemptions or permits under other rules of the department or of other government agencies does not eliminate the requirement for a Myakka River permit for an activity in the river area. Exemptions from, or the issuance of permits under, this rule may not relieve persons from complying with requirements for permits under other department or government agency rules.

(4) The department shall not deny a permit to a public utility if the public utility has provided a letter with supporting documentation that demonstrates that it is not feasible or practicable to meet all applicable criteria of Rule 62D-15, Florida Administrative Code.

*Specific Authority 258.501 FS. Law Implemented 258.501 FS. History—New 7-22-91, Formerly 16D-15.006.*

## **62D-15.007 Exemptions.**

(1) Activities that have not been prohibited, or subject to permit review may be conducted within the river area without a Myakka River permit unless the activities will have adverse impacts on resource values in the river area. If there is evidence produced or observed by department staff based on standards and factors specified in Rule 62D-15.008, Florida Administrative Code, that an activity, subject to this paragraph adversely impacts resource values, the department will notify the appropriate persons conducting the activity, that they must submit a permit application within 14 days to the department. For exempted activities submitted for permit review that were conducted prior to the effective date of this rule, the department shall approve these activities with or without conditions based on standards and factors specified in Rule 62D-15.008, Florida Administrative Code. Activities subject to this paragraph conducted after the effective date of this rule, must be submitted for permit review as specified in Rules 62D-15.008 and 62D-15.009 Florida Administrative Code. The department will approve with or without conditions, or deny the activity pursuant to Rules 62D-15.008 and 62D-15.009, Florida Administrative Code, and procedures set forth in Section 120.60, Florida Statutes, governing licensure. Applications to conduct exempted activities or to replace damaged structures, under this section, in existence prior to the effective date of this rule will not be subject to permit application fees under Rule 62D-15.011, Florida Administrative Code.

(2) In the event that an exempted structure in existence prior to the effective date of this rule is damaged or destroyed by 50 percent or more of materials or construction, and is no longer suitable to safely serve its intended purpose, the person owning or operating such structure, in order to re-establish the structure, must submit a permit application for review and approval as specified under Rules 62D-15.008, and 62D-15.009, Florida Administrative Code. The department shall review, and approve the application with or without conditions, as specified in Rules 62D-15.008, and 62D-15.009, Florida Administrative Code, for reestablishment of the damaged structure.

(3) The following activities may be conducted by persons without having submitted a permit application unless the activity will adversely impact resource values as evidenced or observed by department staff under this section, subsection (1):

(a) Commercial fishing;

- (b) Maintenance or repair, but not including expanding, remodeling or renovation, of existing structures;
- (c) Continuation of yard maintenance activities such as mowing, trimming or pruning of vegetation only to prevent or minimize potential damage to existing structures or for the continuation of activities which had been conducted prior to the effective date of this rule;
- (d) Structures, land uses and water-dependent activities on public and private lands in existence at the effective date of this rule within the river area, including but not limited to docks and associated mooring pilings, boat ramps, shore protection structures, fences, other structures;
- (e) Continuation of existing agricultural and forestry practices or activities similar in nature to those existing on the site, within the river area, at the effective date of this rule;
- (f) Continuation of existing drainage and water management practices, including but not limited to, repair or maintenance of impoundments, dams, diversions, pumping operations, swales, ditches, pipes, or canals;
- (g) Resource management practices of government agencies including but not limited to, prescribed burning or exotic and nuisance species control, for the protection, conservation, rehabilitation, or restoration of resource values;
- (h) Installation of devices for measuring water quality, water quantity, hydrologic conditions, or other ecological conditions by governmental agencies, private not-for-profit research organizations, and persons who are required to install such devices as a requirement of obtaining a permit from a governmental agency;
- (i) Continuation of existing facilities and easements for utilities and roads, including repair and maintenance, but not including increasing the size of easements or structures of such facilities which shall be subject to Rules 62D-15.006 and 62D-15.008, Florida Administrative Code;
- (j) Renovating or replacing facilities or structures by a public utility so long as the footprint of the facility or structure is not materially enlarged or the facility or structure is not relocated; and,
- (k) Mowing, trimming, pruning, removing or cutting native vegetation to the extent required to maintain or construct public utility facilities or structures.

*Specific Authority 258.501 FS. Law Implemented 258.501 FS. History—New 7-22-91, Formerly 16D-15.007.*

## **62D-15.008 Standards for Issuance or Denial of a Permit.**

(1) In accordance with Section 258.501(10), Florida Statutes, no permit shall be issued unless the department finds that the proposed activity will not adversely impact resource values in the river area. The department will review completed applications for permits submitted as specified under Rules 62D-15.005, 62D-15.006 and 62D-15.009, Florida Administrative Code, and will evaluate applications using the standards and factors contained in this section. Additional information on the standards and factors used in evaluating applications may be obtained from the department at the address location provided in Rule 62D-15.006, Florida Administrative Code. Applications will be processed in accordance with procedures specified in Section 120.60, Florida Statutes.

(2) Factors to be considered by the department in determining whether the activity will adversely impact the resource values include:

(a) Whether the activity is consistent with the Act, this rule, and management principles, objectives and actions of the Myakka Wild and Scenic River Management Plan.

(b) Whether the activity will affect resource values by:

1. Increasing the amount of fertilizers, nutrients, pesticides and herbicides, soil or soil conditioners, or biological and artificial substances discharged into the river area;
2. Increasing impervious surface area or stormwater runoff;
3. Causing discharge of pollutants or increasing pollution impacts from land development, septic tanks, underground storage tanks, sanitary landfills, and wastewater treatment or disposal;
4. Causing or contributing odors or noise;
5. Increasing water use;
6. Increasing water resource impacts;
7. Encouraging erosion or shoaling;
8. Creating an impediment to navigation;
9. Causing upstream penetration of saline water into the river;



10. Causing a drawdown of surface or aquifer water levels;
  11. Inhibiting the natural storage and detention functions of floodplains;
  12. Reducing wetland buffers or wetland filtrative functions;
  13. Altering natural hydrologic characteristics of the river area;
  14. Altering the flow rate, timing, volume, or water quality of freshwater flowing into downstream reaches of the river area so as to affect the growth and productivity of brackish-saltwater marine life and vegetation;
  15. Causing or contributing to overfishing;
  16. Increasing access to the Myakka River through construction of roads, utility corridors, except facilities of public utilities as public utility is defined in Section 366.02, Florida Statutes, or recreation sites;
  17. Decreasing recreational opportunities, including but not limited to fishing, boating, canoeing, picnicking, nature study, or photography;
  18. Causing or contributing to overuse of the river's recreational resources;
  19. Blocking, obstructing, lessening or otherwise interfering with the scenic and natural views as seen within the river area, including but not limited to open water, broad marshes, forested horizons, mangrove swamps, bluffs, riverbanks and bars;
  20. Increasing litter;
  21. Increasing visibility of storage, dilapidated or unmaintained structures;
  22. Increasing the visual intrusion of tall structures;
  23. Increasing intrusion caused by artificial light;
  24. Impacting the conservation and preservation of fish and wildlife including endangered or threatened species or their habitats, feeding or breeding grounds;
  25. Impacting listed threatened or endangered species of flora or plant communities or groupings considered to be of special ecological significance by the Florida Department of Agriculture and Consumer Services and the Florida Natural Areas Inventory;
  26. Encouraging infestation or propagation of exotic or nuisance aquatic or terrestrial species such as Brazilian pepper, melaleuca, Australian pine, hydrilla, paragrass, parrotfeather, alligator weed, water hyacinth or cattail;
  27. Affecting wildlife corridors or waterfowl flyways;
  28. Reducing aquatic habitat, other than nuisance species, including, but not limited to, grassbeds, marshes or mangroves;
  29. Increasing the density or intensity of development permitted on the subject property at the time the permit application is submitted;
  30. Causing or contributing to unsafe conditions for boats or boaters;
  31. Encouraging unauthorized use of public and private lands; and
  32. Damaging or destroying archaeological, cultural or historic sites or their artifacts.
- (3) Certain structures or activities must also comply with the following restrictions:
- (a) Docks shall be located and designed to avoid adverse impacts to resource values. At a minimum, to the extent that new docks or expansions to docks or marinas are approved, they shall meet the following standards and criteria:
1. No dock or marina and its associated pilings, shall extend waterward of the mean or ordinary high water line more than 20 feet or 10 percent of the width of the waterbody at that particular location, whichever is less. Special consideration will be given to extension of these limits in instances where riparian access would be precluded due to insufficient water depths. A water depth of minus three feet mean low water shall be deemed sufficient water depth for purpose of special consideration.
  2. The dock will extend out from the shoreline no further than a length that reaches a water depth not exceeding minus three feet (mean low water).
  3. Docks and expanded marinas shall only be approved in locations having adequate water depths in the vessel mooring, turning basin, access channels, and other such areas in order to insure that a minimum of one foot clearance is provided between the deepest draft of a vessel and the bottom at mean low water.
  4. Dredging to obtain navigable water depths for docks or for expanded marinas is prohibited.
  5. Terminal platform size shall be no more than 120 square feet and the length of the platform shall be no more than 12 feet and the width shall be no more than 10 feet.
  6. Any main access dock shall be limited to a maximum width of four feet.
  7. No more than one dock shall be permitted for a lot or parcel of land, except no dock shall be permitted where riparian lot owners have acquired access to, or conveyed or transferred their riparian dock rights for, the use of a common, private multi-family



docking facility. No dock for a single family lot may be designed, constructed or used to moor more than two vessels.

8. The dock decking design and construction shall provide maximum light penetration, with full consideration of safety and practicality.

9. New docks, renovations, remodeling or expansions to existing docks or facilities may be subject to requirements for identifying ways to improve or mitigate adverse environmental impacts caused by previous activities on the subject property. If deemed necessary to improve an existing condition which is creating an adverse impact on the river area, permit conditions may be imposed requiring that the permittee conduct certain activities that will minimize impacts to resource values in the river area.

10. Where local governments have more stringent standards and criteria for docks and marinas, the more stringent standards for the protection and enhancement of the river area shall prevail.

11. The submerged lands area preempted by expanded marinas or private multi-family docks shall not exceed the square footage amounting to 10 times the applicant's contiguous riparian waterfront footage. A conservation easement or other such use restriction acceptable to the department must be placed on the riparian shoreline, used for the calculation of the 10:1 threshold, to conserve and protect shoreline resources and subordinate/waive any further riparian rights.

(b) Dredging or filling. Dredging or filling shall be permitted only upon a determination by the department that the proposed activity will not adversely impact resource values and is clearly in the public interest.

(c) Water management practices. Water management practices must not adversely affect, diminish, or degrade existing water quality or resource values in the river area.

(4) A permit shall contain specific conditions for approval, as necessary, to assure that the activity will not adversely impact resource values in the river area.

(5) In denying a permit application, the department shall specifically identify which resource values will be adversely impacted by the activity sought to be undertaken by the applicant.

(6) Permit applications shall be processed, and notification of the granting or denial of permits will be provided to applicants by the department, in accordance with Section 120.60, Florida Statutes, governing licensure.

(7) The approval of the permit application shall be based upon a finding by the department that the activity will not adversely impact resource values in the river area. Within thirty (30) days of its approval, the department shall issue the permit.

(8) A Myakka River permit is not an operating permit but is issued for purposes of repairing, reconstructing, renovating, replacing, maintaining, expanding, constructing, dredging or filling, engaging in new activities or practices, or removing or cutting of vegetation and shall be valid for two years from date of issuance except where another permit period is determined by the department as a condition for approval, or upon completion of construction. Once construction is completed, or activities and practices have begun, a structure, practice or activity is not subject to a termination or revocation of its permit unless a violation of the permit conditions occurs.

(9) A request for an extension of a permit will be considered and shall be approved if the extension of the permit will not result in adverse impacts to resource values. An extension of up to two years from the date of issuance may be granted by the department, if, based on standards included in Rule 62D-15.008, Florida Administrative Code, resource values will not be adversely impacted. Extensions will be renewed no more than two times. An application for an extension must be submitted by form to the department at least sixty days prior to expiration of the permit. An application form titled, Myakka Wild and Scenic River Application for Permit Extension, DEP 46-051, May 28, 1991, which is incorporated by reference, may be obtained from and submitted to the District Manager at the address location included in Rule 62D-15.006, Florida Administrative Code. The application must be submitted and made complete before the expiration date of the permit in order for the permit to be considered for an extension. Applications for permit extensions will be processed and approved or denied in accordance with Section 120.60, Florida Statutes.

*Specific Authority 258.501 FS. Law Implemented 258.501 FS. History—New 7-22-91, Formerly 16D-15.008.*

## **62D-15.009 Permit Application Form.**

An applicant shall make application for a Myakka River permit on the Joint Dredge and Fill Application Form as specified in Rule 62D-15.006, Florida Administrative Code. The application form must be completed with all pertinent information required in instructions attached with the application form. The applicant shall also include, as part of the application, a detailed explanation of how the proposed project is consistent with the Act, the Plan, and this rule. The application must also be accompanied by a letter from any other appropriate government agency indicating the status of such other government agency approvals necessary for the

proposed activity. In its review of the application, the department may request other technical information in support of the application. The application and all supportive information must be filed in duplicate with the Division of Recreation and Parks at the address specified in Rule 62D-15.006, Florida Administrative Code.

*Specific Authority 258.501 FS. Law Implemented 258.501 FS. History—New 7-22-91, Formerly 16D-15.009.*

## **62D-15.010 Transfer of Permits.**

Within 30 days following the sale or legal transfer of a permitted facility or activity, the new owner of the permitted facility or activity must register by form with the department. A registration form titled, Myakka Wild and Scenic River Registration for Transfer of Permit, DEP 46-052, May 28, 1991, which is incorporated by reference, may be obtained from and submitted to the Bureau Chief at the address location included in Rule 62D-15.006, Florida Administrative Code. The registration form for the new owner will certify that the new owner will conform to all conditions under which the permit was approved.

*Specific Authority 258.501 FS. Law Implemented 258.501 FS. History—New 7-22-91, Formerly 16D-15.010.*

## **62D-15.011 Permit Application Fees.**

Each application for a permit to be considered by the department pursuant to Section 258.501, Florida Statutes, and Rules 62D-15.005, 62D-15.006 and 62D-15.007, Florida Administrative Code, unless where otherwise provided in this chapter, shall be accompanied by a non-refundable processing fee to help defray the cost of processing the application. The fee structure is as follows:

(1) For the removal or cutting of native vegetation for riparian ingress and egress, conducting activities, or for constructing structures for which the fair market value of either the materials or labor to be used for the activity or structure does not exceed Four Hundred Dollars (\$400.00), the fee is \$50.00.

(2) For all other activities the fee is \$200.00.

*Specific Authority 258.501 FS. Law Implemented 258.501 FS. History—New 7-22-91, Formerly 16D-15.011.*

## **62D-15.012 Boating Regulations.**

(1) Watercraft shall not exceed a slow/minimum wake speed in any part of the river area upstream of U.S. Highway 41 except for the official government agency use of watercraft. A watercraft in an area designated as a slow/minimum wake zone is traveling at a slow/minimum wake if:

(a) It is not operating on a plane;

(b) It is not in the process of coming off plane and settling into the water, which action creates more than no or minimum wake;

(c) It produces no wake or minimum wake; and

(d) It is completely off plane, has settled into the water with neither the bow elevated nor the stern depressed, and is proceeding without wake or with minimum wake.

(2) Watercraft shall not exceed an idle/no-wake speed within 500 feet of marinas, boat ramps, docks, and other structures near navigable channels, and in other locations where the river is designated and posted as being too narrow to safely accommodate two-way traffic. A watercraft in an area designated as a idle/no-wake zone is traveling at a speed no faster than necessary to be steered.

*Specific Authority 258.501 FS. Law Implemented 258.501 FS. History—New 7-22-91, Formerly 16D-15.012.*

# Appendix 11

## Local Government Comprehensive Plan Compliance



SARASOTA COUNTY  
*"Dedicated to Quality Service"*

July 20, 2018

Demi P. Baxley  
Government Operations Consultant  
Division of Recreation and Parks  
Florida Department of Environmental Protection  
3800 Commonwealth Blvd., MS#525  
Tallahassee, FL 32399

**RE: Myakka State Park Unit Master Plan, Consistency with the Sarasota County Comprehensive Plan**

Dear Ms. Baxley,

Thank you for the request for a comprehensive plan consistency analysis for the proposed update to the Myakka State Park Unit Master Plan.

Staff has reviewed the Unit Master Plan and has compared it to the intent of the adopted goals, objectives, and policies of the Sarasota County Comprehensive Plan and find that the Unit Master Plan is consistent with and is supported by numerous goals, objectives, and policies in the Comprehensive Plan. The attached analysis is a listing of each applicable County goal, objective, or policy that is supportive of each of the 8 Unit Master Plan goals, and associated objectives and actions.

Sarasota County appreciates the opportunity to review this Unit Master Plan. If you have any questions, please feel free to contact our office.

Sincerely,

  
Jane H. Grogg, Manager  
Neighborhood Services & Long Range Planning  
Planning & Development Services  
Sarasota County Government



## Appendix 11—Comp Plan Compliance

**From:** Joshua Dan [mailto:joshua.dan@mymanatee.org]  
**Sent:** Tuesday, January 29, 2019 10:13 AM  
**To:** Maldonado, Tyler <Tyler.Maldonado@dep.state.fl.us>  
**Cc:** Robert Knable <robert.knable@mymanatee.org>; Lisa Barrett <lisa.barrett@mymanatee.org>  
**Subject:** RE: MANATEE COUNTY - Request to Review Myakka River State Park's Draft Unit Management Plan for Compliance w/Comprehensive Plan

Hi Tyler,

I have reviewed the Land Use Component of the Myakka River State Park Draft Unit Management Plan. It appears to show uses that are consistent with the existing uses, either expanding or improving the existing facilities, and appears to comply with the zoning and FLUC. Please keep in mind that any future development may require site plan, construction plan, and building permit approvals.

I hope this addresses your questions and let me know if I can be of further assistance.  
Thank you,

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# Appendix 12

## Roller-Chopping Guidelines

**History:** The roller-chopper had its debut in Florida State Parks in 1987 at Myakka River State Park (MRSP). After much research and debate, this highly controversial activity was approved only with significant alterations to standard roller-chop practices and limitations to its use. “Restoration Roller-chopping” was introduced to counteract changes in saw palmetto vegetative structure that occurred as a result of 30 to 40 years of fire exclusion. Saw palmetto, in many areas, had developed woody above and belowground trunks that prevented the survival of herbaceous plant species necessary to fuel frequent fires. Permanent vegetation transects were set up in each management zone for long term monitoring. Vegetation transects and pre- and post-chop photos were also required for treatment sites.

**Definition:** Restoration roller-chopping differs significantly from other types of roller-chopping methods, such as forestry site-prep, site clearing, agricultural and pasture roller-chopping. The prescription calls for lighter, non-weighted drums, single-pass, single occasion, with little to no ground disturbance. Other types of roller-chopping are infamous for destroying native groundcover. The same risk exists for this process if it is misapplied by land managers.

**Goal:** The goal of mechanical roller-chopping at MRSP is to restore the aspect and woody/herbaceous ratio to within the range of non-fire-excluded prairie and flatwoods, while preserving existing original groundcover and opening up areas for colonization of herbaceous prairie plants. Shrub height in good condition prairie and flatwoods varies between one and four feet in height with the majority of shrubs between one and two feet high. Shrub height greater than 3 feet usually occurs naturally along wetland or hammock borders or in small patches of less than one-half acre, widely spaced over the landscape. One way we can surmise the historical random occurrence of small areas of 4'-high, dense palmetto is via the accounts of large populations of vultures encountered in the Myakka River region prior to fire exclusion.

Turkey and black vultures utilize the tall palmetto thickets for nesting.

Roller-chopping alone does not increase species diversity in highly degraded prairie or flatwood but increases soil surface sunlight to allow herbaceous species to colonize when combined with other strategies and prescribed fire. These strategies include chopping sites adjoining those with adequate seed source, selecting chop sites upwind of the prevailing SE/SW winds, scheduling treatment to benefit from peak seeding periods, and collecting and planting seeds harvested from the same region.

**Assess the need:** Restoration roller-chopping should only be prescribed for long fire-excluded dry prairie and flatwoods that has atypically high-density saw palmetto. Under this condition the palmetto excludes the natural diversity of shrubs, grasses and forbs. The primary indicator that a site could benefit from the process is the presence of a near monoculture of palmetto with large trunks, often referred to as gator-back palmettos, along and above the ground. This condition can prevent the reestablishment of a natural fire frequency and plant diversity. Roller-chopping should not be prescribed to reduce woody vegetation. It can actually increase the incidence of woody stems. Blueberries, gallberry, fetterbush, oaks and other characteristic flatwoods and prairie shrubs produce many additional stems when cut. The goal of restoration chopping is not to remove saw palmetto or shrubs, but rather to encourage herbaceous plants by decreasing cover of saw palmetto. woody growth. Repetition of frequent growing season burns is the best prescription for decreasing shrubs and increasing the cover of herbaceous plants.

## Appendix 12—Roller-Chopping Guide

### Methodology—When considering use of restoration roller-chopping the following steps should be taken:

1. Get more than one informed opinion (individuals skilled in evaluating undisturbed groundcover) before deciding to roller chop.
  2. Establish monitoring protocols to track the results of management actions that include vegetation transects and photo-monitoring points.
  3. Select an appropriate reference site to act as an example of the desired condition you want the restoration site to resemble.
  4. Be sure that your site has been burned at least two times within the appropriate burn return of 2-3 years, but still has atypically dense palmetto with above-ground palmetto trunks.
  5. Select appropriate equipment. A double, offset 24", unweighted spiral-blade aerator (with a few gallons of oil in the drums to prevent rust) has been shown to be most effective for better penetration of saw palmetto trunks with less soil disturbance. Never use a heavier chopper than required for the job since it is more likely to cause destructive soil disturbance. The key is to only cut the horizontal above and ground level trunks thus avoiding ground cover and soil disturbance.
  6. Select appropriate time:
    - A. Chopping less than 1 year after a fire will minimize dead fuels on the ground so the next fire will have a faster rate of spread, lower temperatures at the soil surface, and prevent loss of the seed bank.
    - B. Research has shown that restoration roller-chopping provides the most favorable results when conducted during the growing season. The additional stress on saw palmetto when it is producing new growth can achieve greater palmetto reductions than dormant season chops. Additionally, sites chopped under wet conditions, though not so wet as to cause tractor tires to slip, result in better penetration of saw palmetto, trunks with less soil disturbance.
  7. The faster you can safely go, the better penetration of palmetto trunks and less ground disturbance because there is limited "kickout."
  8. Never roller-chop through wetlands, or invasive plants.
  9. Avoid chopping large areas at a time. Leave a mosaic of chopped and unchopped for diversity, just as you would ideally with a prescribed burn. There is no need to overlap passes.
  10. Care must be taken not to double-chop, by chopping over previously chopped areas. Over chopping or re-chopping an area can result in irreparable damage to valuable and sensitive groundcover plants and cause soil disturbance that facilitates the establishment and spread of invasive plant and animal species.
- Roller-chopping, in conjunction with a frequent fire return interval, can through time, greatly aid in regaining the low aspect and diversity of healthy Florida dry prairie such as was historically maintained by frequent lightning fires and an unimpaired hydroperiod.
- \* Note:** See Instructions for Roller Chopper Operators on next page.



### Instructions for Roller Chopper Operators

Plan your pattern so as to prevent double chopping (chopping repeatedly over the same area). Avoid sharp turns that cause unnecessary ground disturbance. Give pine trees plenty of clearance to avoid nicks in roots and bark that can lead to tree mortality.

Try to achieve a mosaic of chopped and unchopped area similar to the prescribed fire objective of a natural mosaic of burned and unburned. There is no specific mathematical formula for obtaining the right balance but rather a general guideline for mimicking natural processes. Leave unchopped islands of 1 to 4 acres per ten-acre parcel treated. Areas with lower saw palmetto height and greater diversity should have a higher proportion of unchopped islands than those with higher saw palmetto and limited diversity.

It is preferable to chop small patches of no more than 100 acres. The selected chop sites should be upwind of prevailing SE/SW winds and shaped as elongated ovals or strips to better receive seed dispersal.

Do not chop wetlands. When chopping wetland edges consider and preserve fire shadow effect. Fire shadow can be found on any side of a wetland (depending upon other natural features in the area) but occurs most frequently on the North side of wetlands. If you are not sure you can distinguish fire shadow from artificial effects of fire exclusion, ask someone knowledgeable to go out with you and show you specific examples before you begin chopping.

Be attentive for exotics such as cogongrass, tropical soda apple and climbing fern. The chopper can spread them to other areas. Chopping will open more surface area to sunlight and trigger growth spurts in many exotic plants. Keep flagging tape with you; flag and GPS exotics so they can be relocated and treated.

Fill out chopping observation forms on the first and last day of your assignment. Include maps so the information can be added to the chop map. Provide written notes for anything unusual you encounter such as animal sightings (burrowing owl, numerous gopher tortoises feeding during the day, strange animal behavior, etc) or plant associations not described on the chop field notes log (a large monoculture of runner oak or witch grass,

100% saw palmetto if you have previously described areas with more diversity, etc).

Chopping results are greatly influenced by how wet the area is when it is chopped. Better cutting of saw palmetto trunks occurs when they are wet. The more cutting, the greater the reduction of saw palmetto cover and height. If the blades are not penetrating the woody growth, check for sharpness. Carry an angle grinder in the field with a portable generator at least once per week to maintain sharpness.

