WETLAND ASSESSMENT PROCEDURE (WAP) INSTRUCTION MANUAL FOR ISOLATED WETLANDS

(OCTOBER 2004 FIELD TEST)

1.0. INTRODUCTION

This field test manual is designed for specific use in the field test scheduled for October 2004. This manual is a shortened version of what will eventually be the manual for the revised Wetland Assessment Procedure (WAP). Because many aspects of the final WAP will not be tested in October, there are several sections that do not appear in this manual.

Note that certain words and phrases used throughout this manual (presented in bold type) will be defined in an appendix of the final manual. Please ask if there are any questions about any of these terms. Abbreviated definitions are sometimes included within the text of this instruction manual. Please be aware that some definitions have been modified for the WAP and may deviate from generic definitions.

Note that as of 2004, *this WAP methodology is appropriate for isolated wetlands only*. All sites in the test will be isolated wetlands.

For test purposes, all of the **WAP Transects** have been set up for you. The description presented in this manual on WAP Transect setup is for information purposes only. However, he information on setup is important for your understanding of terms and approach.

A critical aspect of this test and the WAP procedure is the written explanations requested to document decisions made by the evaluator. The written explanations are intended to document the evaluators logic in deriving scores, and provide a basis for quality control (as well as future correction of errors). Additional comments may provide the evaluator the ability to document potentially important wetland health-related observations that may not be fully included in the current procedure. Therefore, it is important to realize that the written explanations and comments are essential products of the WAP test, and should not be considered optional.

2.0. WETLAND SETUP

WAP Transect selection. All vegetation assessments will be conducted along a **WAP Transect**. The **WAP Transect** is a straight line from the **historic wetland edge** to the **wetland interior**, and should be chosen such that it provides the best opportunity to fully assess all aspects of the wetland, including the **transition zone** (see below). Practical considerations, such as access issues, existing disturbance, minimizing vegetation disturbances while monitoring, and lines of sight, should be taken into account when choosing a **WAP Transect** as well. If a **wetland well**, **upland well**, and/or a **staff gage** have been previously established, consideration should be given to including their location in the **WAP Transect**. If wells and/or a **staff gage** have not been established, they should be installed as close to the **WAP Transect** as possible.

The area to be assessed from the **WAP Transect** will be referred to as the **Assessment Area**. For all WAP evaluations except **groundcover zonation**, the width of the **Assessment Area** will be the visual range of the wetland from the **WAP Transect**

centerline, or at least ten meters in width, which ever is greater. The **Assessment Area** also includes the visual range of the wetland, or at least ten meters, beyond the wetland interior. Where the visual range from the **WAP Transect** is greater than ten meters, however, the assessments should not exceed the distance in which species can accurately be identified. Evaluators should stay on the **WAP Transect** to avoid unnecessary trampling of vegetation, but can walk throughout the wetland if thought to be critical for an accurate evaluation. For purposes of **groundcover zonation** scoring, evaluators should use an **Assessment Area** width of no more than 10 meters, to assure consistency and the quality control of plant identification. If the evaluator strongly feels that an **Assessment Area** width of greater than 10 meters is necessary of a specific wetland, the evaluator must justify the larger **Assessment Area**, and document the width used in the field sheet and wetland history In wetland systems such as cypress marshes, the entire wetland should be evaluated as one system with appropriate comments that detail the wetland's **zonation**, etc.

Establishment of Historic Normal Pool and other reference points. Once a **WAP Transect** is chosen, the **historic normal pool** and **historic wetland edge** need to be established. Appendix D (not included in this test manual) contains the definitions and procedures necessary to make these determinations. Once these elevations are determined, the elevations six-inches below **historic normal pool** (**NP-6**) and twelve-inches below **historic normal pool (NP-12)** should be established along the **WAP Transect**. The **NP-6** and **NP-12** elevations must be permanently marked for future reference. If possible, markers should also be placed at the **historic wetland edge**, as well as the **wetland interior**. The **staff gage** can serve as the **wetland interior** marker if it is placed appropriately. All four points should also be recorded using the Geographic Positioning System (GPS), and documented with detailed notes, for future reference.

The **NP-6** elevation, **NP-12** elevation, **historic wetland edge**, and **wetland interior** will be used to designate the three **wetlands zones** used in the WAP analysis. The area within the **Assessment Area** between the **historic wetland edge** and the **NP-6** marker is referred to as the **transition zone**. The area within the **Assessment Area** between the **NP-6** marker and the **NP-12** marker is referred to as the **outer deep zone**. The area within the **Assessment Area** between the **NP-12** marker and the **wetland interior** marker is referred to as the **deep zone**. Note that the **NP-6** and **NP-12** elevations may not coincide with existing vegetational indicators due to impacts to the wetland, or possible short-term natural fluctuations.

If the **transition** or **outer deep zones** of the wetland are very narrow, an assessment of these zones may not be practical or appropriate. The **transition zone** or **outer deep zone** can be narrow naturally, can become narrow due to disturbance by surrounding land use activities, or can have become narrow due to **subsidence** in the wetland. If possible, the **WAP Transect** should be chosen in a portion of the wetland with a **transition zone** and **outer deep zone** that are wide enough for adequate monitoring. However, if no such area exists, or if an existing **WAP Transect** has a narrow **transition zone** or **outer deep zone**, and the assessor determines that the value of the maintaining the existing **WAP Transect** outweighs the value of moving the **WAP Transect**, the narrow **transition zone** or **outer deep zone** should not be monitored. In this case, the situation should be clearly discussed in the wetland history. A zone that is too narrow for practical evaluation is generally considered to be one meter or less in width (from the **historic wetland edge** to the **NP-6** elevation for the **transition zone**, or from the **NP-6** elevation to the **NP-12** elevation for the **outer deep zone**), but the determination of whether or not a zone is too narrow for evaluation is a decision of the assessor (subject to SWFWMD consensus).

In very shallow wetland systems, it may not be possible to establish an **NP-6** or **NP-12** elevation (i.e., the wetland has no **deep zone** and/or **outer deep zone**). In these cases, the situation should be clearly discussed in the wetland history.

The **WAP Transect** and supporting elevations should be fully documented (using the worksheet in Appendix G), and the documentation should be forwarded to the SWFWMD. Based on the documentation and specific wetland situation, an on-site verification may be required. If the **WAP Transect** needs to be moved during the course of wetland monitoring, all appropriate elevations should be re-established, and the information on the new **WAP Transect** must be submitted to the SWFWMD.

3.0. ACTIVITIES TO BE PERFORMED ANNUALLY

The following information must be collected annually during the May/June time period. All of the data must be entered into an approved electronic database. Forms for use in data collection in the field will be provided. The following describes the information to be collected during the annual evaluations (the site description information is pre-printed on the sheets).

WELLFIELD Identify wellfield associated with the wetland assessment (if any).

STATION ID Identify the wetland station ID (use the same ID as the Tampa Bay Water database).

HISTORIC FLUCCS CODE Identify the **historical** Florida Land Use, Cover and Forms Classification System (**FLUCCS**) code for the wetland. A table is provided in the EMP that cross-references the **FLUCCS**, Florida Natural Areas Inventory (FNAI) and SWFWMD codes.

WETLAND TYPE Identify wetland type from Appendix E that most closely represents the wetland being assessed

PERSONNEL Identify firm and person(s) conducting the wetland assessment

DATE Date (early summer or fall semi-annual wetland assessments, or other for as-needed wetland assessments).

TIME Time of arrival

GROUND PHOTOGRAPHY (not needed for the test)

Photos Photos should be taken in each cardinal direction at the **wetland well** or **staff gage** and **NP-6** stake. Optionally, if the wetland has been monitored for several years, photos should be taken at previously chosen photo points. In this case, the photo points must be clearly described in the wetland documentation and identified by accurate latitude and longitude coordinates (if possible) to assure photo views are the same for each assessment. The

photography must be digital format, and the resulting electronic image files must be at least 280 dpi at an image size of 8 inches by 10 inches. Digital image files should be clearly labeled with wetland ID, photo point, cardinal direction, and date, and stored in an appropriate database.

Card Note unique identification code for memory card or other storage device.

Photo Frame # Number of each photo frame, as designated by the camera, for the direction the photo is taken. Stored memory card views should be labeled so that the photo view and date of the photo is consistent from one monitoring season to the next.

Direction Cardinal directions North = 0, East = 90, South = 180, and West = 270. Note that if the views from the cardinal directions are not indicative of the wetland, the photo-directions can be changed to best represent the wetland; however, they must be permanently designated so that the same view is taken during each assessment. Note that the photo directions should be re-evaluated when appropriate to insure that the photos content remains useful.

WATER LEVEL

Describe water level conditions in the wetland at the time of the assessment. Water levels from existing **staff gage** should be noted, and an estimate of the percent of the wetland inundated should be mentioned. If there is no standing water in the wetland, an estimate of soil moisture or saturation, and, if possible, depth to water, should be made. Saturation can be determined by rolling a golf ball-sized ball of soil in your palm. If soil is saturated moisture will appear on the soil and in your palm. Depth to water can be estimated by the degree of soil saturation, or through the use of the **wetland well**. The goal of this evaluation is to provide a general description of water level conditions at the time of the assessment. **For purposes of the test, a brief description of water level conditions is all that is needed.**

VEGETATION ZONATION

The following section provides direction to assess the **composition** and **zonation** of the most common **groundcover**, **shrub**, and **tree** species in the monitored wetland. The vegetation assessment will be conducted within the **Assessment Area** from the **WAP Transect** described earlier. The purpose is to assess vegetation characteristics and distribution with respect to **hydrology**. It is assumed that normal **composition** and **zonation** of species are a result of normal wetland **hydrology**. Altered **hydrology** is assumed to affect plant community **composition** and plant species **zonation**.

Groundcover is defined as all woody species less than one meter in height, and all non-woody species (regardless of height), rooted in the ground. **Vines** originating from within the **historic wetland edge** (but not on **hummocks**) should be considered **groundcover**. For clarity, *Eupatorium* spp., *Typha* spp., and *Rubus* spp., and certain other species generally thought of as herbaceous even though greater than one meter will only be assessed as groundcover.

Shrubs and small trees are defined as woody plants greater than one meter in height and less than four centimeters **Diameter at Breast Height** (**DBH**). Shrubs usually have multiple permanent stems. When greater than one meter in height, *Hypericum* spp. and *Ilex glabra* are considered shrubs. *Myrica cerifera*, and *Lyonia* spp., and other woody plants with

multiple stems that are greater than one meter tall are always assessed as **shrubs and small trees**. Cabbage palms with trunks greater than one meter tall but less than six meters are considered **shrubs**. Only **shrubs and small trees** rooted in the ground (not on **hummocks**) will be considered.

Trees are defined as woody plants that are greater than or equal to one meter in height and greater than or equal to four centimeters **DBH**. *Myrica cerifera*, *Lyonia* spp. and other woody plants with multiple stems that are greater than one meter tall are assessed as **shrub and small trees**. Cabbage palms with trunks greater than one meter tall but less than six meters are considered **shrubs**. Some non-forested wetlands such as marshes may have enough **trees** to provide useful information. The **tree** category should be scored in marsh and wet prairie systems if the evaluator believes that useful information can be obtained from scoring. Only **trees** rooted in the ground (not on **hummocks**) will be considered.

The species found in Appendix A have been determined to be common species in west-central Florida that are useful in determining the status of wetland **zonation**. Each species have been designated a **wetland zone** classification as follows:

Upland (U) – Plant species that are not expected to be seen in wetlands. It is possible that a few of these species may be found along wetland edges, but are not expected throughout the **transition zone**.

Adaptive (AD) – Plants species designated as FAC or Upland by DEP, but are commonly seen in the **transition zone** in limited numbers. When **adaptive** plants are found in the **outer deep** or **deep zones**, they should be treated the same as **transition zone** plants.

Transition Zone (T) – Plant species commonly found in the **transition zone**, and designated either FACW or OBL by DEP.

Outer Deep (OD) – Plant species commonly found in the **outer deep zone**, and designated either FACW or OBL by DEP.

Deep (D) - Plant species commonly found in the **deep zone**, and designated either FACW or OBL by DEP.

For each category of vegetation (**groundcover**, **shrub and small tree**, and **tree)**, the assessment should be performed as follows:

1) The assessor should walk along the **WAP Transect**., and list the species that occur within each **zone** (within the **Assessment Area**), keeping the following in mind:
    a. Only rooted vegetation growing within the **historic wetland edge** should be included in the assessment. Floating vegetation should not be considered.
    b. Vegetation growing on **hummocks** should not be considered.
    c. Vegetation overhanging from the uplands, such as saw palmetto should not be considered. Keep in mind that the historic wetland edge is typically uneven and meandering.
    d. **Vines** in the **canopy** that originate from outside the **historic wetland edge**, or from hummocks, should not be included in the assessment.
    e. Only consider green (living, non-dormant) vegetation in the assessment.
    f. It is possible that there may be topographically higher areas within the wetland. For example, there can be areas of the wetland within the **deep zone** that that

are shallow enough to become less than **NP-6**. In this case, that area should be considered to be part of the **transition** zone. This may not be easy to distinguish visually, so great care should be taken to identify and document such areas.

g. If the wetland does not have a **transition zone**, **outer deep zone**, or **deep zone**, NA (not applicable) should be written in the appropriate area of the field sheet, and an explanatory comment should be included.

h. Evaluators should stay on the **WAP Transect** to avoid unnecessary trampling of vegetation, but can walk throughout the wetland if thought to be critical for an accurate evaluation.

Comments and/or notes on the observed vegetation species, including those not to be considered in the zonation evaluation, are encouraged in the documentation. Useful references for species identification include Wunderlin, R.P. (1997), Tobe and others (1998), and http://www.plantatlas.usf.edu

1) Estimate the percent **cover** of each species. Each percentage should be the percent of the wetland **zone** covered by the specific species. Note that **cover** that is significantly disturbed by paths or trails used to enter the wetland should not be considered in the assessment. Add any comments necessary to explain the results of the percentage estimates. For the test, you are asked to estimate percent cover using three options. The field form explains the options, and provides a separate column for each.

2) Indicate the **wetland zone** classification for each species found in Appendix A. If the species is not found in Appendix A, no **wetland zone** designation should be assigned.

Using the Ranking Scale below, indicate the category that best describes the groundcover zonation, and provide an explanation that clearly outlines the reasons for your choice. A species is considered to have "moved" when a species with a **wetland zone** classification closer to the **historic wetland edge** is found in a **zone** closer to the **wetland interior**. Assigning half points between categories is not acceptable. For all categories evaluated, a choice of 1-5 must be made, or **N/A** must be chosen.

Ranking Scale

1. Species with an **upland** classification have moved into the **deep zone** in high numbers and distribution.

2. Species have moved in two zones in high numbers and distribution, and/or some species with an **upland** classification have moved into the **deep zone**.

3. Species have moved in one zone in high numbers and distribution, and/or some plants have moved in two zones.

4. Species have moved in one zone in enough numbers and distribution to be of concern, and/or species with an **adaptive** classification are extensive in numbers and distribution in the **transition zone**.

5. Normal zonation. Some species may have migrated inward one zone, but they are small in number and/or right along the zone edge. **Adaptive** species in the **transition zone** are not considered abnormal if they are not extensive in numbers and distribution.

N/A Not enough **cover** to make evaluation

Examples of species moving two **zones** include species with an **upland** classification being found in the **outer deep zone**, or species with an **adaptive** or **transition** classification being

found in the **deep zone**. Examples of a species moving one **zone** include species with an **upland** classification being found in the **transition zone**, species with an **adaptive** or **transition** classification being found in the **outer deep zone**, or species with an **outer deep** classification being found in the **deep zone**.

The main factors in the rank chosen must be documented in the **explanation** section. If **NA** is chosen, clearly explain the reason, and, if a permanent condition, include in the updated wetland history.

VEGETATION HEALTH

The following section provides direction to assess the status of stress and death of **shrub and small tree** and **tree** species within the wetland. As part of this section of the wetland assessment, the evaluator is asked to decide if a species is **appropriate**, or **inappropriate**. A **shrub and small tree** or **tree** is **appropriate** if it is growing in a wetland zone appropriate for its zone classification. A **shrub and small tree** or **tree** is **inappropriate** if it is growing in a zone that is inappropriate for its zone classification. For example, since *Myrica cerifera* is classified as a **transition zone** species, it would be **appropriate** if it is found growing in the **transition zone**, but **inappropriate** if it is found growing in the **outer deep** or **deep zones** (assuming it is not on a **hummock**).

Stress of Appropriate Shrub and Small Tree Species. Indicate the category below that best describes the stress of all **appropriate** species of **shrub and small trees**. Include any standing **shrubs and small trees** that are dead. Do not include species growing in hummocks. Finally, explain the results of your ranking scale choice, including the species you consider to be **appropriate**.

Ranking Scale

1. >50 percent exhibit **stress**
2. 25-50 percent exhibit **stress**
3. 10-25 percent exhibit **stress**
4. 5-10 percent exhibit **stress**
5. <5 percent exhibit **stress**

N/A Not enough **cover** to make evaluation

Stress of Inappropriate Shrub and Small Tree Species. In the space provided in the field sheet, indicate which **shrub and small tree** species you consider to be **inappropriate**. Indicate the category below that best describes the stress of all **inappropriate** species of **shrub and small trees**. Include any standing **shrubs and small trees** that are dead. Do not include species growing in hummocks. Finally, explain the results of your ranking scale choice, including the species you consider to be **inappropriate**.

Ranking Scale

1. <5 percent exhibit **stress**
2. 5-10 percent exhibit **stress**
3. 10-25 percent exhibit **stress**
4. 25-50 percent exhibit **stress**
5. >50 percent exhibit **stress**

N/A Not enough **cover** to make evaluation

Canopy Stress of Appropriate Tree Species. In the space provided in the field sheet, indicate which **tree** species you consider to be **appropriate**. Indicate the category below that best describes the stress of all **appropriate** species of **trees**. Do not include any standing **trees** that are dead. Do not include species growing in hummocks. Finally, explain the results of your ranking scale choice, including the species you consider to be **appropriate**.

Ranking Scale

1. >50 percent of individual **trees** exhibit **stress**
2. 25-50 percent of individual **trees** exhibit **stress**
3. 10-25 percent of individual **trees** exhibit **stress**
4. 5-10 percent of individual **trees** exhibit **stress**
5. <5 percent of individual **trees** exhibit **stress**

N/A Not enough **cover** to make evaluation

Leaning or Dead Appropriate Trees

Indicate the category that best describes the presence of **leaning** or dead **trees** within the entire wetland. Include standing dead **trees**, **trees** that are dead on the ground, and **trees** that are known to have died during the period of wetland observation and are no longer in the wetland. Do not include any timbered **trees**, or trees growing on hummocks. Restrict the analysis to **appropriate** species. Explain the results of your ranking scale choice.

Ranking Scale

1. >25 percent of **trees** dead or leaning
2. 15-25 percent **trees** dead or leaning
3. 5-15 percent of **trees** dead or leaning
4. <5 percent of **trees** dead or leaning, but inappropriate percentage for wetland type
5. Normal numbers of dead or **leaning trees** for wetland type

N/A Not enough **cover** to make evaluation

Canopy Stress of Inappropriate Tree Species. In the space provided in the field sheet, indicate which **tree** species you consider to be **inappropriate**. Indicate the category below that best describes the stress of all **inappropriate** species of **trees**. Include any standing **inappropriate trees** that are dead. Do not include species growing in hummocks. Finally, explain the results of your ranking scale choice, including the species you consider to be **inappropriate**.

Ranking Scale

1. <5 percent of individual **trees** exhibit **stress**
2. 5-10 percent of individual **trees** exhibit **stress**
3. 10-25 percent of individual **trees** exhibit **stress**
4. 25-50 percent of individual **trees** exhibit **stress**
5. >50 percent of individual **trees** exhibit **stress**

N/A Not enough **cover** to make evaluation

Additional Questions for the WAP Test (to be answered at each wetland)

1. How much time was spent at this wetland?

2. Are young **appropriate trees** starting to grow in wetland locations in a way that would suggest recovery? Yes ____ No ____ Not Sure _____ Not applicable_____

3. Are **inappropriate vines** dropping leaves or dying in a way that would suggest recovery? Yes ____ No ____ Not Sure ____ Not applicable ____

4. On a scale of 1 to 10, with 1 being the lowest and 10 being the highest, how would you score the overall health of this wetland? Please give a brief explanation of your answer.