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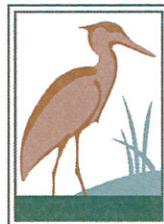
MITIGATION PLAN

FOR

**SHADY LANE
DRAINAGE PROJECT
CRESTVIEW, FLORIDA**

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Introduction

The applicant, the City of Crestview, proposes to impact 1.84 acres of mixed hardwood wetlands (FLUCCS 617) on Shady Lane in Crestview, Florida for a stormwater retrofit project. To mitigate for impacts, the applicant is proposing to preserve and enhance approximately +/- 7.25 acres of wetlands and enhance approximately +/- 21.5 acres of downstream wetlands located southwest of the Shady Lane project. Below are the different off-site preservation and enhancement areas proposed for mitigation:

1. Preservation and Enhancement - 7.25 acres of off-site of mixed hardwood wetlands (FLUCCS 617). Enhancement will be invasive species removal (popcorn, privet, mimosa);
2. Enhancement - 21.5 acres of mixed hardwood wetlands (FLUCCS 617). Enhancement will be hydrological improvement of wetlands located downstream of the Shady Lane retrofit project. This area is currently being inundated with untreated stormwater. The proposed project would treat, attenuate, and redirect untreated stormwater from downstream wetlands improving water environment.

Mitigation Area Description

7.25 acres - Northview Park Mitigation Area

The 7.25 acre wetland system is located in what will be referred to as the Northview Park Mitigation Area. The park is approximately 33 acres in total, is owned by the City of Crestview, and is located on Northview Park Drive in Crestview, see **Figure 1**. The Okaloosa Property Appraiser lists the parcel number as 31-3N-23-0000-0002-0010.

The wetlands comprise approximately 7.25 acres and are located to the southwest of the parcel, see **Figures 2-3**. The wetland can be best described as mixed hardwood and are the headwaters of Williams Branch, which eventually drains into the Shoal River, see **Figure 4**. The 8-digit HUC code is 03140103, the same HUC code as the Shady Lane impact site, see **Figure 8**.

The wetland within the Northview Park Mitigation Area is typically of riparian/floodplain system associated with an ephemeral creek. It is designated as PFO3/1B - Palustrine, Forested, Broad-leaf evergreen/Broad-leaf deciduous, Saturated by FWS National Wetlands Inventory.

The majority of the wetland system is comprised of sweet bay (*Magnolia virginiana*), red maple (*Acer rebrum*), tupelo (*Nyssa sylvatica*), swamp bay (*Persea palustris*), slash pine (*Pinus elliottii*), willow (*Salix nigra*), red titi (*Cyrtilla racemiflora*), sweet pepperbush (*Clethra alnifolia*), arrowheads (*Sagittaria latifolia*), royal fern (*Osmunda regalis*), sensitive fern (*Onoclea sensibilis*), Virginia chain fern (*Woodwardia virginica*), netted chain fern (*Woodwardia areolata*), and panic grass (*Panicum spp.*). There are some invasives on the



fringes of the wetland and in the surrounding upland community, i.e. popcorn (*Sapium sebiferum*).

21.5 acres - Red Wash Branch Area

The 21.5 acre wetland system is located in what will be referred to as the Red Wash Branch Area. This area is immediately downstream (southwest) of the impact site at Shady Lane between Texas Pkwy and Pearl Street, see **Figures 5-6**. The area is comprised of numerous parcels owned by different individuals. For this reason, preservation is not feasible.

The wetland can be best described as mixed hardwood and are the headwaters of Red Wash Branch, which eventually drains into the Yellow River, see **Figure 7**. The 8-digit HUC code is 03140103, the same HUC code as the Shady Lane impact site, see **Figure 8**.

The wetland within the Red Wash Branch Area is bordered on all sides by residential development. There are culverts connecting the system from Texas Pkwy through Pearl Street to Pandora Drive. The 21.5 acre area is a typical riparian/floodplain system. It is designated as PSS1F - Palustrine, Scrub-Shrub, Broad-leaf deciduous, Semi-permanently Flooded by FWS National Wetlands Inventory.

The majority of the wetland system is compromised of sweet bay (*Magnolia virginiana*), red maple (*Acer rebrum*), tupelo (*Nyssa sylvatica*), swamp bay (*Persea palustris*), slash pine (*Pinus elliottii*), willow (*Salix nigra*), red titi (*Cyrilla racemiflora*), sweet pepperbush (*Clethra alnifolia*), arrowheads (*Sagittaria latifolia*), royal fern (*Osmunda regalis*), sensitive fern (*Onoclea sensibilis*), Virginia chain fern (*Woodwardia virginica*), netted chain fern (*Woodwardia areolata*), and panic grass (*Panicum spp.*). There are some invasives on the fringes of the wetland and in the surrounding upland community, i.e. popcorn (*Sapium sebiferum*) and privet (*Ligustrum sinense*).

Mitigation

7.25 acres - Northview Park Mitigation Area

The wetland boundary of the 7.25 acre area was delineated in September, 2012, see **Figure 3**. The entire area is proposed for preservation using the accepted, District and Corps approved Conservation Easement document and 5 years of enhancement activities.

Enhancement will occur by removing invasive species throughout the 7.25 acres, with attention given to the edges of the Mitigation Area where most of the invasive species are located. Enhancement will include the removal of invasive species (popcorn, privet, mimosa) using the methodology below.



Uniform Mitigation Assessment Method (UMAM) was used to quantify the mitigation, see **Attachment A**. The functional loss and functional gain was assessed and calculated. According to the UMAM, the functional loss of the wetland impacts would be offset by the mitigation.

21.5 acres - Red Wash Branch Area

The wetland boundary for the downstream improvement area was established using topographic maps, aeriels, and soil maps. The area is owned by several different entities, has been platted, and is surrounded by residential development. There is currently untreated stormwater entering the system by way of underground piping from the Shady Lane wetland (high rainfall events).

Feedback to the initial mitigation and UMAM calculations were that the proposed 65-acre service area above the Shady Lane pond that will be enhanced by retro-fit stormwater treatment is not acceptable as mitigation because most of the service area is upland and/or developed. In response to this feedback, the applicant is proposing that a small portion (21.5 acres) of the downstream wetland environment be considered as possible mitigation. The retro-fit project would eliminate untreated volumes of stormwater entering the wetland system during periods of heavy rainfall. Treatment, attenuation, and redirection of stormwater are direct benefits to water environment within wetland systems.

Uniform Mitigation Assessment Method (UMAM) was used to quantify the mitigation, see **Attachment A**. The only UMAM category that was altered was water environment. We are proposing minimal change (1 point) to water environment for the 'current' and 'with' scenario. The functional loss of the wetland impacts would be offset by the mitigation.

Enhancement

7.25 acres - Northview Park Mitigation Area

There is a preponderance of the invasive species popcorn (*Sapium sebiferum*) in surrounding uplands and some species within the wetland area. Without intervention, popcorn will begin to intrude on the wetland ecosystem and out compete native wetland vegetation. Invasive species will be treated to the specifications below.

Forested wetlands -

1. Eradication of invasive exotic/nuisance species:
 - a. Eradication events will occur annually (within the growing season) and target the following species:
 - i. popcorn (*Sapium sebiferum*);
 - ii. Chinese privet (*Ligustrum sinense*)
 - b. For woody species (popcorn, privet and mimosa) Garlon-4 20% solution will be used where necessary via hand-held backpack sprayer:



- i. Smaller trees, 3" diameter at breast height (DBH) and less, will be treated with a combination foliar and basal bark application;
- ii. Trees that are 3" DBH and larger will be cut and the stumps will be treated with Garlon 4.

Monitoring

7.25 acres - Northview Park Mitigation Area

Monitoring will occur in two (2) different homogenous areas within the overall wetland area. Two, static, 10' radial plots will be located randomly within the 7.25 acre Mitigation Area. Static monitoring plots/photopoints will then be permanently established by placing flagging tape/pvc within the field and recording the geographic position. Both plots will be located within homogenous area indicative of the habitat/community type unless specified otherwise. Monitoring plot data will include: photographs from the same photopoint (center of plot) in the four cardinal directions; plant data including species; and percent cover of natives and non-natives.

21.5 acres - Red Wash Branch Area

Monitoring will occur in two (2) different areas, see **Figure 9**. One monitoring point will be located at the Texas Pkwy wetland crossing and one will be located at the Pearl Street wetland crossing. Static monitoring plots/photopoints will be established at each crossing and the geographic position will be recorded. Monitoring plot data will include: photographs from the same photopoint (center of plot) in the four cardinal directions; plant data including species; percent cover of natives and non-natives; water levels at each crossing; any signs of turbidity; and any signs of scouring/erosion. Local rain data and recent extreme rain events will also be provided.

Within 12 months of the start of construction activities, a baseline monitoring/time zero monitoring event will be conducted within the growing season (March-October). After that, monitoring will occur annually within the growing season (March-October) for five years, or until the success criteria listed below is met for a period of at least two full growing seasons (2 years) with no intervention. Once the mitigation success criteria are met, a final report requesting the mitigation is complete will be submitted to the Northwest Florida Water Management District and the Army Corps of Engineers.

Reports

Reports will be submitted 60 days after data acquisition. The first report will contain the baseline monitoring report and the first annual monitoring event. Information to be submitted in the reports shall include the permit name and number, photographs, all data collected from monitoring plots, success criteria, and enhancement and restoration activities. In addition, the dates and type of any required management shall also be included. If for any reason, the site



exhibits patterns that might prevent it from becoming successful; a discussion of the probable reason(s) as well as possible solutions will be included.

Success Criteria

Mitigation will be considered successful when the success criteria listed below are met for a period of at least two full growing seasons (2 years) with no intervention. Once the mitigation success criteria are met, a final report requesting the mitigation is complete will be submitted to the Northwest Florida Water Management District and the Army Corps of Engineers:

- Exotic and non-native species are limited to 2.5% or less of the total cover within the Northview Park Preservation enhancement area;
- The 7.25 acre Northview Park Mitigation Area is found to be jurisdictional pursuant to District and Corps regulations;
- Desirable species are recruiting normally and reach at least 50% cover. Desirable plants shall include all native, non-nuisance species having a FAC, FAC-W or OBL indicator status;
- The downstream section of Red Wash Branch Area does not visibly deteriorate or increase in any of the success criteria listed above, such as:
 - An increase in percent cover of non-natives;
 - An extreme increase in water levels (excepting conditions of high seasonal rainfall);
 - An increase in visible turbidity;
 - An increase in scouring/erosion.

After the above success criteria is met and the final report submitted and accepted, intermittent monitoring will be conducted to insure permit conditions are perpetually met. Perpetual monitoring will occur within the growing season every two years; photographs and approximate invasive species cover will be collected but not submitted in any formal report. In the event the mitigation area is NOT meeting the success criteria and/or permit conditions, active mitigation will need to resume and the District will be notified in writing of a new mitigation plan, revised success criteria and updated timeline.

Conclusion

The proposed project was designed to avoid direct and secondary impacts to jurisdictional wetlands. The proposed mitigation will be successful in offsetting for the 1.84 acres of wetland impacts. According to UMAM, **Attachment A**, the Functional Loss for this project is 0.8 (District approved) and Functional Gain is 1.23. The mitigation is sufficient to offset for impacts and will be meaningful in preserving and enhancing critical habitats and communities.

