ADMINISTRATIVE APPEAL DECISION

LANDSTONE COMMUNITIES DRI

FILE NO. SAJ-2009-833

JACKSONVILLE DISTRICT

2 AUGUST 2012

Review Officer: Jason Steele, U.S. Army Corps of Engineers, South Atlantic Division (SAD)

Appellant: Landstone Communities DRI

Date of Receipt of Request for Appeal: 8 February 2012

Acceptance of Request for Appeal: 14 February 2012

Appeal Meeting: 5 April 2012

Authority: Section 404 of the Clean Water Act (CWA) (33 U.S.C. § 1344)

SUMMARY OF DECISION

Appellant's request for appeal (RFA) does not have merit. The administrative record (AR) substantiates the District's determination that the subject wetlands and tributary have a significant nexus to the nearest downstream Traditional Navigable Water (TNW), as required by the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (6/1/2007) ("JD Guidebook"), and the EPA/Army Memorandum, *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States* (2 December 2008) ("Rapanos Memorandum").

BACKGROUND

Landstone Communities, DRI (Appellant) is appealing the Jacksonville District's (District) 9 December 2011 decision to assert jurisdiction over approximately 400 acres of wetlands and a tributary (non-relatively permanent water (non-RPW)) on the appellants property, located along County Road 470, within Sections 15, 16, 17, 20, 21, 22, 27, 28, Township 20 South, Range 23 East, Sumter County, Florida.

The District contends that the areas designated as wetlands on the appellant's property are adjacent to a tributary (non-RPW) that flows directly or indirectly into a TNW. The onsite wetlands are adjacent to the non-RPW via surface and shallow subsurface flow. Shallow subsurface flow was identified using the Saturated Hydraulic Conductivity (Ksat) method, pond reservoir rating, geology, transmissivity data, isotope

data, professional communications, and professional reports from the United States Geological Survey (USGS) and Southwest Florida Water Management District (SWFWMD). The District physically observed the path of flow for the surface connection. The District claims jurisdiction over the onsite wetlands and non-RPW via significant nexus to the downstream TNW.

The appellant contends the non-RPW is non-jurisdictional because it has not flowed under State Road 301 and into Lake Panasofkee (TNW) since 1998. Therefore, the onsite (adjacent) wetlands, by default, are non-jurisdictional. In addition, the District's significant nexus evaluation is speculative and insubstantial.

The appellant stated, "The District's assertion of jurisdiction based, in part, upon groundwater flows is only speculative. This includes, but is not necessarily limited to, the use of an inappropriate measurement (Ksat) that does not measure the duration, volumes, or frequency of discharges, which are the critical factors to the determination. If such speculation were validated as evidence that demonstrates the isolated wetlands in question are jurisdictional, this same determination would be valid for a significant number of isolated systems in similar and different habitats (e.g., isolated wetlands within scrub, sandhill, pine flatwoods and many others). Basically, this would "open the door" for the District to have jurisdiction over perhaps all isolated wetland systems in Florida and beyond."

The appellant further stated, "The District has not demonstrated the wetlands in question have the potential to receive significant amounts of pollutants and that these pollutants actually have the potential to be carried, in significant amounts, to the ditch and then into the TNW. The District's reference to Ksat values to demonstrate potential for the conveyance of pollutants to the TNW is not appropriate as Ksat is only applicable in saturated soils. Conversely, the upland soils of the Landstone project have the highest Ksat values largely because they are very pervious soil types. If there were significant pollutants that could be carried by rain waters, the pervious character of these upland soils would carry a relatively higher amount of pollutants to the groundwater than other soil types (bypassing the wetlands). Therefore, a relatively greater amount of pollutants would be carried via the upland soils to the water table and fewer pollutants would be carried via surface flows to the isolated wetlands as compared to isolated systems in other areas. This would mean that the role of the Landstone wetlands in question would be relatively less significant than isolated systems in other areas in terms of protecting downstream systems from pollutants. The same could be said for flood protection (storage, etc.)."

And finally, the appellant stated, "Perhaps the most critical element of Landstone's position is that the District has not demonstrated that the hydrological and ecological factors described in their determination are, in fact, "significant". For example, the District did not adequately describe the amount or type of pollutants that might be carried to the TNW and if the amount and type that might reach the TNW was "significant". If the District's position was validated without demonstrating significance,

jurisdiction would extend to all isolated systems within any drainage basin that included a TNW. In Florida, we do not know of an isolated wetland system that would not be characterized as jurisdictional using this interpretation. Clearly, this would exceed the intent of the rule."

INFORMATION RECEIVED DURING THE APPEAL AND ITS DISPOSITION

1. The District provided a copy of the administrative record, which was reviewed and considered in the evaluation of this request for appeal.

2. The appellant's agent supplied supporting documentation at the time of submittal of the RFA.

3. The District and appellant's agent supplied information at the time of the appeal meeting.

APPELLANT'S STATED REASON FOR APPEAL

The tributary (non-RPW) is non-jurisdictional because it has not flowed under State Road 301 and into Lake Panasofkee (TNW) since 1998. Therefore, the onsite (adjacent) wetlands, by default, are non-jurisdictional. In addition, the District's significant nexus evaluation is speculative and insubstantial.

EVALUATION OF THE REASONS FOR APPEAL, FINDINGS, DISCUSSION, AND ACTIONS FOR THE JACKSONVILLE DISTRICT COMMANDER

Appeal Reason: The tributary (non-RPW) is non-jurisdictional because it has not flowed under State Road 301 and into Lake Panasofkee (TNW) since 1998. Therefore, the onsite (adjacent) wetlands, by default, are non-jurisdictional. In addition, the District's significant nexus evaluation is speculative and insubstantial.

Finding: This reason for appeal does not have merit.

Discussion: The Rapanos Memorandum (p. 1) states,

> The agencies will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a traditional navigable water:
>
> - Non-navigable tributaries that are not relatively permanent.
> - Wetlands adjacent to non-navigable tributaries that are not relatively permanent.
> - Wetlands adjacent to but that do not directly abut a relatively permanent nonnavigable tributary.

The District identified two categories of jurisdictional "waters of the United States" on the site under Section II.B.1. of its 28 November 2011 Approved Jurisdictional Determination Form (JD Form): "Wetlands adjacent to non-RPWs that flow directly or

indirectly into TNWs," and "[N]on-RPWs that flow directly or indirectly into TNWs."

The JD Guidebook (p. 55) states,

> The field staff will assert jurisdiction over tributaries that are non-RPWs where the tributary, in combination with all of its adjacent wetlands, has a significant nexus with a TNW. The field staff will assert jurisdiction over wetlands that are adjacent to a non-RPW where the wetlands, in combination with the relevant tributary reach, have a demonstrated significant nexus with a TNW. As a result, the explanation in Section III.C.2 will include a discussion documenting the characteristics and underlying rationale for the conclusions regarding the presence or absence of a significant nexus with a TNW. Field staff will explain the specific connections between the characteristics documented and the functions/services that affect a TNW. Specifically, an evaluation will be made of the frequency, volume, and duration of flow; proximity to a TNW; capacity to transfer nutrients and organic carbon vital to support food webs; habitat services such as providing spawning areas for important aquatic species; functions related to the maintenance of water quality such as sediment trapping; and other relevant factors. In addition, the evaluation will also consider the functions performed cumulatively by any and all wetlands that are adjacent to the tributary, such as storage of flood water and runoff; pollutant trapping and filtration; improvement of water quality; support of habitat for aquatic species; and other functions that contribute to the maintenance of water quality, aquatic life, commerce, navigation, recreation, and public health in the TNW. This is particularly important where the presence or absence of a significant nexus is less apparent, such as for a tributary at the upper reaches of a watershed. Because such a tributary may not have a large volume, frequency, and duration of flow, it is important to consider how the functions supported by the wetlands, cumulatively, have more than a speculative or insubstantial effect on the chemical, physical, or biological integrity of a TNW.

The JD Guidebook (p.57) goes on to state the documentation requirements for "Non-RPWs that flow directly or indirectly into TNWs":

> • Section III.B.1 (and III.B.2 and III.B.3, if applicable) of the form needs to demonstrate that water flow characteristics of a non-RPW, in combination with the functions provided by those non-RPWs and any adjacent wetlands (if any), has more than an insubstantial or speculative effect on the chemical, physical, and/or biological integrity of the TNW.
> • Section III.C.1 or Section III.C.2 needs to identify rationale to support the significant nexus determination for the non-RPW.

In addition, the JD Guidebook (p.58) states the documentation requirements for "Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs":

• Wetlands will meet the 3-parameter test contained in the agency's regulatory definition of wetlands. See also the protocol identified in the *Corps of Engineers Wetlands Delineation Manual* (1987) or appropriate Regional Supplement.
• Section III.B.1 of the form needs to demonstrate that water flows from a non-RPW directly or indirectly into a TNW.
• Section III.B.2 and 3 need to identify rationale that the wetland is adjacent to a non-RPW that flows directly or indirectly into a TNW.
• Section III.C.2 needs to identify rationale to support significant nexus determination for the wetland, in combination with all other wetlands adjacent to that tributary.

The District provided the necessary documentation requirements for each of the above-listed sections within the JD Form. However, for purposes of this appeal document, a more substantial document will be used to identify the District's rational. The District documented the significant nexus in a memorandum titled, "Memorandum for Record", dated December 9, 2011 (MFR).

The District's rational that the wetlands and non-RPW have a significant "Physical" nexus with the downstream TNW is as follows (p. 11, MFR):

> A significant physical nexus has been demonstrated between the TNW and wetlands and waters in the review area and project site using field observations, rainfall data, aerial photographs, soil properties and hydrogeology, isotope data and groundwater well data. Evidence of surface water flow in the non-RPW and from adjacent wetlands was observed during the site inspection and in aerial photographs correlated with rainfall data. Evidence of floodwater storage was observed on aerial photographs correlated with rainfall data. The presence of hydric and partially hydric soils over the majority of the review area also indicates floodwater storage. Evidence of shallow subsurface flow from the non-RPW and wetlands within the review area to the TNW was indicated by soil properties, hydrogeology and groundwater well data. Groundwater well data, the saturated hydraulic conductivity (Ksat) and pond reservoir ratings for the majority of soils in the review area and the lack of an effective confining unit between the surficial aquifer system (SAS) and the Upper Floridan Aquifer (UFA) indicate that rainfall rapidly infiltrates and recharge the shallow subsurface flow in the UFA. Transmissivity values also indicate that shallow subsurface flow within the UFA is rapid. Isotope and groundwater well data showed that rainfall is the primary source of groundwater recharge.

The District provided a more detailed explanation of the significant "physical" nexus as follows (p. 3-8, MFR):

> ***Physical Nexus:*** Big Prairie canal (non-RPW) and the wetlands in the review area have a significant physical nexus with the TNW, Lake Panasoffkee. The non-RPW has a significant physical nexus with the TNW via flood storage,

surfacewater flow and shallow subsurface flow. The wetlands have a significant physical nexus with the TNW via flood storage and shallow subsurface flow.

A site visit of the project area was conducted on August 30, 2010. During the site visit the following observations were made: 1) evidence of surface water flow from a wetland on the southern portion of the property into the non-RPW, 2) evidence of surface water flow in the non-RPW due to hydrologically aligned vegetation, scour alignments in the bed and bank of the Big Prairie canal, litter and rafted debris, and sediment deposition and 3) evidence of multiple ordinary high water lines (OHWL) on existing culverts (Figure 13) and in a forested wetland system adjacent to the non-RPW (Figure 14). Rusted water lines observed on the existing culverts in the non-RPW and water lines on the trees in the adjacent wetland were formed by prolonged exposure to surfacewater and are considered to be indicators of the OHWL. These water lines also indicate that the non-RPW and its adjacent wetlands provide flood water storage.

Ground surface elevation influences surfacewater flow. The ground surface elevation of the review area varies from approximately 55 to 100 ft NGVD. The elevations are generally higher in the eastern portion of the review area and slope to lower elevations in the western and northwestern portion of the review area (Figure 15). Due to the ground surface elevation precipitation that falls east of non-RPW and does not percolate vertically into the soil flows horizontally overland into the non-RPW. Precipitation that falls west of non-RPW and does not percolate vertically into the soil, flows horizontally overland to the non-RPW. Surfacewater flows north in the non-RPW into a group of sink holes, referred to as the Walled Sink complex. During periods of high water, water from the sink complex flows through a previously mined channel to culverts underneath US Highway 301 into Belton's Millpond Spring Complex and Shadybrook before flowing to Lake Panasoffkee (Figure 6). According to McBride et al. "Big Prairie canal (non-RPW) probably only flows after excessive rainfall during flooding conditions, because most of the Big Prairie watershed appears to be internally drained".

There is minimal surface water data available for the review area. The Dixie Lime & Stone Company monitors surfacewater on their active and inactive mine properties east and southeast of Lake Panasoffkee. Staff gauge #39 is located in an inactive mine area southeast of Lake Panasoffkee (Figure 16). The area in the vicinity of the staff gauge was mined during the 1960s then abandoned. During periods of high water, water flows through the abandoned mining area to culverts underneath US HWY 301, then to Belton's Millpond Spring complex, Shadybrook and Lake Panasoffkee. Water levels for staff gauge #39 were collected monthly between November 1994 and June 2010 and weekly between February 2002 and May 2008 (Appendix A). Staff gauge #39 is located approximately 0.62 miles from US Highway 301. The culverts underneath US Highway 301 are at an invert elevation of 56-feet NGVD. Due to the elevation of

culverts underneath US Highway 301, the only time that water could have flowed underneath the highway was in March 1998 when water levels were recorded at 56.3-feet NGVD. Water could have flowed underneath US Highway 301 in 2004 however the ditch block constructed by Ocala Bedrock Resources mine prevented water from flowing into the Walled Sink complex.

Due to the lack of available surfacewater data for the review area, rainfall data was correlated with aerial photographs to determine the frequency of water flow in the non-RPW and to demonstrate water storage in the non-RPW and the wetlands within the review area. According to the National Climatic Data Center, the long term average rainfall for Sumter County is 54.04 inches per year. The nearest NOAA weather station (Bushnell 2E) to the review area had numerous rainfall data missing from monthly records (Table 1). Due to missing rainfall data at the Bushnell weather station, the Corps obtained an approximation of the average yearly rainfall for the project site by averaging the monthly rainfall data located in the NOAA Climatological Annual Reports from the Bushnell, Brooksville and Inverness weather stations (Figures 17 and 18, Table 2). There was very little variation between the Bushnell, Brooksville and Inverness weather stations. The aerial photographs taken between January 1999 and February 1999 indicate little to no surface water in the non-RPW and the minimal water in wetlands in the review area resulting from the below average rainfall in 1998 (Figure 19, Table 2). The aerial photograph taken in January 2004 indicates surface water in the non-RPW and wetlands in the review area resulting from the above average rainfall in 2002 and 2003 (Figure 20, Table 2). The aerial photograph taken in May 2005 indicates surface water in the non-RPW and wetlands in the review area resulting from the above average rainfall in 2002, 2003 and 2004 (Figure 21, Table 2). Also, during the spring of 2004 the Ocala Bedrock Resources Mine placed a ditch block in the canal that allows Big Prairie Canal to flow into the Walled Sink complex. This ditch block held water in the non-RPW and wetlands within the Walled Sink sub-basin. The ditch block was removed by early 2005. The aerial photograph taken in March 2006 indicates surface water in the non-RPW and the wetlands in the review area resulting from large rainfall events in June, July and August 2005 (Figure 22, Table 1). The aerial photograph taken in January 2008 indicates no surface water in the non-RPW and minimal water in wetlands in the review area, resulting from the below average rainfall 2006 and 2007 (Figure 23, Table 2). The rainfall data correlated with aerial photography indicates floodwater storage in the non-RPW and wetlands within the review area. Also, the rainfall data correlated with aerial photography indicate intermittent but not seasonal flow of water in the non-RPW during years with above average rainfall and following years with above average rainfall.

Floodwater storage, surfacewater flow, and shallow subsurface flow within the review area are influenced by the properties of soils present within the review area. The hydric rating of a soil map unit can be used to illustrate floodwater

storage in wetlands. Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, "all hydric" means that all components listed for a given map unit are rated as being hydric, while "not hydric" means that all components are rated as not hydric. Partially hydric" means that at least one component of the map unit is rated as hydric, and at least one component is rated as not hydric. Of the 68 soil map series within the review area, 19 percent are classified as hydric, 39 percent are classified as partially hydric and 42 percent are classified as non-hydric. The majority of soil map units within the review area are hydric or partially hydric, indicating that water is stored within wetlands in the review area (Appendix B).

Six general soil map units are located within the Walled Sink drainage basin (HUC 031002080706). Soil map units include Astatula, Lake-Arredondo-Millhopper, Tavares-Adamsville, Sumterville-Mabel-Ft. Green, EauGallie-Delray and Myakka, Placid-Ona (Figure 24). Astatula, Lake-Arredondo-Millhopper and Tavares-Adamsville soils are nearly level to gently sloping, excessively drained to somewhat poorly drained soils found on the upland ridges along boundaries of Walled Sink sub-basin. Sumterville-Mabel-Ft. Green soils are nearly level to gently sloping, somewhat poorly drained to poorly drained soils found on the low ridges in the northwestern and southwestern areas of Walled Sink sub-basin. EauGallie-Delray and Myakka, Placid-Ona soils are nearly level, poorly drained to very poorly drained soils found in flatwoods and depression areas over the majority of Walled Sink sub-basin. The drainage classes (i.e. poorly drained) listed above refer to the frequency and duration of periods when the soil is saturated with water. Approximately 57 percent of the soils within the review area are somewhat poorly drained, poorly drained or very poorly drained and approximately 43 percent of the soils within the review area are moderately well drained, well drained or excessively drained (Appendix B). Soils that are poorly drained are saturated at shallow depths for significant periods during the growing season, while soils that are well drained are not. Saturated conditions in poorly drained soils are caused by a slowly pervious layer within the soil profile, high water table, seepage from continuous rainfall or a combination of these factors.

The saturated hydraulic conductivity (Ksat) of soils within the review area indicate shallow subsurface flow. Saturated hydraulic conductivity measures a saturated soils ability to transmit water when subjected to a hydraulic gradient. The drainage class data discussed above indicates that more than half of the soil map units within the review area are saturated at shallow depths during significant periods during the growing season. In the review area approximately 43 percent of the soils have a high to very high (1.98 to 50.02 inches/hour) Ksat value, 26 percent of the soils have a moderately high to high (0.20 to 1.98 inches/hour) Ksat value, 6 percent of the soils have a moderately low to high (0.06 to 1.98

inches/hour) Ksat value, 26 percent of the soils have a moderately low to moderately high (0.06 to 0.20 inches/hour) Ksat value (Figure 25, Appendix B). The majority of the soils within the review area have a moderately high to very high Ksat value indicating shallow subsurface flow from the wetlands and non-RPW is present within the review area.

Another indicator of shallow groundwater flow is the pond reservoir area rating. Pond reservoir area ratings are both verbal and numerical and indicate the potential for a soil map unit to be used to hold water behind a dam or embankment. The Natural Resource Conservation Service (NRCS) and the U.S. Department of Agriculture (USDA) list the majority of soil map units within the review area as "very limited" for the water management use of pond reservoir areas or storage of water behind a dam or an embankment. The numerical rating assigned by the USDA to indicate the severity of this limitation is reported based on a scale that ranges from not limited (0.01) to very limited (1.00). The majority of soil map units present on the review area were rated a 1.00 indicating the "very limited" ability of the soil to store water behind an embankment due to seepage or water movement through the soil. (Appendix B). The saturated hydraulic conductivity (Ksat) and pond reservoir ratings for the majority of soils in the review area indicate that shallow subsurface flow from the wetlands and the non-RPW occurs within the review area.

Shallow subsurface flow is influenced by the geology within the review area. The geology within the review area includes undifferentiated sands and clays characterized by the presence of fine sand, interbedded clay, shell and limestone overlying Ocala Limestone10 (Figures 26 and 27). The undifferentiated sands and clays are part of the surficial aquifer system (SAS), while the Ocala Limestone is part of the Upper Floridan Aquifer (UFA). Within the review area the surficial aquifer system (SAS) overlies the unconfined Upper Floridan aquifer (UFA) at or near the surface (Figure 28 and Figure 29). The SAS is a "permeable hydrogeologic unit contiguous with the land surface that contains the water table within it and is under mainly unconfined conditions" and the UFA "generally contains water under unconfined conditions". Geotech data collected within the project area shows the depth to the Ocala Limestone ranges from 3 to 20 feet deep (Appendix C). Information provided by the SWFWMD shows that the depth to Ocala Limestone ranges from 0 to 56 feet around Lake Panasoffkee (Figure 30). The depth to the UFA is less than 75 feet through the entire review area (Figure 29). The depth to the Ocala Limestone is 18 feet below the ground surface at ROMP 111 (Figures 30 and 31). The properties of the sandy soils of the SAS and the lack of an effective confining unit above the UFA allow precipitation to rapidly recharge the shallow UFA within the review area. The karst geology, such as sinkholes, found throughout Sumter County allows surface water to directly recharge the UFA. The Walled Sink complex recharges directly to the UFA during periods of lower water.

Groundwater provides a significant amount of water to Lake Panasoffkee, a TNW. The potentiometeric mapping of the UFA illustrates the regional groundwater flow in Sumter County is towards the TNW (Figure 32). The UFA is the main source of groundwater to the TNW. Isotopes were utilized in the McBride et al. study to identify sources of groundwater to the TNW. Strontium isotope data indicated that groundwater from the Upper Floridan aquifer interacts with both the surficial aquifer and surface waters within the Lake Panasoffkee watershed. Stable isotopes of hydrogen and oxygen confirm rainfall is the primary source of groundwater recharge within the Lake Panasoffkee watershed. The majority of groundwater and spring isotope data resemble that of isotopically depleted rainfall, indicating that the watershed drainage is primarily internal. For water year 2007-2008 (October 2006 to September 2008), groundwater from the UFA contributed 68 percent of water inflow to Lake Panasoffkee. The groundwater contribution area of the TNW is approximately 192 square miles and extends approximately 15 miles southeast and 5 miles northeast of Lake Panasoffkee (Figures 8 and 9). The review area is located completely within the groundwater contribution area (Figure 11). Transmissivity can be used to estimate the volume of water flowing through an aquifer. The transmissivity of the SAS varies from 8 to 5,348 ft2/day when the thickness of the SAS is less than 55 feet. The SAS is between 3 and 20 feet thick within the 4050.27 acre project site. The thickness of the SAS throughout the review area appears to be shallow (Figure 28). Transmissivity of the UFA in Sumter County ranges from approximately 9,100 to 1,850,000 ft2/day. Areas where the UFA is confined have lower transmissivity then semiconfined or unconfined areas. The UFA within the review area is unconfined and therefore has higher transmissivity.

There is minimal groundwater data available for the review area. The only groundwater monitoring well data available for the review area are U.S. Geologic Survey (USGS) site number 284435082011701 Brentwood Well NR Sumterville, FL and USGS site number 284057081593601 Stuart Ranch Replacement No. 2 NR Center Hill, FL, (Figure 33). The Brentwood well is located at Latitude 28°44'35" N and Longitude 82°01'17" W (NAD27) and the Stuart Ranch well is located at Latitude 28°40'57" N and Longitude 82°59'36" W (NAD83). The depth of the Brentwood well is 60 feet and water levels have been periodically recorded since 1984. Groundwater levels at the Brentwood well have fluctuated between 3.64 and 27.51 feet below the ground surface. The average groundwater level at the Brentwood well is 17.86 feet below the ground surface (Figure 34, Appendix C). The depth of the Stuart Ranch well is 100 feet and water levels have been periodically recorded since 2007. Groundwater levels at the Stuart Ranch well have fluctuated between 18.04 and 25.99 feet below the ground surface. The median groundwater level at the Stuart Ranch well is 23.23 feet below the ground surface (Appendix C). Groundwater fluctuations for both the Brentwood and Stuart Ranch wells between September 2007 and September 2011are closely correlated (Figure 35). Comparing average rainfall and average groundwater monitoring data from 1990 to 2009, shows a slight lag between

rainfall events and groundwater levels (Figure 36). According the SWFWMD, "the timing of rainfall greatly impacts the groundwater table because rainfall is the only recharge source to Lake Panasoffkee's groundwater supply". Fifteen piezometers were installed within the 4050.27 acre project area. Groundwater levels were recorded on 7/9/2007, 7/23/2007 and 8/17/2007 (Table 3). Groundwater levels ranged from 7.10 to 28.10 feet below the ground surface with shallower depths in the along the SE project site boundary gradually increasing to deeper depths travelling SE to NW (Figure 37). ROMP Well 111 is located north of the review area on Shadybrook and records the water level within the UFA (Figure 31). From 1990 to 2010 the water level, as measured by ROMP 111, in the UFA fluctuated between 7 and 15 feet below the ground surface (Figure 38). The USGS groundwater well data show that the water table fluctuations are influenced by precipitation. Also, the USGS groundwater well data, piezometers and ROMP 111 indicate shallow subsurface flow.

By field observations and analysis of elevation, surface water data, rainfall data, aerial photographs, soil properties, hydrogeology, isotope data and groundwater data, the Corps asserts that the non-RPW has a significant physical nexus with the TNW via flood storage, surfacewater flow and shallow subsurface flow. Also, the Corps asserts that the wetlands within the review area have a significant physical nexus with the TNW via flood storage and shallow subsurface flow.

The District's rational that the wetlands and non-RPW have a significant "Chemical" nexus with the downstream TNW is as follows (p. 11, MFR):

A significant chemical nexus has been demonstrated between the TNW and wetlands and waters in the review area and project site using hydrogeology, soil properties and wetland science. Lake Panasoffkee (TNW) is the Floridan aquifer exposed at the land surface. Approximately 68 percent of the water inflow to the TNW is from groundwater. The good water quality of the TNW is attributed to the large groundwater input and extensive coverage by submerged aquatic vegetation (SAV). Low nutrient and pollutant concentrations are essential to maintain the good water quality within the TNW. Due to the large groundwater input to the TNW, rapid recharge of the UFA from the SAS, and high transmissivity rates within the UFA in Sumter County, the non-RPW and the wetlands within the review area provide essential pollutant trapping/filtration and improve surface and groundwater quality via nutrient storage.

The District provided a more detailed explanation of the significant "chemical" nexus as follows (p. 8-9, MFR):

Chemical Nexus: The Big Prairie canal (non-RPW) and all wetlands in the review area have a significant chemical nexus with the TNW, Lake Panasoffkee, via pollutant trapping/filtration, and improving water quality by nutrient storage.

The geology of Sumter County influences the pollutant trapping/filtration and nutrient storage within the review area. The Upper Floridan aquifer (UFA) is unconfined and is at or very near the land surface in the majority of Sumter County. Lake Panasoffkee (TNW) is the Floridan aquifer exposed at the land surface, therefore water level changes in the aquifer directly affect lake levels. The TNW acts like a large spring because of the large volume of groundwater inflow that seeps into the lake through the lake bed. Approximately 68 percent of the water inflow to the TNW is from groundwater. The review area is located entirely within the groundwater contribution area for the TNW. There are few natural surface water drainage features within Walled Sink sub-basin because precipitation rapidly infiltrates the sandy soils and recharges the SAS (Figure 39). Nutrients and pollutants are filtered through the SAS, which also supports many microbial and geochemical reactions that break down potentially harmful contaminants before they reach the UFA. Sandy soils overlying the SAS and the lack of an effective confining unit above the UFA allow precipitation to rapidly recharge the groundwater system. The shallow groundwater in the unconfined UFA is vulnerable to the transmission of nutrients and pollutants because of the rapid recharge. Also, karst features, such as sinkholes, conduits and swallets, allow surface water to recharge directly to the UFA without filtering through the sands of the SAS. The Walled Sink complex directly recharges the UFA, without the pollutant and nutrient filtration provided by soils and wetlands such as those located within the review area and project site. Transmissivity of the UFA in Sumter County ranges from approximately 9,100 to 1,850,000 ft2/day. The UFA within the review area is unconfined and therefore has higher transmissivity. Higher transmissivity allows pollutants and nutrients to travel quickly from the UFA to the TNW. Surrounding silvaculture and agriculture practices within and surrounding the review area are a source of nutrients. Surface and subsurface transport of dissolved nutrients can be increased by activities such as mining, logging, agriculture, and urban development. Due to the large groundwater input to the TNW, the geology of Sumter County, including the review area and project site, and high transmissivity rates within the UFA in Sumter County, the non-RPW and the wetlands within the review area provide essential pollutant trapping/filtration and improve surface and groundwater quality via nutrient storage.

Lake Panasoffkee (TNW) is an Outstanding Florida Waterbody, and the largest lake in Sumter County, with approximately 7.5 square miles of surfacewater area. The TNW's surface water drainage basin is approximately 360 square miles and makes up 17 percent of the Withlacoochee watershed. The TNW is regionally important because the water quality and quantity affects the hydrology and ecology of the Withlacoochee River. The large groundwater input to the TNW from the UFA and extensive submerged aquatic vegetation beds are credited with maintaining the good water quality of the TNW. The source of groundwater in the TNW is primarily the UFA which is unusual, because most lakes in FL receive inflow from the SAS, which then recharges to the UFA through the lake

> bed. According to the SWFWMD a minimum of 60% submerged aquatic vegetation (SAV) coverage is necessary to maintain the good water quality in the TNW. Adequate light transmission is vital for SAV survival. Limiting the nutrient inputs from the surrounding area is an important factor in maintaining light transmission. The majority of land use in the groundwater contribution basin is agricultural, which is a source of high nutrient export. Due to the importance of water quality within the TNW, the non-RPW and the wetlands within the review area provide essential pollutant trapping/filtration and improve surface and groundwater quality via nutrient storage.
>
> By analysis of hydrogeology, soil properties and wetland science the Corps asserts that the non-RPW and the wetlands within the review area have a significant chemical nexus with the TNW, Lake Panasoffkee.

The District's rational that the wetlands and non-RPW have a significant "Biological" nexus with the downstream TNW is as follows (p. 11, MFR):

> A significant biological nexus has been demonstrated between the TNW and wetlands and waters in the review area and project site using freshwater fisheries and federally endangered and threatened species. The economically important recreational freshwater fishery associated with TNW requires maintenance of good water quality. The non-RPW and wetlands within the review area provide nutrient and pollutant filtration necessary for maintenance of water quality in the TNW. Wood stork and Bald Eagle nest and forage around the TNW. The floodwater storage and nutrient/pollutant filtration functions of the non-RPW and wetlands within the review area are important to maintain the water quality and the aquatic flora and fauna of TNW. The uplands and wetlands within review area provides habitat and foraging opportunities for the Bald Eagle and Eastern Indigo Snake.

The District provided a more detailed explanation of the significant "biological" nexus as follows (p. 9-10, MFR):

> ***Biological Nexus:*** Big Prairie canal (non-RPW) and the wetlands within the review area have more than a speculative or insubstantial effect on the biological integrity of the downstream TNW, Lake Panasoffkee. The biogeochemical functions provided within the review area are important in preserving water quality within the TNW. Good water quality is necessary for abundant aquatic flora and fauna. Aquatic flora and fauna of the TNW and wetlands within the Walled Sink sub-basin provide habitat and foraging opportunities for numerous species.
>
> According to the Lake Panasoffkee Surfacewater Improvement and Management Plan (SWIM), the TNW is an Outstanding Florida Waterbody that has played an important role in the regional economy as a shipping port for timber, citrus and

other regional goods throughout the late 1880s and currently serves as a vital recreational freshwater sport fishery resource and an important contributor to the local and regional economy. A Florida Fish and Wildlife Conservation Commission study was conducted between July 1, 1998 and June 30, 1999 to determine the population dynamics of bluegill and redear sunfish in the TNW. Domicile data collected during the study show that 31% of anglers live in Sumter County and the surrounding contiguous counties, 26% live in the greater Tampa area, 29% live in areas in Florida and 15% live out of state. According to the study, expenditures on the TNW between February 28 to October 17, 1998 were $1,341,461 1997 dollars or approximately $1,848,533 in 2011 dollars, and the economic impact was $2,414,630 1997 dollars or approximately $3,327,360 in 2011 dollars. The TNW is nationally recognized as one of Florida's most productive lakes for the redear sunfish fishery and supports both intrastate and interstate commerce. Good water quality in the TNW is essential for the health of the freshwater sport fishery. The non-RPW and wetlands within the review area provide nutrient and pollutant filtration necessary for maintenance of water quality in the TNW.

The non-RPW and wetlands within the review area provide flood water storage which is essential in supporting a diverse assemblage of fauna that serve as food for fish, birds and mammals in the review area and the TNW. Bald Eagle (*Haliaeetus leucocephalus*) nest SU031 is located within the review area (Figure 42). Although Bald Eagles were removed from the endangered species list in 2007, they are protected by the Bald and Golden Eagle Protection Act of 2009. Bald eagles utilizing nest SU031 likely forage within the review area.

Wood stork (*Mycteria americana*) are a federally listed endangered species that nest in cypress and mangrove swamps and feed in freshwater marshes, depressions in cypress heads, swamp sloughs, managed impoundments, stock ponds, shallow-seasonally flooded roadside or agricultural ditches, narrow tidal creeks and shallow tidal pools. Storks primarily feed on small amphibians and small fish, such as frogs, topminnows and sunfish. The USFWS has identified core foraging areas that include all suitable foraging habitat within a 15-mile radius of every Wood stork nesting colony in North Florida. Suitable foraging habitat is, "any area containing patches of relatively open (<25% aquatic vegetation), calm water, having a permanent or seasonal water depth between 2 and 15 inches that supports and concentrates or is capable of supporting and concentrating small fish, frogs and other aquatic prey". The closest Wood stork nesting colony (#611004A) is located in Hernando County (Latitude 28.90800 and Longitude -82.32300), approximately 12 miles northwest of Lake Panasoffkee (Figure 43). Lake Panasoffkee is located within the core foraging area and provides suitable foraging habitat for the Wood stork. Wood storks have been reported feeding around the edge of Lake Panasoffkee. The floodwater storage and nutrient/pollutant filtration functions of the review area are important

to maintain the water quality and the aquatic flora and fauna of Lake Panasoffkee, a TNW.

The review area and the project site exhibit freshwater marshes/sloughs, mesic flatwoods and upland hardwood hammock habitats. During the project site inspection on August 30, 2010 a gopher tortoise was observed. Eastern indigo snakes (*Drymarchon corais couperi*), a federally listed threatened species, inhabit flatwoods and upland hammock habitats that support gopher tortoise populations. Eastern indigo snakes feed on other snakes, small tortoises, small mammals and amphibians. Although no snakes were observed during the August 30, 2010 site inspection, the review area and project site exhibit abundant habitat and foraging areas that could support Eastern indigo snakes.

Based on this information, the Corps asserts that the non-RPW and the wetlands within the review area have a significant biological nexus with the TNW, Lake Panasoffkee.

As outlined above, the District evaluated the frequency, volume, and duration of flow; proximity to a TNW; capacity to transfer nutrients and organic carbon vital to support food webs; habitat services such as providing spawning areas for important aquatic species; functions related to the maintenance of water quality such as sediment trapping; and other relevant factors. In addition, the District evaluated the functions performed cumulatively by any and all wetlands that are adjacent to the tributary, such as storage of flood water and runoff; pollutant trapping and filtration; improvement of water quality; support of habitat for aquatic species; and other functions that contribute to the maintenance of water quality, aquatic life, commerce, navigation, recreation, and public health in the TNW. And finally, the District considered how the functions supported by the wetlands, cumulatively, have more than a speculative or insubstantial effect on the chemical, physical, or biological integrity of a TNW.

Actions: None required.

CONCLUSION

For the reasons stated above, I find that the appeal does not have merit. The District's administrative record contains substantial evidence to support the District's determination that the subject wetlands and non-RPW have a significant nexus to the nearest downstream TNW. The District's determination was not otherwise arbitrary, capricious or an abuse of discretion, and was not plainly contrary to applicable law, regulation, Executive Order, or policy. The administrative appeals process for this action is hereby concluded.

Donald E. Jackson, Jr.
Colonel, US Army
Commanding