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David Harkins, Ph.D., P.E.
Vice President
Espey Consultants, Inc.
4801 Southwest Parkway
Parkway 2, Suite 150
Austin, Texas 78735

Dear Dr. Harkins:

Enclosed is the information on Wright Patman Lake and White Oak Creek Wildlife Management Area you requested in your letter dated January 28, 2010. We believe we have addressed each of the areas you outlined in your letter. Enclosed you will also find a CD containing additional data including the shape files for the maps included in this packet.

We appreciate the opportunity to provide input on this critical resource issue. If you have any further questions, feel free to contact Nathan Garner, Region 3 Wildlife Director, at (903) 566-1626 ext 221. Thank you.

Sincerely,

Carter Smith
Executive Director

CS:NG:ne

Enclosures

cc: Mr. Nathan Garner

Impacts of Raising the Elevation of Wright Patman Lake above 230 Feet

Texas Parks and Wildlife has been asked to provide information and data regarding the impacts of raising the pool elevation level of Wright Patman Lake to a maximum of 240 feet on White Oak Creek Wildlife Management Area (WOC WMA), Altanta State Park and the surrounding United States Army Corps of Engineers (USACE) land. In a letter from Luke Baker, Area Biologist of WOC WMA, dated August 17, 2009, he stated “while 230’ could be a tolerable maximum elevation a more accurate analysis of increased flood severity must be completed before a determination can be made.” Any level above a 230 feet elevation would certainly have direct impacts on the natural resources and TPWD management capabilities.

Wright Patman Lake is located on the Sulphur River near Maud, Texas. The 25,777 acres of WOC WMA is situated just west of the lake, contiguous with other USACE lands. These lands comprise one of the largest, highest rated, intact tracts of mature bottomland hardwood habitat remaining in East Texas. This large extensive tract of bottomland hardwood forest creates a critical corridor of high quality habitat for resident and migratory wildlife species. The mature bottomland hardwood forests along this portion of the Sulphur River and its associated tributaries also provide habitat to over 500 species of vertebrate animals and 1,150 plant species. These forests support over 50% of the neo-tropical migratory bird species in the United States for a portion of their life cycle. It is one of three highest rated habitats for black bear in East Texas, with the eastern most portion of this forest lying within the range of the federally listed Louisiana Black Bear. Elevating the level of Wright Patman Lake will result in fragmenting this large tract, negatively impacting the wildlife species dependent on this habitat. GIS analyses of these lands indicate that over 32,000 acres of prime bottomland habitat will be inundated at the 240’ elevation. Current management practices on WOC WMA at the existing lake level provide a premium habitat for a variety of game and non-game species. As the lake level is increased, a proportionate loss in public hunting opportunities and other outdoor recreation activities that are vigorously pursued in this area will result.

Endangered and Threatened Species Potentially Impacted by Raising the Elevation of Wright Patman Reservoir

Federally Listed Species

There are a number of federally listed endangered and threatened species that have been recorded as occurring, or potentially occurring within Bowie, Cass, Morris and Titus Counties, Texas, that may be adversely impacted by raising the pool elevation at Wright Patman Reservoir in northeast Texas. These species include: American Peregrine Falcon (*Falco peregrinus anatum*), Arctic Peregrine Falcon (*Falco peregrinus tundrius*), Bald Eagle (*Haliaeetus leucocephalus*), Piping plover (*Charadrius melodus*), Louisiana black bear (*Ursus americanus luteolus*), and Red Wolf (*Canis rufus*).

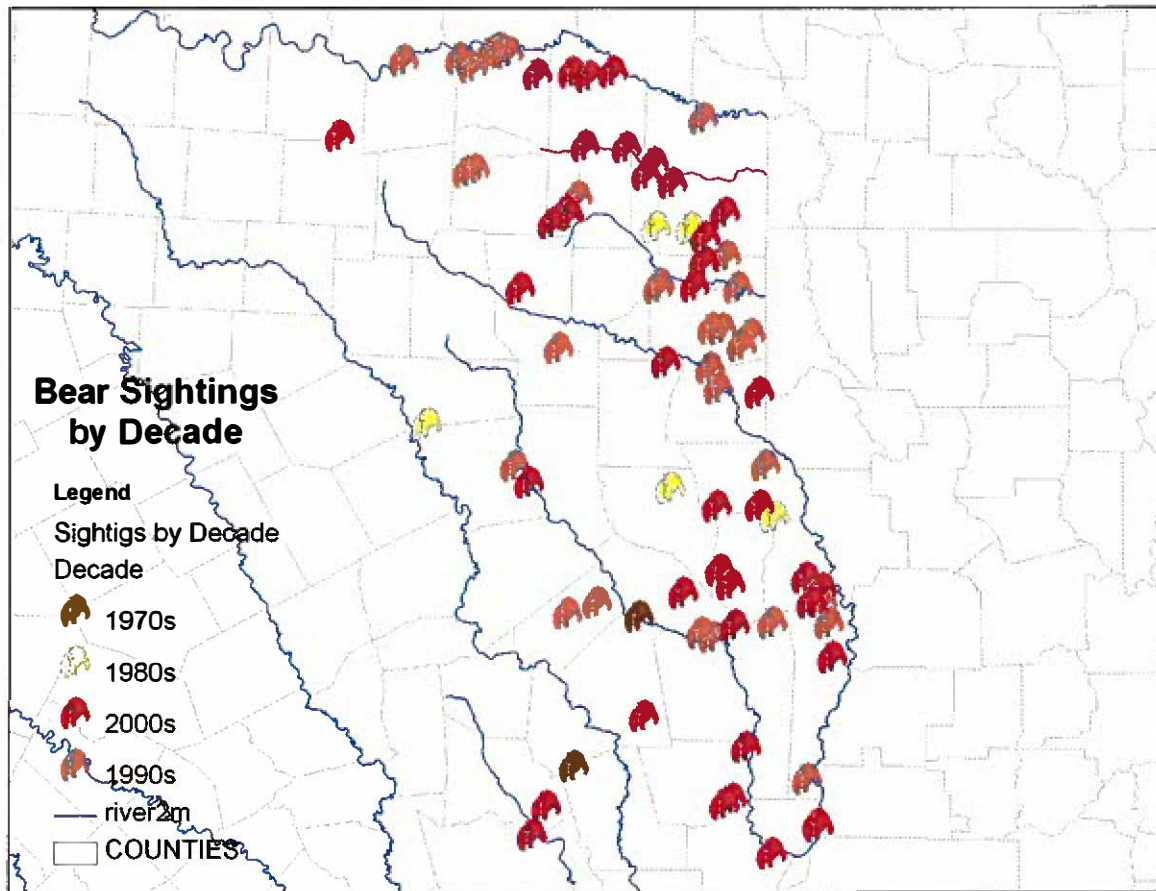
The American and Arctic Peregrine Falcon are both currently federally de-listed, but remain on the state’s list as a threatened species, and for monitoring purposes. Both subspecies are low-altitude migrants through these counties and would utilize a wide range of habitats

during their migration. They have been recorded as making stopovers at leading landscape edges such as lake shores. Though there would remain a lake shore edge regardless of the elevation of the reservoir, the adjacent bottomland hardwood forest and shallow wetland habitats would decline with the proposed change in elevation resulting in loss of quantity and quality of these habitats, and subsequent losses in prey available to these birds.

The Bald Eagle population in eastern Texas has been steadily increasing since use of DDT was outlawed. The Bald Eagle is currently federally de-listed, but remains on the state's list as a threatened species, and for federally required monitoring the first 5 years following de-listing. This part of the state has both migratory and nesting bald eagles that utilize the habitats at Wright Patman Reservoir and White Oak Creek Wildlife Management Area (WOC-WMA). Bald Eagles utilize dominant canopy trees in mature forests nearby wetland habitats and reservoirs, and there could be significant loss of these potential nest trees through inundation of adjacent bottomland hardwood and other types of forests. In addition, availability and richness of prey items for Bald Eagles is greater in bottomland hardwood forests with their associated shallow wetlands than in open, deep water areas.

The Piping Plover is currently federally and state listed as a threatened species. This species is a wintering migrant along the Texas Gulf Coast and has been recorded in this part of northeast Texas. This species utilizes shallow mud flats in this part of its range. The upper end of Wright Patman Reservoir and some larger sloughs along feeder creeks like White Oak Creek contain significant mud flat habitats that would be lost by raising the elevation of the reservoir. The amount of habitat lost would vary from year to year based upon flooding, or lack thereof during dry years.

American Black bear (*Ursus americanus*) and Louisiana black bear are on the boundary of their species and sub-species ranges within this area, both subspecies are considered as federally threatened within Cass County due to similarity of appearance, and all black bear are protected throughout Texas as a state-threatened species including Bowie, Morris and Titus Counties. The bottomland hardwood forest within this section of the Sulphur River watershed is ranked among the highest quality black bear habitat in East Texas. The Texas Parks and Wildlife Department has been recording black bear sightings since 1978. Figure 1 shows that there have been numerous black bear sightings verified in northeast Texas, including the Sulphur River Basin, over the past few decades. A large number of those sightings occurred within the past decade, including at least one fairly recent sighting within WOC WMA.



(Figure 1, Black Bear Sightings Recorded in East Texas by Decade Since 1978, TPWD)

Although black bear will utilize a variety of habitat types, their preferred habitats are bottomland hardwood forests. Inundation of significant mature bottomland hardwood forests that would occur with the raising of the pool elevation of Wright Patman Reservoir would result in a significant loss of denning, foraging and travel corridor habitat for this species.

Although the Red Wolf is still maintained on the federal and state endangered species lists as endangered, most biologists consider it to be extirpated from the wild throughout its range. Though the species no longer is known to occur here, most of the habitats to be inundated with the raising of the pool elevation of Wright Patman Reservoir would result in loss of habitat suitable for this species.

State Listed Species

There are a number of species that are listed by the state in this part of northeast Texas as threatened that are not federally listed. These species include two avian species: Bachman's Sparrow (*Aimophila aestivalis*), Wood Stork (*Mycteria americana*); one mammal species: Rafinesque's big-eared bat (*Corynorhinus rafinesquii*); two freshwater mussel species: Louisiana pigtoe (*Pleurobema riddellii*), Southern hickorynut (*Obovaria jacksoniana*); 4 reptile species: alligator snapping turtle (*Macrochelys temminckii*), Northern scarlet snake (*Cemophora coccinea copei*), timber/canebrake rattlesnake (*Crotalus horridus*), Texas horned lizard (*Phrynosoma cornutum*); and three fish species: Blackside darter (*Percina maculata*), Creek chubsucker (*Erimyzon oblongus*), and Paddlefish (*Polyodon spathula*).

Though there are relatively few acres of upland forest types that will be inundated by raising the pool elevation of Wright Patman Reservoir, there are some. One species that occupies pine savannah forests that could potentially be impacted on those habitat types is Bachman's Sparrow. Two species that occupy upland sites with sandy soils regardless of overstory forest type that could occur on some of the upland sites are Northern scarlet snake and Texas horned lizard. Though there are somewhat more acres available for these species than in pine savannah forests, there are relatively few acres of these types to be inundated. However, the sites that are to be inundated are of generally high quality with mature vegetative communities that are fairly intact. More exact information on the vegetative communities and acreages to be inundated can be found in the appendix of this document.

There are significant habitats available for Wood Stork within the upper reaches of Wright Patman Reservoir, and within the bottomland hardwood forests and associated sloughs of the reservoir and WOC WMA. Though the Wood Stork is only listed as state threatened in Texas, its status is much more drastic in areas of the eastern Gulf Coast states. Wood Storks are often seen during summer months in the upper end of the reservoir and wetland areas upstream of the reservoir and on WOC WMA. Though there are no breeding records available for this area, there are areas of suitable habitat currently available for that activity now and in the future. This bird species needs shallow wetlands for foraging. There could be significant loss of shallow wetlands that will be converted to unsuitable deeper water habitats with the proposed raising of the pool elevation of the reservoir.

Rafinesque's big-eared bat is considered by all states within its range across the southeastern United States to be in decline, and Texas certainly is no exception. This species preferred habitat across its range is mature bottomland hardwood and various other types of mature floodplain forests. Though this species will roost in abandoned man-made structures, it prefers natural caves (further east) and mature trees with natural cavities and hollows. These mature trees are a product of older, later-successional forests. So, this species has lost significant habitat across its range to inundation associated with reservoir construction, to short rotation forest management, and conversion of some drier bottoms and mesic sites to commercial pine plantations. Since most of the forests to be inundated by the raising of the pool at the reservoir are either mid- or later-successional or older forests, and the management strategy for those forests is largely aimed at producing naturally functioning bottomland hardwood forests, all of this habitat to be lost could potentially be habitat for this species.

There are significant gaps in knowledge concerning mollusk species within most areas of the state, and northeast Texas is no exception. There are a dozen or so species that are currently under study for potential listing in Texas, many of these occurring in northeast Texas. Two currently state listed threatened species that may occur within the area to be inundated with the raising of the pool elevation of Wright Patman Reservoir include Louisiana pigtoe and Southern hickorynut. There is potential loss of habitat for these species within the proposed project area; further study would be needed to ascertain the exact impacts.

The alligator snapping turtle occurs throughout the Pineywoods of East Texas, and within many portions of the Post Oak Woodlands and Prairies of East Texas. Though this species could likely survive an inundation through raising the pool elevation of Wright Patman Reservoir, it is uncertain how this will actually affect population numbers. Much literature profiles this species as occupying deep water, but "deep" is a relative term. Ricky Maxey, Wildlife Diversity Biologist with TPWD, has captured these turtles in fairly shallow creeks many miles from any deep water reservoirs. Shallow water habitats that intersect, or are nearby deeper habitats will support these turtles. Mr. Maxey observed one such resident alligator snapping turtle in about 3.5 feet depth (this was "deep" compared to the majority of this stream) of water in late summer, and it was very healthy. These shallow water habitats are generally rich in both numbers of species and quantity of prey available for foraging that may not be replicated in deeper water habitats. Therefore, considering food availability as a factor, though the species may survive the habitat loss to inundation, its populations could be reduced as a result of that inundation.

Though the timber/canebrake rattlesnake will occupy a variety of habitat types, its preferred habitat type is bottomland hardwood forest. All of the habitats to be inundated by the raising of the pool elevation of Wright Patman Reservoir are suitable habitat for this species. Therefore, all habitat lost in this inundation will be habitat lost for this species.

There are three fish species that are currently listed as threatened by Texas Parks and Wildlife Department that could occur within the Sulphur River and its tributaries above Wright Patman Reservoir and along White Oak Creek.

The blackside darter has been documented to occur within streams of the Red River Basin. The Sulphur River is a tributary of the Red River, and flows into the Red River in Arkansas approximately 20 miles east, southeast of the Wright Patman Reservoir Dam. This species prefers clear, gravelly streams, quiet pools and pools with riffles. Any feeder streams within the areas to be inundated by the proposed raising of the pool elevation of Wright Patman Reservoir that currently meet these requirements would no longer be suitable habitat for this species.

The creek chubsucker has been noted as occurring in tributaries of the Red River Basin in small rivers and creeks of various types; particularly in upstream creeks and headwater streams. The species seldom occurs within impoundments. Young of this species are known to use headwater rivulets or marshes. This species spawns in river mouths or pools, riffles, lake outlets and upstream creeks. These types of shallow water habitats would be converted to deep-water habitats within the areas to be inundated with the proposed raising of the pool elevation of Wright Patman Reservoir.

The paddlefish is in peril throughout its range in Texas, and is not doing well. This species prefers large, free-flowing rivers. It migrates to spawn in fast, shallow water over gravel bars. It has been noted to frequent impoundments with access to spawning sites. Its larvae may drift from reservoir to reservoir. Basically all of the shallow streams upstream of Wright Patman Reservoir, including White Oak Creek, where these conditions might be met could be made unsuitable if inundated and made into deepwater habitats.

Inland Fisheries

During the late 1990's and extending into the early 2000's a significant effort was made by the Texas Water Development Board and others to evaluate instream flow needs of the Sulphur River upstream of Wright Patman reservoir in response to several potential reservoir projects identified in the regional water planning process. George Parkhouse I (North), George Parkhouse II (South) and Marvin Nichols I and II. Although TPWD was not directly involved in the conduct of these studies, River Studies staff was consulted during the study design phase and reviewed drafts of reports prepared by the TWDB and their contractors. The downstream most proposed project was Marvin Nichols Reservoir; both iterations of this project would be upstream of Wright-Patman and the proposed Marvin Nichols Dam would be on the Sulphur River near the 240 foot elevation – close to the U.S. Hwy 271 Bridge near Talco. I would suggest that Espey Consulting refer to the completed study (Osting, Mathews and Austin 2004) which can be found at the following link:

http://www.twdb.state.tx.us/RWPG/rpgm_rpts/InstreamFlows_SulphurRiver.pdf

This study provides a comprehensive evaluation of the fish communities of the Sulphur River immediately upstream of Wright-Patman Reservoir. Study site two in this report is located in the area that would be inundated by an increase in the elevation of Wright-Patman. It is worth noting, however, that the elevation of Wright-Patman is frequently near 240 ft amsl; during the studies mentioned above we observed difficulty calibrating hydraulic models due to backwater effects from Wright Patman.

White Oak Creek WMA

The following is a list of infrastructure that would be affected by permanently increasing Lake Wright Patman water levels. (See map in appendix)

230'

No infrastructure should be affected.

235'

Two water control structures
Three managed wetland units (480 acres)
1 concrete bridge

240'

In addition to everything under 235'

8 water control structures
1 high water bridge
7.32 miles of levees
10 miles of equestrian trails
11.5 miles of ATV trails

1.5 miles of boundary line
3,596.2 acres of public hunting land

Atlanta State Park

Impacts to Atlanta State Park would include the loss of approximately 2,421 feet of trails and parts of both boat ramps. See maps in appendix for detailed information.

Contributors of data and information to this document were:

Luke Baker, Area Biologist, White Oak Creek WMA, TPWD

Kevin R. Herriman, Project Leader, Northeast Texas Ecosystem Project, TPWD

Stephen Lange, GIS Specialist, Regions 3 and 4, TPWD

Ricky W. Maxey, Wildlife Diversity Biologist, Wildlife District 6 – East Texas Pineywoods, TPWD

Doyle Mosier, Director, River Studies Program, TPWD

Kody Waters, Park Superintendent, Atlanta State Park

Appendix

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Other Documents

1. Texas Ecological Systems Phase 2 Interpretive Guide
2. Texas Ecological Systems Phase 2 Interpretive Guide Appendix 1

Data Folders

1. White Oak Creek WMA
2. Texas Ecological Systems Classification – Vegetation Clips

Map Data Disclaimer - Information

Maps compiled by: Stephen D. Lange, Regional GIS Specialist, TPWD-Tyler, TX.

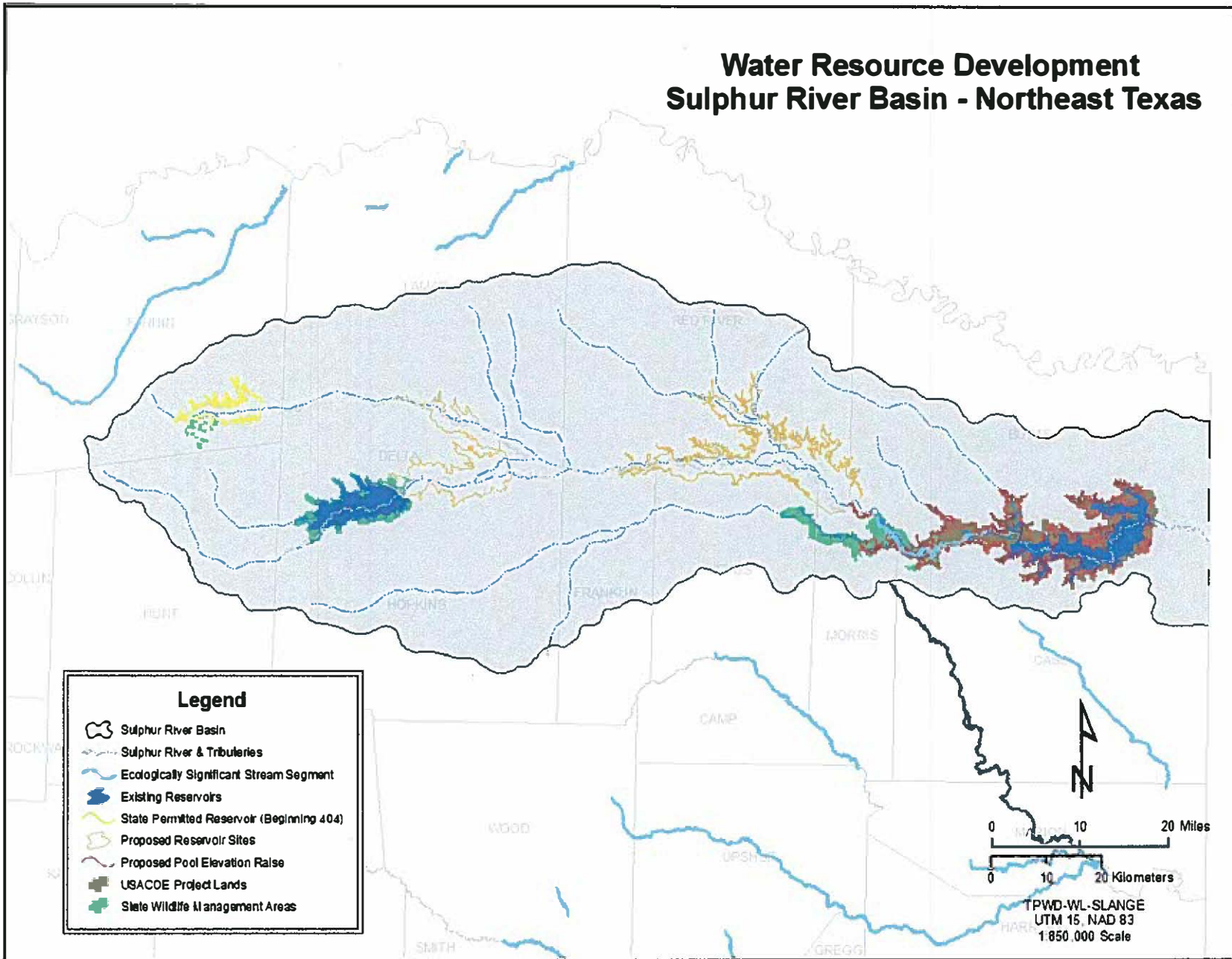
Date: 03/10/2010

These maps were compiled using geographic information systems software. While care has been taken to preserve the quality of the data; transformation, geographic, mathematical, format and structure errors may have been introduced to the data. TPWD makes no representations or warranties regarding the accuracy or the completeness of the information depicted on these maps or its suitability to any particular use. The requestor must be aware of data conditions and ultimately bear responsibility for the appropriate use of the information with respect to possible errors, original map scale, collection methodology, currency of data, and other conditions specific to certain data. Unless noted all maps are UTM Zone 15, NAD 1983, NGVD29.

Question should be directed to:

Stephen D. Lange
stephen.lange@tpwd.state.tx.us
Regional GIS Specialist (TWIMS)
Wildlife Regions III & IV
11942 FM 848
Tyler, TX 75707
Office: 903/566-1626 x208
Cell: 903/279-5145
Fax: 903/566-3273

Water Resource Development Sulphur River Basin - Northeast Texas

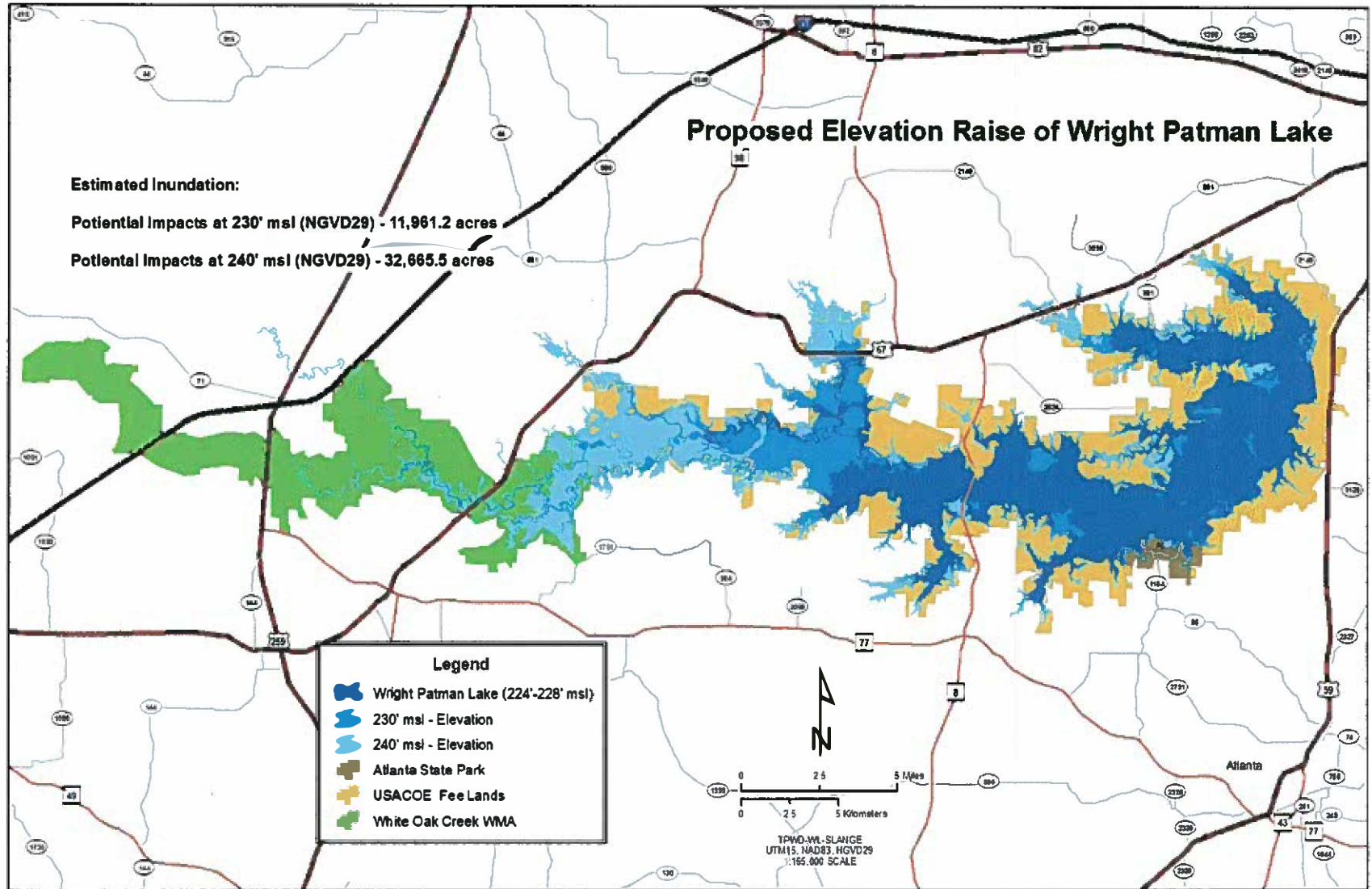


Proposed Elevation Raise of Wright Patman Lake

Estimated Inundation:

Potential Impacts at 230' msl (NGVD29) - 11,961.2 acres

Potential Impacts at 240' msl (NGVD29) - 32,665.5 acres

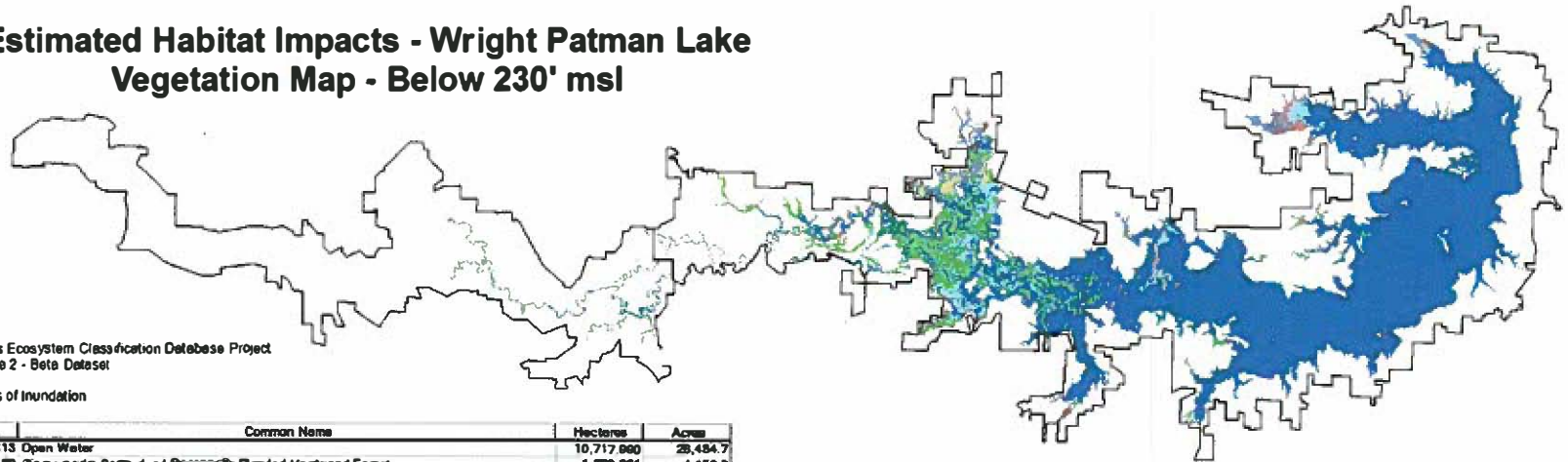


Estimated Habitat Impacts - Wright Patman Lake Vegetation Map - Below 230' msl

Texas Ecosystem Classification Database Project
Phase 2 - Beta Dataset

Acres of Inundation

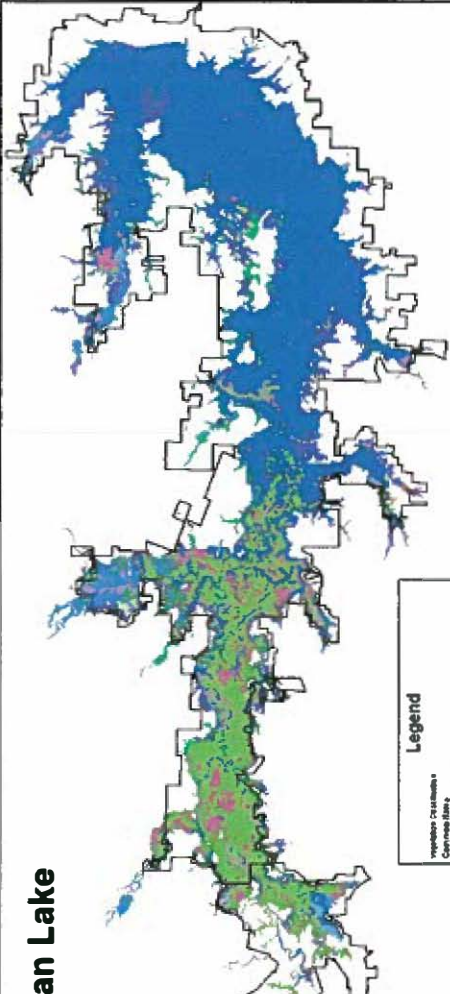
Code	Common Name	Hectares	Acres
113	Open Water	10,717.000	26,484.7
39	Pineywoods: Bottomland Seasonally Flooded Hardwood Forest	1,679.601	4,150.9
81	Pineywoods: Bottomland Baldcypress Swamp	1,020.130	2,520.8
55	Pineywoods: Bottomland Temporarily Flooded Hardwood Forest	448.161	1,102.5
19	Pineywoods: Upland Hardwood Forest	387.440	908.0
66	Pineywoods: Small Stream and Riparian Seasonally Flooded Hardwood Forest	209.470	517.8
64	Pineywoods: Small Stream and Riparian Temporarily Flooded Hardwood Forest	203.979	504.0
4	Post Oak Savanna: Post Oak Matte and Woodland	183.377	453.1
1	Unclassified	166.376	408.7
78	Pineywoods: Hardwood Flatwoods	165.323	408.5
70	Pineywoods: Small Stream and Riparian Baldcypress Swamp	108.382	267.8
17	Pineywoods: Pine Forest or Plantation	81.553	201.5
56	Pineywoods: Bottomland Herbaceous Wetland	57.948	143.2
116	Pine Plantation > 3 meters tall	49.455	122.2
67	Pineywoods: Small Stream and Riparian Herbaceous Wetland	31.685	78.3
76	Pineywoods: Longleaf or Loblolly Pine Flatwoods or Plantation	14.116	34.9
100	Pineywoods: Disturbance or Tame Grassland	11.719	29.0
14	Pineywoods: Northern Mesic Hardwood Forest	11.248	27.8
18	Pineywoods: Pine / Hardwood Forest or Plantation	8.756	21.6
57	Pineywoods: Bottomland Deciduous Successional Shrubland	5.615	13.9
120	Urban Low Intensity	4.228	10.4
5	Post Oak Savanna: Savanna Grassland	2.967	7.4
72	Pineywoods: Herbaceous Flatwoods Pond	2.277	5.6
68	Pineywoods: Small Stream and Riparian Deciduous Successional Shrubland	1.842	4.6
69	Pineywoods: Small Stream and Riparian Wet Prairie	1.457	3.6
101	Native Invasive: Deciduous Woodland	1.450	3.6
54	Pineywoods: Bottomland Temporarily Flooded Mixed Pine / Hardwood Forest	1.272	3.1
9	Post Oak Savanna: Oak / Hardwood Slope Forest	1.088	2.8
104	Native Invasive: Mesquite Shrubland	0.962	2.4
80	Pineywoods: Bottomland Wet Prairie	0.582	1.4
119	Urban High Intensity	0.213	0.5
77	Pineywoods: Longleaf or Loblolly Pine / Hardwood Flatwoods or Plantation	0.202	0.5
13	Pineywoods: Northern Mesic Pine / Hardwood Forest	0.200	0.5
106	Native Invasive: Deciduous Shrubland	0.082	0.2
111	Barren	0.054	0.1
117	Pine Plantation 1 to 3 meters tall	0.041	0.1
20	Pineywoods: Dry Pine Forest or Plantation	0.012	0.0
22	Pineywoods: Dry Upland Hardwood Forest	0.005	0.0



Estimated Habitat Impacts - Wright Patman Lake Vegetation Map - Below 240' msl

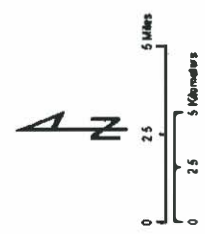
Texas Ecosystem Classification Database Project
Phase 2 - Beta Dataset
Acres of Inundation

Code	Common Name	Hectares	Acres
113	Open Water	11,123.877	27,487.7
59	Phytoplankton: Bottomland Seasonally Flooded Hardwood Forest	4,450.902	10,949.0
61	Phytoplankton: Bottomland Belkyypress Swamp	1,708.615	4,222.1
19	Phytoplankton: Upland Hardwood Forest	1,317.881	3,286.8
85	Phytoplankton: Bottomland Temporarily Flooded Hardwood Forest	955.840	2,381.8
68	Phytoplankton: Small Stream and Riparian Seasonally Flooded Hardwood Forest	847.275	2,093.9
64	Phytoplankton: Small Stream and Riparian Temporarily Flooded Hardwood Forest	742.428	1,834.8
4	Post Oak Savanna: Post Oak Marsh and Woodland	724.680	1,790.2
78	Phytoplankton: Hardwood Forest	648.307	1,620.5
17	Phytoplankton: Pine Forest or Plantation	448.880	1,104.5
1	Unclassified	390.880	971.9
70	Small Stream and Riparian Belkyypress Swamp	183.710	456.0
116	Shrub Forest: 3 meters tall	174.090	430.1
58	Phytoplankton: Bottomland Herbaceous Wetland	158.863	392.6
76	Phytoplankton: Longleaf or Loblolly Pine Forest or Plantation	109.433	270.5
67	Phytoplankton: Small Stream and Riparian Herbaceous Wetland	83.213	206.4
100	Phytoplankton: Disturbance or Tame Grassland	57.228	141.4
4	Phytoplankton: Northern Mesic Hardwood Forest	56.912	140.4
5	Post Oak Savanna: Savanna Grassland	49.495	122.1
69	Phytoplankton: Small Stream and Riparian Wet Prairie	40.028	98.9
114	Rare Grass	37.280	92.1
71	Phytoplankton: Wet Hardwood Forest	38.062	94.1
18	Phytoplankton: Pine / Hardwood Forest or Plantation	34.401	85.0
72	Phytoplankton: Herbaceous Pasture or Field	28.252	70.3
66	Phytoplankton: Small Stream and Riparian Deciduous Seasonal Shrubland	23.756	58.8
57	Phytoplankton: Bottomland Deciduous Seasonal Shrubland	23.088	57.3
60	Phytoplankton: Bottomland Wet Prairie	14.806	36.6
120	Urban Low Intensity	10.982	27.2
110	Swamp	10.437	25.8
77	Phytoplankton: Longleaf or Loblolly Pine / Hardwood Forest or Plantation	9.923	24.5
77	Phytoplankton: Longleaf or Loblolly Pine / Hardwood Forest or Plantation	7.704	19.0
101	Native Invasive: Deciduous Woodland	5.902	14.6
8	Post Oak Savanna: Oak / Hardwood Slope Forest	3.106	7.7
13	Phytoplankton: Northern Mesic Pine / Hardwood Forest	2.881	7.1
65	Blackland Prairie: Disturbance or Tame Grassland	2.807	6.9
104	Native Invasive: Mesquite Shrubland	2.457	6.1
75	Phytoplankton: Herbaceous Sedge Bog	2.181	5.4
64	Phytoplankton: Bottomland Temporarily Flooded Mixed Pine / Hardwood Forest	2.026	5.0
117	Pine Plantation 1 to 3 meters tall	1.026	2.5
65	Phytoplankton: Small Stream and Riparian Temporarily Flooded Mixed Pine / Hardwood Forest	1.020	2.5
111	Barren	0.534	1.3
22	Phytoplankton: Dry Upland Hardwood Forest	0.243	0.6
20	Phytoplankton: Dry Pine Forest or Plantation	0.198	0.4
21	Phytoplankton: Dry Pine / Hardwood Forest or Plantation	0.115	0.3



Public Land Boundary

Estimated Inundation
240' msl (NGVD29) - 32,665.5 acres



Legend

Vegetation Database	113 Open Water
Common Name	59 Phytoplankton: Bottomland Seasonally Flooded Hardwood Forest
	61 Phytoplankton: Bottomland Belkyypress Swamp
	19 Phytoplankton: Upland Hardwood Forest
	85 Phytoplankton: Bottomland Temporarily Flooded Hardwood Forest
	68 Phytoplankton: Small Stream and Riparian Seasonally Flooded Hardwood Forest
	64 Phytoplankton: Small Stream and Riparian Temporarily Flooded Hardwood Forest
	4 Post Oak Savanna: Post Oak Marsh and Woodland
	78 Phytoplankton: Hardwood Forest
	17 Phytoplankton: Pine Forest or Plantation
	1 Unclassified
	70 Small Stream and Riparian Belkyypress Swamp
	116 Shrub Forest: 3 meters tall
	58 Phytoplankton: Bottomland Herbaceous Wetland
	76 Phytoplankton: Longleaf or Loblolly Pine Forest or Plantation
	67 Phytoplankton: Small Stream and Riparian Herbaceous Wetland
	100 Phytoplankton: Disturbance or Tame Grassland
	4 Phytoplankton: Northern Mesic Hardwood Forest
	5 Post Oak Savanna: Savanna Grassland
	69 Phytoplankton: Small Stream and Riparian Wet Prairie
	114 Rare Grass
	71 Phytoplankton: Wet Hardwood Forest
	18 Phytoplankton: Pine / Hardwood Forest or Plantation
	72 Phytoplankton: Herbaceous Pasture or Field
	66 Phytoplankton: Small Stream and Riparian Deciduous Seasonal Shrubland
	57 Phytoplankton: Bottomland Deciduous Seasonal Shrubland
	60 Phytoplankton: Bottomland Wet Prairie
	120 Urban Low Intensity
	110 Swamp
	77 Phytoplankton: Longleaf or Loblolly Pine / Hardwood Forest or Plantation
	77 Phytoplankton: Longleaf or Loblolly Pine / Hardwood Forest or Plantation
	101 Native Invasive: Deciduous Woodland
	8 Post Oak Savanna: Oak / Hardwood Slope Forest
	13 Phytoplankton: Northern Mesic Pine / Hardwood Forest
	65 Blackland Prairie: Disturbance or Tame Grassland
	104 Native Invasive: Mesquite Shrubland
	75 Phytoplankton: Herbaceous Sedge Bog
	64 Phytoplankton: Bottomland Temporarily Flooded Mixed Pine / Hardwood Forest
	117 Pine Plantation 1 to 3 meters tall
	65 Phytoplankton: Small Stream and Riparian Temporarily Flooded Mixed Pine / Hardwood Forest
	111 Barren
	22 Phytoplankton: Dry Upland Hardwood Forest
	20 Phytoplankton: Dry Pine Forest or Plantation
	21 Phytoplankton: Dry Pine / Hardwood Forest or Plantation

TPWD, W. & ANCE
UTM 18S 08E
SCALE
TECDDP-Phase 2 Beta

White Oak Creek WMA - Vegetation Map

Estimated Habitat Impacts - Below 230' msl

Texas Ecosystem Classification Database Project
Phase 2 - Beta Dataset

Estimated Inundation

230' msl (NGVD29) - 521.0 acres

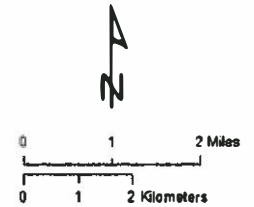
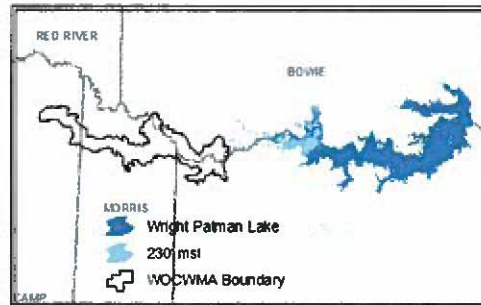
Code	Vegetation Class - Common Name	Hectares	Acres
59	Pinewoods: Bottomland Seasonally Flooded Hardwood Forest	79.6	196.7
55	Pinewoods: Bottomland Temporarily Flooded Hardwood Forest	59.6	147.2
61	Pinewoods: Bottomland Baldcypress Swamp	29.8	73.7
113	Open Water	25.2	62.3
1	Unclassified	14.3	35.3
9	Post Oak Savanna: Oak / Hardwood Slope Forest	1.1	2.6
14	Pinewoods: Northern Mesic Hardwood Forest	0.9	2.3
58	Pinewoods: Bottomland Herbaceous Wetland	0.1	0.2
19	Pinewoods: Upland Hardwood Forest	0.1	0.2
60	Pinewoods: Bottomland Wet Prairie	0.1	0.2
116	Pine Plantation > 3 meters tall	0.1	0.1
4	Post Oak Savanna: Post Oak Mottle and Woodland	0.0	0.1

Legend

Vegetation Classification

Common Name

- Unclassified
- Post Oak Savanna: Post Oak Mottle and Woodland
- Post Oak Savanna: Oak / Hardwood Slope Forest
- Pinewoods: Upland Hardwood Forest
- Pinewoods: Northern Mesic Hardwood Forest
- Pinewoods: Bottomland Wet Prairie
- Pinewoods: Bottomland Temporarily Flooded Hardwood Forest
- Pinewoods: Bottomland Seasonally Flooded Hardwood Forest
- Pinewoods: Bottomland Herbaceous Wetland
- Pinewoods: Bottomland Baldcypress Swamp
- Pine Plantation > 3 meters tall
- Open Water



WUTLYER-SLANGER
UTM 15, NAD83, NGVD29
1:75,000 SCALE
TECCP-Phase 2, Beta

White Oak Creek WMA - Vegetation Map Estimated Habitat Impacts - Below 240' msl

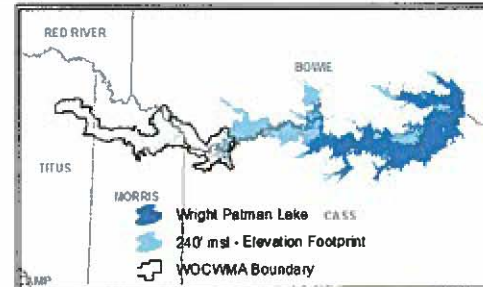
Estimated Inundation

240' msl (NGVD29) - 3,596.2 acres

Texas Ecosystem Classification Database Project
Phase 2 - Beta Dataset

Acres of Inundation

Code	Vegetation Class - Common Name	Hectares	Acres
59	Pinewoods: Bottomland Seasonally Flooded Hardwood Forest	833.579	2066.8
55	Pinewoods: Bottomland Temporarily Flooded Hardwood Forest	219.811	543.2
61	Pinewoods: Bottomland Baldcypress Swamp	196.869	488.7
113	Open Water	120.242	297.1
58	Pinewoods: Bottomland Herbaceous Wetland	90.855	224.0
1	Unclassified	50.523	124.8
64	Pinewoods: Small Stream and Riparian Temporarily Flooded Hard	14.093	34.8
68	Pinewoods: Small Stream and Riparian Seasonally Flooded Hard	13.516	33.4
110	Swamp	8.685	18.8
19	Pinewoods: Upland Hardwood Forest	8.320	15.8
14	Pinewoods: Northern Mesic Hardwood Forest	5.222	12.9
116	Pine Plantation > 3 meters tall	2.853	7.1
70	Pinewoods: Small Stream and Riparian Baldcypress Swamp	2.705	6.7
60	Pinewoods: Bottomland Wet Prairie	2.474	6.1
73	Pinewoods: Herbaceous Seepage Bog	2.457	6.1
4	Post Oak Savanna: Post Oak Mottle and Woodland	2.372	5.9
17	Pinewoods: Pine Forest or Plantation	1.872	4.6
9	Post Oak Savanna: Oak / Hardwood Slope Forest	1.852	4.6
57	Pinewoods: Bottomland Deciduous Successional Shrubland	0.641	1.6
117	Pine Plantation 1 to 3 meters tall	0.383	0.9
18	Pinewoods: Pine / Hardwood Forest or Plantation	0.289	0.7
13	Pinewoods: Northern Mesic Pine / Hardwood Forest	0.181	0.4
21	Pinewoods: Dry Pine / Hardwood Forest or Plantation	0.005	0.0
100	Pinewoods: Disturbance or Tame Grassland	0.001	0.0



Legend

Vegetation Classification Common Name

Unclassified	Pinewoods: Small Stream and Riparian Baldcypress Swamp	Pinewoods: Bottomland Temporarily Flooded Hardwood Forest
Swamp	Pinewoods: Pine Forest or Plantation	Pinewoods: Bottomland Seasonally Flooded Hardwood Forest
Post Oak Savanna: Post Oak Mottle and Woodland	Pinewoods: Pine / Hardwood Forest or Plantation	Pinewoods: Bottomland Herbaceous Wetland
Post Oak Savanna: Oak / Hardwood Slope Forest	Pinewoods: Northern Mesic Pine / Hardwood Forest	Pinewoods: Bottomland Deciduous Successional Shrubland
Pinewoods: Upland Hardwood Forest	Pinewoods: Northern Mesic Hardwood Forest	Pinewoods: Bottomland Baldcypress Swamp
Pinewoods: Small Stream and Riparian Temporarily Flooded Hardwood Forest	Pinewoods: Herbaceous Seepage Bog	Pine Plantation > 3 meters tall
Pinewoods: Small Stream and Riparian Seasonally Flooded Hardwood Forest	Pinewoods: Dry Pine / Hardwood Forest or Plantation	Pine Plantation 1 to 3 meters tall
	Pinewoods: Disturbance or Tame Grassland	Open Water
	Pinewoods: Bottomland Wet Prairie	



W.L. TYLER, SLAINGE
UTM15, NAD83, NGVD29
1:75,000 SCALE
TECDP Phase 2, Beta

Lake Wright Patman USACOE Lands - Vegetation Map

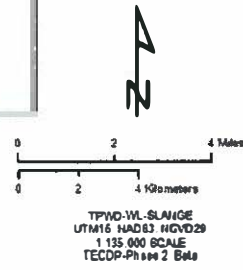
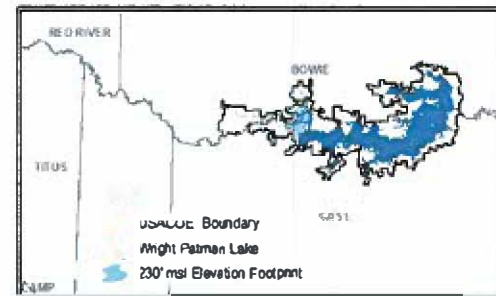
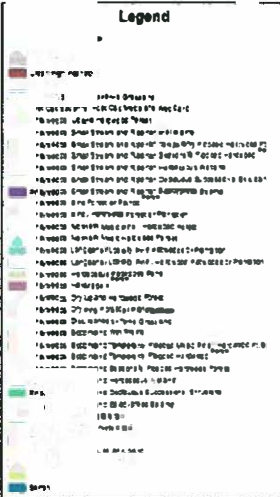
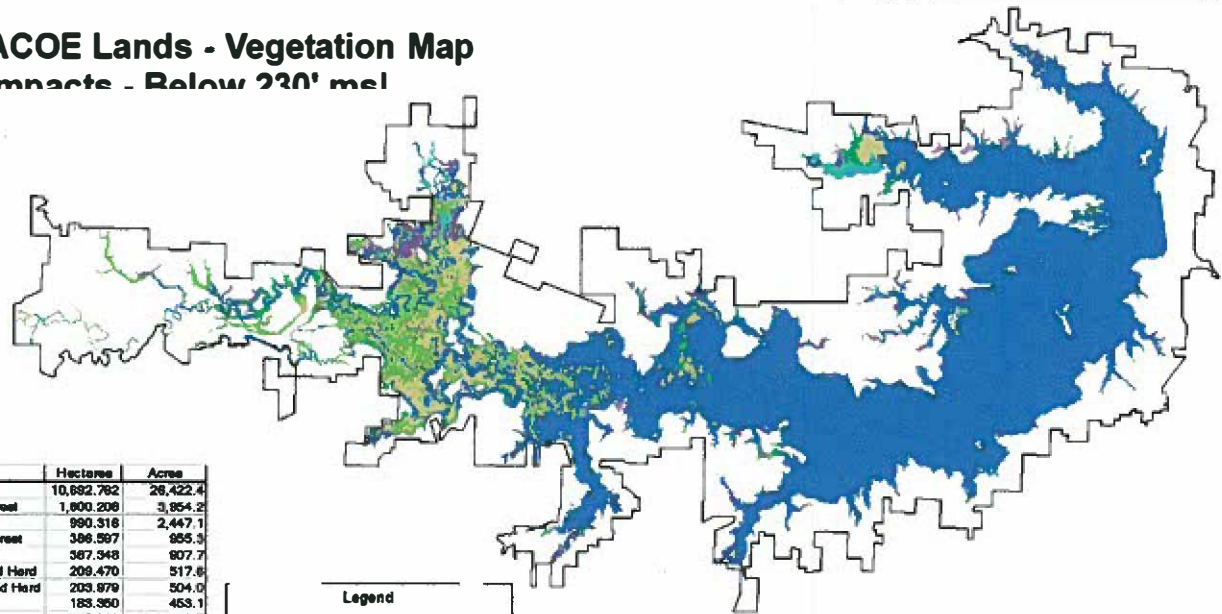
Estimated Habitat Impacts - Below 230' msl

Estimated Inundation
230' msl (NGVD29) - 11,502.5 acres

Texas Ecosystem Classification Database Project
Phase 2 - Beta Dataset

Acres of Inundation

Code	Common Name	Hectare	Acres
113	Open Water	10,692.762	26,422.4
58	Pineywoods: Bottomland Seasonally Flooded Hardwood Forest	1,600.209	3,954.2
61	Pineywoods: Bottomland Baldcypress Swamp	366.318	2,447.1
55	Pineywoods: Bottomland Temporarily Flooded Hardwood Forest	366.997	905.3
19	Pineywoods: Upland Hardwood Forest	367.348	907.7
66	Pineywoods: Small Stream and Riparian Seasonally Flooded Hard	209.470	517.6
64	Pineywoods: Small Stream and Riparian Temporarily Flooded Hard	203.679	504.0
4	Post Oak Savanna: Post Oak Matte and Woodland	183.350	453.1
76	Pineywoods: Hardwood Flatwoods	165.323	408.6
1	Unclassified	151.078	373.3
70	Pineywoods: Small Stream and Riparian Baldcypress Swamp	106.362	267.8
17	Pineywoods: Pine Forest or Plantation	81.353	201.6
58	Pineywoods: Bottomland Herbaceous Wetland	57.656	143.0
116	Pine Plantation > 3 meters tall	49.404	122.1
67	Pineywoods: Small Stream and Riparian Herbaceous Wetland	31.695	78.3
76	Pineywoods: Longleaf or Loblolly Pine Flatwoods or Plantation	14.118	34.9
100	Pineywoods: Disturbance or Tame Grassland	11.719	29.0
14	Pineywoods: Northern Mesic Hardwood Forest	10.308	25.6
18	Pineywoods: Pine / Hardwood Forest or Plantation	8.756	21.6
57	Pineywoods: Bottomland Deciduous Successional Shrubland	5.615	13.9
120	Urban Low Intensity	4.228	10.4
5	Post Oak Savanna: Savanna Grassland	2.967	7.4
72	Pineywoods: Herbaceous Flatwoods Pond	2.277	5.6
66	Pineywoods: Small Stream and Riparian Deciduous Successional	1.842	4.6
69	Pineywoods: Small Stream and Riparian Wet Prairie	1.457	3.6
101	Native Invasive: Deciduous Woodland	1.450	3.6
54	Pineywoods: Bottomland Temporarily Flooded Mixed Pine / Hardw	1.272	3.1
104	Native Invasive: Mesquite Shrubland	0.992	2.5
60	Pineywoods: Bottomland Wet Prairie	0.489	1.2
119	Urban High Intensity	0.213	0.5
77	Pineywoods: Longleaf or Loblolly Pine / Hardwood Flatwoods or Pl	0.202	0.5
13	Pineywoods: Northern Mesic Pine / Hardwood Forest	0.200	0.5
108	Native Invasive: Deciduous Shrubland	0.082	0.2
111	Barren	0.054	0.1
117	Pine Plantation 1 to 3 meters tall	0.041	0.1
20	Pineywoods: Dry Pine Forest or Plantation	0.012	0.0
22	Pineywoods: Dry Upland Hardwood Forest	0.009	0.0



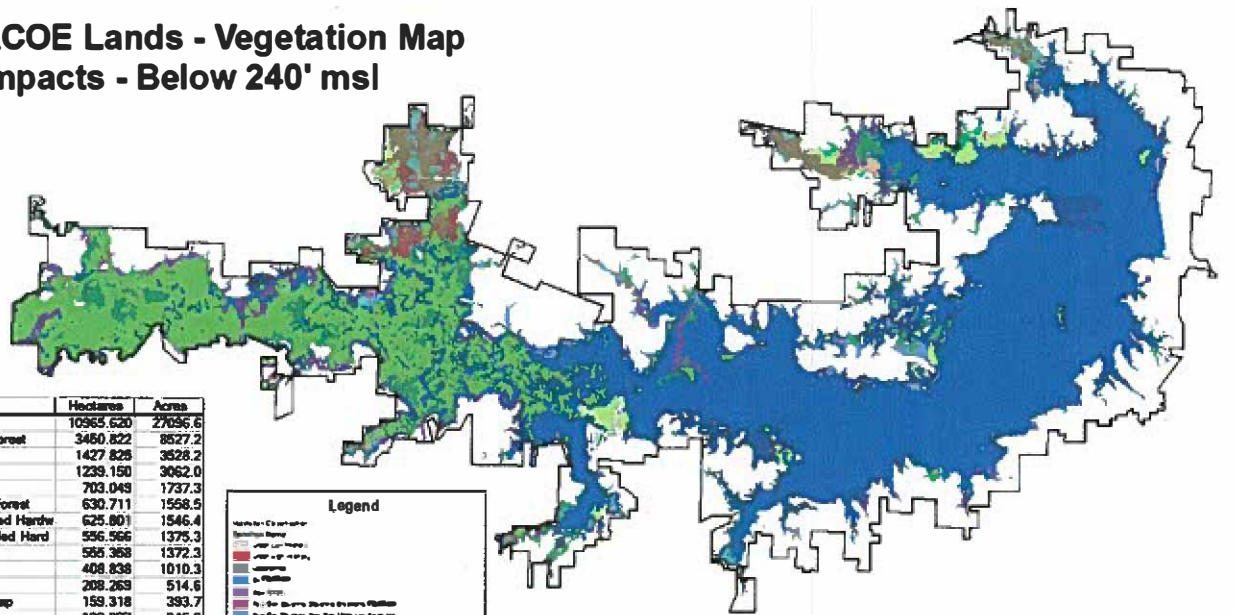
Lake Wright Patman USACOE Lands - Vegetation Map

Estimated Habitat Impacts - Below 240' msl

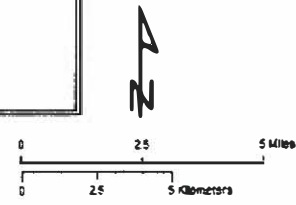
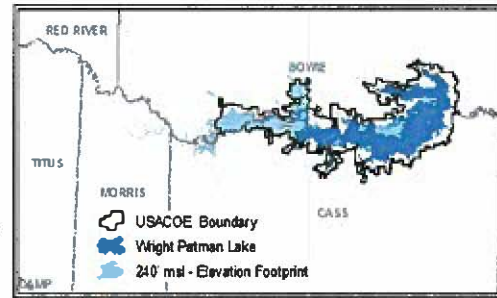
Estimated Inundation

240' msl (NGVD29) - 26,209.2 acres

Texas Ecosystem Classification Database Project
Phase 2 - Beta Dataset
Acres of Inundation



Code	Vegetation Class - Common Name	Hectares	Acres
113	Open Water	10563.620	27656.6
59	Pinewoods: Bottomland Seasonally Flooded Hardwood Forest	3450.822	8527.2
61	Pinewoods: Bottomland Baldcypress Swamp	1427.828	3528.2
19	Pinewoods: Upland Hardwood Forest	1239.150	3062.0
4	Post Oak Savanna: Post Oak Motts and Woodland	703.049	1737.3
55	Pinewoods: Bottomland Temporarily Flooded Hardwood Forest	630.711	1568.5
68	Pinewoods: Small Stream and Riparian Seasonally Flooded Hardw	625.801	1546.4
64	Pinewoods: Small Stream and Riparian Temporarily Flooded Hard	556.566	1375.3
78	Pinewoods: Hardwood Flatwoods	556.368	1372.3
17	Pinewoods: Pine Forest or Plantation	408.838	1010.3
1	Unclassified	208.269	514.6
70	Pinewoods: Small Stream and Riparian Baldcypress Swamp	153.318	383.7
116	Pine Plantation > 3 meters tall	139.927	345.8
76	Pinewoods: Longleaf or Loblolly Pine Flatwoods or Plantation	94.146	232.6
58	Pinewoods: Bottomland Herbaceous Wetland	64.767	160.0
67	Pinewoods: Small Stream and Riparian Herbaceous Wetland	61.114	151.0
14	Pinewoods: Northern Mesic Hardwood Forest	43.404	107.3
100	Pinewoods: Disturbance or Tame Grassland	35.576	87.9
18	Pinewoods: Pine / Hardwood Forest or Plantation	32.688	80.8
71	Pinewoods: Wet Hardwood Flatwoods	31.636	78.2
72	Pinewoods: Herbaceous Flatwoods Pond	29.120	72.0
108	Native Invasive: Deciduous Shrubland	16.116	39.8
57	Pinewoods: Bottomland Deciduous Successional Shrubland	14.236	35.2
114	Row Crops	10.677	26.4
120	Urban Low Intensity	9.966	24.6
66	Pinewoods: Small Stream and Riparian Deciduous Successional S	9.675	23.9
5	Post Oak Savanna: Savanna Grassland	9.326	23.0
77	Pinewoods: Longleaf or Loblolly Pine / Hardwood Flatwoods or PI	8.877	21.9
101	Native Invasive: Deciduous Woodland	7.600	18.8
69	Pinewoods: Small Stream and Riparian Wet Prairie	7.328	18.1
60	Pinewoods: Bottomland Wet Prairie	4.796	11.8
104	Native Invasive: Mesquite Shrubland	2.393	5.9
54	Pinewoods: Bottomland Temporarily Flooded Mixed Pine / Hardwo	1.787	4.4
13	Pinewoods: Northern Mesic Pine / Hardwood Forest	1.520	3.8
117	Pine Plantation 1 to 3 meters tall	1.339	3.3
119	Urban High Intensity	1.026	2.5
110	Swamp	0.687	1.7
111	Barren	0.534	1.3
22	Pinewoods: Dry Upland Hardwood Forest	0.230	0.6
63	Pinewoods: Small Stream and Riparian Temporarily Flooded Mixed	0.207	0.5
20	Pinewoods: Dry Pine Forest or Plantation	0.138	0.3



TPWD\JL-SLANGZ
UTM 15, NAD 83, NGVD 29
1:155,000 SCALE
TE COP Phase 2 Beta

Lake Wright Patman Adjacent Private Lands - Vegetation Map

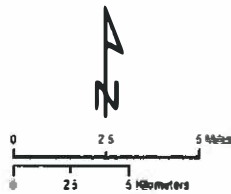
Estimated Habitat Impacts - Below 240' msl

Estimated Inundation
 240' msl (NGVD29) - 2863.9 acres

Texas Ecosystem Classification Database Project
 Phase 2 - Beta Dataset
 Acres of Inundation

Impacts Adjacent to White Oak Creek WMA - 163.3 acres

Code	Common Name	Hectares	Acres
55	Pineywoods: Bottomland Temporarily Flooded Hardwood Forest	29.083	82.0
59	Pineywoods: Bottomland Seasonally Flooded Hardwood Forest	11.103	27.4
91	Pineywoods: Groundland Baldcypress Swamp	8.168	22.7
1	Unclassified	4.947	12.2
19	Pineywoods: Upland Hardwood Forest	2.711	6.7
113	Open Water	2.553	6.3
64	Pineywoods: Small Stream and Riparian Temporarily Flooded Hard	2.510	6.2
9	Post Oak Savanna: Oak / Hardwood Slope Forest	2.049	5.1
89	Pineywoods: Small Stream and Riparian Wet Prairie	1.818	4.5
67	Pineywoods: Small Stream and Riparian Herbaceous Wetland	1.842	4.1
100	Pineywoods: Disturbance or Tame Grassland	1.512	3.7
4	Post Oak Savanna: Post Oak Mottle and Woodland	0.589	1.5
114	Row Crops	0.581	1.4
80	Pineywoods: Bottomland Wet Prairie	0.524	1.3
110	Swamp	0.352	0.9
120	Urban Low Intensity	0.129	0.3



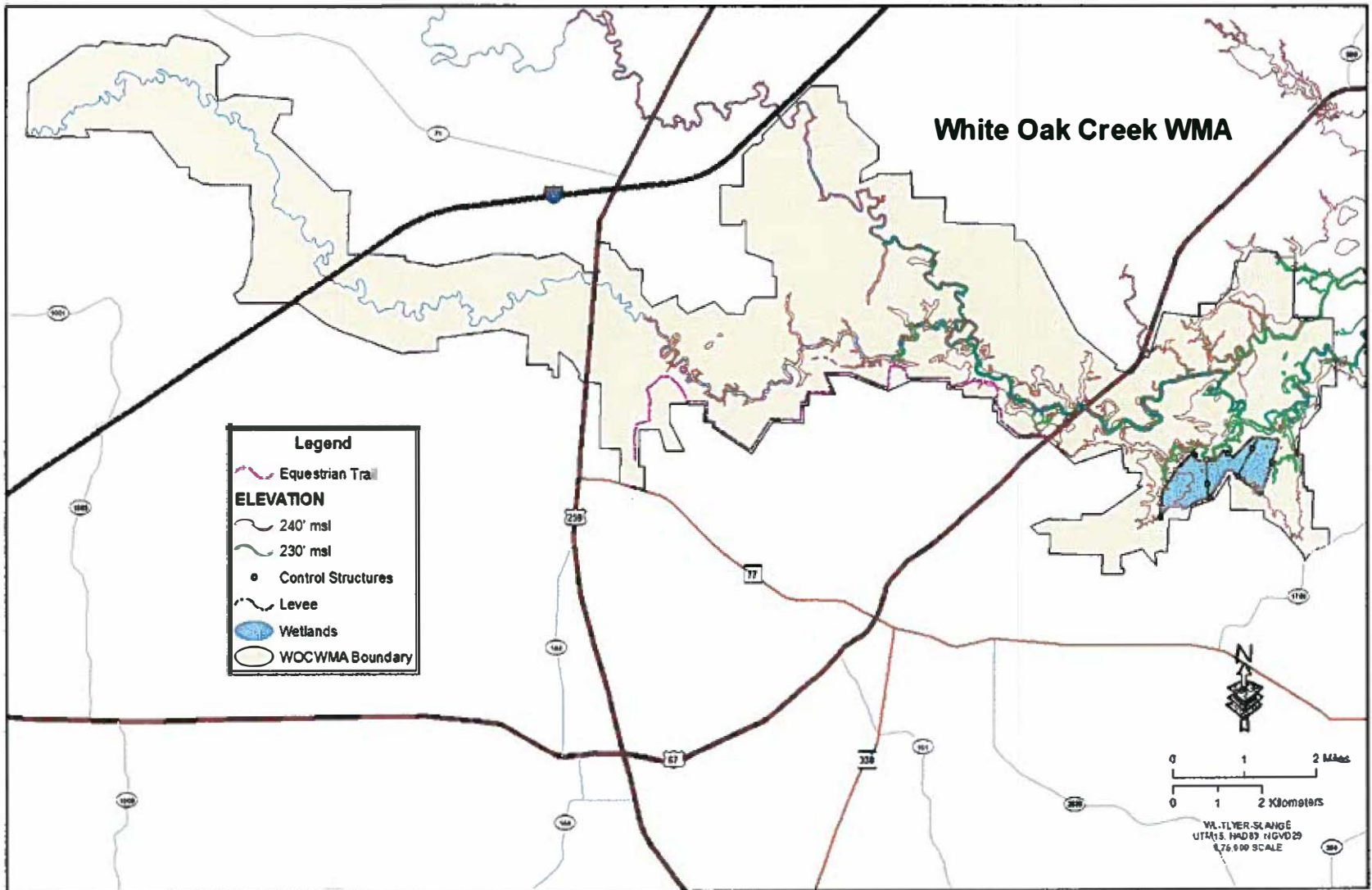
TPND-WL_STAGE
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 TECOP-Phase 2 Beta

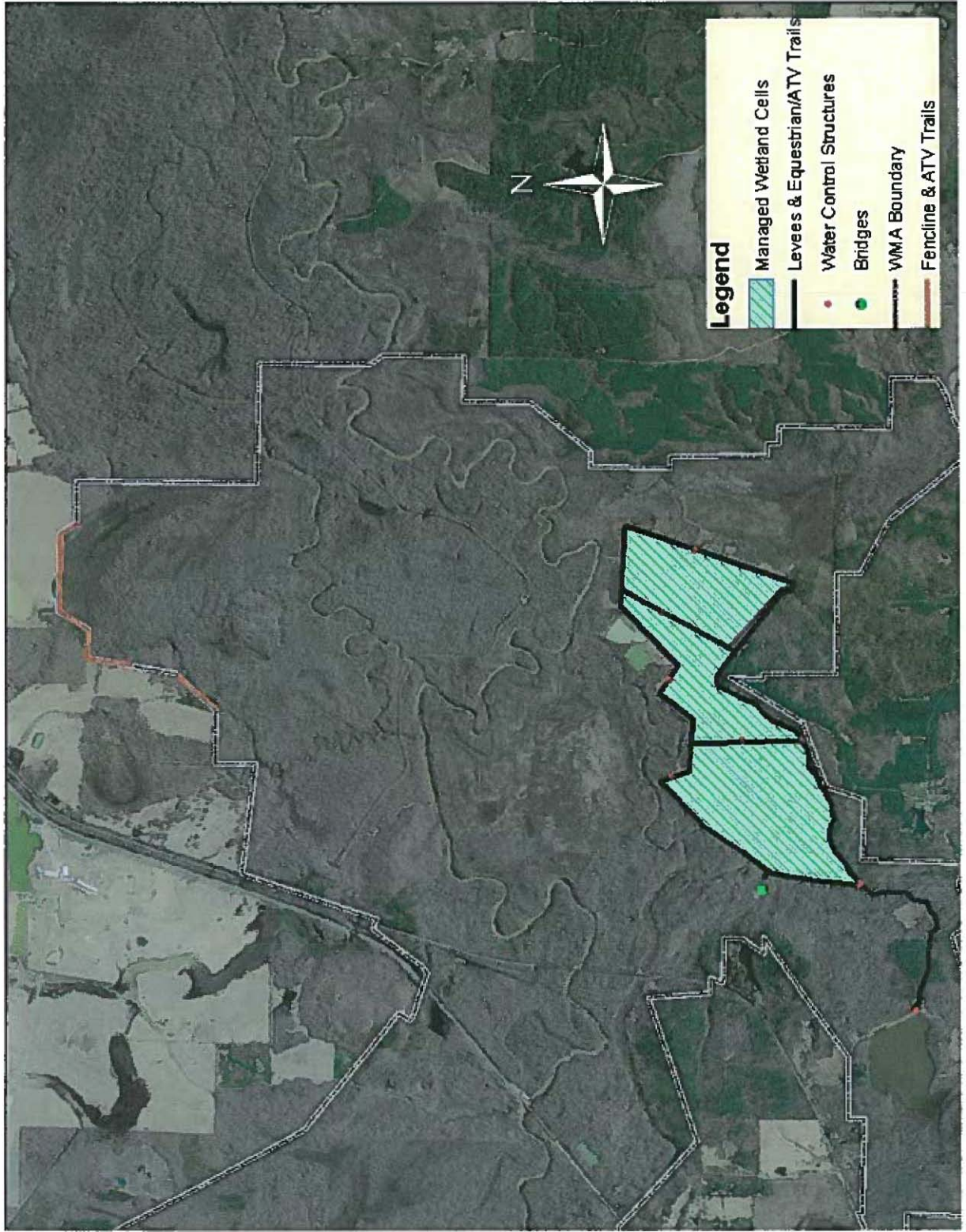
- Wright Patman Lake (228' msl)
- Proposed Elevation Raise (240' msl)
- Public Land Boundary

Impacts Adjacent to Wright Patman USACOE Lands - 2700.3 acres

Code	Vegetation Classification - Common Name	Hectares	Acres
18	Pineywoods: Upland Hardwood Forest	69.701	172.2
78	Pineywoods: Hardwood Flatwoods	40.848	100.9
17	Pineywoods: Pine Forest or Plantation	36.268	89.6
113	Open Water	35.482	87.6
116	Pine Plantation > 3 meters tall	31.280	77.3
5	Post Oak Savanna: Savanna Grassland	31.169	77.0
89	Pineywoods: Small Stream and Riparian Wet Prairie	30.881	76.3
1	Unclassified	29.842	73.8
114	Row Crops	29.047	72.4
70	Pineywoods: Small Stream and Riparian Baldcypress Swamp	23.686	58.8
100	Pineywoods: Disturbance or Tame Grassland	20.137	49.8
4	Post Oak Savanna: Post Oak Mottle and Woodland	19.680	48.7
78	Pineywoods: Longleaf or Loblolly Pine Flatwoods or Plantation	15.267	37.6
98	Pineywoods: Small Stream and Riparian Deciduous Successional	13.910	34.4
108	Native Invasive: Deciduous Shrubland	10.640	26.3
14	Pineywoods: Northern Mesic Hardwood Forest	8.185	20.2
67	Pineywoods: Small Stream and Riparian Herbaceous Wetland	5.454	13.5
71	Pineywoods: Wet Hardwood Flatwoods	4.417	10.9
60	Pineywoods: Bottomland Wet Prairie	3.238	8.0
86	Shrubland Prairie: Disturbance or Tame Grassland	2.689	6.6
18	Pineywoods: Pine / Hardwood Forest or Plantation	1.444	3.6
58	Pineywoods: Bottomland Herbaceous Wetland	1.442	3.6
13	Pineywoods: Northern Mesic Pine / Hardwood Forest	1.407	3.5
77	Pineywoods: Longleaf or Loblolly Pine / Hardwood Flatwoods or PI	1.046	2.6
63	Pineywoods: Small Stream and Riparian Temporarily Flooded Mize	0.813	2.0
104	Native Invasive: Mesquite Shrubland	0.407	1.0
54	Pineywoods: Bottomland Temporarily Flooded Mixed Pine / Hardw	0.385	1.0
120	Urban Low Intensity	0.346	0.9
117	Pine Plantation 1 to 3 meters tall	0.304	0.8
72	Pineywoods: Herbaceous Flatwoods Pond	0.182	0.5
21	Pineywoods: Dry Pine / Hardwood Forest or Plantation	0.110	0.3
101	Native Invasive: Deciduous Woodland	0.080	0.2
57	Pineywoods: Bottomland Deciduous Successional Shrubland	0.029	0.1
22	Pineywoods: Dry Upland Hardwood Forest	0.015	0.0

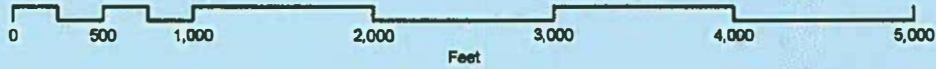






Atlanta State Park

Approximate Position of 240' MSL Elevation throughout Park



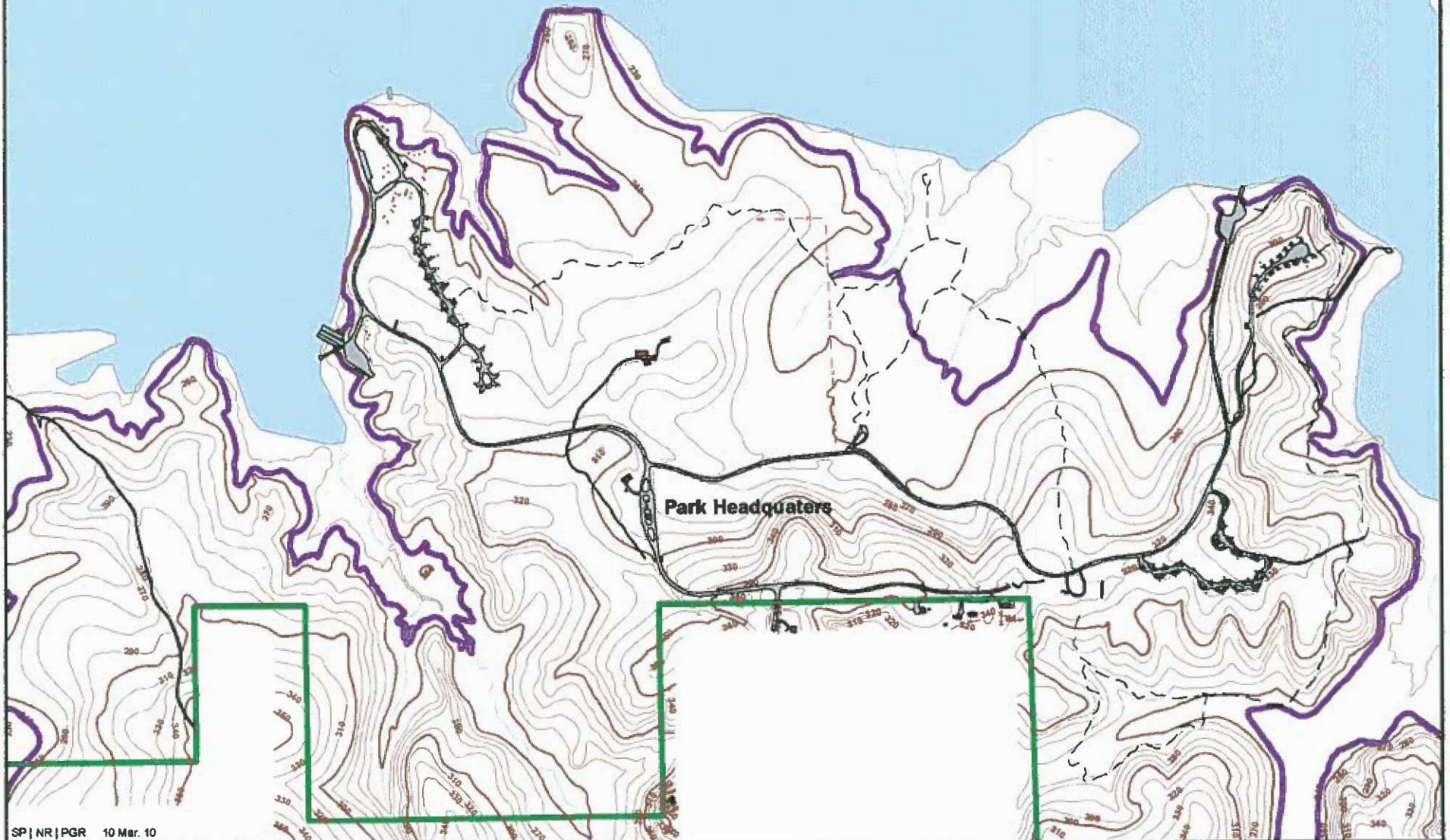
- Elevation 240
- Park Boundary
- Trails
- Park Roads

Contours

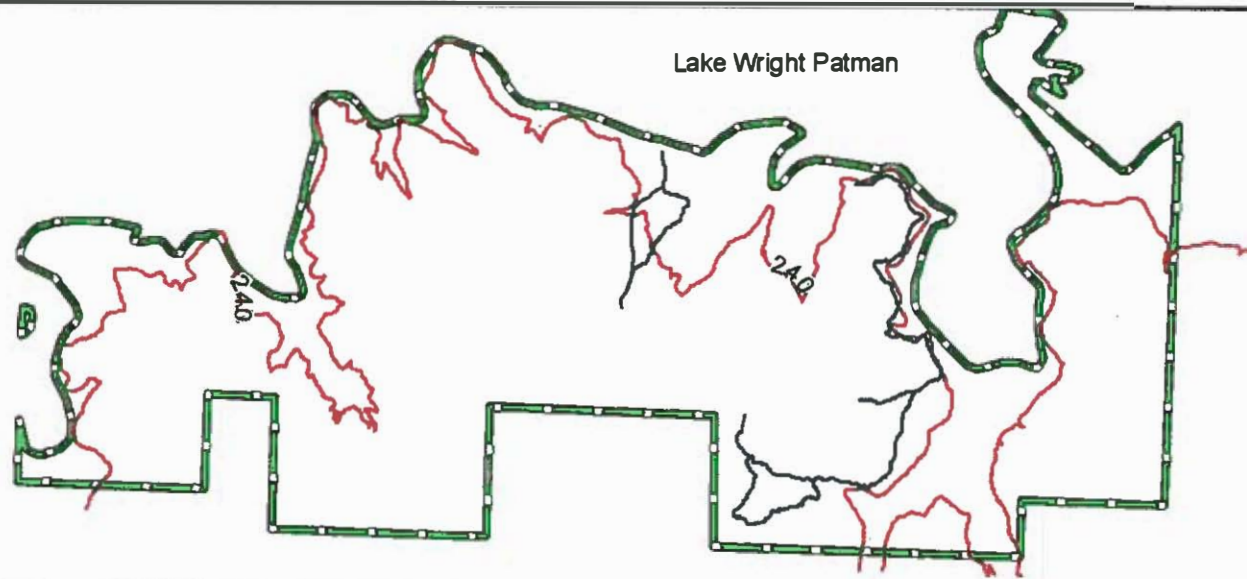
- Index @ 50'
- Intermediate @ 10'



Wright Patman Lake
Elev. 235'

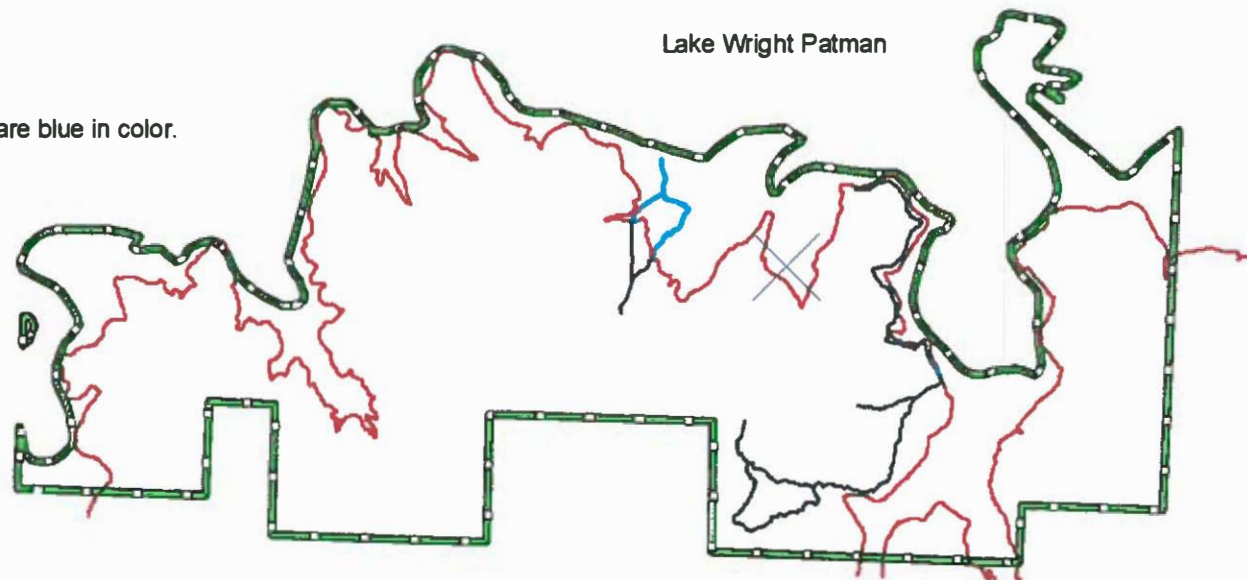


Frame 1

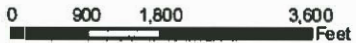


Frame 2

In frame 2, trails below 240' are blue in color.



Atlanta State Park
Footage of Trail below 240'



Map Date: 3/10/2010

Legend

- Atlanta SP Trails
- 240' Elevation
-  Park Boundary

To find the footage of trail below 240', I simply split the trail lines at the elevation marker. I then merged all the line segments together and found the footage of the combination.



Linear feet of all trails in Park today: 14,872
Linear feet of trails below 240': 2,421

