Salt Valley Lakes Development Plan- An overview of the State Recreation Areas and Wildlife Management Areas

2013

NEBRASKA GAME PARKS

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Purpose and Need of Plan

The purpose and need of this plan is that the license agreement between the Nebraska Game and Parks Commission (NGPC) and the United States Army Corp of Engineers (USACE) was set to expire on May 31, 2013. USACE has a requirement when license agreements expire and they are being renewed for the future, a Development Plan of the area must also be updated and approved by USACE staff. NGPC requested an extension to the license in the term of one year to update the Development Plans of the areas and negotiate the terms of the agreement with USACE. The current license agreement provides management oversight to NGPC of the Salt Valley Lakes. The Development Plan is intended to provide a history and overview of the Salt Valley Lakes while providing a vision for future park and wildlife area management and development.

The plan will include land use plan maps and land use category descriptions. The goal of the land use development plan is to provide a general pattern for the location, distribution and character of the future land uses within the Salt Valley Lakes. The plan provides a snapshot of the current inventory, investment and management of the areas and is a vision of the future of the Salt Valley Lakes. However, managers should remain flexible to change development patterns when warranted due to public preferences, park safety, ecological preservation and the geographic realities of the areas.

History of Salt Valley Lakes

There are 11 creeks that converge with Salt Creek in the vicinity of Lincoln, NE, draining over 1,000 square miles of land. With so much land draining into Salt Creek, flooding is frequent and has caused significant damage and historically loss of lives. On May 8, 1950, fourteen inches of rain fell in the Lincoln area causing widespread flooding in Lincoln, Sprague, Roca and surrounding areas. Eight people died as a result of this flooding as Salt Creek registered the fourth highest flood crest on record. In June of 1951, Salt Creek again reached a slightly higher flood crest compared to the 1950 flood.

On July 3, 1958, the United States Congress authorized the project of flood control on Salt Creek and tributaries. The Salt-Wahoo Watershed District was organized in 1960 to provide flood control, water conservation and erosion control in the Salt Creek watershed. The District's name was changed to the Salt Valley Watershed District in 1966 because the District had no responsibility over the Wahoo Creek watershed. The District acted as the local sponsor to coordinate activities of local governments and to work with the USACE and USDA Soil Conservation Service on the Salt Valley Project. This included other developments sponsored by local governments including land treatment (terraces, waterways, contour farming…etc.) in the watershed, construction of farm ponds and gully control structures, and small flood detention dams.

The main part of the project included the deepening and widening of Salt Creek through Lincoln and construction of ten large dams on Salt Creek and its' tributaries, with USACE assuming responsibility for their construction. The total cost of these projects was $11.7 million. These projects included:

- Holmes Lake, finished in 1962 and managed by the City of Lincoln
- Bluestem and Wagon Train, completed in the fall of 1962 and managed by NGPC

- Olive Creek and Stagecoach, completed in 1963 and managed by NGPC
- Conestoga and Pawnee, finished in 1964 and managed by NGPC
- Yankee Hill and Twin Lakes, completed in 1965 and managed by NGPC
- Branched Oak, completed in 1967 and managed by NGPC

On June 1, 1963, the USACE entered into a license agreement with NGPC until May 31, 2013 to use and occupy the land and water areas (see Overview of Areas below) for public park and recreation and fish and wildlife conservation and management purposes (License No. DA-25-066-CIVENG-63-1158). When the lakes were completed, they were designated as State Recreation Areas (SRA). However, Yankee Hill, Twin Lakes and portions of Branched Oak were re-designated as Wildlife Management Areas (WMA) in following years. In 1980, the Parks and Wildlife Divisions entered into an agreement to allow Wildlife Division to manage portions of Bluestem, Conestoga, Pawnee, Olive Creek, Stagecoach and Wagon Train as WMA's with WMA regulations applying to these managed tracts.

Overview of Areas

The Salt Valley Lakes originally were designated as SRAs once the license agreement was in place between USACE and NGPC. NGPC manages State Parks, SRAs, State Historical Parks, Fish Hatcheries and WMAs. It was determined that some of the land that was originally designated as a SRA would be better managed as WMAs. Yankee Hill, Twin Lakes and a portion of Branched Oak were designated as WMAs. In 1980, the Parks and Wildlife Divisions of NGPC entered into an agreement to allow Wildlife Division to manage portions of Bluestem, Conestoga, Pawnee, Olive Creek, Stagecoach, and Wagon Train. Figures 1 through 9 provides an overview of each of the lakes. Some of the property of each of the lake is owned by USACE and NGPC is licensed to manage the property and the remaining property is land that has been acquired by deed by NGPC to enhance the USACE area. Appendix A provides for a list of hunting and trapping species at the Salt Valley Lakes. Appendix B provides a list of common species that could potentially be found at the Salt Valley Lakes as well as a list on threatened and endangered (T&E) species within Lancaster County. It should be noted that the T&E may not be present at the Lake areas.

Bluestem Lake (Site #4) is located two and a half miles west of Sprague, Nebraska. It has 485 acres of land and 257 acres of water. It is located on Olive Branch. See Figure 1 for a map of the area. The fishery is comprised of largemouth bass, bluegill, black and white crappie, channel catfish, flathead catfish, and common carp. In 2012, it was estimated that 3,303 anglers spent 8,685 hours fishing at the lake. Nebraska Department of Environmental Quality's (DEQ) 2012 Integrated Report lists the reservoir as impaired for sedimentation and nutrients, and fish consumption advisory is currently posted.

Branched Oak (Site #18) reservoir is located two miles north of Malcolm, Nebraska and is the largest of the Salt Valley Lakes in Lancaster County, encompassing 4,008 acres of land and

1,752 acres of water. It is located at the confluence of Middle Oak Creek and Oak Creek, tributaries of North Oak Creek. See Figure 2 for a map of the area. The warm-water fishery is comprised of a multitude of fish, including walleye, wipers, black and white crappie, bluegill, white perch, gizzard shad, blue, channel and flathead catfish, bluegill, common carp and largemouth bass. DEQ's 2012 Integrated Report lists the reservoir as impaired for excess nutrients. An Aquatic Habitat experimental project was completed in the mid-1990s, assessing the efficacy of A-jacks and breakwaters to stabilized shorelines at a cost of $2.3 million. Additional rehabilitation work is planned for a future with an estimated cost of $20 million. In 2012, it is estimated that 13,270 anglers spent 55,477 hours fishing.

Conestoga Lake (Site #12) is located two miles north of Denton, Nebraska. It is located on Holmes Creek. It has 523 acres of land and 193 acres of water. See Figure 3 for a map of the area. Fishing is comprised of largemouth bass, bluegill, black and white crappie, channel and blue catfish and common carp. DEQ's 2012 Integrated Report lists the reservoir as impaired for algal toxins, sedimentation and nutrients. An Aquatic Habitat project was initiated in 2012 and is estimated to cost $5 million. The lake is currently in the planning stages to complete the aquatic rehabilitation of the reservoir and renovate the fishery. The reservoir use is dominated by angling (75%), supporting an average of 25,000 angling hours per year from 2009-2012. Much of the development of the lake area occurred in the 1980s, with modern camping being added in 1999. Algae blooms began in 2004 at Conestoga.

Olive Creek (Site #2), is located one and a half miles southeast of Kramer, Nebraska. It embodies 485 acres of land and 127 acres of water. The dam is located on Olive Branch. See Figure 5 for a map of the area. The fishery is comprised of largemouth bass, bluegill and channel catfish. In 2012, it is estimated that 6,231 anglers spent 20,787 hours fishing. The fishery was renovated in 1999 and an aquatic rehabilitation of the reservoir was completed at a cost of $2 million, although DEQ's 2012 Integrated Report still lists the reservoir as impaired for aquatic life (pH, arsenic, dissolved oxygen, ammonia) and nutrients.

Pawnee Lake (Site #14), located three miles northwest of Emerald, Nebraska is the second largest of the Salt Valley Lakes in Lancaster County. It comprises of 1,908 acres of land and 636 acres of water. It is located at the North Branch of Middle Creek. See Figure 4 for a map of the area. The diverse, warm-water fishery is comprised of walleye, white bass, black and white crappie, bluegill, white perch, gizzard shad, channel and flathead catfish, bluegill,

common carp and largemouth bass. DEQ's 2012 Integrated Report lists the reservoir as impaired for algal toxins, sedimentation and nutrients. This reservoir is on the Aquatic Habitat Project list for rehabilitation at an estimated cost of $10 million. In 2010, 10,938 anglers spent 33,467 hours fishing. The first modern camping facilities were built in 1981 and the last camping facility was built in 2000. In 2004 the onset of blue-green algae issues occurred with closures to swimming areas on multiple occasions until 2009.

Stagecoach Lake (Site #9), is located one mile south of Hickman, Nebraska. It contains 437 acres of land and 170 acres of water. The dam is located on the Hickman Branch. Figure 6 is a map of the area. The fishery was renovated in 1991 and a small aquatic enhancement project completed in 1991-1992. DEQ's 2012 Integrated Report still lists the reservoir as having impairments for sedimentation and nutrients, and a fish consumption advisory is posted. While not currently on the approved Aquatic Habitat Project list, it is anticipated that subsequent plans will include Stagecoach. The fishery is now comprised of largemouth bass, bluegill, white and black crappie, channel catfish, walleye, common carp and gizzard shad. The recreational fishery supported 15,750 anglers hours per year from 2009-2012. Modern camping facilities were constructed in 2000 and a water system was added in 2001.

Twin Lakes (Site #13) is located two and a half miles north and one half mile west of Pleasant Dale. It has 1,116 acres of land and 154 acres of water. It is located on the Middle Creek and is two miles north and one mile west of Pleasant Dale. See Figure 7 for a map of the area. An early experimental aquatic habitat rehabilitation project was completed from 1989-1990; however, the fishery was not renovated. DEQ's Integrated Report still lists the reservoirs as impaired for nutrients and aquatic life (ammonia in West Twin).The fishery is comprised of largemouth bass, bluegill, white and black crappie, channel catfish, white bass, walleye, common carp and gizzard shad. This reservoir is on the Aquatic Habitat Project list for a complete rehabilitation at an estimated cost of $6 million.

Wagon Train Lake (Site #8) is located two miles east of Hickman, Nebraska as shown on Figure 8. It encompasses 768 acres of land and 294 acres of water. The dam is located on a tributary of the Hickman Branch. The fishery was renovated in 1999 and 2001 and an aquatic rehabilitation project completed at a cost of $2.7 million. Still, DEQ's 2012 Integrated Report lists impairments for nutrients and aquatic life (dissolved oxygen, natural arsenic), with a fish consumption advisory posted. The fishery is comprised of largemouth bass, bluegill, white and black crappie, channel catfish, white perch, walleye, muskellunge, common carp and gizzard shad. In 2012, it is estimated that 20,167 anglers spent 80,973 hours fishing. Additional modern camping was developed in 1999.

Yankee Hill Lake (Site #10), located two miles east and one mile south of Denton, Nebraska contains 749 acres of land and 189 acres of water. It is located on the Coldwell Branch. Refer to Figure 9 for a map of the area. The fishery was renovated in 2003 and an aquatic habitat project was completed at a cost of $1.9 million. DEQ's 2012 Integrated Report still lists a single impairment for aquatic life (pH). The lake was restocked with largemouth bass, bluegill, channel catfish and walleye. In 2011, it is estimated that 6,741 anglers spent 15,991 hours fishing.

Figure 1: Bluestem Lake (Site #4)

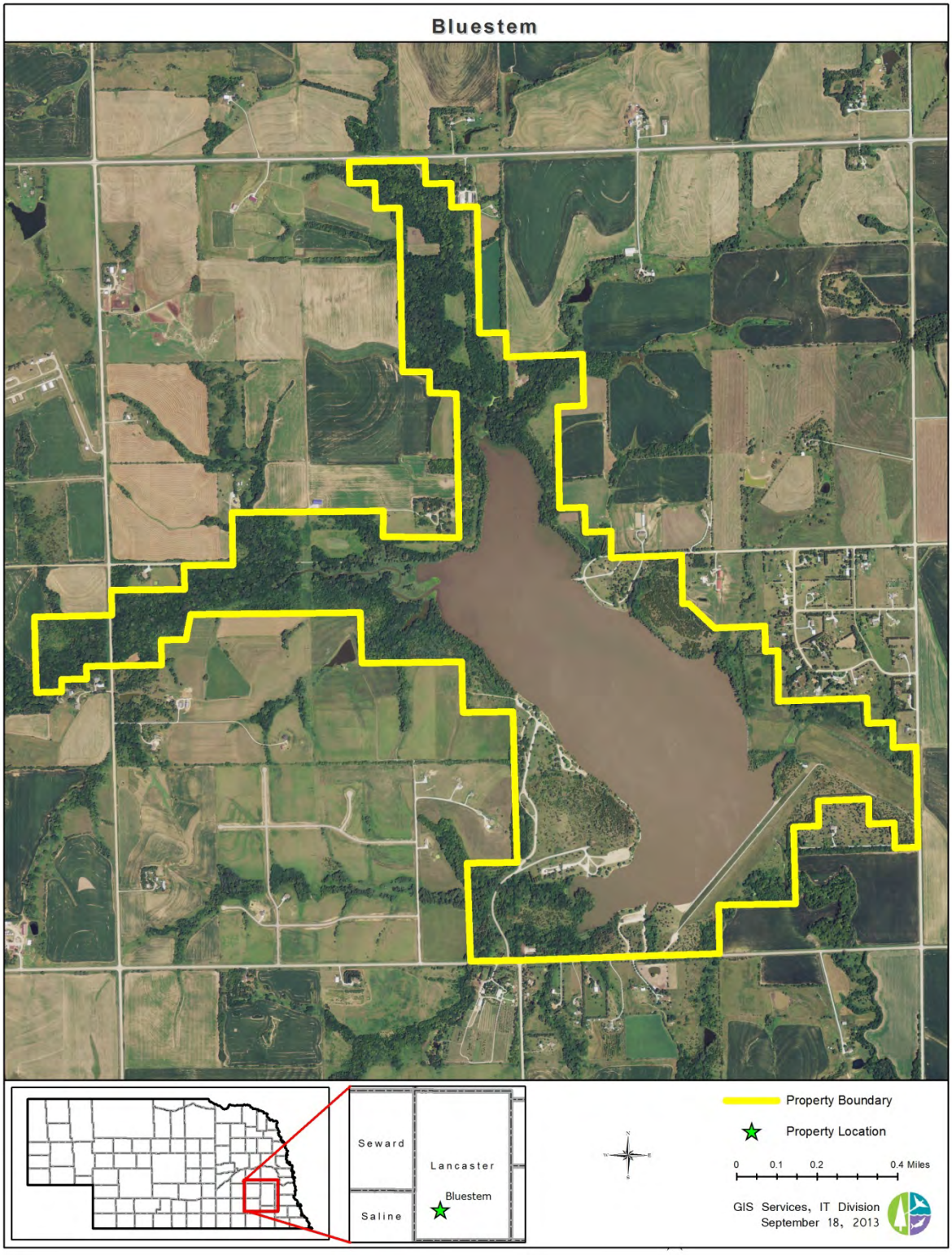


Figure 2: Branched Oak Lake (Site #18)

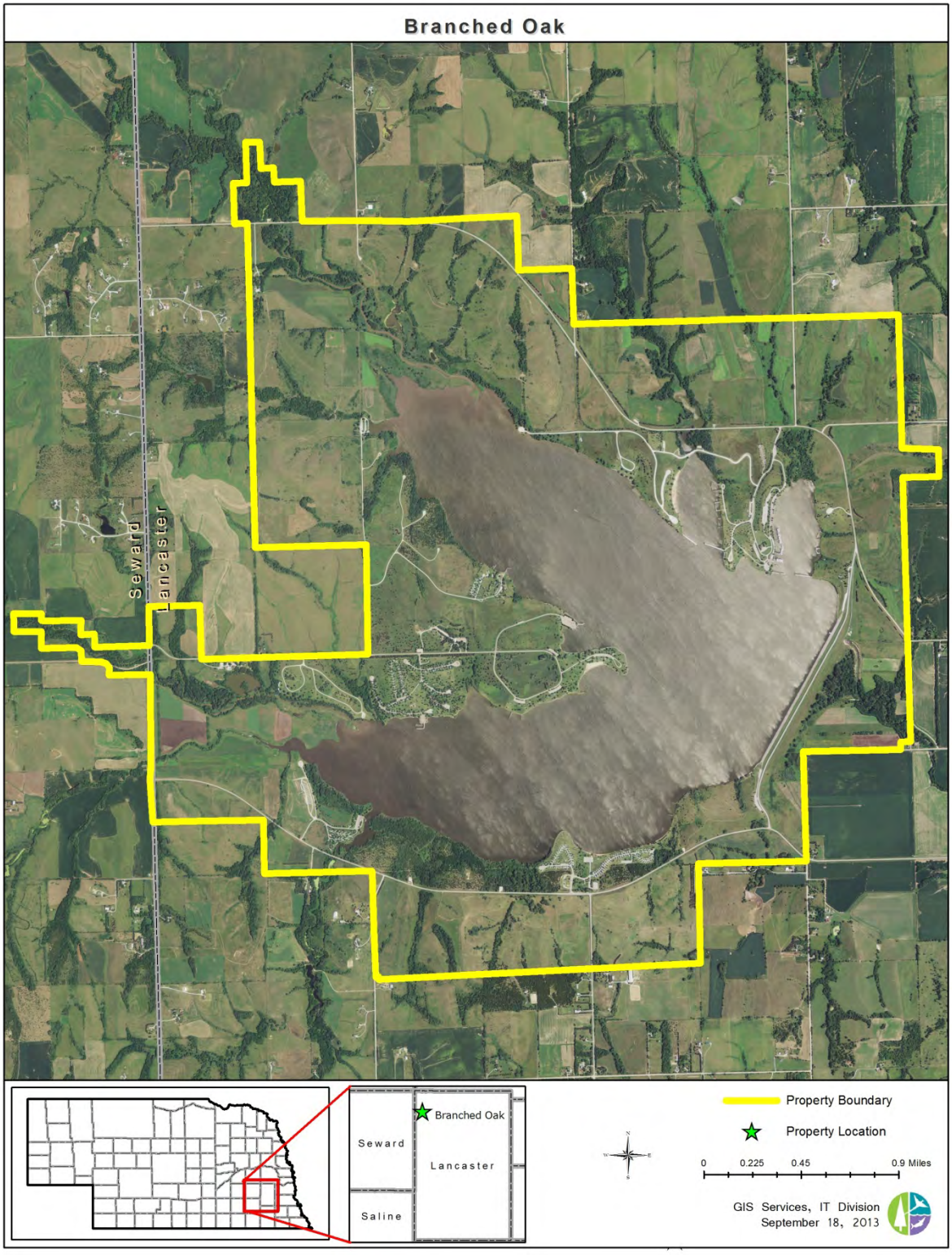


Figure 3: Conestoga Lake (Site #12)

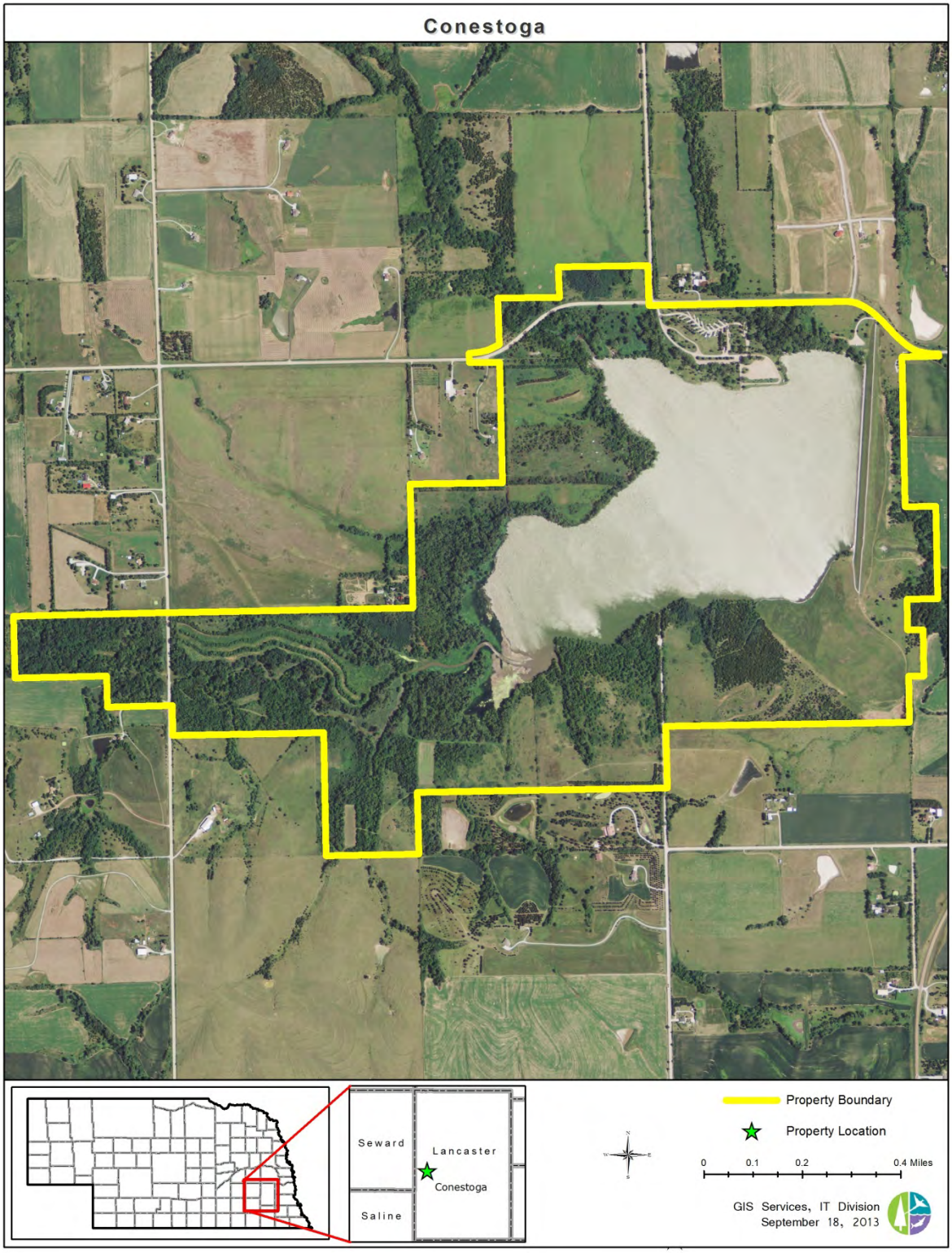


Figure 4: Olive Creek Lake (Site #2)

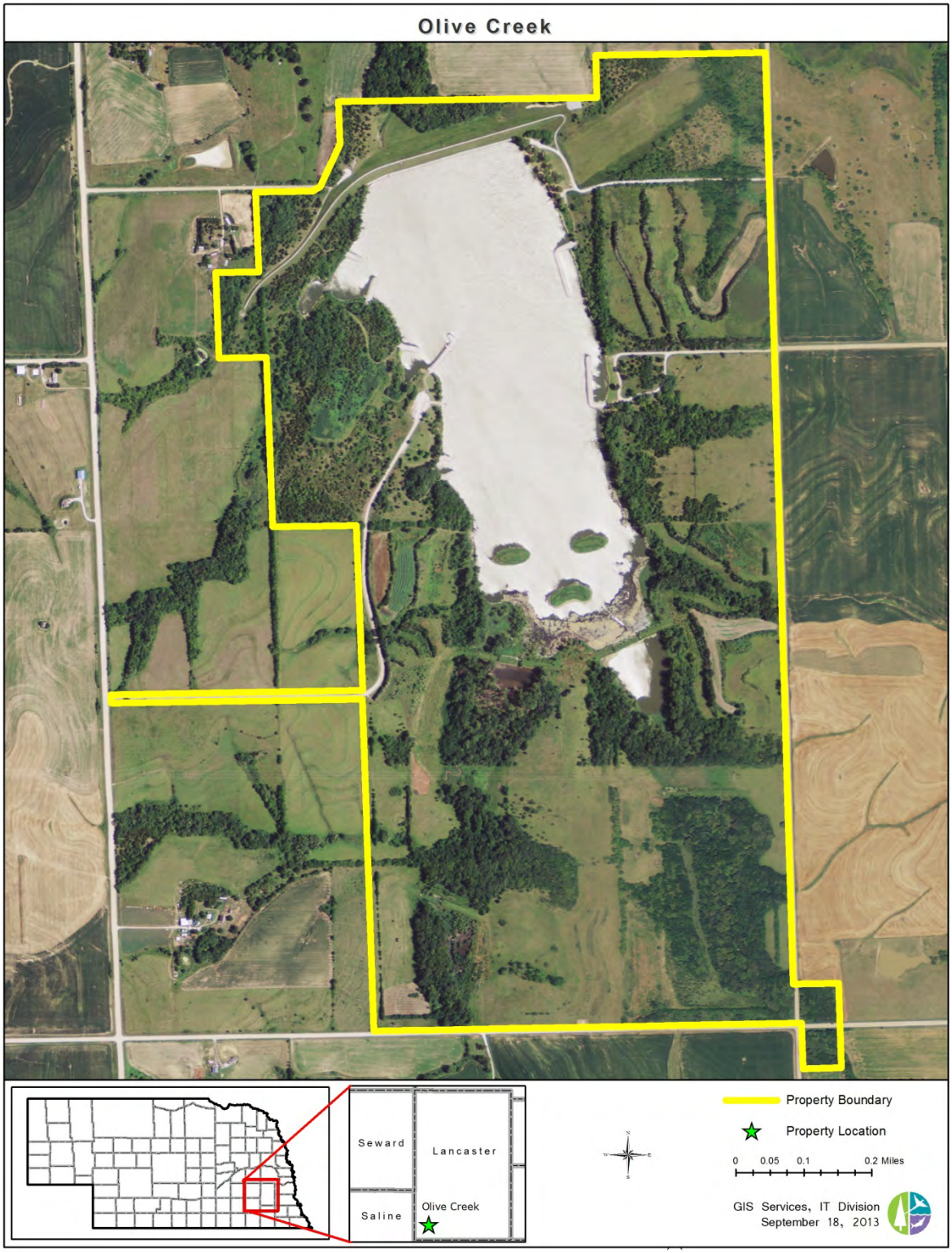


Figure 5: Pawnee Lake (Site #14)

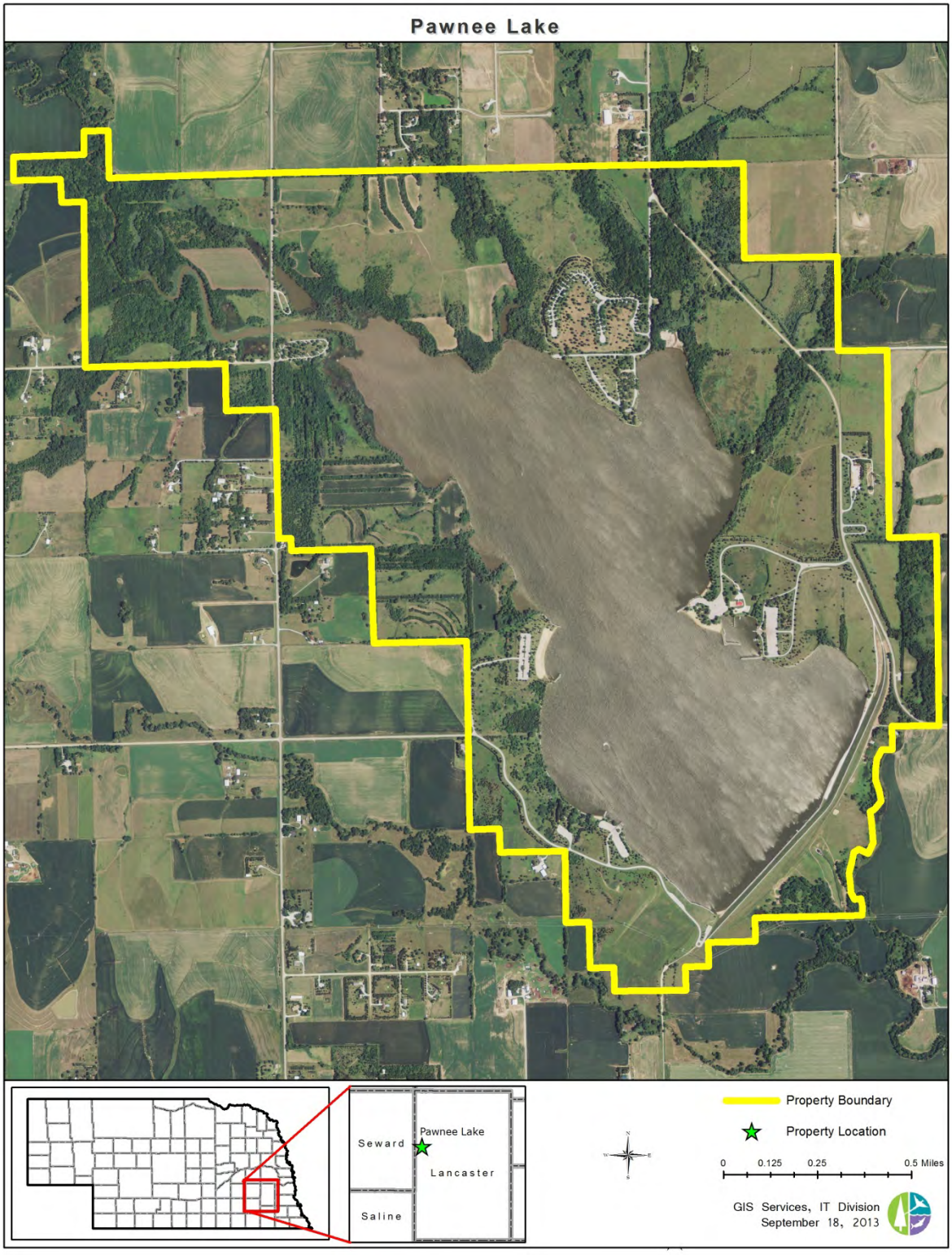


Figure 6: Stagecoach Lake (Site #9)

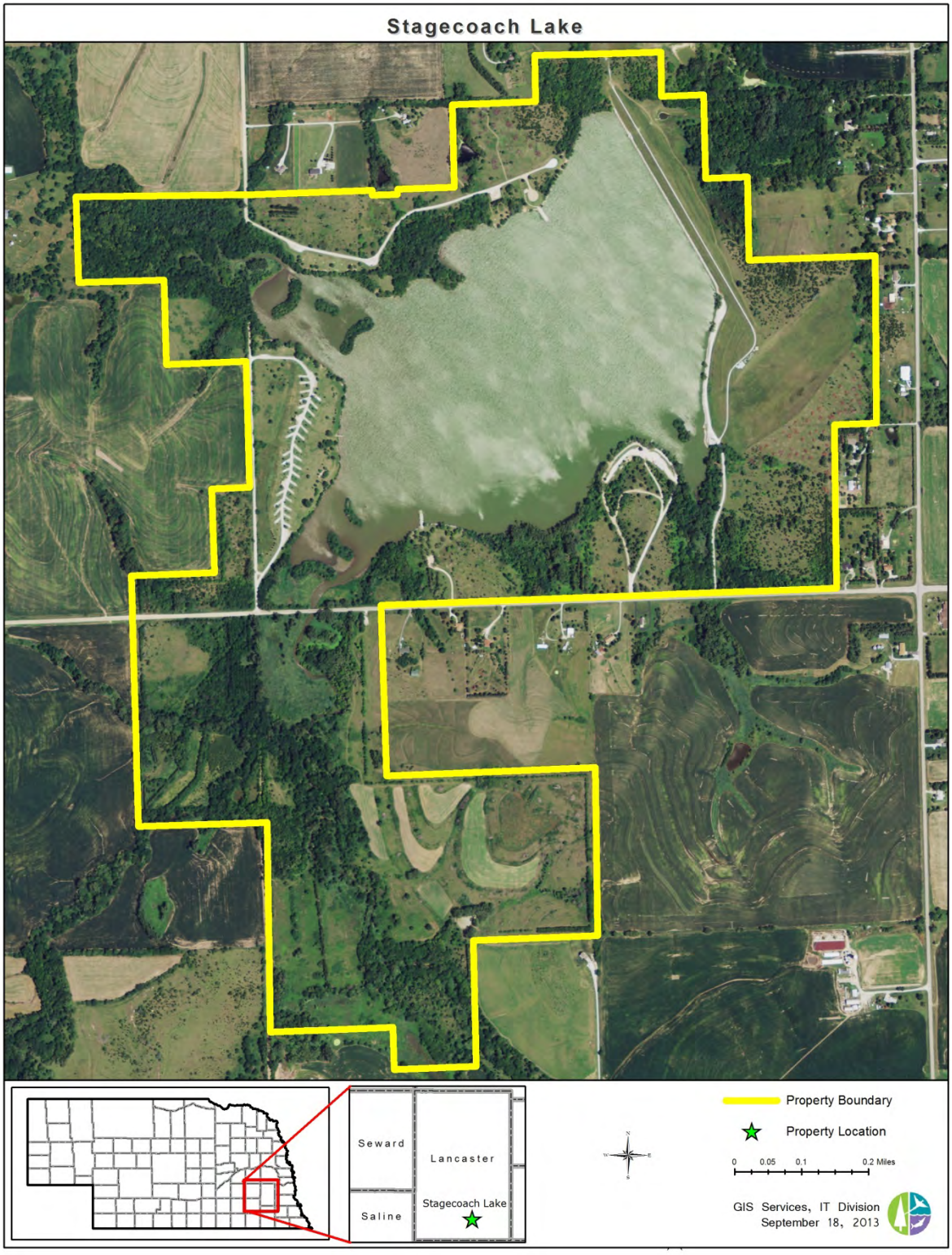


Figure 7: Twin Lakes (Site #13)

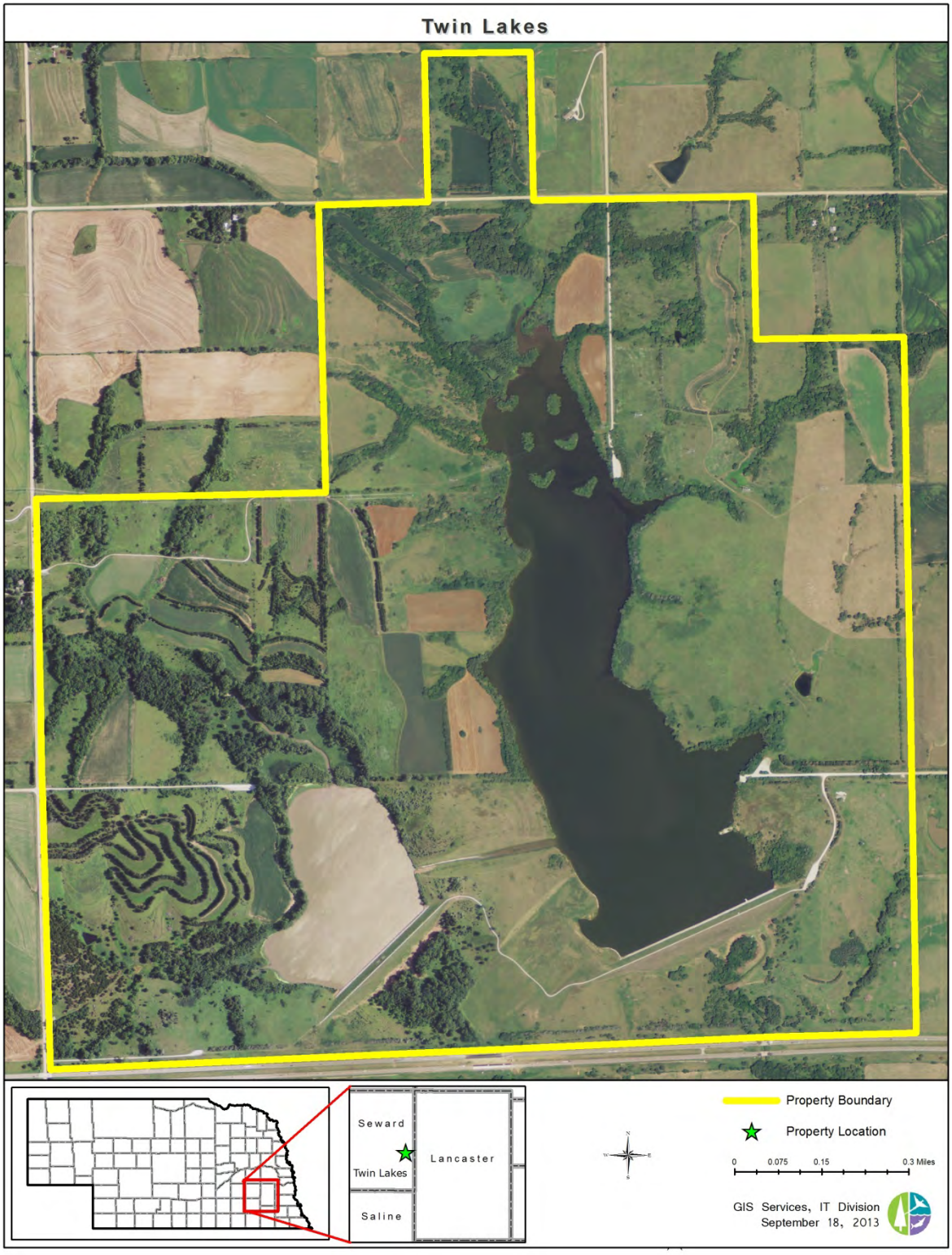


Figure 8: Wagon Train Lake (Site #8)

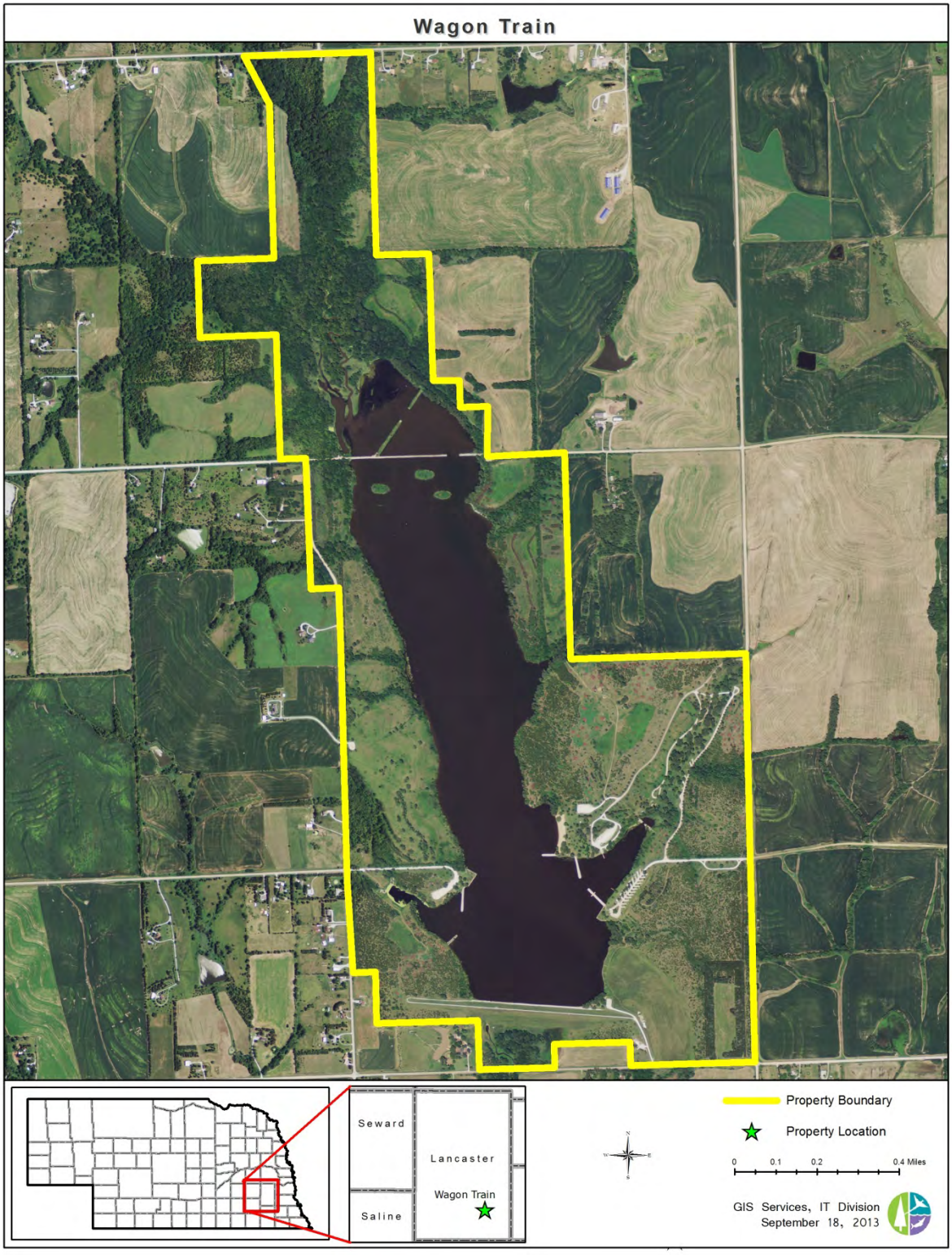
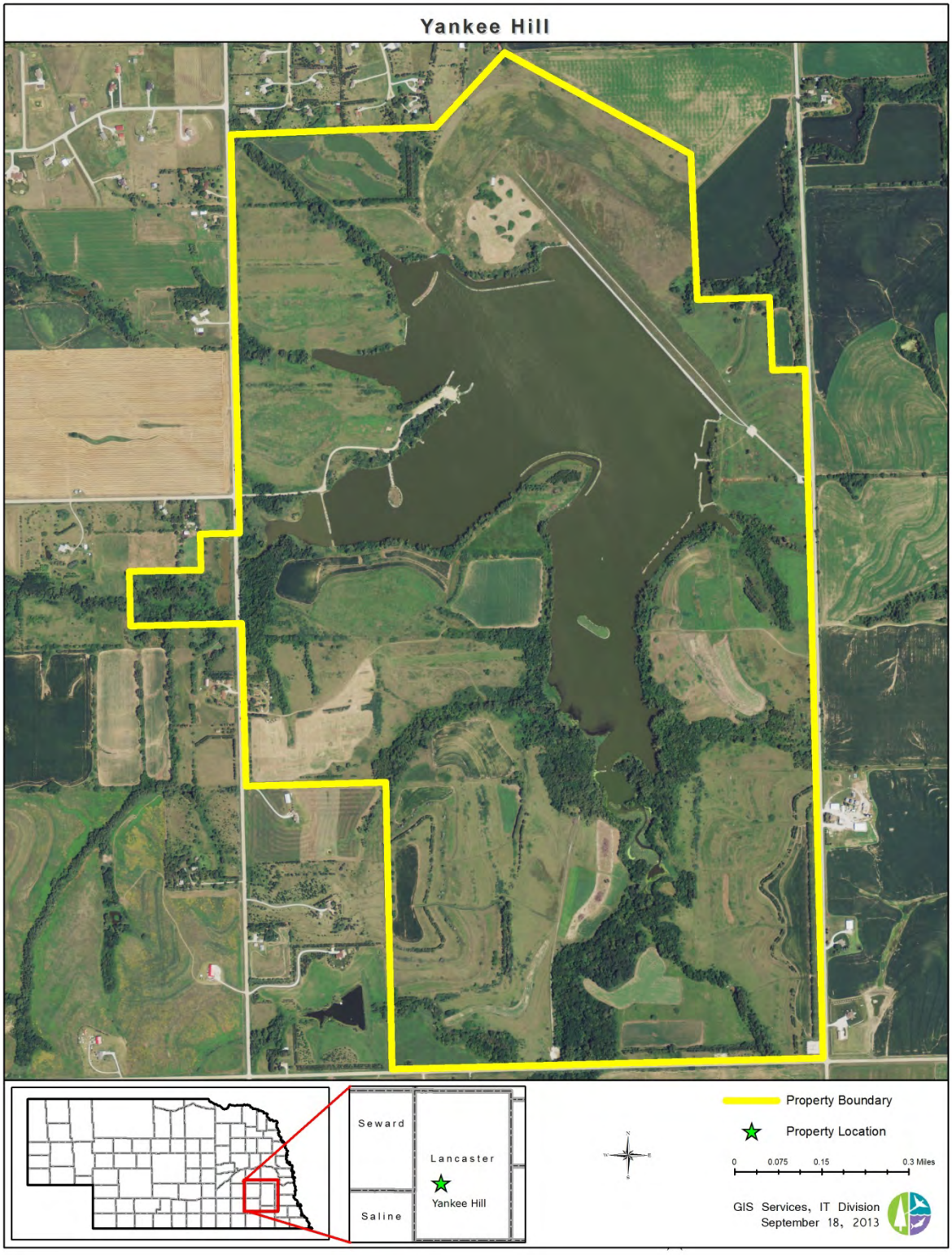


Figure 9: Yankee Hill Lake (Site #10)



Management of Property

There are two divisions of NGPC that manage the Salt Valley Lakes and two divisions that provides support to the lakes. The Parks Division manages the State Recreation Area portions of the lakes and the Wildlife Division manages the Wildlife Management Area portions of the lakes. Branched Oak has been designated through Commission action as a SRA and WMA and Twin Lakes and Yankee Hill have been designated as WMAs. The remaining seven areas are designated SRAs, but portions of them are managed as WMAs. See Figures 10 through Figure 18 for maps that show how the properties are being managed. NGPC's Law Enforcement and Fisheries Divisions provide support to both the SRA and WMA portions of the lakes.

State Recreation Areas and Wildlife Management Areas have different functions regarding their management. According to Nebraska State Statute §37-338, a State Recreation Area means (a) areas with a primary value for day use, but with secondary overnight-use facilities or potential, and which have reasonable expansion capability and are located in accordance with sound park management principles. Wildlife Management Areas, according to State Statute §37-336, means those areas which are primarily of public hunting, fishing, or other wildlife values when so designated by the commission to be maintained from fish and game funds.

All of the Salt Valley Lakes offer a myriad of recreational uses from hunting, fishing, picnicking, hiking to overnight camping at seven of the lakes. To meet the mission of stewardship of the resources in the best interest of the resources and the public, the Salt Valley Lakes are managed in a manner that provides recreational opportunities to as many constituents as possible while conserving the resources available at the areas.

Figure 10: Management of Blue Stem Lake

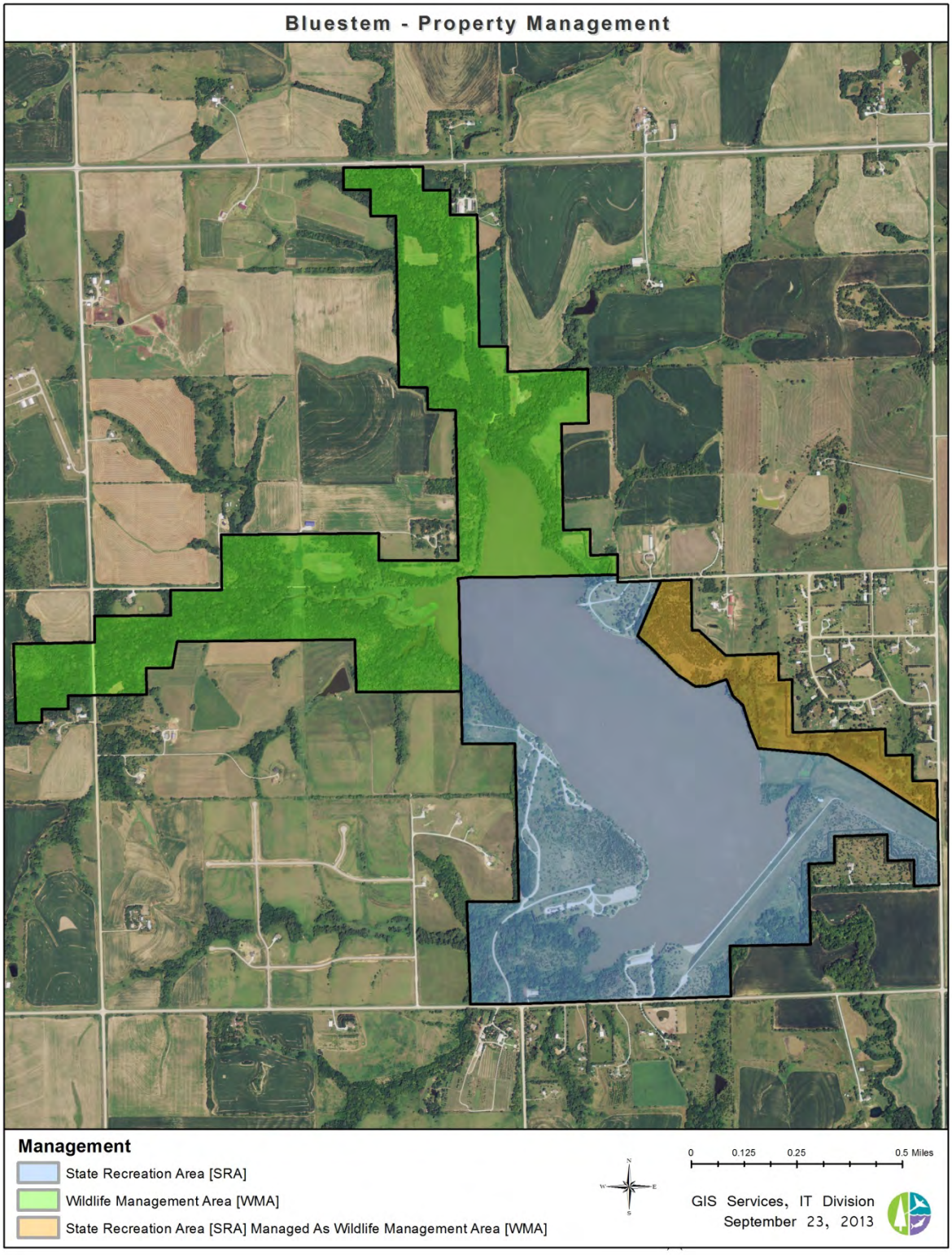


Figure 11: Management of Branched Oak Lake

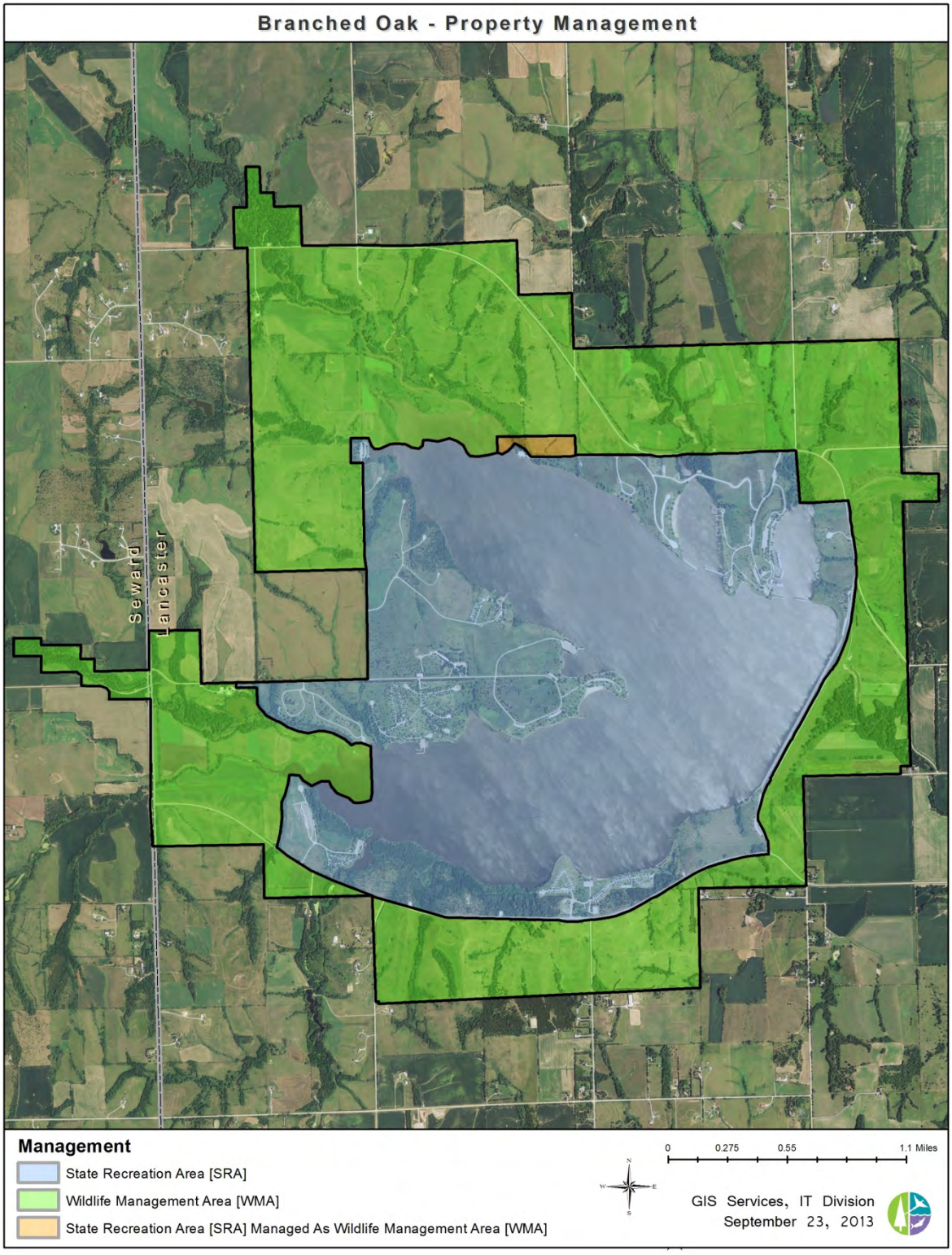


Figure 12: Management of Conestoga Lake

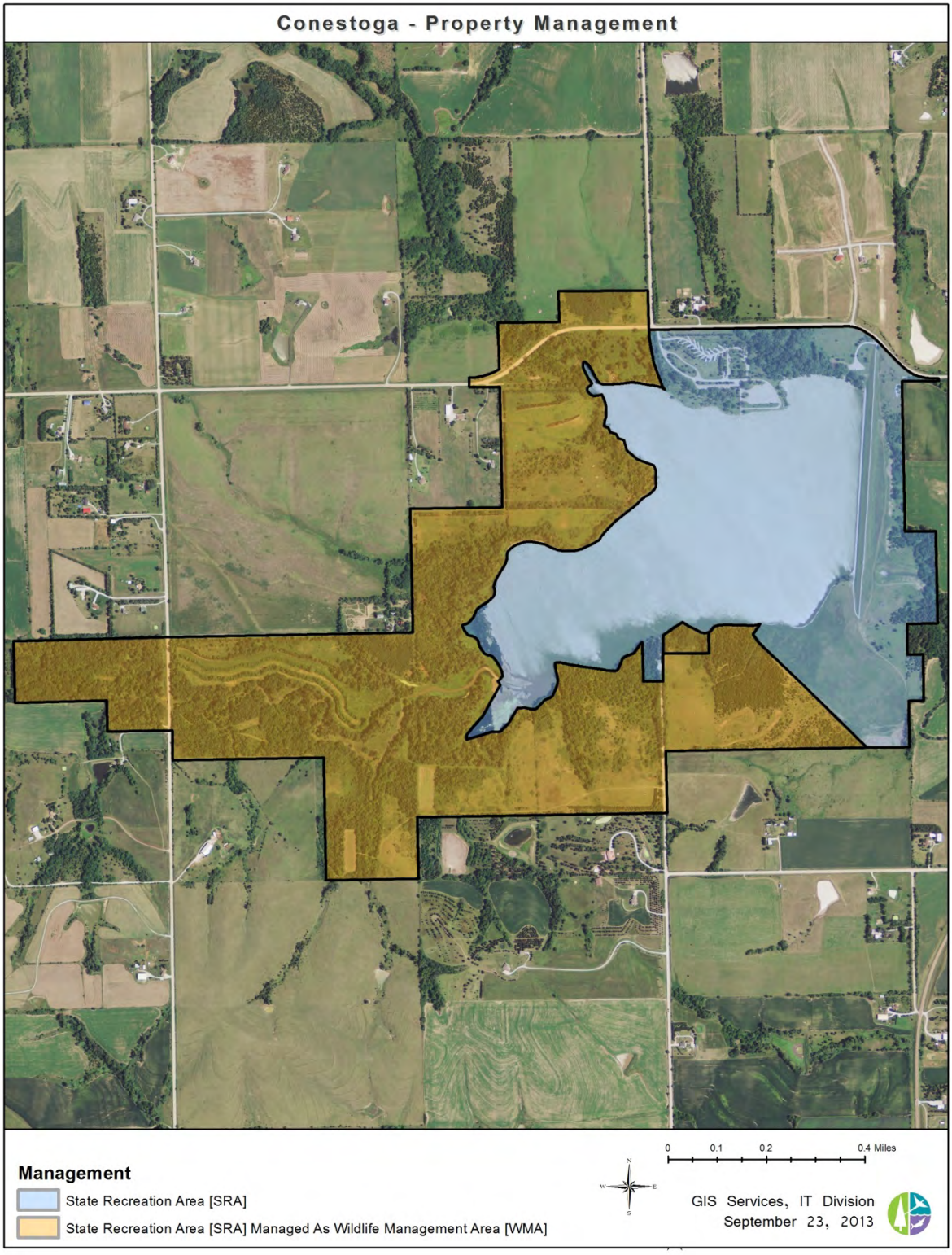


Figure13: Management of Olive Creek

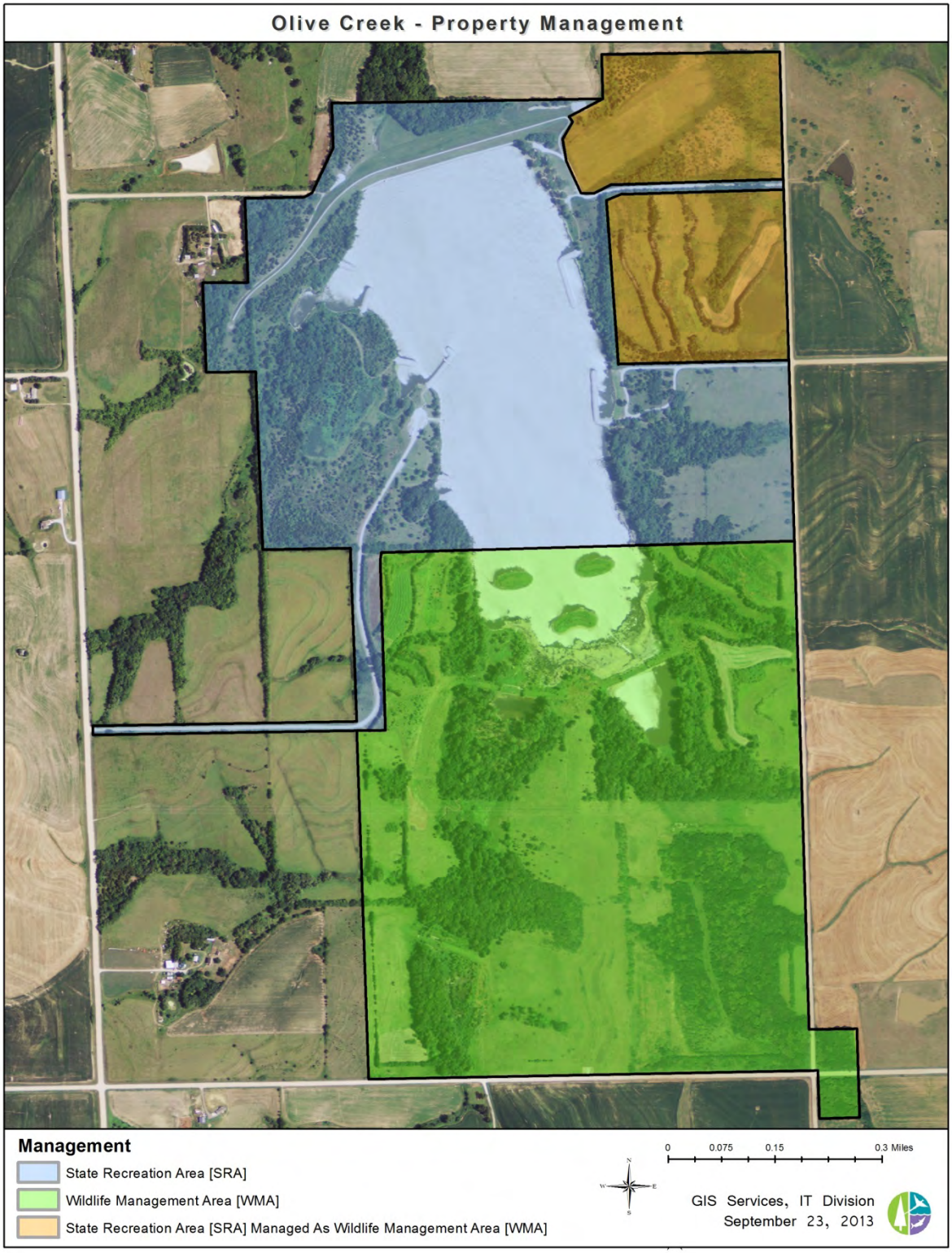


Figure 14: Management of Pawnee Lake

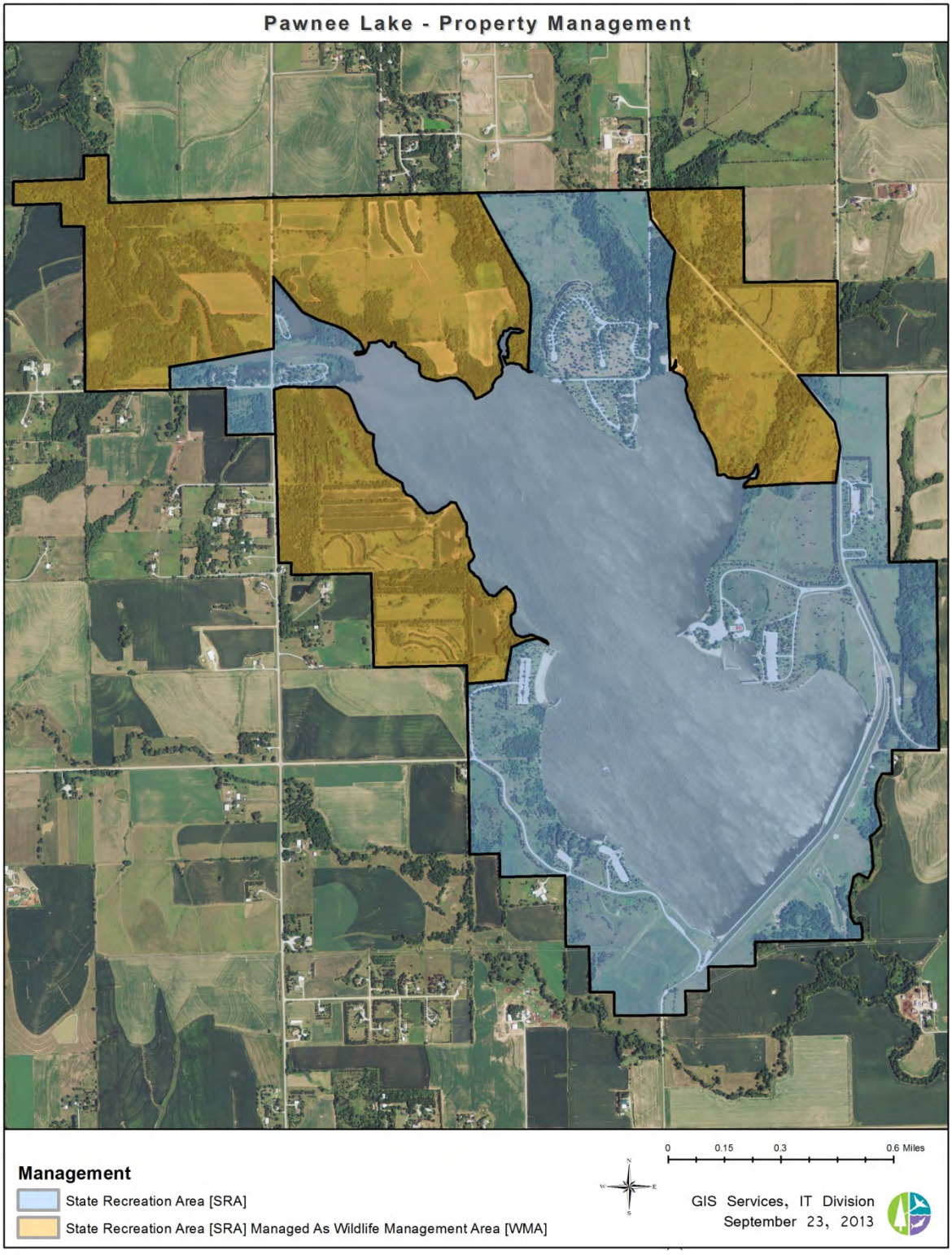


Figure 15: Management of Stagecoach Lake

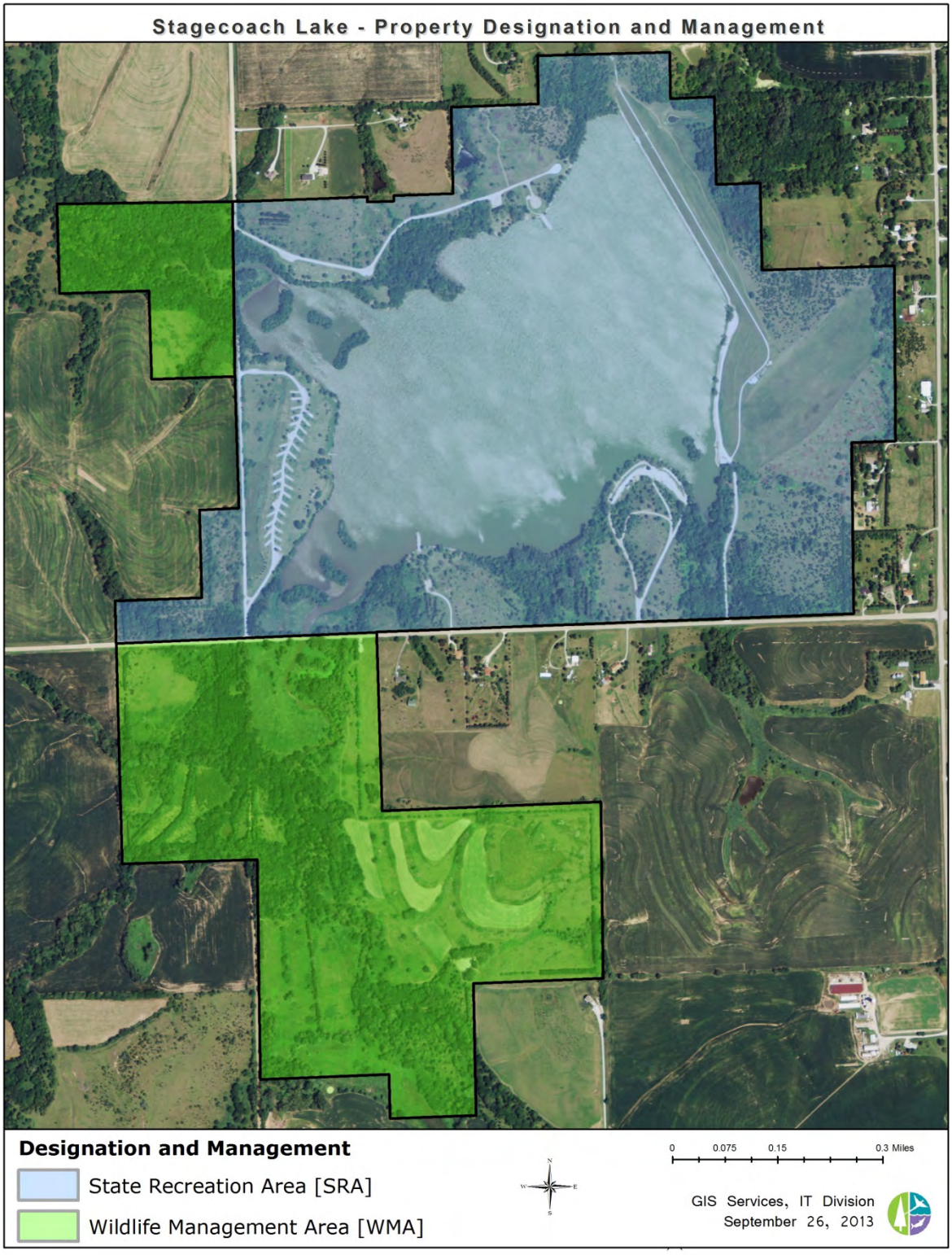


Figure 16: Management of Twin Lakes

Figure 17: Management of Wagon Train Lake

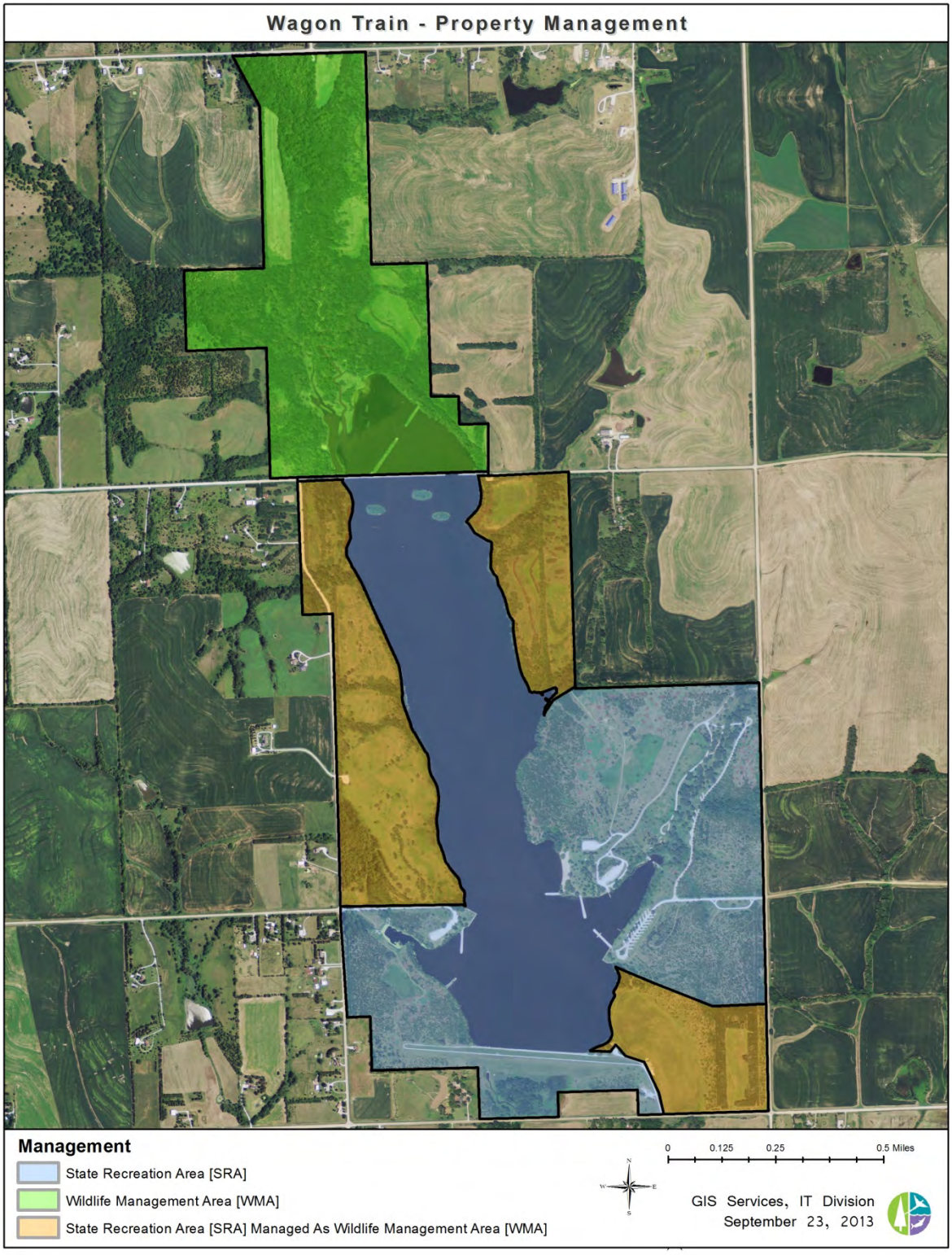
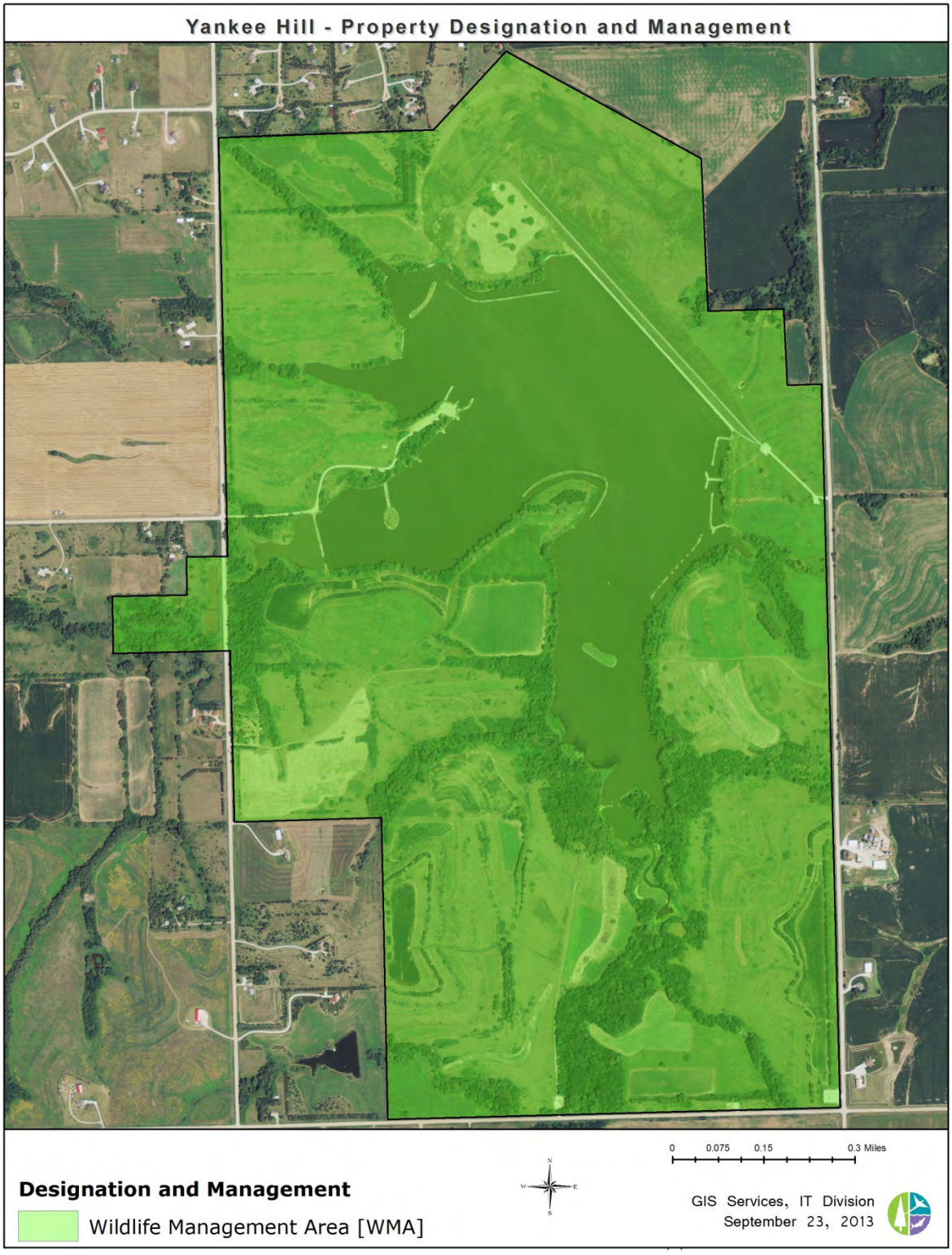


Figure 18: Management of Yankee Hill Lake



Inventory of Existing Infrastructure

Since NGPC started operating and maintaining the Salt Valley Lakes, extensive infrastructure has been built to provide for the visitors to the areas. It must be noted that a large percentage of the staff's time assigned to the Salt Valley Lakes is the upkeep of the existing inventory of infrastructure. Because the infrastructure began as early as the 1970s, deferred maintenance has become more and more of an issue that needs to be addressed to continue to provide for a safe, clean and pleasant experience of the public users of the area. The tables below provide a value of infrastructure which has been determined by using replacement values. Table 1 provides an overview of Bluestem Lake. Figure 19 provides the legend of current amenities for all the Salt Valley Lakes. Refer to this figure when viewing all current amenities maps. See Figure 20 for a map of the current amenities of Bluestem Lake.

Table 1: Bluestem Lake Existing Infrastructure

Infrastructure	Management	Value of Infrastructure
5.2 miles of Boundary Fence	Wildlife	$137,280
1 rocked low water crossing	Wildlife	$500
1 erosion control dam	Wildlife	$40,000
2 parking Lot (rock & guard posts)	Wildlife	$1,736
Informational Signs	Wildlife	$1,000
4 pipe gates	Wildlife	$800
1 cable gate	Wildlife	$75
1 culvert	Wildlife	$1,000
5 vault toilets	Parks	$50,000
3 boat ramps	Parks	$27,600
1 storage shed	Parks	$5,000
4 boat docks	Parks	$20,000
2 miles of Boundary Fence	Parks	$54,000
8 water hydrants	Parks	$640
1 hand well	Parks	$500
1 dump station with septic tank and field	Parks	$20,000
67 fire rings (grills)	Parks	$10,250
4 grills	Parks	$800
26 permanent picnic tables	Parks	$18,564
2 playground pieces	Parks	$20,000
4 yard lights	Parks	$1,600
2 miles gravel roads	Parks	$20,000
½ mile paved roads	Parks	$14,000
Archery range	Parks	$1,200
19 non electric camp pads	Parks	
200 primitive camp sites	Parks	
3 wells	Parks	$30,000
Boat buoys	Parks	$2,275
6 parking lots	Parks	$7,200
2,600' shoreline armoring	Parks	$260,000
Total		**$746,018**

Figure 19: Current Amenities Legend for Current Amenities Maps

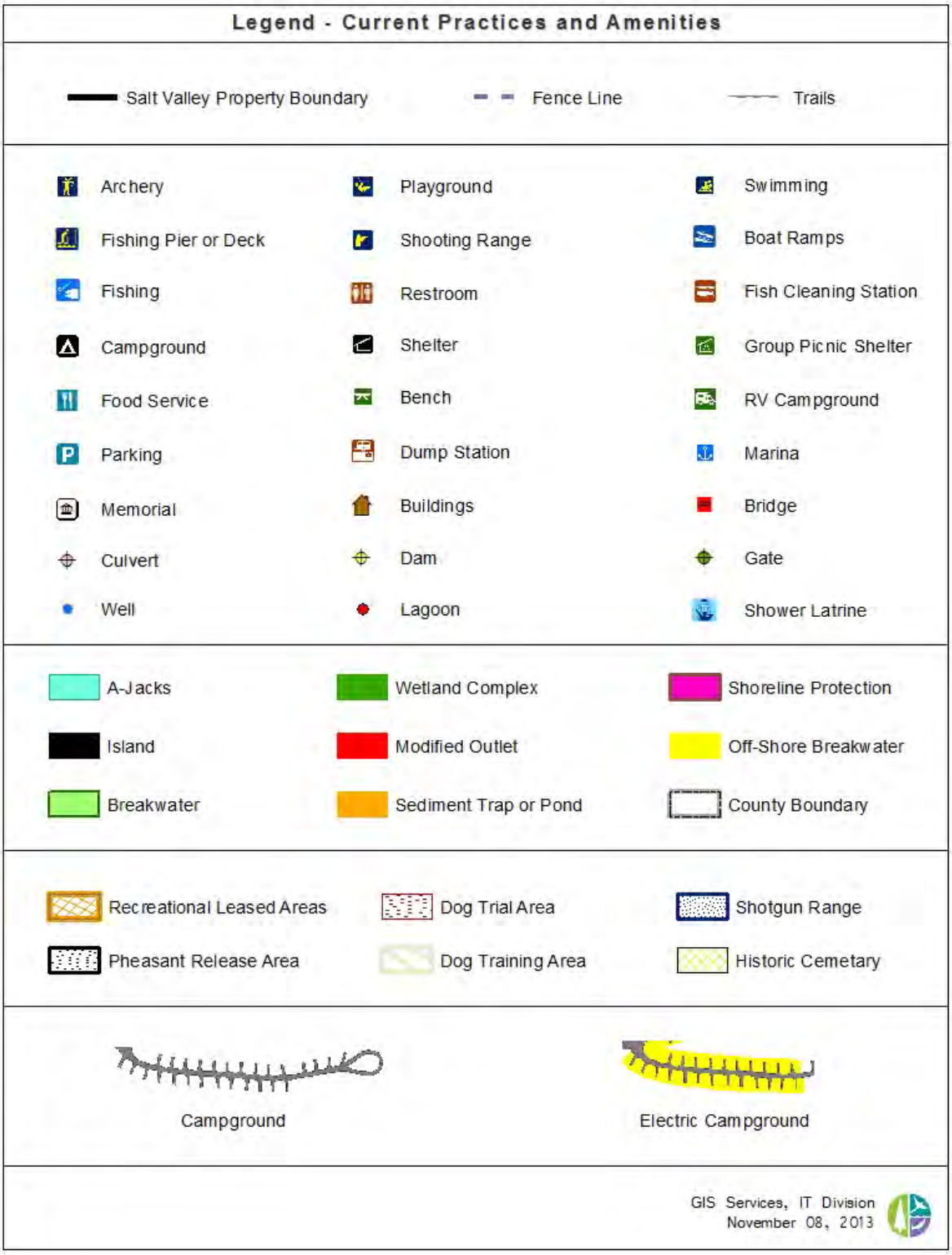


Figure 20: Current Amenities of Bluestem Lake

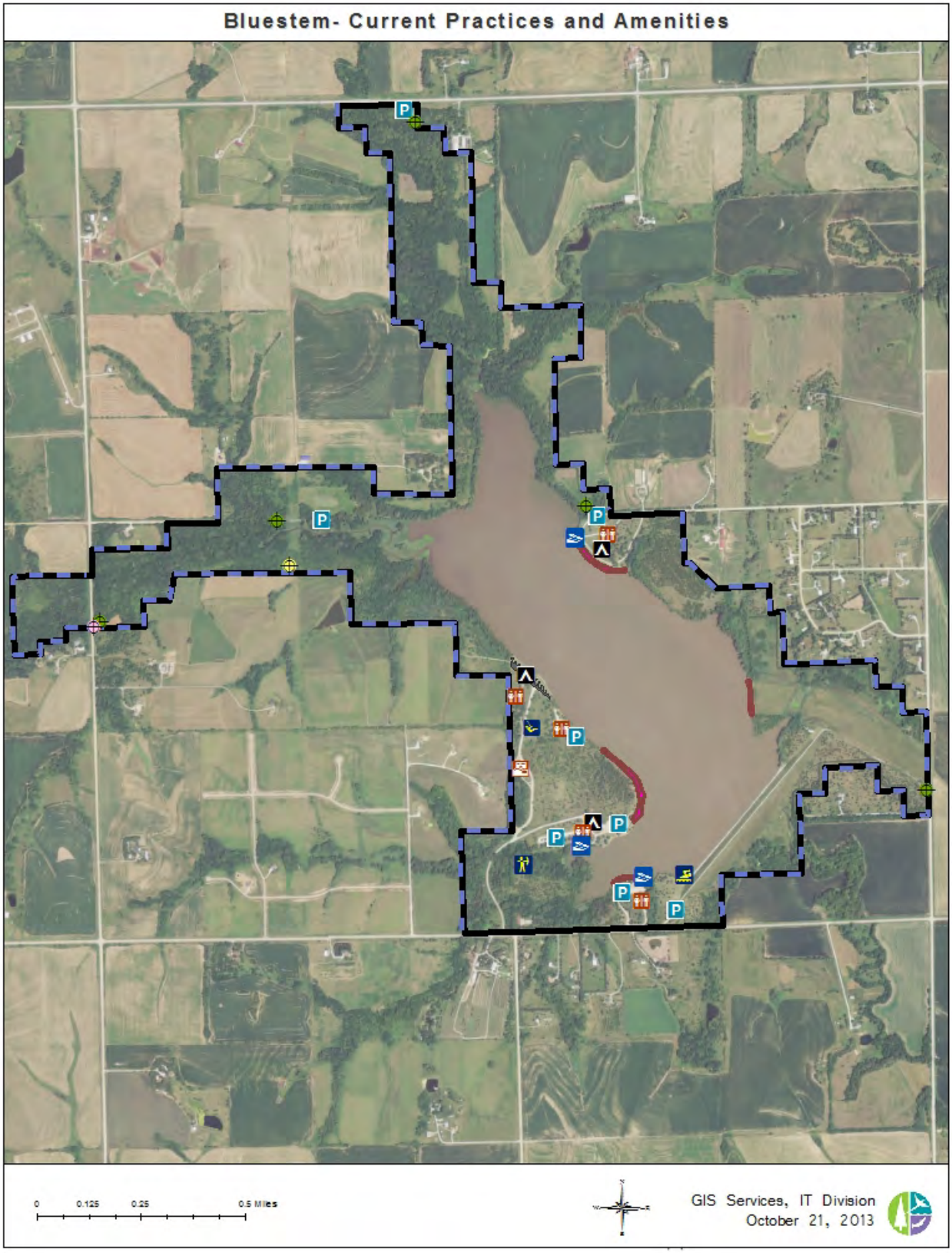


Table 2 provides an overview of the extensive infrastructure that is located at Branched Oak. At this time, there is one area in the WMA portion of the property that has a concessionaire for the dog trial area. This area includes camping facilities, a barn, a clubhouse, parking and other amenities that meet the needs of those that use the dog trial area. The dog trial area host field trials, which are events that test hunting skill levels of different breeds of dogs. Pointing breed field trials are conducted at Branched Oak. There are two concessionaires that provide services on the SRA portion of the lake. These include the Sandbar Restaurant that provides lunch and dinner service and a group that operates the Marina which sells bait, fast food, rents boats and rents boat docks.

There are also two groups that have areas they sublease from NGPC; the Optimist Club (lease 7 acres) and the Lincoln Sailing Club (lease 7 acres). The Sailing Club uses the area to promote sailing and provide opportunities to their members and invited guests to sail and yacht at Branched Oak. The Optimist Club uses the area for activities specific to members of the Optimist Club. Looking at Table 2, the rate of investment into this area has been substantial on NGPC's part in the past 50 years. Refer to Figure 21 for a current amenities map of the infrastructure.

Table 2: Branched Oak Lake Existing Infrastructure

Infrastructure	Management	Value of Infrastructure
60x80 shop/office building	Wildlife	$120,000
8 storage sheds	Wildlife	$110,000
3 well with 5 hydrants	Wildlife	$90,500
1 overhead light pole	Wildlife	$300
2 550 gallon bulk fuel tanks/pumps	Wildlife	$12,000
2 bulk propane storage tanks	Wildlife	$1,200
5 parking lots	Wildlife	$5,420
9 metal pipe gates	Wildlife	$1,800
17 miles of boundary fence	Wildlife	$448,800
15 erosion control dams	Wildlife	$600,000
11 culverts	Wildlife	$11,000
Informational signs	Wildlife	$1,500
2 vault toilets	Wildlife	$80,000
Barn	Wildlife	$100,000
Clubhouse	Wildlife	$140,000
Bird holding pen	Wildlife	$8,000

Horse corral	Wildlife	$4,000
Well pump house	Wildlife	$3,000
19 electrical hook ups	Wildlife	$4,000
Metal drain tube	Wildlife	$1,000
2 bridges (1 wooden, 1 concrete)	Wildlife	$80,000
21,511 feet of woven wire fence	Wildlife	$150,577
2 hitching posts	Wildlife	$400
1 box culvert	Wildlife	$10,000
4 livestock wells	Wildlife	$52,000
28 vault toilets	Parks	$280,000
5 shower Houses	Parks	$300,000
1 employee Residence & Garage	Parks	$200,000
2 fish cleaning stations	Parks	$250,000
1 storage Garage	Parks	$35,000
1 maintenance shop/office	Parks	$200,000
3 park entrance booths	Parks	$24,000
1 campground gatehouse	Parks	$8,000
1 seed/tree cooler	Parks	$10,000
1 old shop/maintenance building	Parks	$50,000
3 group picnic shelters	Parks	$165,000
44 aluminum picnic shelters	Parks	$440,000
9 boat ramps	Parks	$828,000
49 boat docks	Parks	$245,000
15.5 miles of trails	Parks	$1,500
7.3 miles of paved roads	Parks	$200,400
7 miles of gravel roads	Parks	$70,000
29 gravel parking lots	Parks	$10,000
35 paved parking lots	Parks	$593,478
3 playgrounds	Parks	$155,000
319 electrical hookups	Parks	$315,000
28 non-electric camp pads	Parks	$28,000
184 primitive campsites	Parks	
4 dump stations	Parks	$80,000
588 grills	Parks	102,900
4 hand pumps	Parks	$2,000
50 boat buoys	Parks	$8,750
11 electric wells	Parks	$98,000
Sailboat tower	Parks	$10,000
13 flood lights	Parks	$3,900
325 picnic tables	Parks	$188,760
290 acres hay field	Parks	
4-cove protection breakwaters	Parks	$1,528,100
2 boat ramp breakwaters	Parks	$218,250
8 shoreline protection features	Parks	$669,693
16,950’ of shoreline armoring	Parks	$1,695,000
Total		**$10,869,228**

Figure 21: Current Amenities of Branched Oak Lake

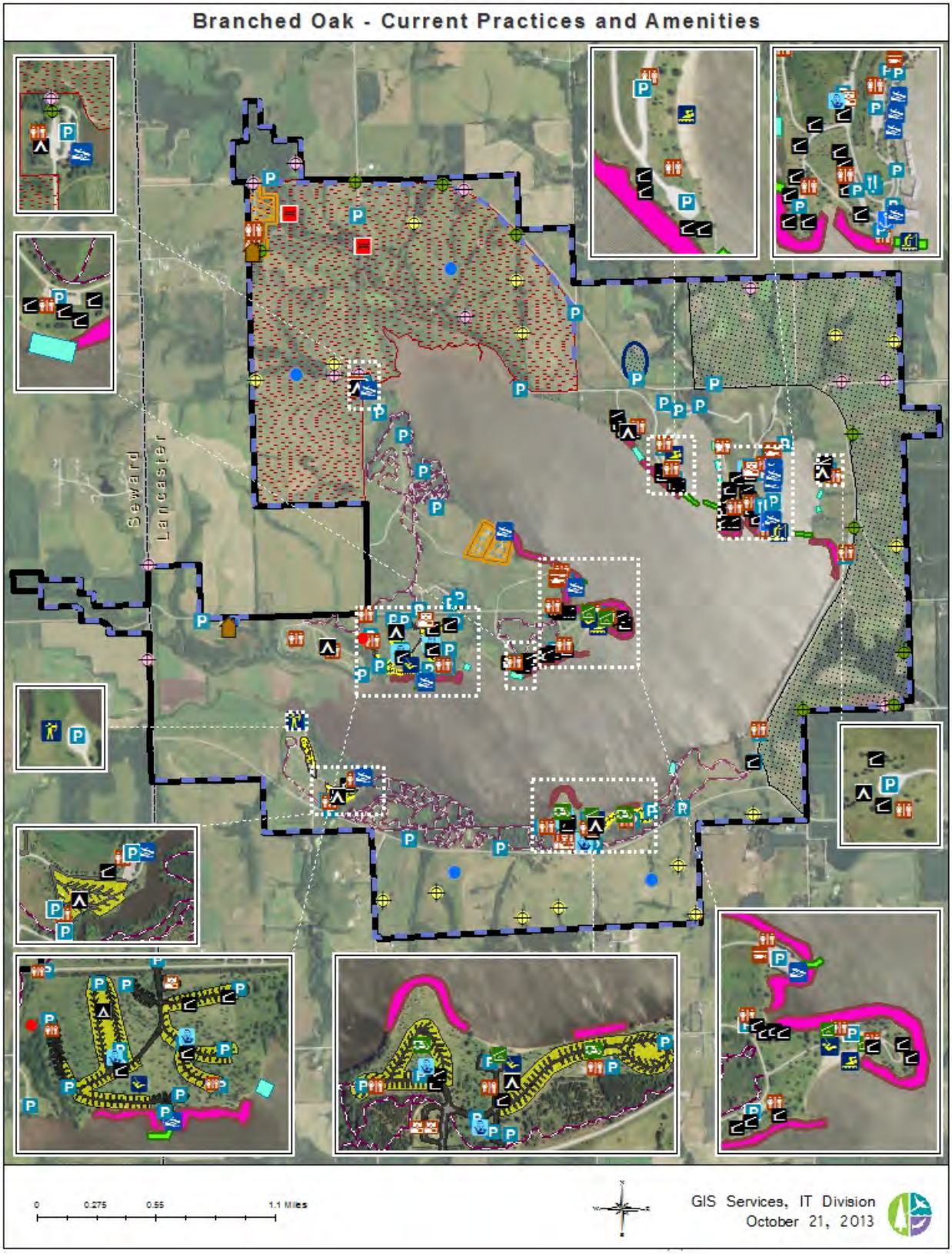


Table 3 provides an overview of Conestoga Lake and what exists for infrastructure. At this time, the infrastructure is moderate in scope, but the potential to develop this area is great due to the upcoming Aquatic Habitat Project. This will be discussed in more length in the Future Development section of the plan. See Figure 22 for a map of the current amenities of Conestoga Lake.

Table 3: Conestoga Lake Existing Infrastructure

Infrastructure	Management	Value of Infrastructure
1 parking lot	Wildlife	$1,120
4 culverts	Wildlife	$4,000
4.5 miles of boundary fence	Wildlife	$118,800
2 rock crossing	Wildlife	$1,000
4 pipe gates	Wildlife	$800
2 cable gate	Wildlife	$150
Informational signs	Wildlife	$1,000
25 electric hook ups	Parks	$30,000
8 non electric camp pads	Parks	
24 primitive camp sites	Parks	
6 boat docks	Parks	$30,000
Boat ramp	Parks	$9,200
¾ mile of fence	Parks	$20,000
2 wells	Parks	$20,000
Dump station with septic tanks & field	Parks	$20,000
Fish cleaning station with septic tank & field	Parks	$175,000
57 fire rings (grills)	Parks	$8,721
2 grills	Parks	$400
59 picnic tables	Parks	$42,126
3 vault toilets	Parks	$30,000
½ mile paved roads	Parks	$14,000
½ mile gravel roads	Parks	$5,000
2 picnic shelters	Parks	$20,000
3 yard lights	Parks	$1,200
5 gravel parking lots	Parks	$6,000
2 paved parking lots	Parks	$33,912
2,600’ of shoreline armoring	Parks	$260,000
Total		**$802,429**

Figure 22: Existing Amenities of Conestoga Lake

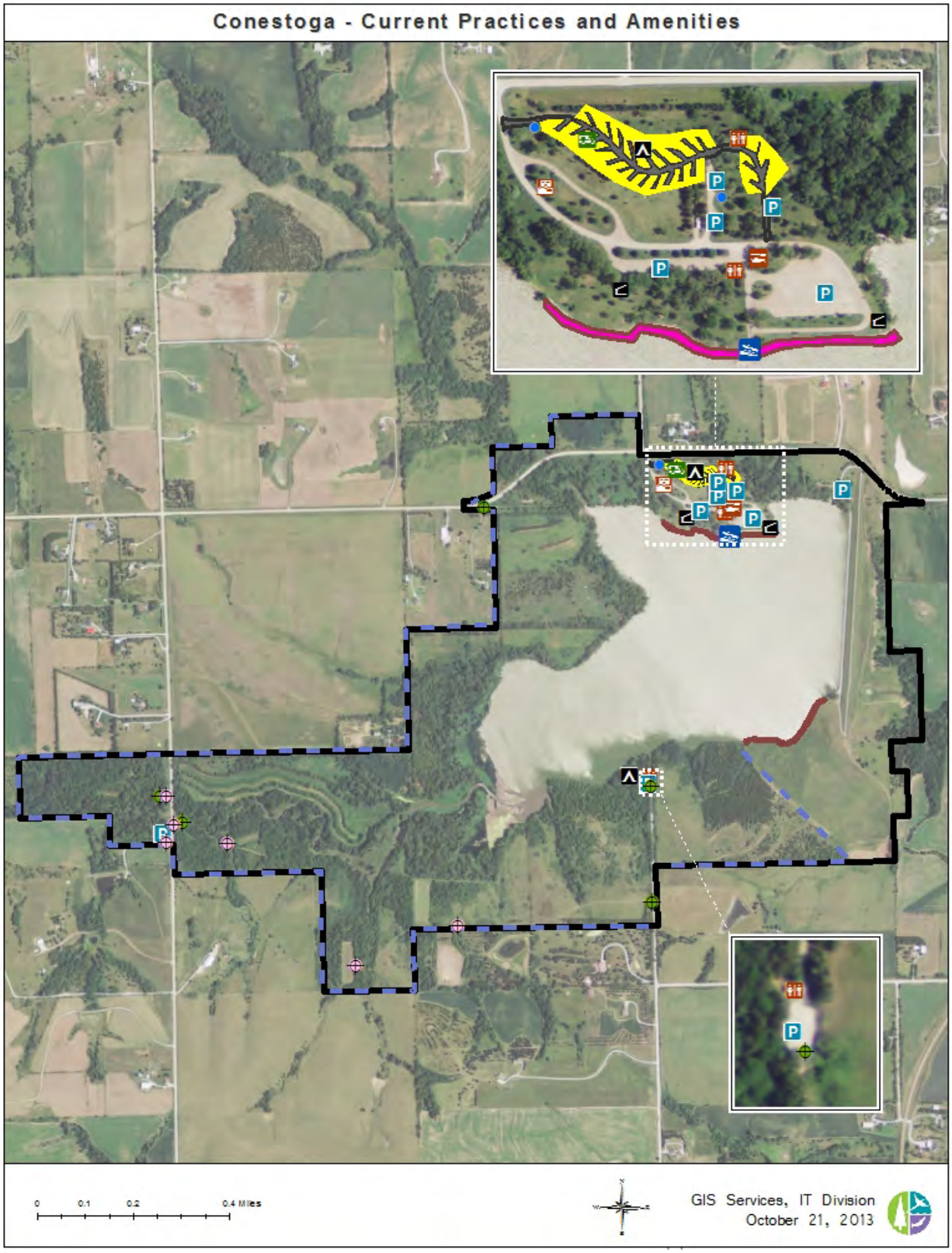
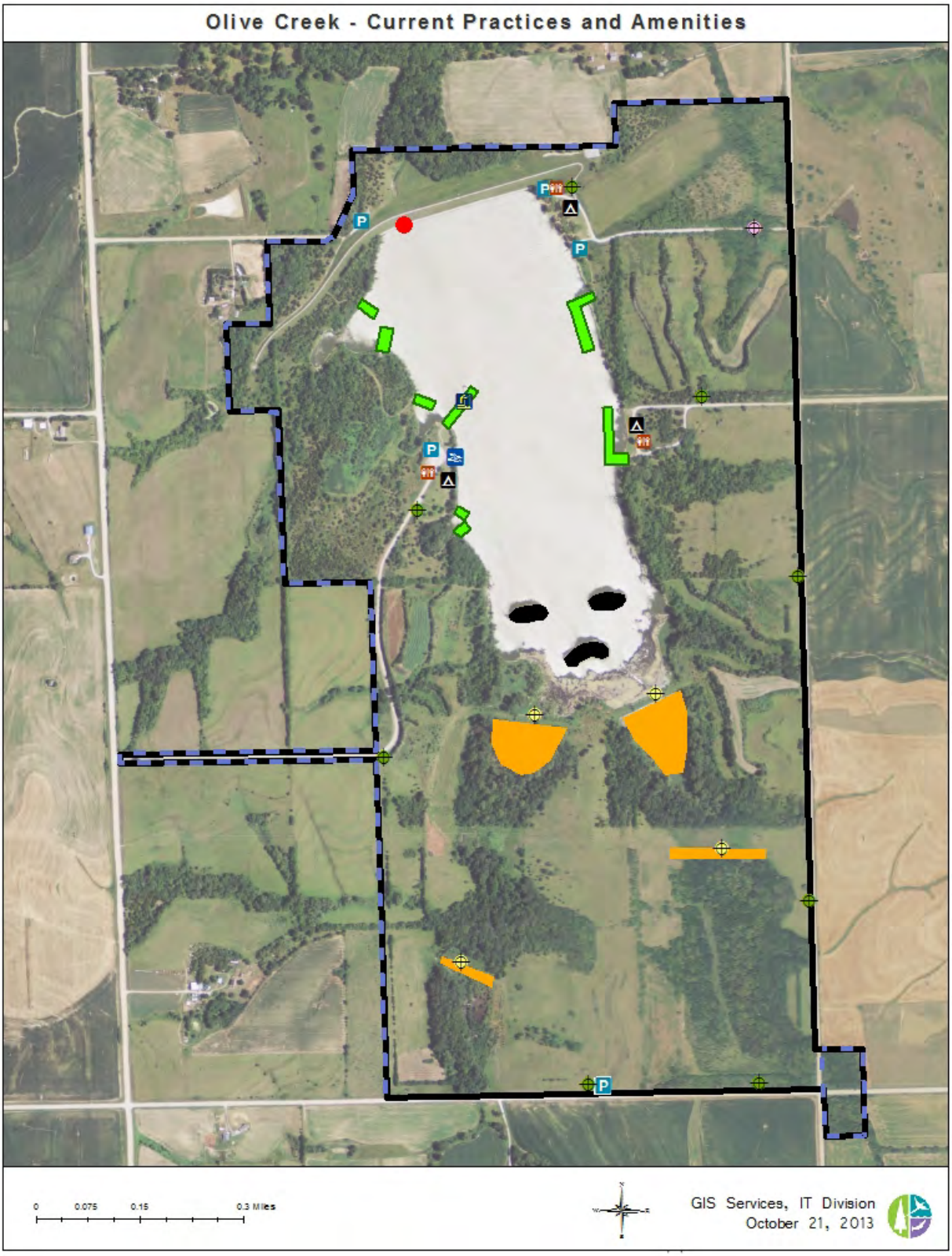


Table 4 shows the primitive development at Olive Creek Lake. This is one of the least developed Salt Valley Lakes and it shows by the amount of infrastructure listed in the table. It is a natural area that provides the public opportunities to fish, primitive camp and enjoy their natural surroundings. Figure 23 provides an overview on the map of the existing amenities as outlined in Table 4.

Table 4: Olive Creek Lake Existing Infrastructure

Infrastructure	Management	Value of Infrastructure
3.3 miles boundary fence	Wildlife	$87,120
6 cable gates	Wildlife	$475
2 pipe gates	Wildlife	$400
1 parking lot	Wildlife	$1,000
4 erosion control dams	Wildlife	$160,000
Informational signs	Wildlife	$1,000
1 culvert	Wildlife	$40,000
3 islands	Fisheries	$320,000
3 boat docks	Parks	$15,000
1 boat ramp	Parks	$9,200
1 hand well	Parks	$500
2 miles boundary fence	Parks	$54,000
13 fire rings (grills)	Parks	$1,989
32 picnic tables (11 permanent)	Parks	$13,377
3 vault toilets	Parks	$30,000
2 miles gravel road	Parks	$20,000
Fishing pier	Parks	$100,000
4 gravel parking lots	Park	$4,800
6 cove protection breakwaters	Parks	$381,000
2 long offshore breakwaters	Parks	$405,000
1 outlet modification	Parks	$10,000
Total		**$1,664,836**

Figure 23: Existing Amenities of Olive Creek Lake

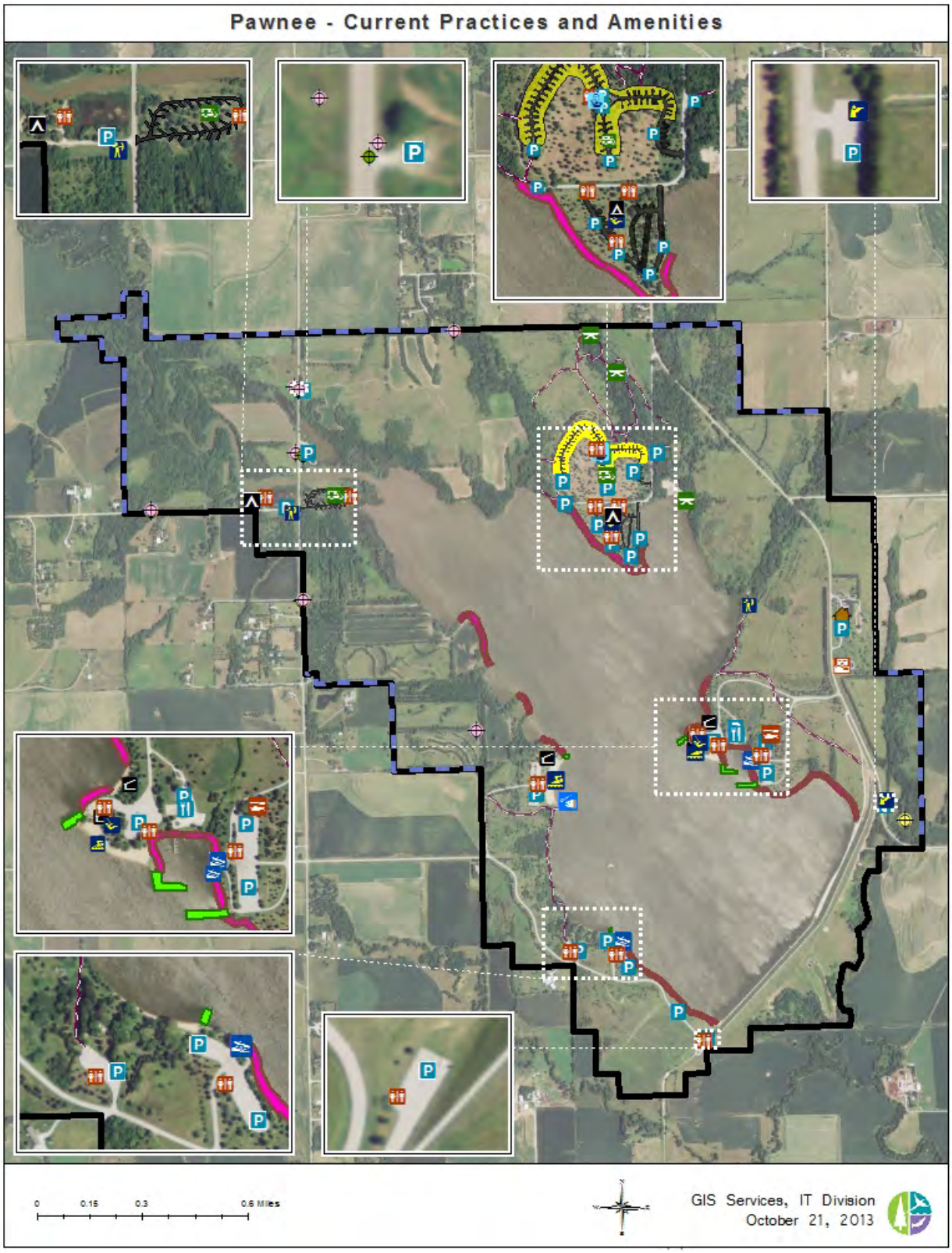


Pawnee Lake has a relative large list of infrastructure as shown in Table 5. It provides multiple opportunities and both Wildlife and Parks divisions have invested heavily into developing this area in the past 50 years. Pawnee has one concessionaire, the Pawnee Lodge that provides groceries, bait, firewood, and other essentials. Figure 24 provides a snapshot of the current amenities of Pawnee Lake.

Table 5: Pawnee Lake Existing Infrastructure

Infrastructure	Management	Value of Infrastructure
6 culverts	Wildlife	$6,000
3 pipe gates	Wildlife	$300
4 miles of boundary fence	Wildlife	$105,600
Informational signs	Wildlife	$1,000
1 gravel parking lot	Wildlife	$1,200
68 electrical hook ups	Parks	$70,000
34 non electric camp pads	Parks	
97 primitive camp sites	Parks	
7 boat docks	Parks	$65,000
3 boat ramps	Parks	$27,600
3 miles of boundary fence	Parks	$81,000
Dump station with septic fields & tanks	Parks	$20,000
1 fish cleaning station with septic field & tank	Parks	$125,000
185 fire rings (grills)	Parks	$28,305
40 grills	Parks	$8,000
2 horse corrals	Parks	$2,000
225 picnic tables	Parks	$160,650
13 vault toilets	Parks	$130,000
5 pieces of playground equipment	Parks	$55,000
3 miles paved roads & paved parking stalls	Parks	$168,000
½ mile of gravel road	Parks	$5,000
2 picnic shelters (aluminum)	Parks	$20,000
2 shower house	Parks	$250,000
7 yard lights	Parks	$2,800
5.7 miles of trails	Parks	$570
Blue Rock Range	Parks	$5,000
Archery Range	Parks	$1,200
Poleshed	Parks	$10,500
Shop	Parks	$250,000
Boat buoys	Parks	$7,000
Group Shelter	Parks	$55,000
4 gravel parking lots	Parks	$4,800
21 paved parking lots	Parks	$356,076
4 breakwaters	Parks	$371,000
9,950’ of shoreline armoring	Parks	$995,000
Total		**$3,428,601**

Figure 24: Current Amenities of Pawnee Lake



Stagecoach Lake has moderate infrastructure as provided in Table 6. This lake is a relatively popular lake and provides recreational opportunities to those living in Hickman, which is located nearby. It meets the needs of campers, anglers and hunters. Figure 25 provides a map of the current amenities that are outlined in Table 6.

Table 6: Stagecoach Lake Existing Infrastructure

Infrastructure	Management	Value of Infrastructure
2 parking lots	Wildlife	$2,000
2 pipe gates	Wildlife	$400
2 cable gates	Wildlife	$150
2 culvert	Wildlife	$2,000
3 miles boundary fence	Wildlife	$79,200
Erosion control dam	Wildlife	$40,000
Informational signs	Wildlife	$1,000
30 electrical hook ups	Parks	$30,000
8 non electric camp pads	Parks	
50 primitive camp sites	Parks	
2 boat dock systems	Parks	$20,000
1 boat ramp	Parks	$9,200
3 miles boundary fence	Parks	$81,000
1 hand well	Parks	$500
36 fire rings (grills)	Parks	$5,508
10 grills	Parks	$2,000
45 picnic tables	Parks	$11,835
5 vault toilets	Parks	$50,000
3 miles gravel roads	Parks	$30,000
3 yard lights	Parks	$1,200
1 fishing pier	Parks	$100,000
1 well	Parks	$10,000
13 gravel parking lots	Parks	$15,600
2 breakwaters	Parks	$84,000
7 islands	Parks	$420,000
2,400’ of shoreline armoring	Parks	$240,000
Total		**$1,235,593**

Figure 25: Current Amenities of Stagecoach Lake

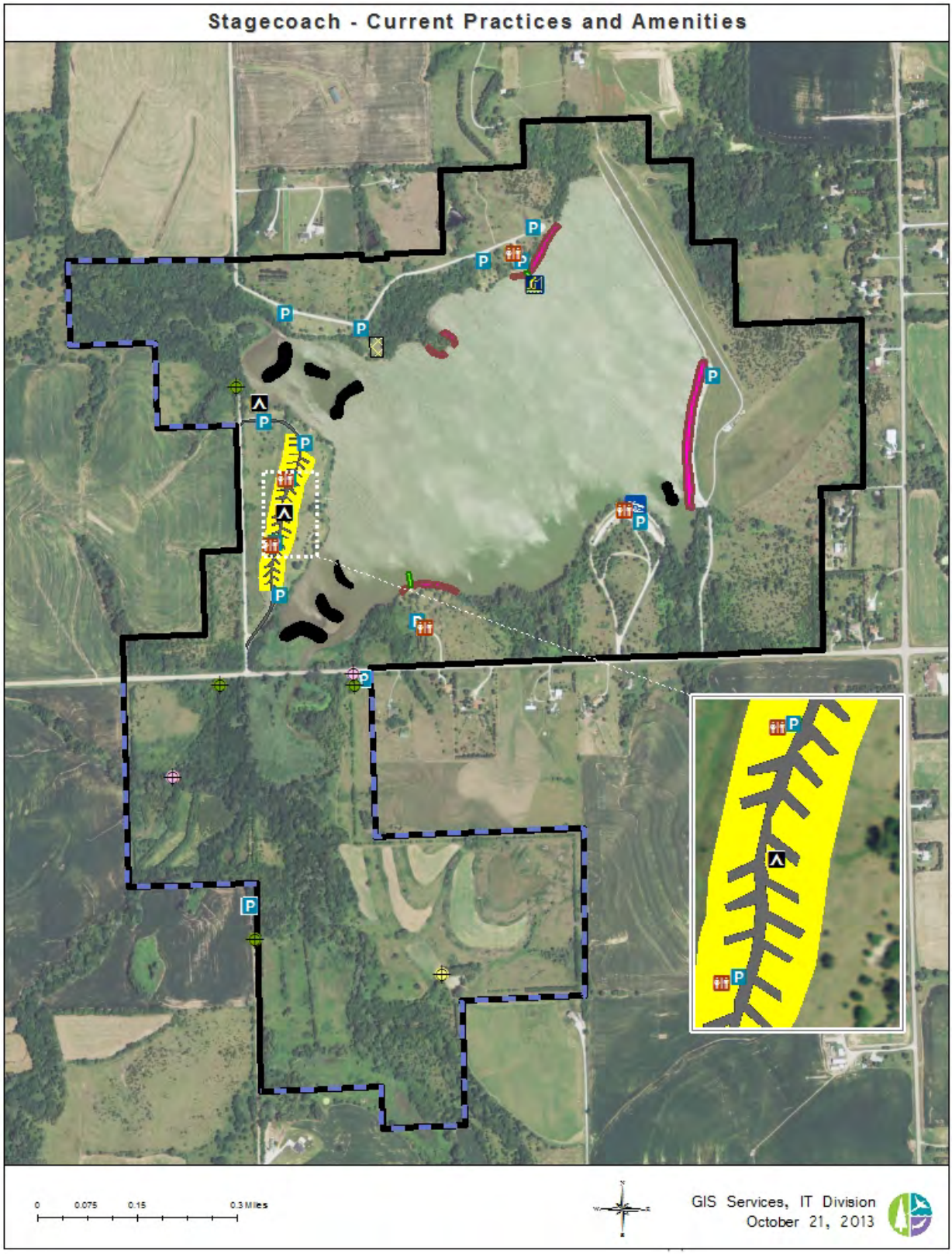


Table 7 shows the infrastructure at Twin Lakes. It should be noted that this lake is completely managed by the Wildlife division, so there is no investment from the Parks division into this area. The primary uses of this WMA are wildlife habitat, hunting, fishing and wildlife viewing. The current amenities of Twin Lakes are mapped, as shown on Figure 26.

Table 7: Twin Lakes Existing Infrastructure

Infrastructure	Management	Value of Infrastructure
5 service roads	Wildlife	$100,000
4.5 miles of boundary fence	Wildlife	$118,800
3 culverts	Wildlife	$3,000
3 cable gates	Wildlife	$225
8 pipe gates	Wildlife	$1,600
13 parking lots	Wildlife	$16,342
Informational signs	Wildlife	$1,000
1 metal sign	Wildlife	$2,000
1 vault toilet	Wildlife	$40,000
8 erosion control dams	Wildlife	$320,000
1 breakwater	Wildlife	$49,000
6 islands	Wildlife	$300,000
750’ of shoreline armoring	Wildlife	$75,000
1 boat ramp	Wildlife	$12,000
1 boat dock	Wildlife	$3,000
Total		**$1,041,967**

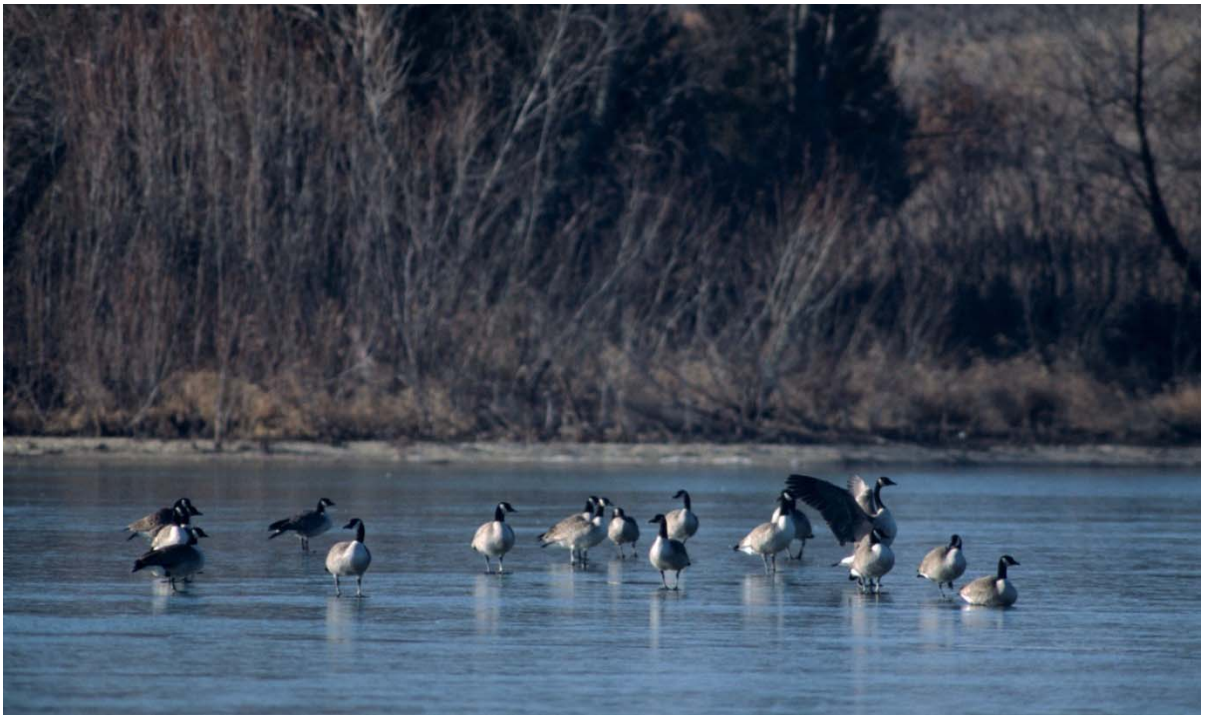
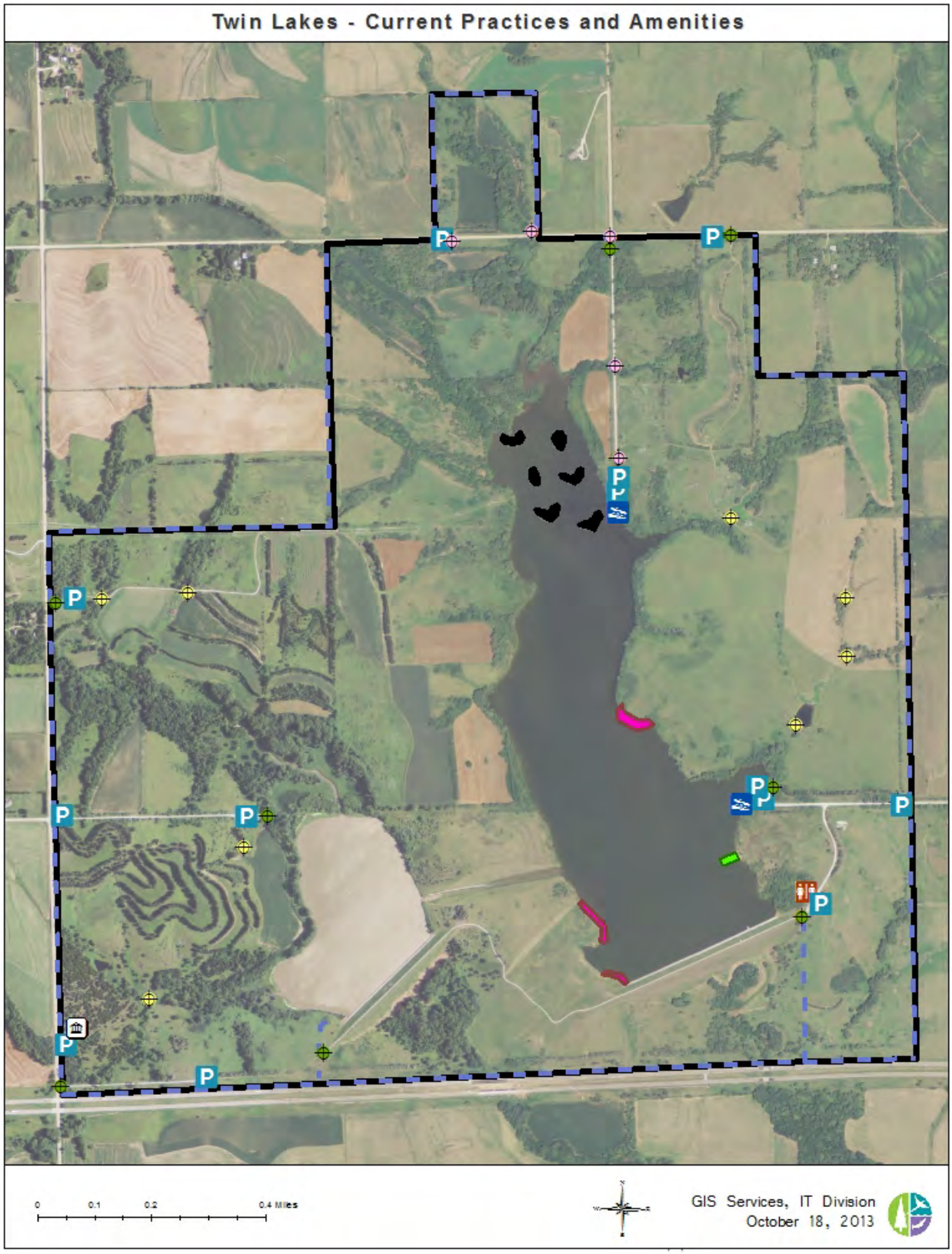


Figure 25: Current Amenities of Twin Lakes



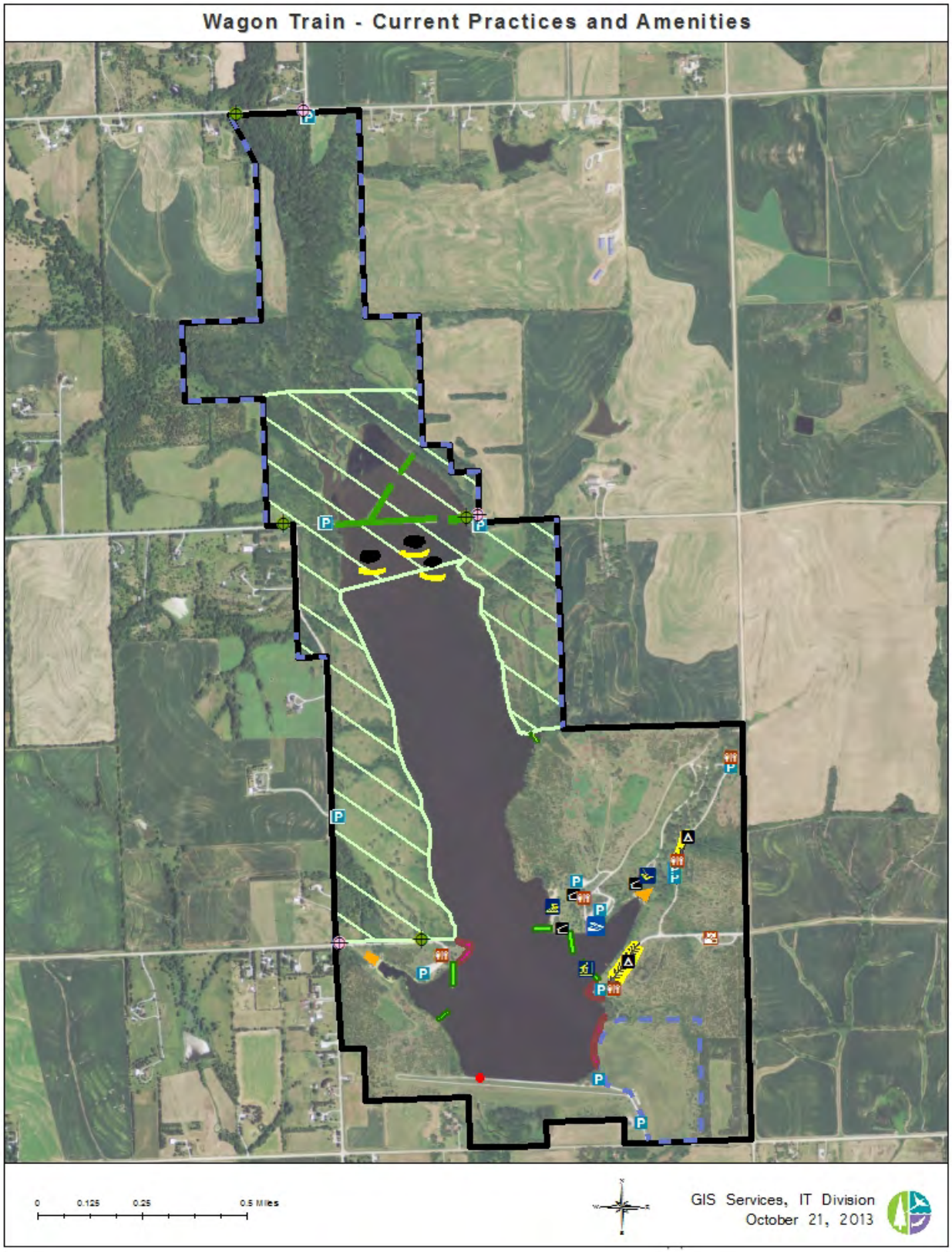
Since the recent Aquatic Habitat project, Wagon Train has become more popular with the public of Nebraska. Table 8 outlines the existing infrastructure at Wagon Train, which is moderate in nature. Additional development could be desirable at this location and will be discussed further on in the Future Development section. Figure 27 provides an overview of the current amenities of Wagon Train, as outlined in Table 8.

Table 8: Wagon Train Existing Infrastructure

Infrastructure	Management	Value of Infrastructure
4 parking lots	Wildlife	$4,240
3 pipe gates	Wildlife	$800
2 culverts	Wildlife	$2,000
4 miles of boundary fence	Wildlife	$105,600
Informational signs	Wildlife	$1,000
1 cable gate	Wildlife	$75
2 sediment traps	Wildlife	$38,000
Wetland complex	Wildlife	$264,017
28 electrical hook ups	Parks	$30,000
80 primitive camp sites	Parks	
2 boat dock systems	Parks	$20,000
1 boat ramp	Parks	$9,200
1 mile boundary fence	Parks	$27,000
4 wells	Parks	$40,000
2 hand pumps & 8 hydrants	Parks	$1,160
1 dump station with septic fields & tank	Parks	$20,000
77 fire rings (grills)	Parks	$11,781
32 grills	Parks	$6,400
125 picnic tables	Parks	$32,875
5 vault toilets	Parks	$50,000
1 playground	Parks	$30,000
½ mile paved roads	Parks	$14,000
4 ½ miles gravel roads	Parks	$45,000
3 picnic shelters	Parks	$30,000
2 yard lights	Parks	$800
Fishing pier	Parks	$100,000

Storage Shed	Parks	$5,000
Boat buoys	Parks	$525
9 gravel parking lots	Parks	$10,800
6 cove protection breakwaters	Parks	$410,000
1 breakwater	Parks	$80,000
3 off-shore breakwaters	Parks	$235,000
3 islands	Parks	$240,000
1,200’ of shoreline armoring	Parks	$120,000
1 outlet modification	Parks	$10,000
Total		**$1,995,273**

Figure 27: Current Amenities of Wagon Train Lake



The infrastructure of Yankee Hill is provided in Table 9. This is another area that has investment from only the Wildlife division because it is managed solely as a WMA, so Parks division has not invested in this area. The current amenities of Yankee Hill Lake are shown on Figure 28.

Table 9: Yankee Hill Lake Existing Infrastructure

Infrastructure	Management	Value of Infrastructure
1 mile of rocked access roads	Wildlife	$100,000
3 miles of boundary fence	Wildlife	$79,200
3 storage buildings	Wildlife	$120,000
1 well with 2 hydrants	Wildlife	$30,000
1 electrical pole with meter	Wildlife	$1,000
2 pipe gates	Wildlife	$400
3 cable gates	Wildlife	$225
8 culverts	Wildlife	$8,000
7 parking lots	Wildlife	$7,420
1 metal sign	Wildlife	$2,000
30 concrete parking barriers	Wildlife	$1,050
3 erosion control dams	Wildlife	$120,000
Informational signs	Wildlife	$1,000
1 vault toilet	Wildlife	$40,000
10 breakwaters	Wildlife	$800,000
4 off-shore breakwaters	Wildlife	$1,020,000
2 islands	Wildlife	$280,000
2 sediment traps	Wildlife	$125,000
100’ of shoreline armoring	Wildlife	$10,000
1 outlet modification	Wildlife	$10,000
1 boat ramp	Wildlife	$24,000
1 boat dock	Wildlife	$8,000
Total		**$2,747,295**

Figure 28: Current Amenities of Yankee Hill Lake

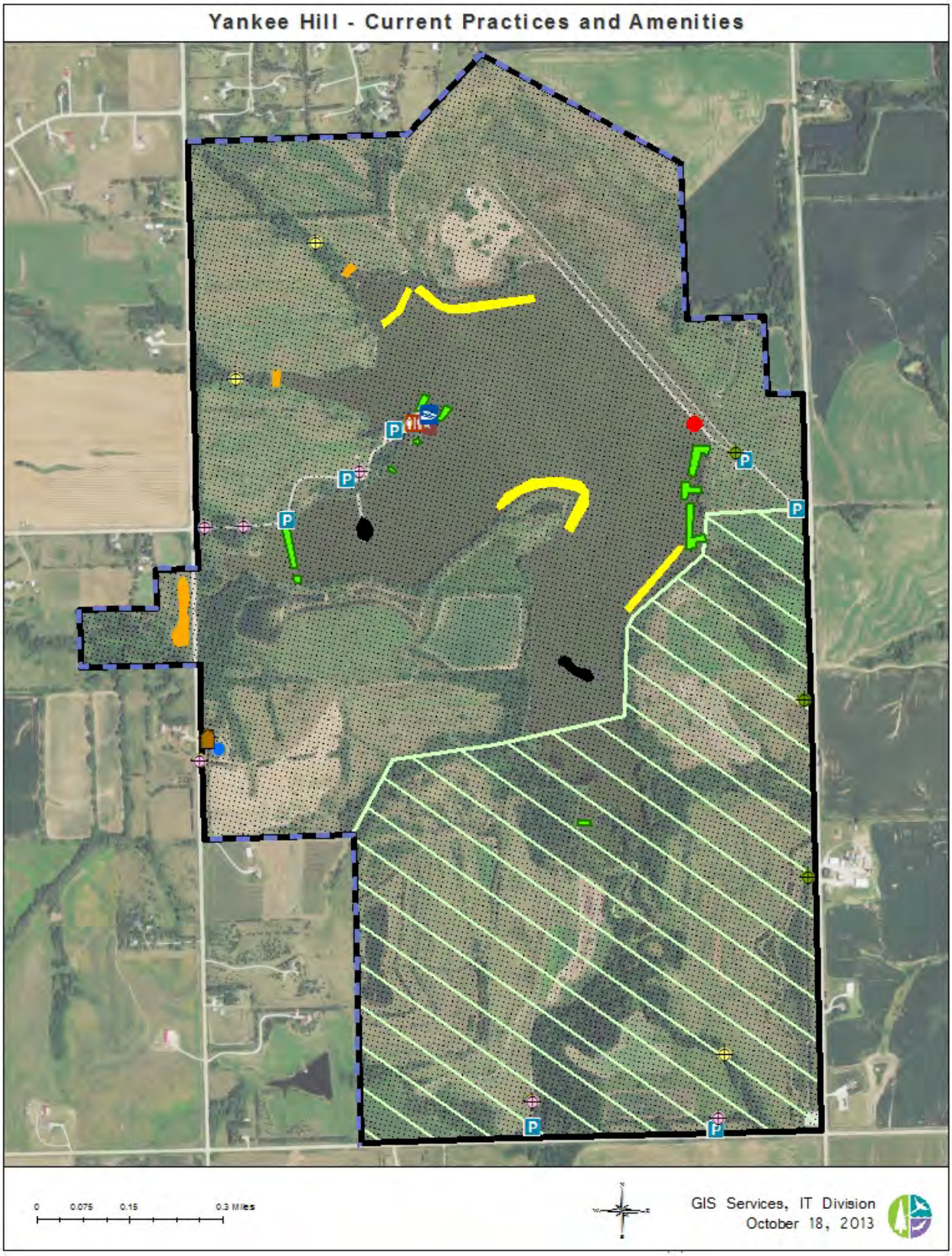


Table 10 provides a total picture of the infrastructure investment that NGPC has made in the past 50 years in the Salt Valley Lakes. It shows that millions have been invested into these areas to make them beneficial for the public to use for recreational purposes.

Table 10: Total Infrastructure Investment at Salt Valley Lakes

Area	Infrastructure Replacement Costs
Blue Stem Lake	$746,018
Branched Oak Lake	$10,869,228
Conestoga Lake	$802,429
Olive Creek Lake	$1,664,836
Pawnee Lake	$3,428,601
Stagecoach Lake	$1,235,593
Twin Lakes	$1,041,967
Wagon Train Lake	$1,995,273
Yankee Hill Lake	$2,747,295
Total	**$24,531,240**

Activities/Programming Available at Salt Valley Lakes

There are numerous outdoor recreational opportunities available at the Salt Valley Lakes. While not all of the lakes offer each of these activities, the proximity of the lakes all being within Lancaster County provides visitors many choices in a less than 60 miles radius. The amenities available include:

- Wildlife viewing
- Hunting
- Trapping
- Fishing
- Hiking
- Biking
- Camping
- Boating
- Picnicking
- Playgrounds
- Horseback Riding
- Snowmobiling
- Target Shooting
- Dog Training and Trials
- Shotgun Shooting

The Salt Valley Lakes fill an important niche for different outdoor events. A portion of the Cornhusker Games take place at Branched Oak SRA and there are many triathlons, races, regattas, weddings, family reunions, antique tractor parades, Fourth of July fireworks, and other group functions at many of the Salt Valley Lakes.

Visitation

It is important to look at visitation counts of the areas to assist in determining the type of development and at which areas development should occur. It should be noted that the areas that are managed as WMAs do not keep visitation counts on the areas. Table 11 provides an overview for the past five years regarding visitation at seven of the nine areas. The visitation at these Salt Valley Lakes makes up a significant part of the overall visitation to the State Park System.

Table 11: Visitation at Salt Valley Lakes; 2008-2012

Area	2008	2009	2010	2011	2012
Bluestem	20,625	22,175	21,175	73,164	83,852
Branched Oak	1,178,289	1,381,947	1,174,267	1,143,550	1,174,488
Conestoga	129,531	125,075	162,603	128,358	152,855
Olive Creek	19,298	21,491	19,389	21,509	19,928
Pawnee	219,304	244,800	318,591	299,925	349,134
Stagecoach	101,480	111,913	98,713	103,671	109,639
Wagon Train	131,271	144,663	129,050	150,277	226,192
Total	1,799,798	2,052,064	1,923,788	1,920,454	2,116,088

Volunteer Opportunities

The SRAs provide numerous volunteer opportunities for the public. These opportunities provide a valuable service to the park and wildlife areas. Boy Scouts, Girl Scouts, church groups, Keep Lancaster County Beautiful and others provide manpower to help tackle many projects. These can include landscaping projects, mowing, trash pick-up, refurbishing picnic tables, placing buoys, assisting in fishing clinics and other naturalist programs and campground hosting. The campground host program provides free camping to individuals or couples to be a presence within the campgrounds of the lakes. They greet other visitors, answer questions the visitors may have, clean and stock restrooms, and collect camping tags for the Superintendents. At the Salt Valley Lakes, there were over 4,000 volunteer hours logged in 2012. This equates to $35,362 in value to the Lakes.

Management of Existing Infrastructure

Management of the SRAs and WMAs entails a tremendous amount of work for all staff involved. In the Financial Section of this plan, the number of hours worked by each division is outlined. This section of the plan provides a brief overview of the tasks that occur on both SRA and WMA land.

State Recreation Area

The Parks division manages the areas that are being managed as SRAs. The staff would include 8 permanent employees and 42 temporary employees. The staff is overseen by a Regional Manager which is housed at the Headquarters office in Lincoln, NE and the Parks Division Administrator also spends time regarding management of the Salt Valley Lakes. The parks are managed in the best long-term interest of the people and the resources at each Salt Valley Lake. The following management activities take place on the SRAs of the Salt Valley Lakes:

- Staff hiring and training (new temporaries start every year for the high use season)
- Landscaping
- Equipment and facilities maintenance
- Fee collection
- Income accounting
- Regulation compliance
- Assist Law Enforcement on boating safety
- Habitat improvement and maintenance (includes tree removal, prescribed burns and chemical application when necessary)
- Program supervision
- Event supervision
- Boundary fence maintenance
- Assist other divisions on interagency projects
- Work with Headquarters to order supplies for the areas, coordinate garbage contracts and other contractual agreements (i.e. concessionaire leases) and marketing of the areas

Wildlife Management Area

The Wildlife division manages the areas that are managed as WMAs. WMAs are open to public use including wildlife viewing, hunting, trapping and fishing and are managed for wildlife habitat. State WMA, hunting, trapping and fishing regulations apply to these areas. There are no major developments on WMAs, however, sometimes major habitat reclamation is undertaken, such as large areas of tree removal. These large undertakings are usually the result of specific emphasis on reclamation of quality habitat by removing invasive plant species.

The vegetation on the Salt Valley Lakes WMAs can be categorized into four major classifications: Converted, Woodland, Grassland and Wetland. At the Salt Valley Lakes, wildlife staff spends the majority of their time using the following best management practices:

- Prescribed Burning
- Grazing
- Herbicide applications
- Haying and mowing
- Invasive/Noxious Weed control
- Timber stand improvement
- Food plots
- Grassland seeding
- Mechanical/chemical grassland management
- Woody plant removal

Other management activity the staff spends time on includes:

- Collect and harvest native grass and forb seed

- Boundary fence maintenance
- Service trail maintenance
- Erection of signs
- Parking lot maintenance

There are three permanent employees and five temporary employees that oversee the daily management of the WMAs at the Salt Valley Lakes. However, it should also be noted that these staff members are supported by administrative staff that is located in the headquarters office in Lincoln, NE. This would include the Wildlife District Manager who oversees the permanent positions as well as the Assistant Division Administrator of Wildlife who oversees all WMAs. The Wildlife District Manager also works in the field with staff to ensure proper management techniques are being applied to the area.

Fisheries

Management of the Fisheries in Southeast Nebraska is conducted by a District Supervisor, 2 biologists and 1 Technician. The Salt Valley and Papio Reservoirs get some of the highest use in the District due to their proximity to 60% of the state's population. Therefore, emphasis is placed on their management and 42% of the district staff time is placed on these 9 Salt Valley Reservoirs. The management goal in the Southeast is to create and/or maintain a diversity of recreational fishing opportunities for a diverse angling public. Creating more diverse recreational fishing opportunities are often limited by habitat, therefore, emphasis is placed on restoring, and improving or modifying conditions were fish live. In addition, creating more diverse recreational fishing opportunities is often limited by uniform management strategies and regulations. Diverse fishing opportunities can be provided by regulation adjustments or through different fish and habitat management practices that are appropriate for this region. The Primary management strategies implemented at the Salt Valley Reservoirs is:

- Fish stocking and evaluations
- Surveys and research of fish populations
- Angler surveys
- Chemical rehabilitation of fish populations
- Surveys of Aquatic nuisance species
- Aquatic habitat rehabilitation projects
- Aquatic vegetation management (physical, chemical and mechanical methods)
- Fish regulation evaluations

Law Enforcement

The Salt Valley Lakes are a major component for the Law Enforcement Division's Southeast District. ON average there are about 10,000 officer hours spent on the Salt Valley Lakes, comprising almost 40% of the officer hours for the entire Southeast District. During the summer months there are a number of officers assigned to the area from outside the Lancaster Duty Station to assist with the overwhelming number of visitors to the lakes at those times. A typical day between Memorial Day and Labor Day consists of proactive patrol checking for compliance with park, boating and fishing issues. As the day moves into the evening hours, management turns into more of reactive patrol due to increased

complaints. Officers respond to a number of calls from loud music/campers to dogs off leash to domestic assaults. There are also a number of other issues that have occurred on these areas that require a significant amount of manpower due to the sensitivity of the incident. These events would consist of drowning's, boat accidents, fatalities…etc.

There are four officers assigned to the Lancaster Duty station. The assigning of outside officers decreases considerably after Labor Day and those officers assigned to Lancaster County work the areas for the rest of the year without assistance from others unless a problem occurs. The Salt Valley lakes are a constant for activity outside of the summer for the officers assigned to Lancaster County due to the other outdoor opportunities such as dog training, deer, fishing, turkey, pheasant, and waterfowl hunting.

Financial Overview

There are four different divisions with NGPC that provide support and management of the Salt Valley Lakes. Each division provides for different elements to manage the Salt Valley Lakes successfully. Without each of these components, the Salt Valley Lakes would not meet the needs of the public. There are great expenses going into managing these areas and the income does not offset the costs to run the areas. The Parks, Wildlife and Fisheries divisions track the Salt Valley Lakes expenses by each specific lake. The Law Enforcement division does not break their time out per lake; through discussions with the law enforcement it has been determined that 60% of their time is spent at Branched Oak and Pawnee Lakes. Tables 12 through 15 provide the costs associated with each lake. Please note that Parks division tables are the only tables that provide anything regarding revenue because none of the other divisions collect revenue specific to the Salt Valley Lakes. There are hunting and fishing permits sold across the state, but it is difficult to correlate that information to a specific area.

Table 12 provides the annual costs associated with Fisheries management on the Salt Valley Lakes. This includes numerous activities and personnel costs. It should be noted that Aquatic Nuisance Species costs are given for one year because this is something that the agency is starting to work diligently on due to the problems it is causing to the water bodies. These costs are expected to climb in future years. This provides for the office overhead at 56th Street as well since equipment and personnel are located at that building that deal directly with fisheries. The lease costs have been broken out by a

percentage base because there are other areas that the fisheries staff deals with out of that office. It should also be noted that this is a snapshot of the last nine years and does not include the planned aquatic rehabilitation projects such as Conestoga that is coming up in the next two years. This table shows that the Fisheries division incurs approximately $490,000 worth of costs related to the management of the fisheries at the Salt Valley Lakes.

Table 12: Annual Costs Associated with Fisheries Management on Salt Valley Lakes

	Annual Cost of Operations and Maintenance averaged for 2004-2012						**Average Annual Cost for 2004-2012**			**Total Annual Cost**
	Fish Stocking Cost	Personnel wages and benefits	*Seasonal Employee Cost	*Mileage Cost	*56th Street Lease	Aquatic Nuisance Species Cost**	Fisheries Research Cost	Aquatic Rehab Cost & maintenance	Chemical Rehabilitation Cost	
Bluestem	$0	(0%) $0	$0	$0	$0	$639	$13,200			$13,839
Branched Oak	$25,085	(15%) $34,018	$2,463	$2,355	$5,400	$2,120	$18,000			$89,441
Conestoga	$1,003	(3.5%) $7,938	$575	$550	$1,260	$639	$13,200			$25,165
Olive Creek	$1,968	(3%) $6,804	$493	$471	$1,080	$639	$13,800	$2,685		$27,940
Pawnee	$1,624	(4%) $9,072	$657	$628	$1,440	$1,508	$19,100			$34,029
Stagecoach	$2,919	(4.5%) $1,021	$739	$707	$1,620	$639	$13,800			$21,445
Twin Lakes	$2,633	(4%) $9,072	$657	$628	$1,440	$639	$13,800			$28,869
Wagon Train	$17,022	(4.5%) $1,021	$739	$707	$1,620	$639	$13,200	$226		$35,174
Yankee Hill	$4,251	(3.5%) $7,938	$575	$550	$1,260	$639	$13,200	$190,000	$400	$218,813
Total Annual Cost	**$56,505**	**$76,884**	**$6,898**	**$6,596**	**$15,120**	**$8,101**	**$131,300**	**$192,911**	**$400**	**$494,715**

* Cost averages derived based on % reported for fish surveys

**Average from 2011-2012

Table 13 provides the annual costs associated with the wildlife management on the Salt Valley Lakes. This includes personnel costs, material costs, mileage and other pertinent costs linked to the wildlife management of the areas. This is an average over the past five years. Income comes from grazing and hay leases on the lands managed for wildlife.

Table 13: Average Annual Costs Associated with Wildlife Management on Salt Valley Lakes from 2008-2012

Area	Income	Staff Time	Expenses	Labor Trade	Total Expenses	Income minus expenses
Blue Stem	$0	$2,491	$2,944	$2,491	$7,926	($7,926)
Branched Oak	$10,960	$28,695	$12,820	$54,340	$95,855	($84,895)
Conestoga	$476	$4,424	$3,303	$424	$8,151	($7,675)
Olive Creek	$672	$2,579	$896	$4,079	$7,554	($6,882)
Pawnee	$0	$3,076	$7,578	$3,076	$13,730	($13,730)
Stagecoach	$0	$3,076	$3,403	$3,076	$9,555	($9,555)
Twin Lakes	$10,523	$1,977	$11,296	$7,150	$20,423	($9,900)
Wagon Train	$454	$4,013	$2,517	$4,013	$10,543	($10,089)
Yankee Hill	$1,972	$5,715	$3,676	$8,215	$17,606	($15,634)
Total	$25,057	$56,046	$48,433	$86,864	$191,343	($166,286)

Table 14 provides the annual costs associated with Law Enforcement on the Salt Valley Lakes. As noted before in text, the Law Enforcement division does not divide their time out in regards to the time they spend at each Salt Valley Lake. It should be noted that the majority (at least 60%) of their time is spent at Branched Oak or Pawnee Lakes. This table shows that an average of the past five years, Law Enforcement spends over $375,000 at the Salt Valley Lakes.

Table 14: Annual Costs Associated with Law Enforcement on Salt Valley Lakes

Year	Hrs. Associated w/ Salt Valley Lakes	Wage & Benefit Costs	Miles	Mileage Cost	Estimated Annual Equipment Costs*	Total Costs
2008	9,714	$323,289	65,040	$32,520	$11,425	$367,234
2009	9,981	$332,181	68,689	$34,344	$11,425	$377,951
2010	10,116	$347,066	81,599	$40,800	$11,425	$399,291
2011	9,046	$316,697	81,312	$41,469	$11,425	$369,591
2012	8,629	$308,222	119,505	$60,947	$11,425	$380,595
Total	47,486	$1,627,456	416,145	$210,081	$57,125	$1,894,663
Average	**9,497**	**$325,491**	**83,229**	**$42,016**	**$11,425**	**$378,932**

*Boat, Boat Use, Depreciation, Other Maintenance

Table 15 provides an overview of the costs and income associated with Parks management on the Salt Valley Lakes. The Parks division is the only division that collects income at the lakes. The income was then compared to the expenses of each of the lakes. The table shows that all areas lose money when all costs are included as opposed to just staff and operations and maintenance.

Table 15: Average Annual Costs and Income Associated with Parks Management on Salt Valley Lakes from 2008-2012

Area	Income	Personnel Costs	Operation & Maintenance	Equipment	Capital Expenditures	Operation & Construction	Total Costs	Income minus Expenses
Bluestem	$9,953	$50,848	$17,680	$0	$437	$4,248	$73,213	($63,260)
Branched Oak	$558,025	$368,912	$217,373	$27,285	$29,571	$37,643	$680,784	($122,759)
Conestoga	$26,729	$17,067	$10,215	$0	$0	$1,430	$28,712	($1,983)
Pawnee	$160,972	$202,301	$98,191	$27,720	$982	$1,160	$302,634	($141,662)
Olive Creek	$2,583	$12,777	$4,346	$0	$292	$4,108	$21,523	($18,940)
Stagecoach	$22,188	$14,966	$12,483	$0	$676	$3,363	$31,488	($9,300)
Wagon Train	$43,283	$50,869	$36,360	$0	$437	$3,380	$91,046	($47,763)
Total	$823,733	$717,740	$396,648	$55,005	$32,395	$55,332	$1,229,400	($405,667)

Table 16 provides the average annual costs for all NGPC divisions to manage the Salt Valley Lakes. It should be noted that the income minus expenses column is used for both the Wildlife and Parks divisions to show the costs of the lake making the assumption that all income made on these areas actually stayed at these areas for operation. It also is important to point out, again, the fact that Law Enforcement does not break out their costs by lake area so only a total is given. This table shows that the Salt Valley Lakes, on average in the past five years, costs NGPC $1,455,600 to operate.

Table 16: Average Annual Costs for all NGPC divisions to manage Salt Valley Lakes

Area	Fisheries	Law Enforcement	Wildlife	Parks	Total
%∞ˇ¹–ˇæ#	$13,839		$7,926	$63,260	$85,025
%ß°ı″ªˇ.#²°Œ#	$89,441		$84,895	$122,759	$297,095
&łı ˇ¹–łÆ°#	$25,165		$7,675	$1,983	$34,823
2 ‰óˇ#&ßˇˇŒ#	$27,940		$6,882	$141,662	$176,484
3°Öıˇˇ#	$34,029		$13,730	$18,940	$66,699
6–°Æˇ″ł°″ª#	$21,445		$9,555	$9,300	$40,300
7Ö Łı#/°Œˇ¹#	$28,869		$9,900	$0	$38,769
: °Æłı#ß°Łı#	$35,174		$10,089	$47,763	$93,026
<°ıŒˇˇ#Ł‰#	$218,813		$15,634	$0	$234,447
Total	**$494,715**	**$378,932**	**$166,286**	**$405,667**	**$1,445,600**

Future Development

This section of the plan describes the future development of each Salt Valley Lake. There is one item that is important to note regarding the buildings at the Salt Valley Lakes. Recently, the Nebraska State Historical Society completed a survey of state-owned historic buildings. Branched Oak SRA has three buildings that the State Historical Society deems as significant due to their examples as early 20th century farmstead buildings. These include a barn built in 1914, a Granary built in 1923 and a Milk House built in 1945. In the next 50 years, additional buildings may be placed on the list as significant, which would affect how the buildings are maintained and what could be done with them when their "useful" life has been reached. Coordination with the State Historical Society could become common practice with all work on buildings, which would include any work done to the exteriors of the buildings.

It should be noted that the future of any area has some unknown factors. Trends in recreation change, the natural environment can be altered; development patterns around the lake areas and unexpected opportunities can change how an area is developed. While those dynamics are not something that can be prepared for, there are some issues that can be. The future development plan addresses those items. This plan must remain flexible to incorporate the unforeseen. Figures 29 to 48 provide for an overview of the future development that could occur at the Salt Valley Lakes. Figure 29 specifically shows the legend that all the future development maps are designed from. Make reference to Figure 29 when viewing Figures 30 through 38. Make reference to Figure 39 when viewing Figures 40 through 48. The future development maps had to be broken into water based and land based maps due to the amount of development that is proposed. Figures 30 through 38 are water based future development.

Water Based Development

The life of the reservoirs is extremely important to the recreational development of these areas. Development needs to take place on land as well as the water to meet the needs of the visitors who frequent the lakes. The Salt Valley Reservoirs have been accumulating sediment over the past 50 years and there is now a backlog of nearly 10,000 acre-feet of sediment in the nine reservoirs that would currently cost $64 million to remove. Sediment accumulation at these sites not only affects the depth and diversity within the reservoir, but since the phosphorus binds to the sediment particles, also increases nutrient loading. The negative aspects of algae blooms and poor water quality will continue to become a more serious concern during the course of the next licensing with USACE. Table 17 provides an overview of the sedimentation rate and what the estimated future costs to remove the sedimentation would be.

A bathymetric survey of Olive Creek conducted by NGPC in 2005, showed a sedimentation rate of 6.5 acre-feet per year since 1964, despite the removal of 138,000 cubic yards as part of an Aquatic Habitat Project. While it is estimated that 1032 acre-feet of sediment storage volume still remains, only 97.5 acre-feet is below 10' of conservation pool. Within 15 years at these sedimentation rates, the fish community and recreational value of the reservoir will be significantly impacted requiring maintenance removal of sediment to restore water depth at an annual cost of $157,268 (6.5 acre-feet x 1613 cu-yds/acre-foot x $15/cu-yd).

A bathymetric survey of Bluestem conducted by NGPC in 2002, showed a sedimentation rate of 22.7 acre-feet per year since 1964. While it is estimated that 1800 acre-feet of sediment storage volume remains, only 239.1 acre-feet is below 10' of conservation pool. Within 11 years at these sedimentation rates, the fish community and recreational value of the reservoir will be significantly impacted requiring maintenance removal of sediment to restore water depth at an annual cost of $549,227 (22.7 acre-feet x 1613 cu-yds/acre-foot x $15/cu-yd).

A bathymetric survey of Wagon Train conducted by NGPC in 2002 showed that the recently completed Aquatic Habitat Project had removed nearly all sedimentation that had occurred since 1963. It is estimated that 1482 acre-feet of sediment storage volume remains, with only 320 acre-feet is below 10' of conservation pool. Within 37 years at the sedimentation rate (8.8 acre-feet/year) published by the USACE in 1995, the fish community and recreational value of the reservoir will be significantly impacted requiring maintenance removal of sediment to restore water depth at an annual cost of $212,916 (8.8 acre-feet x 1613 cu-yds/acre-foot x $15/cu-yd).

A bathymetric survey of Yankee Hill conducted by NGPC in 2000, showed a sedimentation rate of 16.9 acre-feet per year since 1966. While it was estimated that 739 acre-feet of sediment storage volume remained in 2000, nearly 350,000 cubic yards (217 acre-feet) was subsequently removed as part of an Aquatic Habitat Project, with 242.1 acre-feet below 10' of conservation pool. Within 15 years at these sedimentation rates, the fish community and recreational value of the reservoir will again be significantly impacted requiring maintenance removal of sediment to restore water depth at an annual cost of $408,896 (16.9 acre-feet x 1613 cu-yds/acre-foot x $15/cu-yd).

A bathymetric survey of Conestoga conducted by NGPC in 2011, showed a sedimentation rate of 19.1 acre-feet per year since 1964. While it is estimated that 1575 acre-feet of sediment storage volume remains, only 262.2 acre-feet is below 10' of conservation pool. Within 14 years at these sedimentation rates, the fish community and recreational value of the reservoir will be significantly impacted requiring maintenance removal of sediment to restore water depth at an annual cost of $462,125 (19.1 acre-feet x 1613 cu-yds/acre-foot x $15/cu-yd).

A sedimentation survey of Twin Lakes was published by USACE in 1995, showed a sedimentation rate of 12.5 acre-feet per year since 1966, leaving an estimated 1,129 acre-feet in 2013. While it is unknown how much volume remains below 10' of conservation pool, the estimated annual cost to remove entering sediment is $302,438 (12.5 acre-feet x 1613 cu-yds/acre-foot x $15/cu-yd).

A bathymetric survey of Pawnee conducted by NGPC in 2002, showed a sedimentation rate of 62.2 acre-feet per year since 1966. While it is estimated that 6456 acre-feet of sediment storage volume remains, only 1700 acre-feet is below 10' of conservation pool. Within 27 years at these sedimentation rates, the fish community and recreational value of the reservoir will be significantly impacted requiring maintenance removal of sediment to restore water depth at an annual cost of $1,504,929 (62.2 acre-feet x 1613 cu-yds/acre-foot x $15/cu-yd).

A bathymetric survey of Branched Oak conducted by NGPC in 2003, showed a sedimentation rate of 49.1 acre-feet per year since 1967. It is estimated that 12,000 acre-feet of sediment storage volume

remains with 9,890 acre-foot 10' below conservation pool. Branched Oak is the only reservoir that is estimated to not be impaired during the next lease with 201 years remaining. The estimated cost to remove the annual loading of sediment is $1,187,975 (49.1 acre-feet x 1613 cu-yds/acre-foot x $15/cu-yd).

Table 17: Sedimentation at the Salt Valley Lakes

Reservoir	Sedimentation Rate (acre feet)	Years Remaining until Reservoir is Impaired	Annual Maintenance Cost of Sediment Removal
Olive Creek	6.5	15	$157,268
Bluestem	22.7	11	$549,227
Wagontrain	8.8	37	$212,916
Yankee Hill	16.9	15	$408,896
Conestoga	19.1	14	$462,125
Twin Lakes	12.5	N/A	$302,438
Pawnee	62.2	27	$1,504,929
Branched Oak	49.1	201	$1,187,975
Total	**197.8**		**$4,785,771**

There are different elements that need to be addressed to have high water quality, good aquatic habitat and quality access to the water. Figures 30 through 38 provide the water based development recommendations for the next 50 years.

The following brief descriptions are the activities that could potentially take place within the waters at the Salt Valley Lakes that NGPC manages. Not all of these activities are slated for each lake and that the locations at each lake are indicated in a general sense as opposed to an exact location.

Angler Access improves the ability of anglers to access shoreline areas near deep water and clear of nuisance aquatic vegetation. Typical activities including improvement of angler access for the physically impaired, would be the construction of concrete walkways, breakwaters, or fishing platforms (e.g. piers, lawns, groynes, nodes). The activities within the lake areas could include selective basin sculpting and placement of fish attractors.

Fisheries Enhancements improve fish habitat conditions within a lake through selective lake deepening, placement of rock, tree piles or other structures and substrate improvements.

Sediment Control removes existing and reduces future sedimentation into the main water body with the use of wetlands and/or sediment retention structures. Areas at each lake have been identified where sediment control activities need to take place in the future.

Outlet Modification will allow for water level manipulation for wetland management and to allow draining of the lake basin. This is a necessary action that must occur and at some of the reservoirs, this will need to take place in the future.

Wetland Management improves the wetland plant community to improve water quality conditions and provide more suitable fish habitat. It conducts water level manipulation to improve germination rates or by planting or seeding.

Water Quality Management will primarily consist of the removal of existing and prevention of future sediment/nutrient transport into the reservoirs. Additional techniques (alum treatments, herbicide applications, vegetation barriers) may be employed to improve the clarity of water and reduce the available phosphorus for algae growth.

Aquatic Nuisance Species includes informing and educating the public about the impact of aquatic nuisance species to prevent their arrival. It also includes sampling to determine areas where populations of aquatic nuisance species currently reside. All water bodies have the potential to have aquatic nuisance species and should be studied to ensure that if and when they do enter the lake body, they are identified immediately and action is taken. Specific management techniques or actions to remediate are not identified in this plan.

Shoreline Stabilization reduces the impact of wave generated erosion of shorelines by placement of armoring material on the lake edge or by placement of off-shore breakwaters to intercept or reduce wave energy and allow the establishment of near-shore aquatic vegetation.

Boating Access Improvement provides opportunities for boats or their operators' better access to the lake. This could include activities or amenities such as selective lake deepening, restroom facilities, roads, disability access, boat ramps, protective breakwaters, trails, shoreline improvements, or fishing platforms.

Channel Widening is predominantly used to increase boat access either through existing flood trees or where there is an accumulation of sediment which no longer allows boats to travel through.

Figure 29 provides a legend for the future development maps of the Salt Valley Lakes. This figure should be referred to when reviewing Figures 30 through 38. These figures show the future development of the water resources of each area.

Figure 30 provides an overview of Bluestem Lake. Angler access has been identified in three locations of the lake. Most of these improvements would be boat ramps and ADA facilities. Shoreline stabilization was also identified in two locations. This would be removing existing rip rap if it is there and replacing it with new rip rap and possibly additional off-shore breakwaters. There are two locations identified for fisheries enhancement which will improve the fish habitat in those areas. Sediment control and wetland management was identified in three locations which will reduce the amount of sediment in the lake and increase the amount wetland plant communities in those locations. The entire lake is identified for fishery enhancement/water quality management/aquatic nuisance species. This means that improving the water quality is a need at this lake. Finally, the outlet structure is in need of modification and this is slated for improvement in the future.

Figure 29: Legend for Water-based Future Development

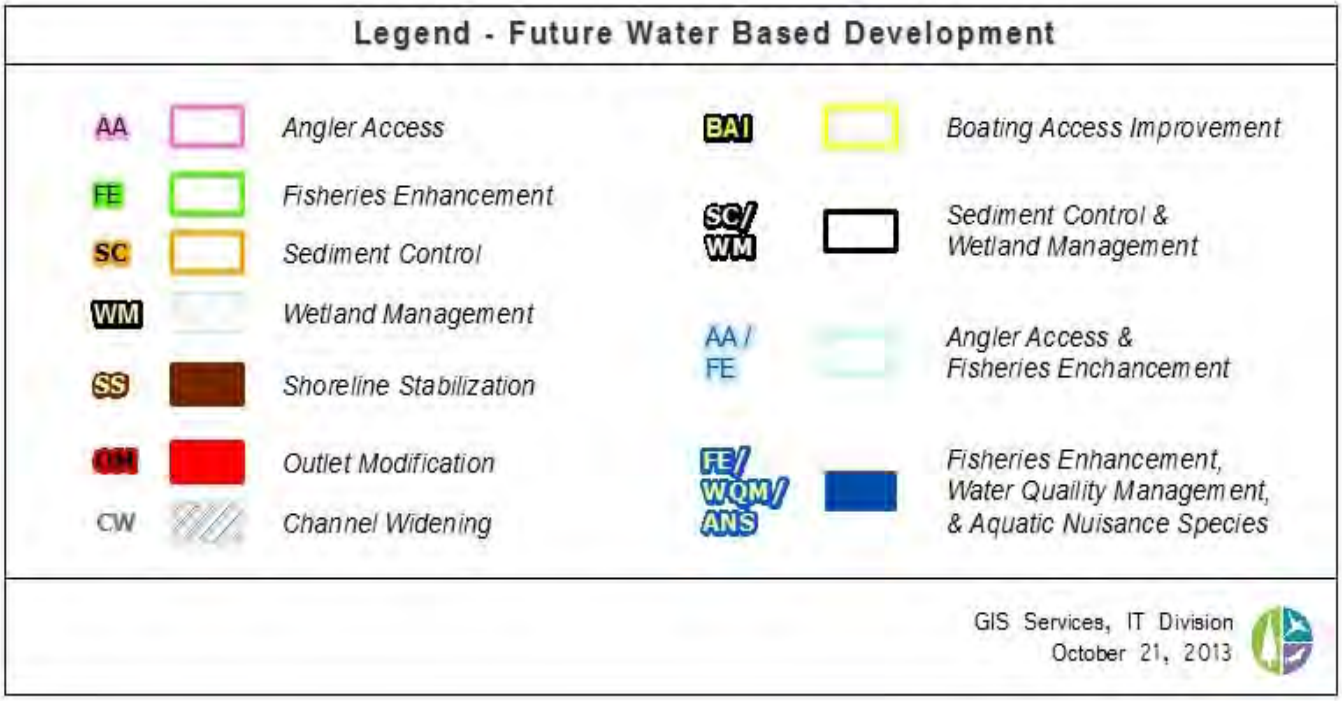


Figure 30: Bluestem Lake Water Based Future Development

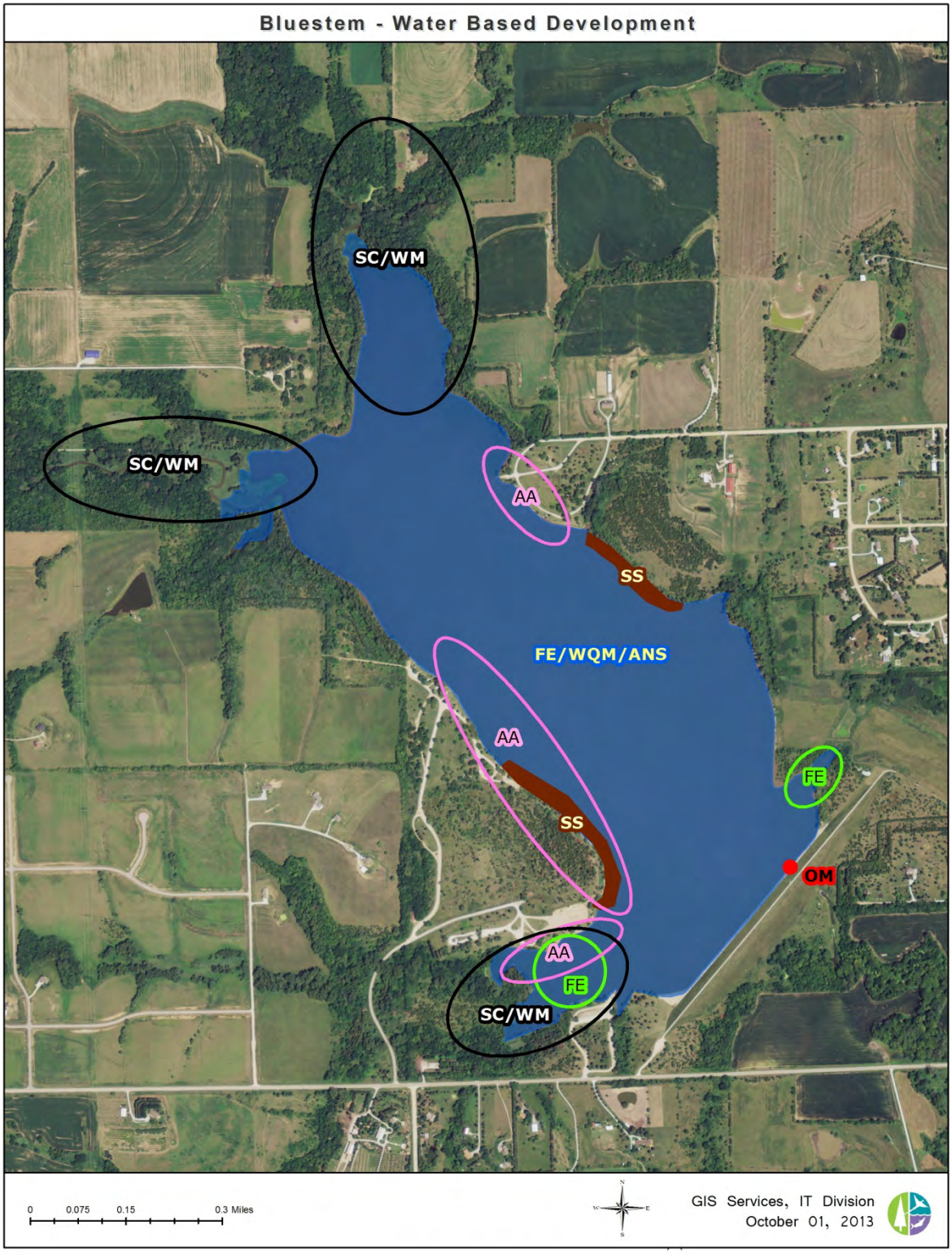
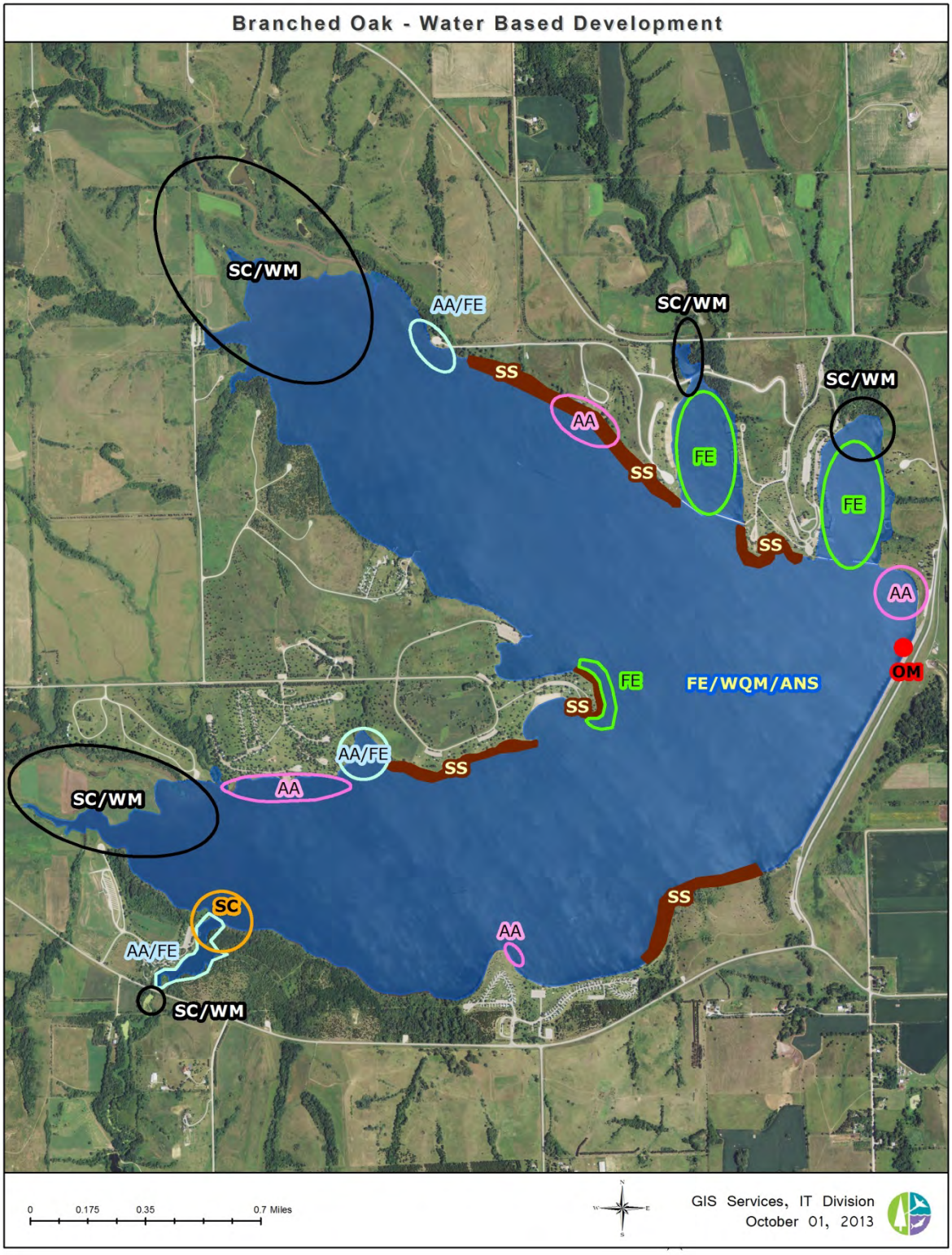


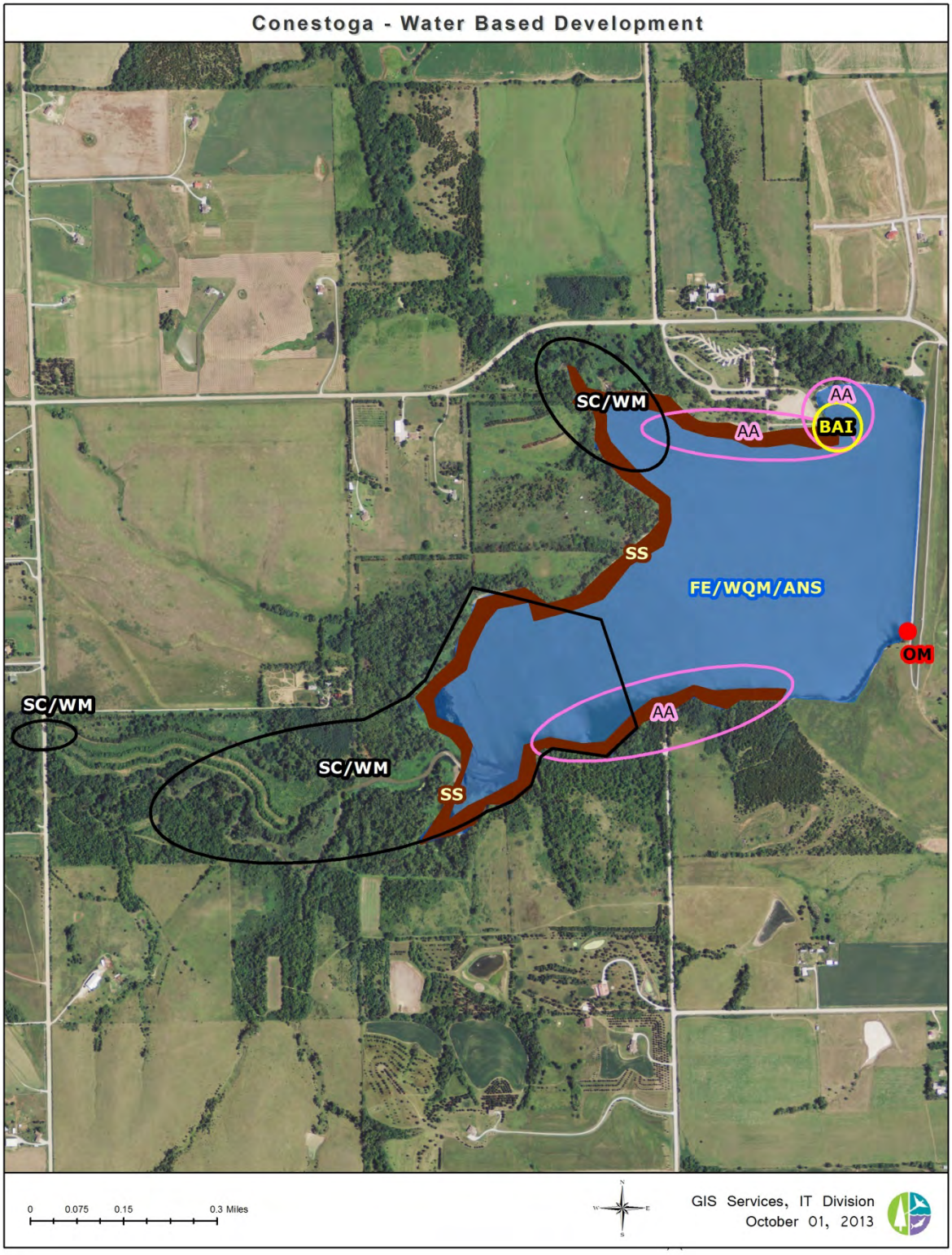
Figure 31 provides the future development of Branched Oak Lake. This lake is in need of quite a bit of work. There are six locations where angler access needs improvement. There are also six locations where shoreline stabilization will be required in the future. Besides angler access and shoreline stabilization, six locations have been identified for fisheries enhancement. Another six locations were detected for sediment control and four areas were identified for wetland management. The entire lake is slated for fisheries enhancement, water quality management and aquatic nuisance species control. Finally, the outlet structure will need modification in the future.

Figure 31: Branched Oak Lake Water Based Future Development



Conestoga Lake's future water based development is pinpointed on Figure 32. It should be noted that a major aquatic habitat and lake renovation project is currently underway. At this point, the project is in the design phase. However, the Fisheries Division looked at the lake area and identified the current problem areas, these areas and others will likely need additional rehabilitation work within the next 50 years. There are three areas that are being considered for additional or improved angler access. The majority of the lake is slated for shoreline stabilization. The three areas that need sediment control work done as well as wetland management. It is important to note the land adjacent to the lake is slated for some wetland management work. One location has been identified to improve boating access and the outlet structure will need modification in the next 50 years. Finally the lake is slated to receive some fisheries enhancement, water quality management and aquatic nuisance species work.

Figure 32: Conestoga Lake Water Based Future Development



The future water based development for Olive Creek is outlined in Figure 33. Olive Creek has benefited from a recent renovation but the Fisheries division has identified additional work that will need to be done in the next 50 years. Two large areas of the lake have been slated for improvements to angler access. One specific area has been identified for fisheries enhancement and it has been determined that the same area would also be in need of sediment control. There are two main areas where sediment control and wetland management would be beneficial to work on in the next 50 years as well as the outlet structure. There will be locations in the lake area that require fisheries enhancement, water quality management and aquatic nuisance species control, which is why the entire lake has been identified for this work. It is unknown at this point exactly which areas will need work in the next 50 years, but it is known that the work will be necessary in the future.

Figure 33: Olive Creek Lake Water Based Future Development

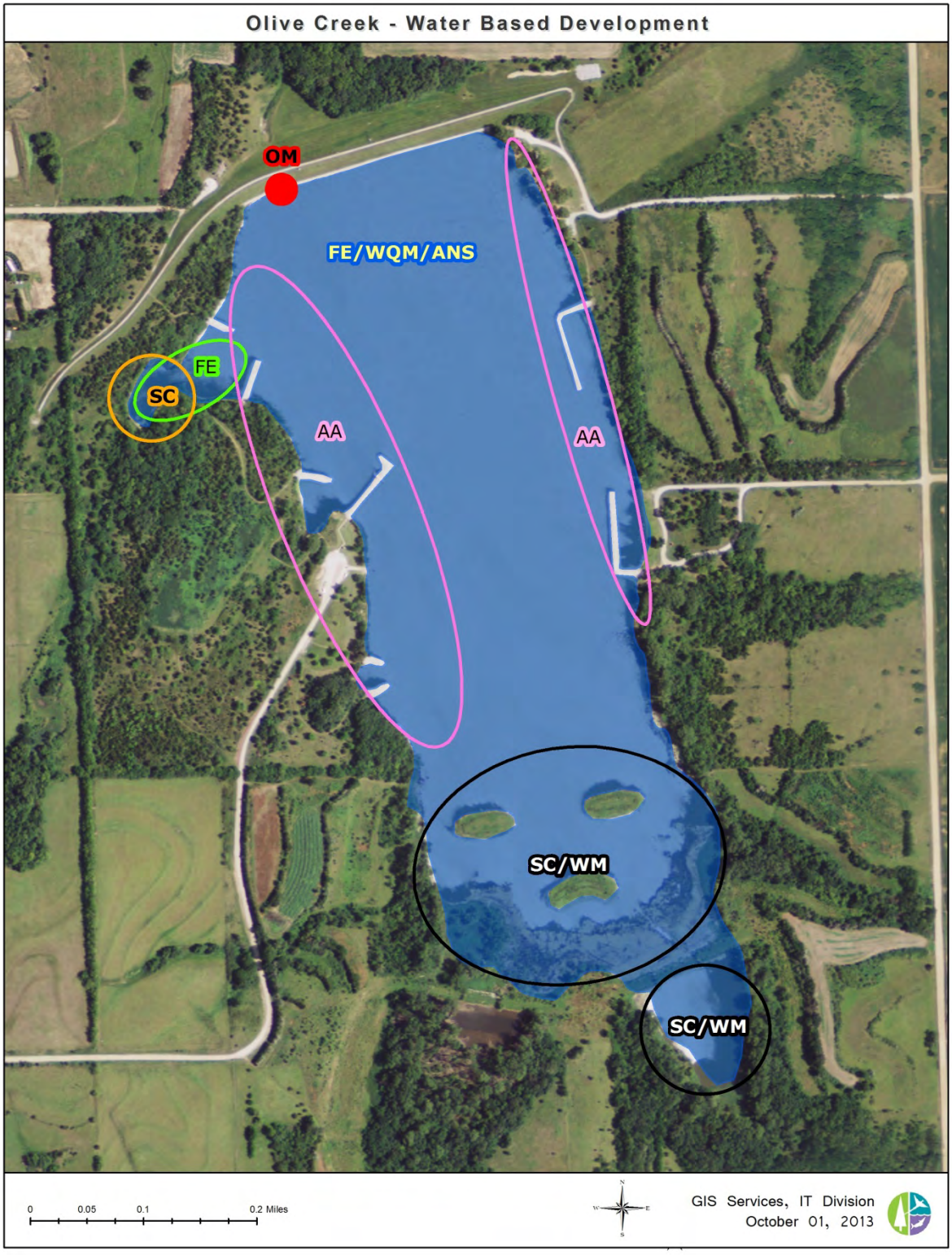
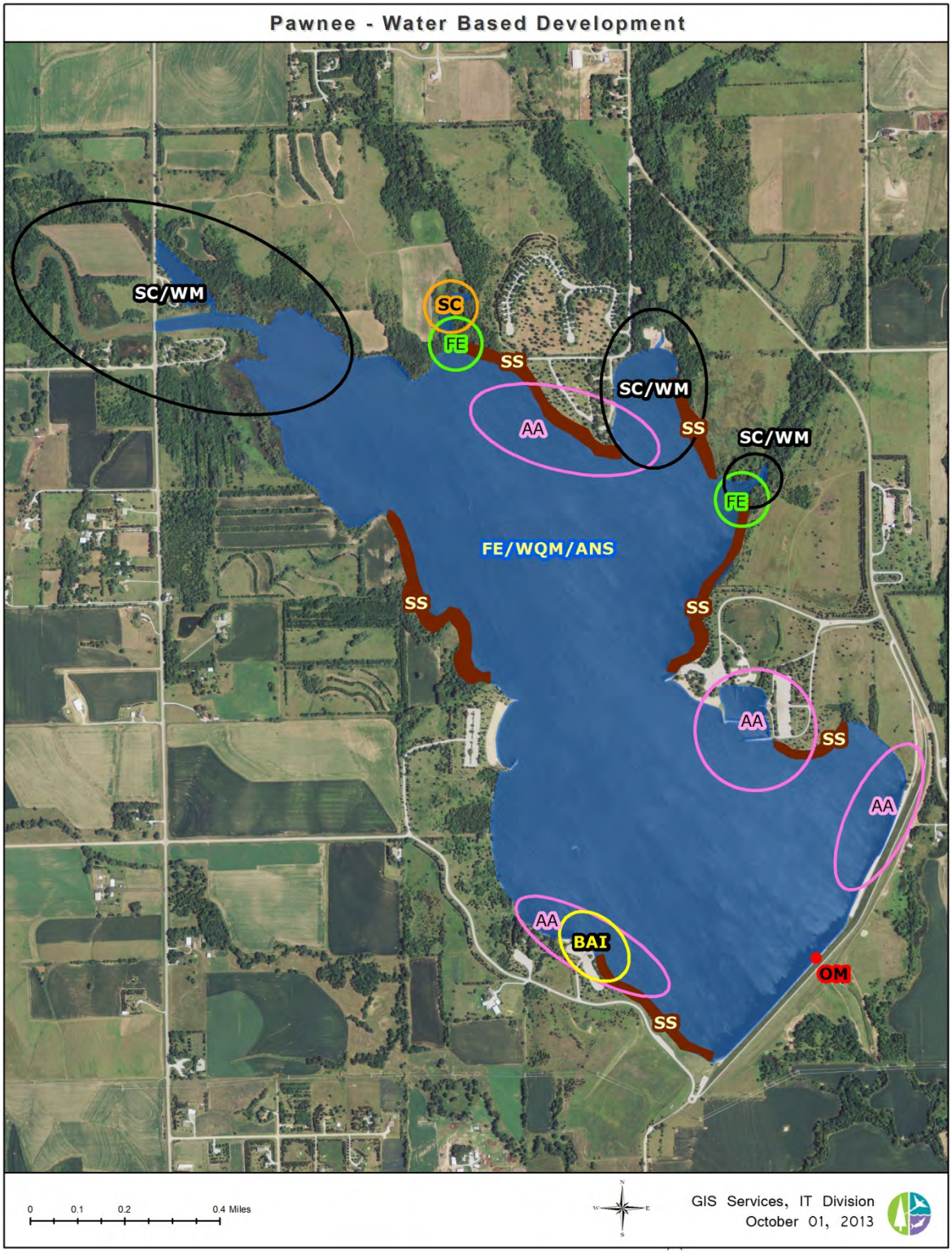


Figure 34 provides an overview of the future water based development that could occur at Pawnee Lake. Four locations have been determined to have a need for additional or renovated angler access at the lake. Another six locations have been identified for shoreline stabilization. Two specific areas have been selected for fisheries enhancement and one of those two areas also requires some sediment control work. Three areas have been located for additional sediment control work and wetland management. These areas also encompass the land adjacent to the lake. There will be locations in the lake area that require fisheries enhancement, water quality management and aquatic nuisance species control, which is why the entire lake has been identified for this work. The outlet structure will be in need of modification in the next 50 years and finally there is one location where boating access will need to be improved.

Figure 34: Pawnee Lake Water Based Future Development



The future water based development at Stagecoach Lake is depicted in Figure 35. The map shows that almost half of the lake has been identified to have a need for angler access. It has been determined that three areas of the lake require shoreline stabilization in the next 50 years. Besides the entire lake being identified for fisheries enhancement, water quality management and aquatic nuisance species control, there are two specific areas identified for fisheries enhancement. Sediment control and wetland management is programmed in three locations, with one area looking at the adjacent land to lake for wetland management. There is also one location that has been identified for improved boating access and the outlet structure will need modified within the next 50 years.

Figure 35: Stagecoach Lake Water Based Future Development

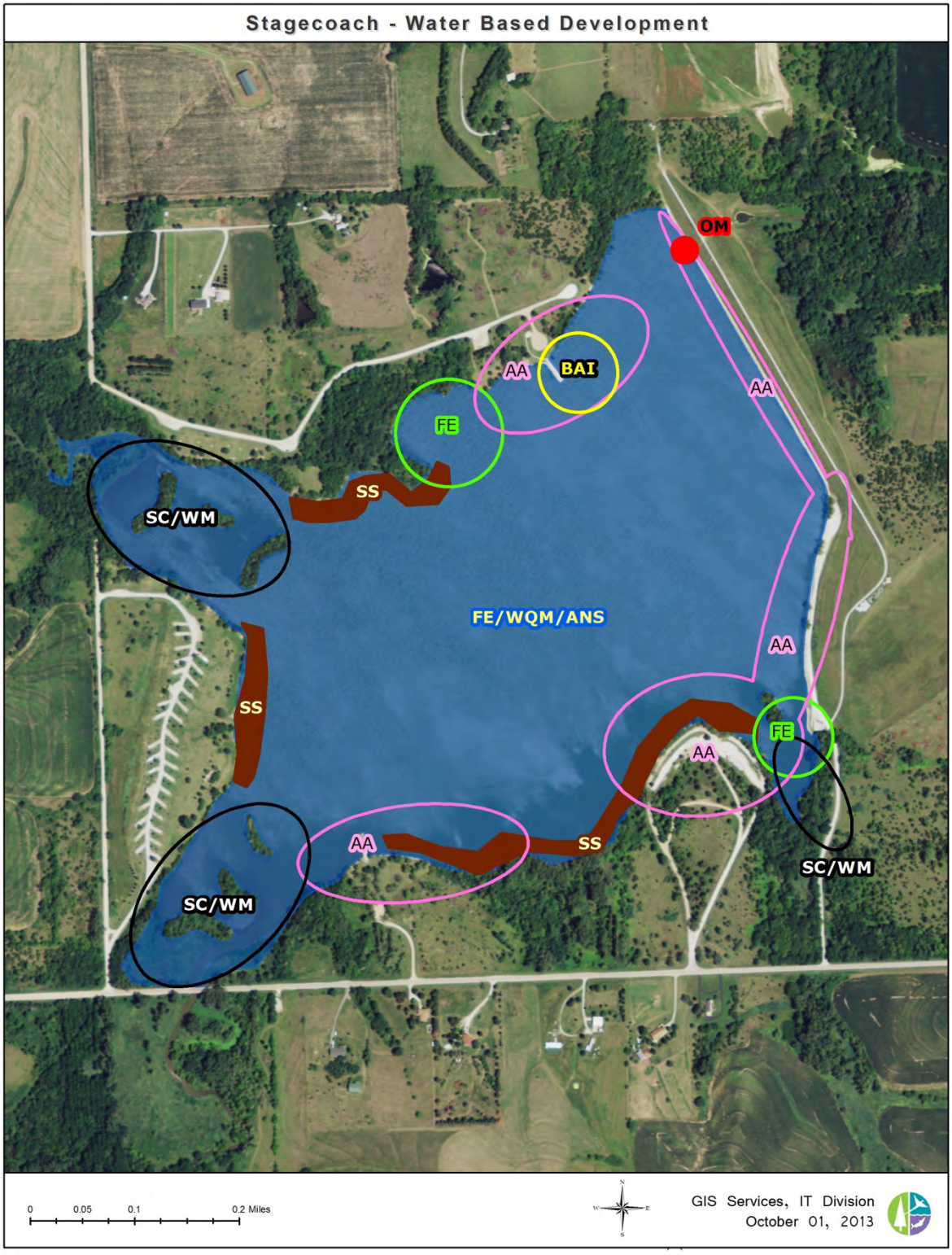
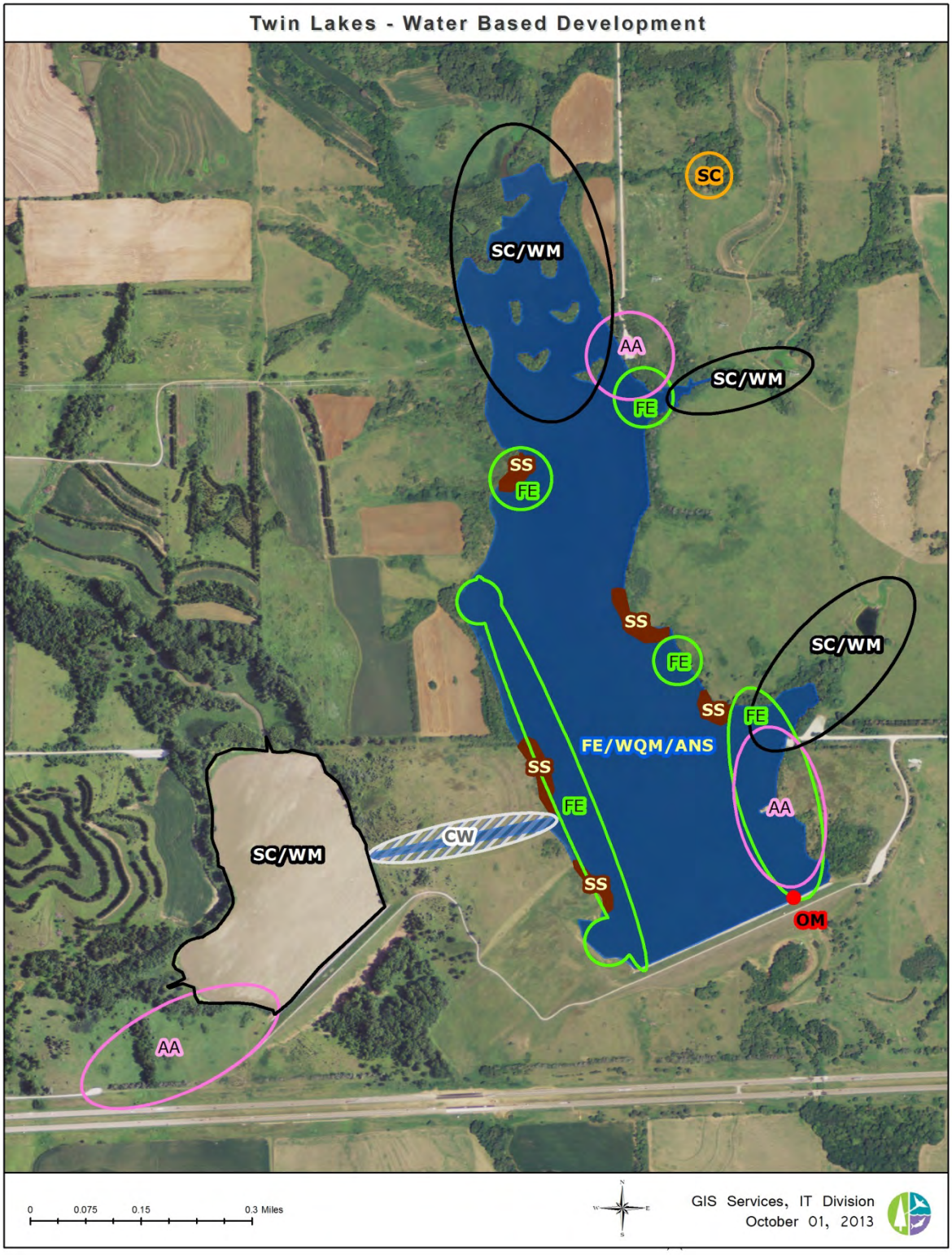


Figure 36 provides a map of the potential water based development in the next 50 years for Twin Lakes. This lake has identified three angler access areas in need of improvement. However, it should be noted that one area identified for angler access will require the channel to be widened as well as a tremendous amount of sediment removal out of the west lake and wetland management to create a lake that is capable to meet the needs of anglers. Besides the sediment control and wetland management identified in the west lake area, there are three other areas that would benefit from sediment control and wetland management. There are five locations at the lake that are identified for shoreline stabilization and there is one area of sediment control located north and east of the lake that needs to be addressed. There will be locations in the lake area that require fisheries enhancement, water quality management and aquatic nuisance species control, which is why the entire lake has been identified for this work. The outlet structure will be in need of modification in the next 50 years.

Figure 36: Twin Lakes Water Based Future Development



The future water based development at Wagon Train Lake is shown in Figure 37. Wagon Train Lake will be in the need of additional or renovated angler access in three different locations. The majority of the shoreline has been identified for stabilization. Besides the entire lake being identified for fishery enhancement, water quality management and aquatic nuisance species control, there is one other specific area of the lake that will require fishery enhancement in the next 50 years. Boating access improvements or additions have been identified in two locations and the outlet structure will need to be modified as well.

Figure 37: Wagon Train Lake Water Based Future Development

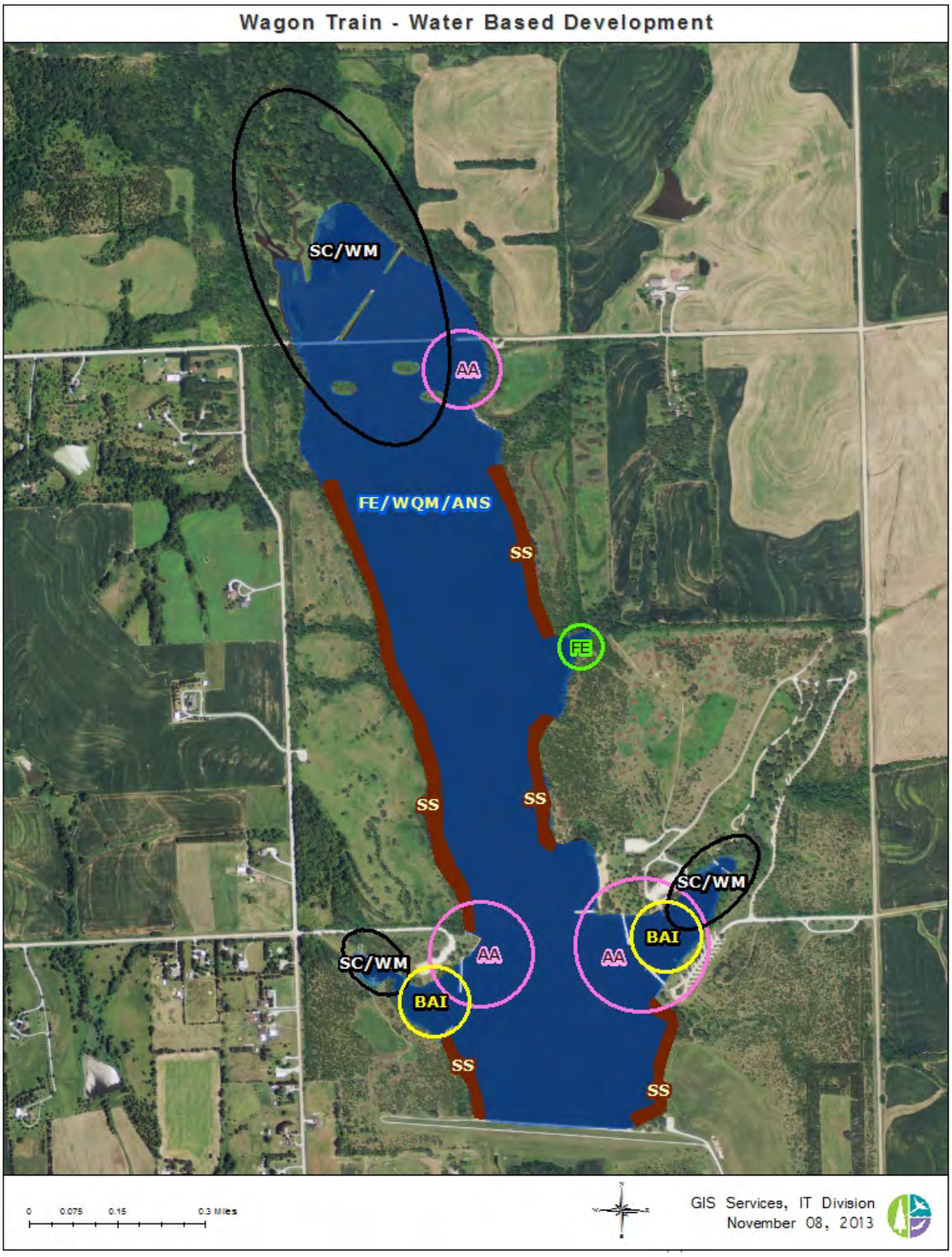
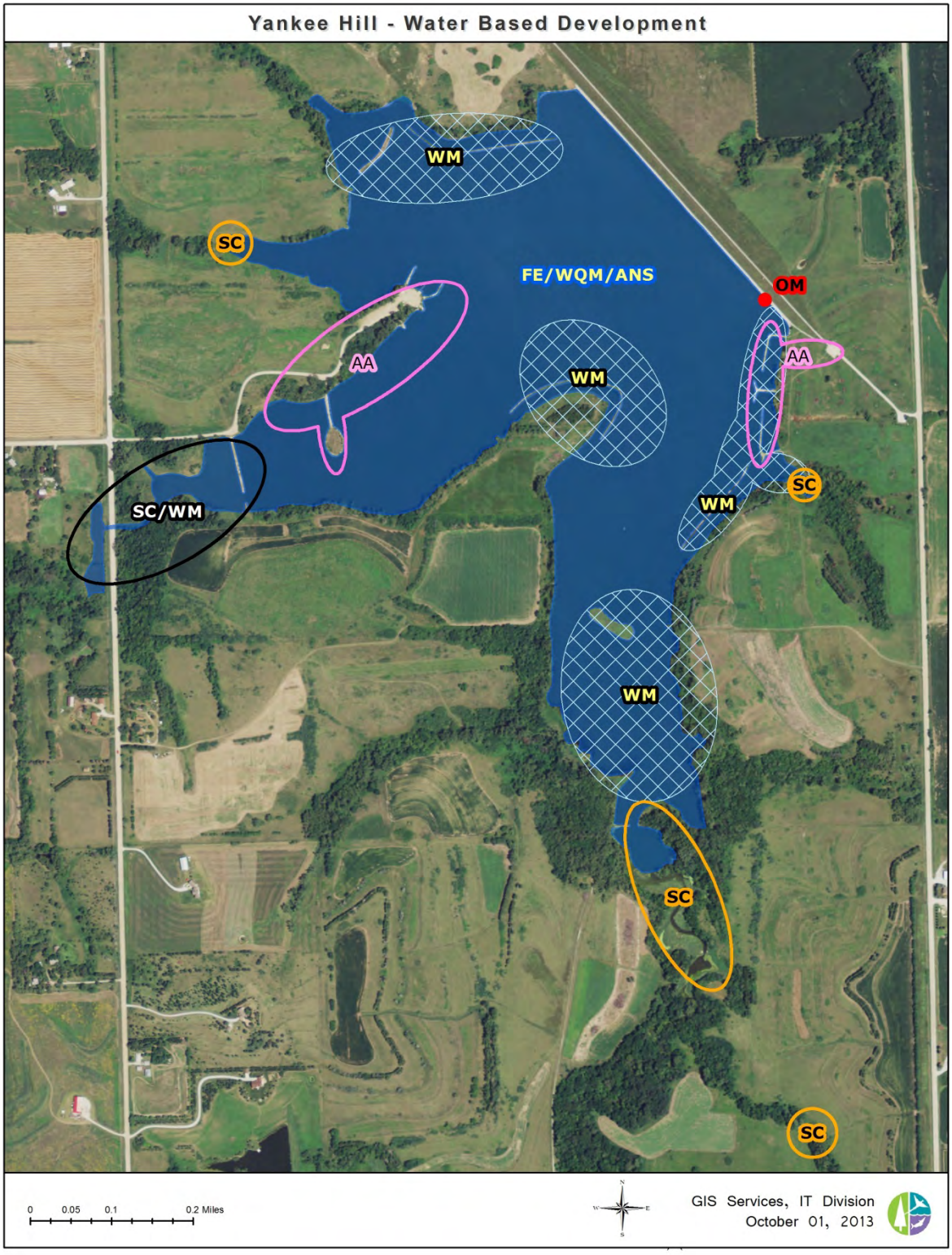


Figure 38 provides a graphical depiction of the future water based development at Yankee Hill Lake. This lake went through a recent renovation so the development is a little different at this location. There are two areas that improvements to angler access are identified and will need to be modified in the next 50 years. There are multiple areas where either sediment control or wetland management has been identified, which will improve not only the aquatic habitat but also the fishing quality. The sediment control is not only located in the lake, but also adjacent to the lake.

Figure 38: Yankee Hill Lake Water Based Future Development



Land Based Development

Not only is it important to look at the future development of the water bodies at the lake areas, but also the land mass around the water. Each of these lakes has a different level of development; from relatively primitive to quite developed. Thus, the future land use at the lakes will differ from one another. There are some lakes that provide for a more developed experience for multiple users and some that offer wildlife opportunities without overnight accommodations. It should be noted that on Figures 40 through 48, renovation or replacement of existing amenities and facilities is not included due to the amount of infrastructure, which would be difficult to map. It should be assumed that all existing amenities will have to be replaced or significantly renovated within the next 50 years. The future development that is included on Figures 40 through 48 is new development that could take place at each lake.

New development was determined in several ways; 1) by looking at the current amenities to establish if additional amenities were needed to serve the existing infrastructure, 2) by looking at what areas are lacking in features that would meet the needs of the public, and 3) by looking at existing operational issues management has and determining if changes in the land use could alleviate some of those problems. Development plans for any of the lakes should remain flexible because factors that do not exist at this time could occur in the next 50 years (i.e. large residential development next to a lake). Future development was identified in estimated locations, so the location of the development could also change due to multiple factors (i.e. location of water availability, topography, other amenities that tie into the future development).

It should be noted that cost estimates for development is not included within the plan. Since these are future plans and there is no timeline given for the next 50 years, costs would more than likely be outdated by the time the development occurred.

Figure 39 provides the future land development legend that should be referred to for Figures 40 through 48. Figure 40 shows the potential future land based development at Bluestem Lake. There are two major areas where development was identified and one minor area for some development. The minor area is located in the WMA portion of the area and included the development of an additional parking lot to accommodate users that access that portion of the area. The development on the southwest side of the lake includes electrifying two existing campgrounds. Trends show that most users want access to electricity when they camp, so electrifying those two areas would serve the public well.

Another area, on the southwest side of the lake, has been identified as a new potential electrical campground. After the two existing campgrounds receive electricity in this area, it may be necessary to add a campground for the future. Since the area will potentially have more users to accommodate, it will also be important to add a water system and shower/restroom facility to service the area. Improvements of the roads will need to occur if this development takes place and the addition of a future playground would serve the needs of the campers in this camp area. The development on the northeast side of the lake would include the potential development of an electrical campground, a water system and shower/restroom facility to serve the campers of this area. This is a long range development that could take place in the next 50 years.

Figure 39: Future Land Use Legend

Figure 40: Bluestem Lake Future Land Based Development

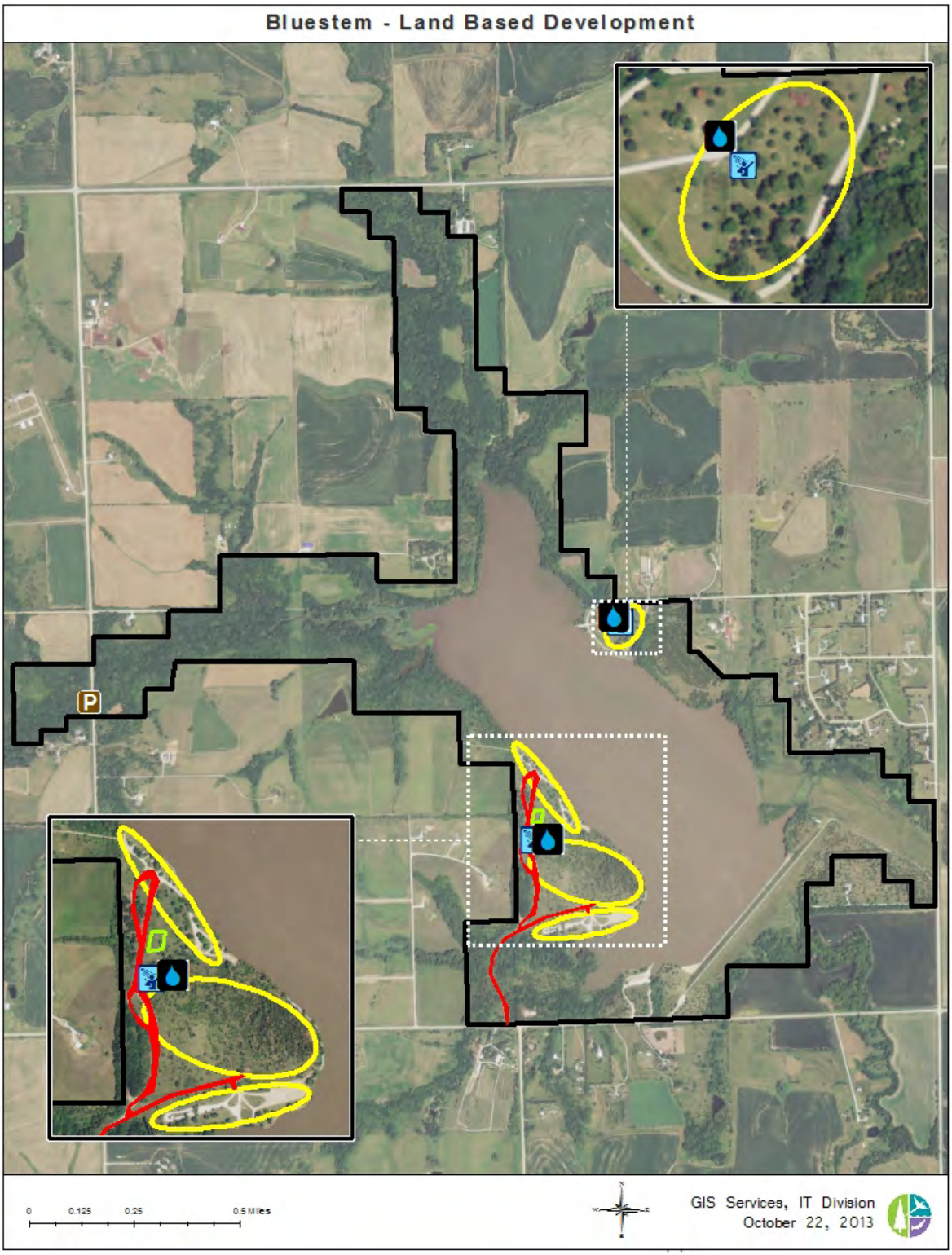


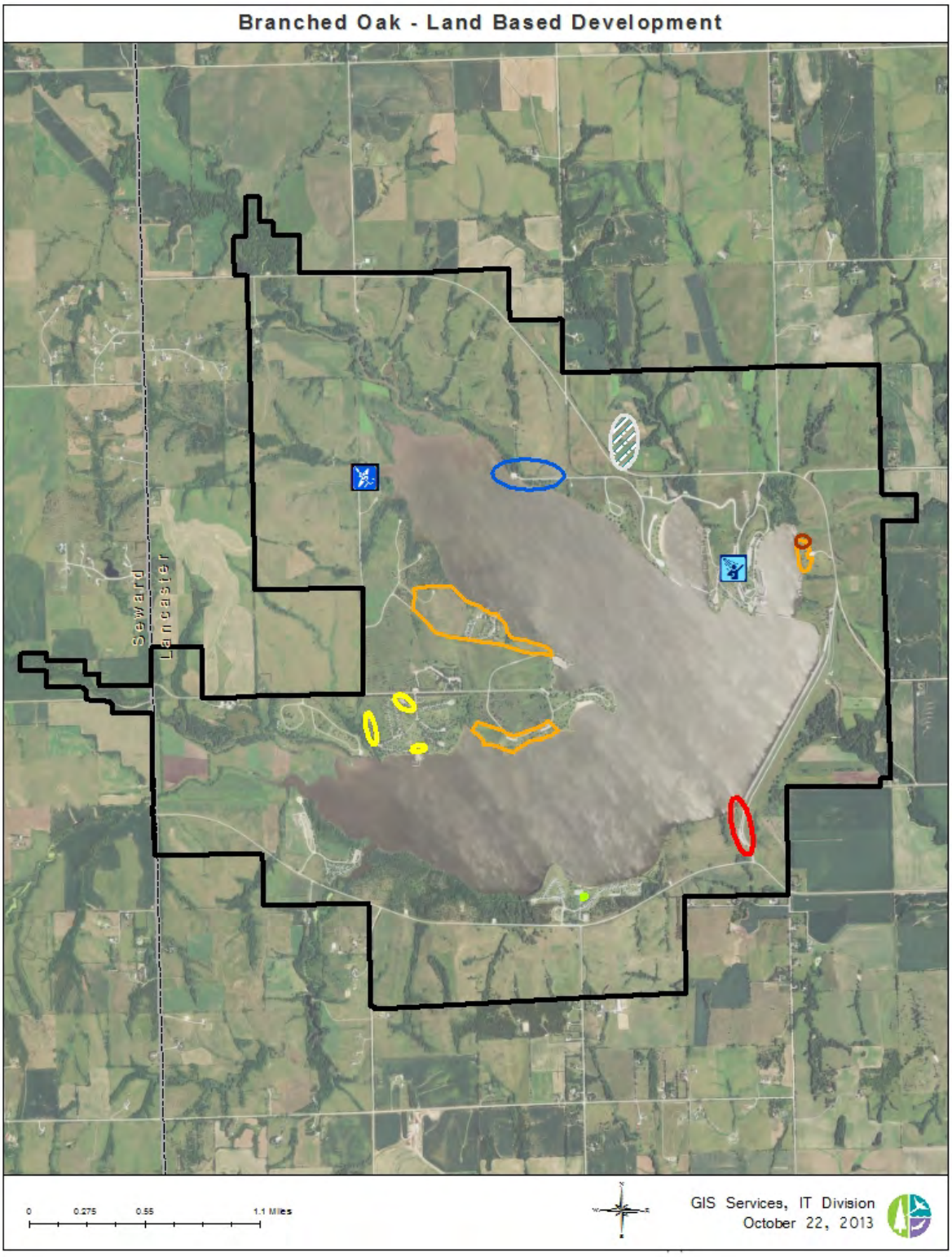
Figure 41 provides the development recommendations for Branched Oak Lake. Branched Oak Lake is the most heavily developed lake of the Salt Valley lakes the Commission manages. Most of the development that will occur in the future will be the renovation of the existing facilities and amenities. However, there are a few areas where development has been identified that should be noted. There is one location on the southeast side of the lake where the area has been potentially slated for closure for access by the public. This area has historically been used by the public as a heavy "party" area where illegal activity has taken place. Because of the road (sharp curve) by this location, it has been deemed unsafe by law enforcement to have a lot of activity happening in this area. In the future, to alleviate the amount of time law enforcement spends in one location of the lake, it might be advantageous for the Commission to close that area off.

On the southwest side of the lake, three areas have been slated for electrical campgrounds. These campgrounds are already in existence but they need to be electrified to meet the needs of the users of the area. Further east in that same area, two large areas have been identified for future cabin development. This would include the areas that are currently being leased to the Lincoln Sailing Club and the Optimist Club. Cabin development will require lake frontage and area where the infrastructure is already set up. Further north of the cabin development, there is the opportunity to create a canoe/kayak launch point that is currently a boat ramp that would serve the public in a new way. At this time, there is not specific launch point for canoes/kayaks and this location would be a good place to do this because the existing boat ramp does not meet the needs of the boaters at the Lake.

On the northeast side of the lake, a future campground has been identified. This campground would be slated for completion after the existing campgrounds were electrified and would only be done if pressure demanded in the next 50 years. This campground is located in area that is now being managed as WMA, so management of this area would change when/if developed. To the east and north of this future campground, a location for a new rifle range is being considered. There are existing shooting facilities in this location, but the addition of a rifle range could serve the needs of the public in the next 50 years.

In the existing campgrounds on the northeast side of the lake, a new shower/restroom facility has been identified as a necessity in the future. Finally, there is proposed development further east of the new shower facility, which includes a cabin area as well as a future lodge/group facility. The lodge facility would be a conference/wedding/reunion facility that overlooks the lake. In Lancaster County, there are not a lot of venues available for outdoor weddings and receptions; this development could provide the Commission the opportunity to fill that niche. The facility would be designed to not only house weddings, but family reunions and meetings. Due to the proximity to Lincoln, this facility should be heavily used. This may not be the right location at the Lake, but it is put in the plan as a potential location and the Commission should be flexible in where this facility is placed.

Figure 41: Branched Oak Lake Future Land Based Development



The future land development of Conestoga is mapped on Figure 42. There is minor development slated at this area. However, it is unclear with the current aquatic rehabilitation project, what the potential need for development will be to serve the clientele of the lake. On the south side of the lake, approximately the middle of the lake area, a future campground is slated. This development is planned due to the lake restoration project. On the north side of the lake, it has been identified to decommission a boat ramp due to its condition and replace that boat ramp in another location that is more suitable for use. A future campground, east of the existing campground has also been identified. Due to the existing campground areas and the slated future campground, it is recommended to put in a water system and shower/restroom facility to meet the needs of the users of that area. Finally, a new parking lot has been identified in the northwest portion of the property. This parking lot would be used primarily by hunters and wildlife watchers.

Figure 42: Conestoga Lake Future Land Based Development

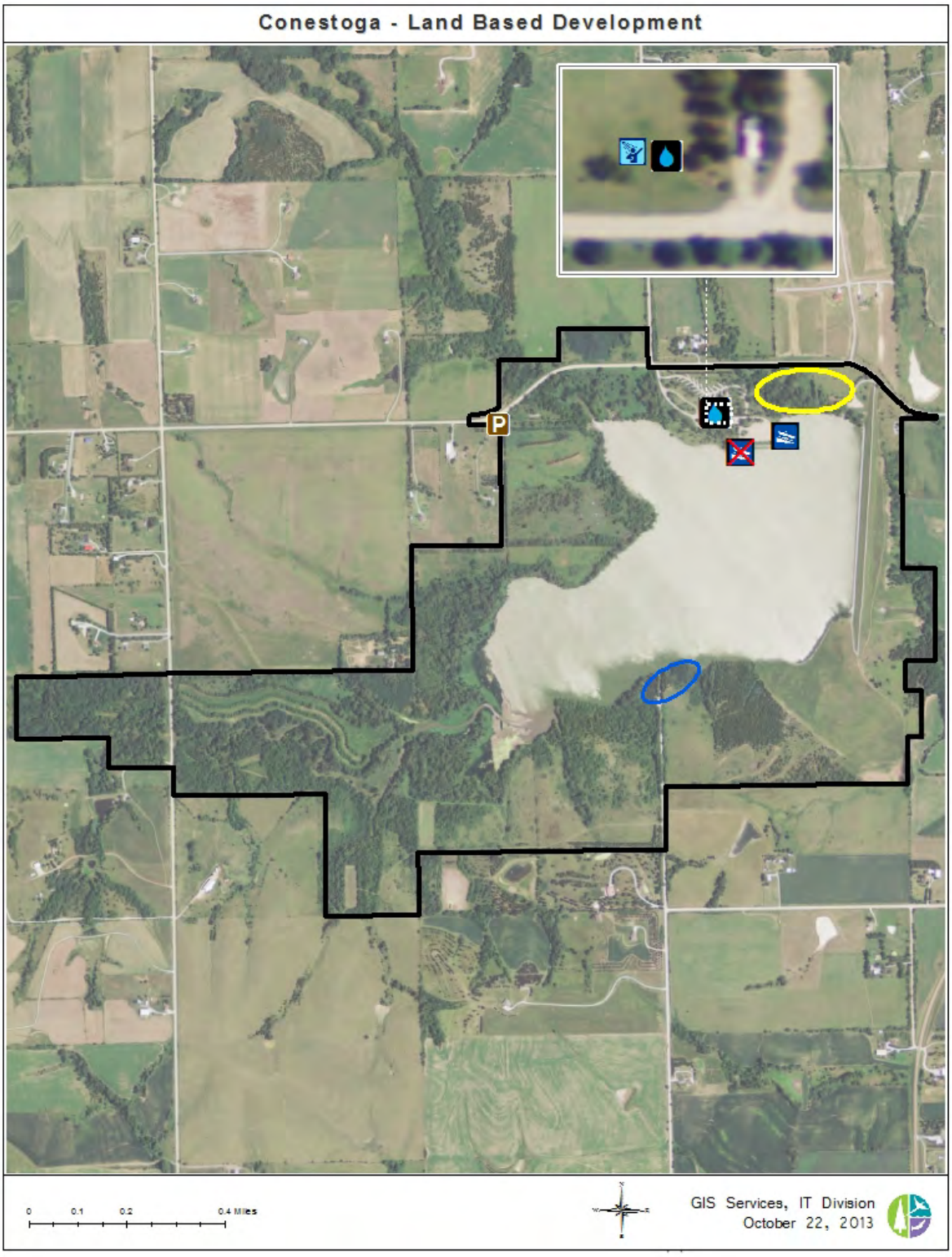


Figure 43 provides for the future development concepts recommended by the Commission for Olive Creek Lake. One of the larger concepts at Olive Creek is to change access on how the public gets to the lake. This is an area that many people have trouble finding. It is recommended to close an access point on the northeast side of the lake. There are two access points on the northeast side of the lake; closing one of them will better control the flow of the area. It is also suggested to then create a new road off of the existing east road into what would be a future campground area. Near that future campground area, it is recommended to place a new boat ramp for the users of the lake in this location.

Improvements to the road west of the lake are suggested, to better access the west side of the area. A future electrical campground has been identified on the west side of the lake and this access road would take users to this area. Besides a future electrical campground, it is proposed that a water system, a trail dump station and a shower/restroom facility be added to the area. Finally in the southeast area of the lake, it is proposed that a rifle range be built to meet the needs of those users looking for a place to practice with their rifles.

Figure 43: Olive Creek Lake Future Land Based Development

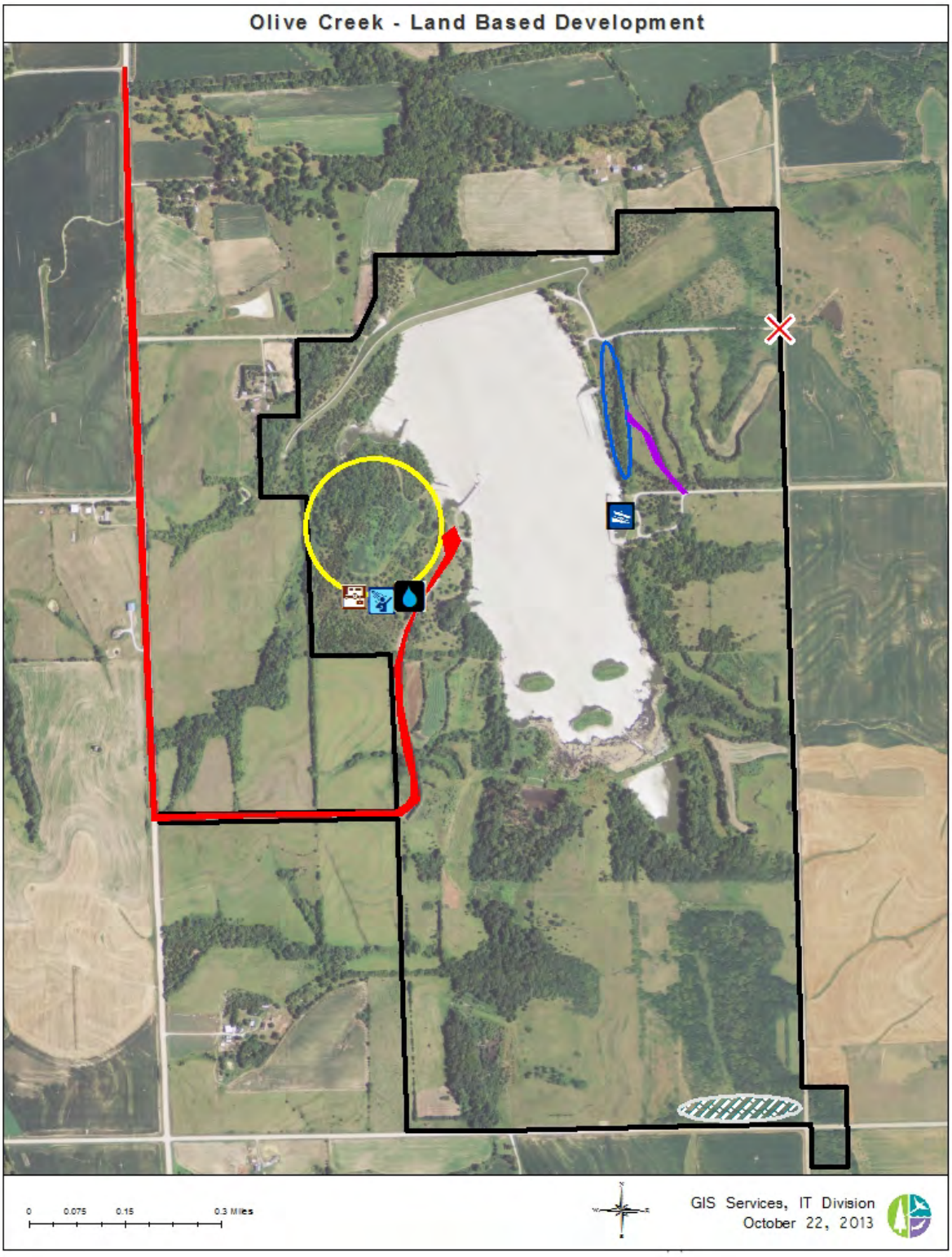
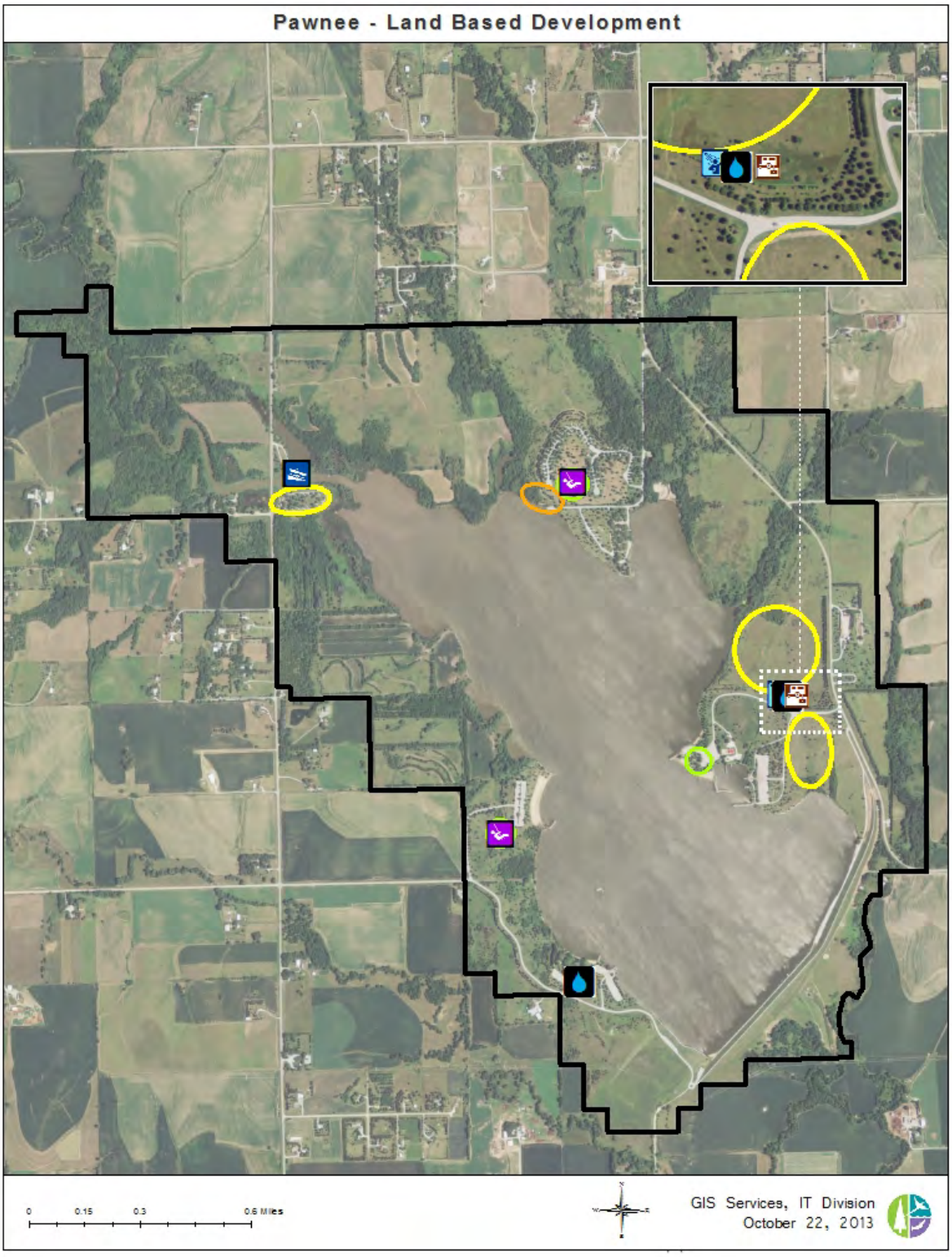


Figure 44 provides a map of what the future land development could be at Pawnee Lake. On the southwest side of the lake, there is a proposed water system at the existing campground. At this time, the water supply is lacking to upgrade camping facilities when the need arises. Further to the north and west, by another campground, a playground has been identified as a new development. Currently, the playground equipment at Pawnee is antiquated and doesn't meet the needs of the young visitors to the lake. Therefore, areas have been identified where the existing playground equipment is for replacement. It should be noted that these developments will also include ADA compliance and meet the safety standards of today regarding playgrounds.

On the northern side of the lake, a future electrical campground and boat ramp have identified. Two other locations have also been slated for potential electrical campgrounds on the east side of the lake. On the east side of the lake, it should be noted that with the potential campgrounds, a trailer dump station, a water system and a shower/restroom facility have been proposed because these amenities will support the future campgrounds. In that same general area, a new playground facility has been identified. Pawnee has thousands of visitors and many of them are young families, so the addition of playgrounds is a necessity at this lake.

Finally, on the northeast side of the lake, new playground equipment has been identified in the existing campground area. It was also determined that this location would potentially benefit from the development of cabins. Cabin development would be minimal at Pawnee, but there is potential to place smaller cabins at the lake to increase revenue and provide for another type of lodging for the public.

Figure 44: Pawnee Lake Future Land Based Development

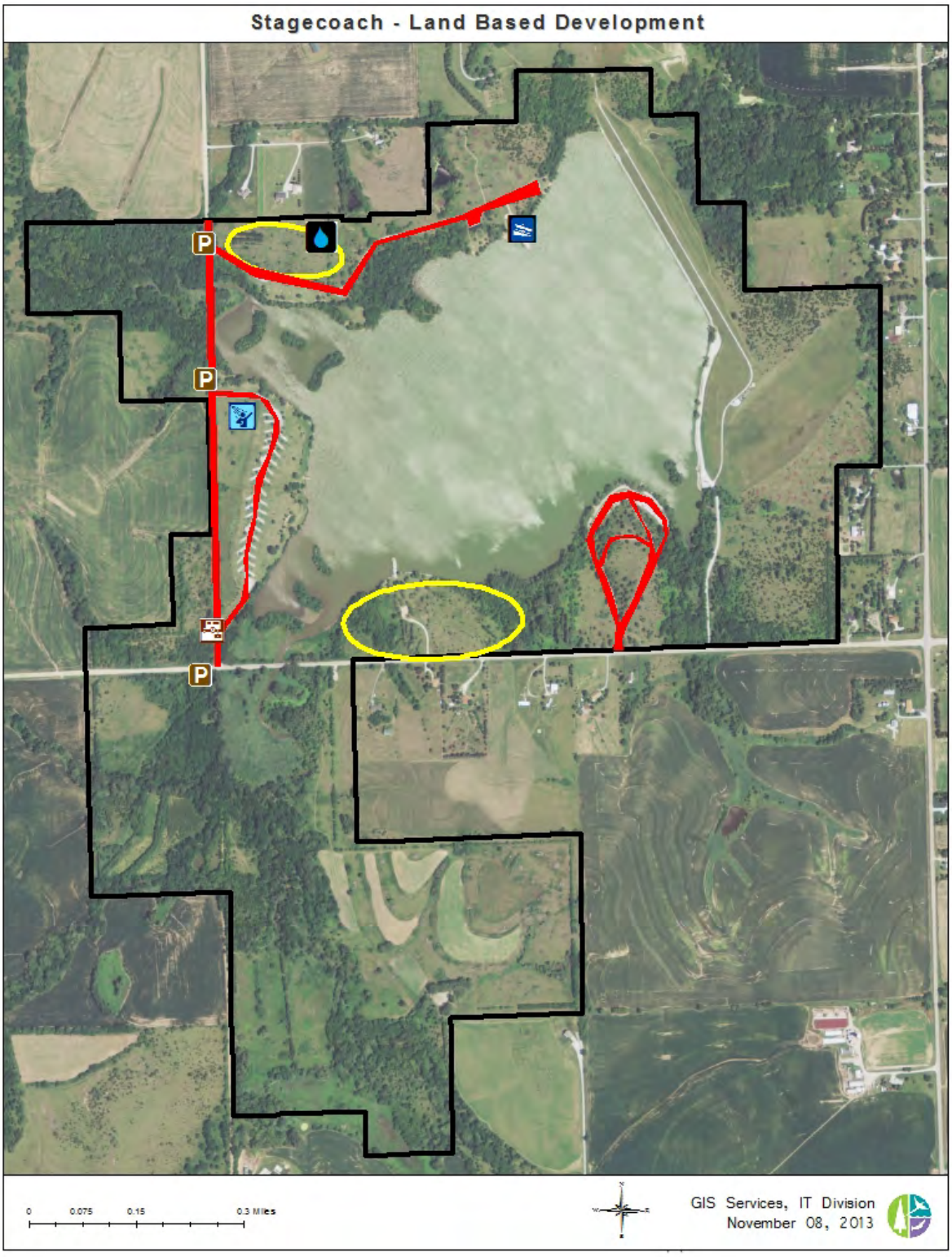


Development for the future of Stagecoach Lake is depicted in Figure 45. The road that runs north to south on the west side of the lake area, including the loop for the campground area has been slated for improvement. There is also a road that runs to the east off of that road that is also in need for improvement. Besides those areas, some roads on the southeast side of the lake require improvements. Roads are important infrastructure improvements that need to take place to better the flow of the area and provide safe access for the public.

Other development at Stagecoach includes the addition of two different electrical campgrounds. One of those areas is on the south side of the lake and the other is on the north side. The future campground on the north side of the lake also includes the addition of a water system to serve the campground. At the existing campground on the west side of the lake, a new shower/restroom facility will be needed to better serve the clientele that use the area. Also, a trailer dump station is identified near that location that will serve the entire lake.

There are three different parking lots identified on the western side of the lake. All of these parking facilities are primarily for the hunters and wildlife watchers that use the area. Finally, there is a new boat ramp identified on the north side of the lake that would serve the anglers and water recreationalists of the area.

Figure 45: Stagecoach Lake Future Land Based Development



The development at Twin Lakes is identified in Figure 46. In the northern most area of Twin Lakes, a future rifle range is planned. The remaining development is slated for the southeastern side of the lake. It includes the decommissioning of a restroom and the placement of a new more modernized restroom. The other development slated at Twin Lakes would be a fishing pier. Because Twin Lakes is a WMA, the development is much different than those areas that are SRAs.

Figure 46: Twin Lakes Future Land Based Development

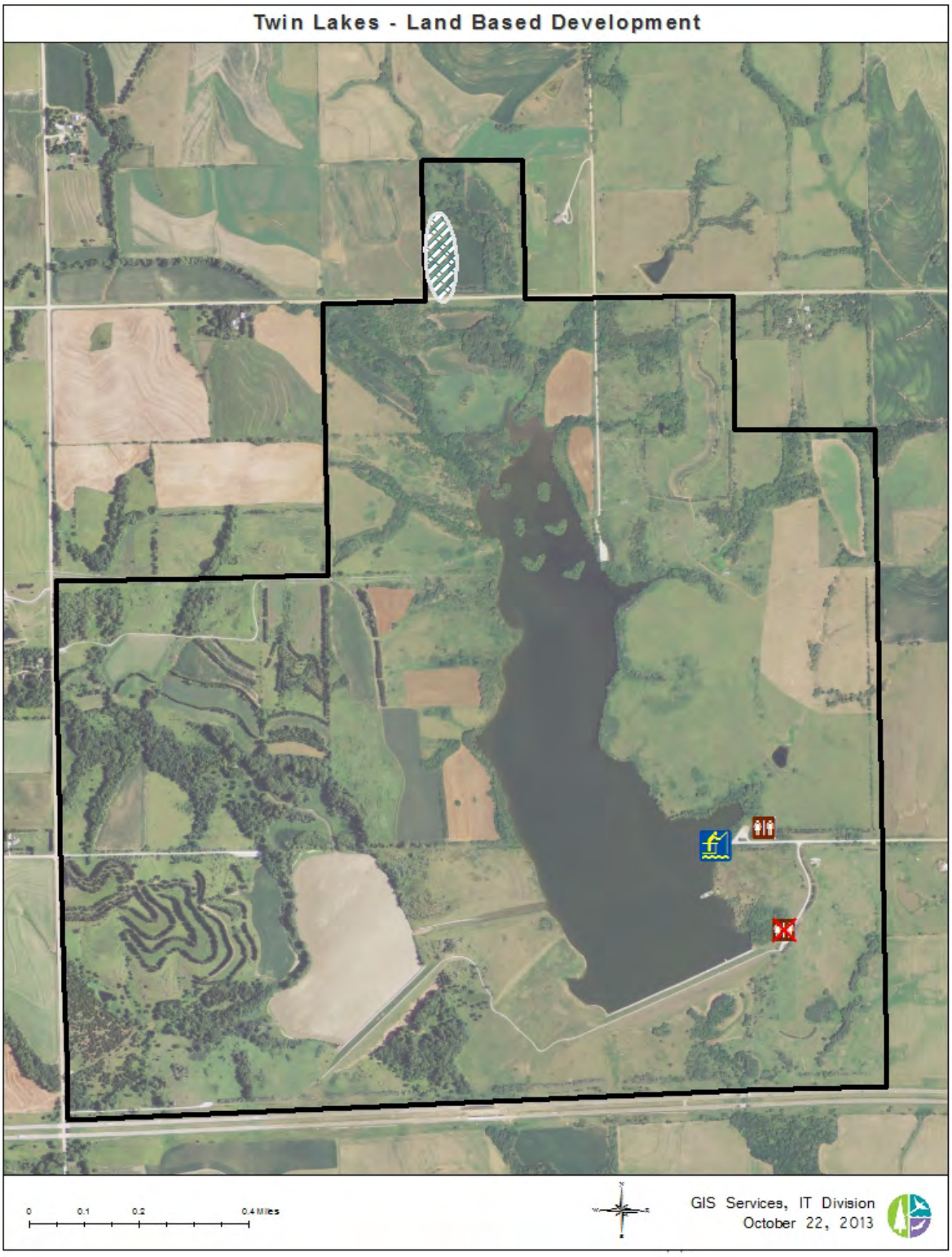
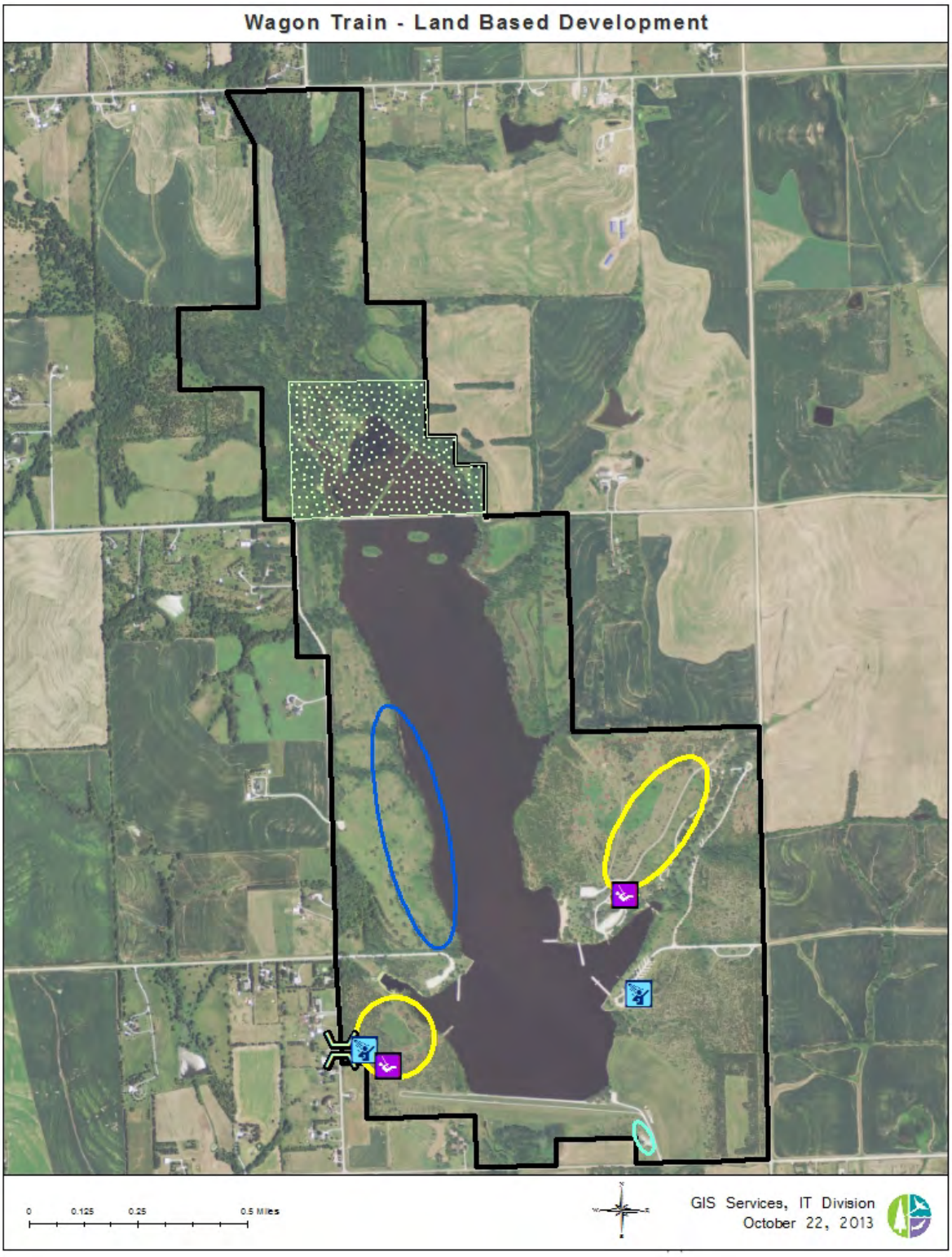


Figure 47 provides a visual of the future development of Wagon Train Lake. The northern part of Wagon Train is managed as a WMA and a future dog training area is identified in this area to meet the needs of users that want to bring their dogs out to a park to train them. Camping facilities are also slated in three locations. These locations include two electrical campgrounds; one on the southeast side of the lake and one on the southwest side of the lake. The other campground that is proposed is on the west side of the lake. At both recommended electrical campground areas, new playground locations have been identified for the users of the lake.

Shower/restroom facilities have been suggested in two locations; one in an existing campground on the southeast side of the lake and one at the proposed new electrical campground on the southwest side of the lake. In the same vicinity of the campground on the southwest side, it is recommended that a new road entrance be created to access the camping facility. This would assist with flow and would minimize the need for additional roads throughout the lake area.

One other facility that is proposed on this plan is a new Regional Office that could house all the staff that works at not only Wagon Train but also Stagecoach, Bluestem and Olive Creek. This provides a location close to the areas where equipment could be housed and staff could use for day to day business. It also affords a Commission presence for the local communities to show support of the operations of these areas.

Figure 47: Wagon Train Lake Future Land Based Development



There is minor future development planned for Yankee Hill Lake, as shown on Figure 48. There are four parking lots identified for the future for users of the area that are on the west and east sides of the area. There is also a future rifle range sited on the northwest side of the lake.

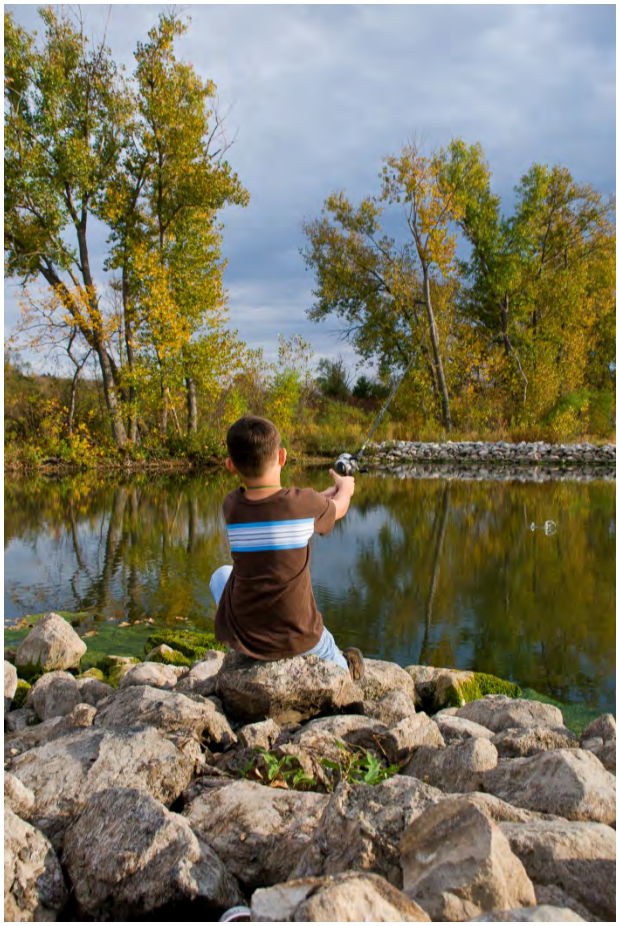
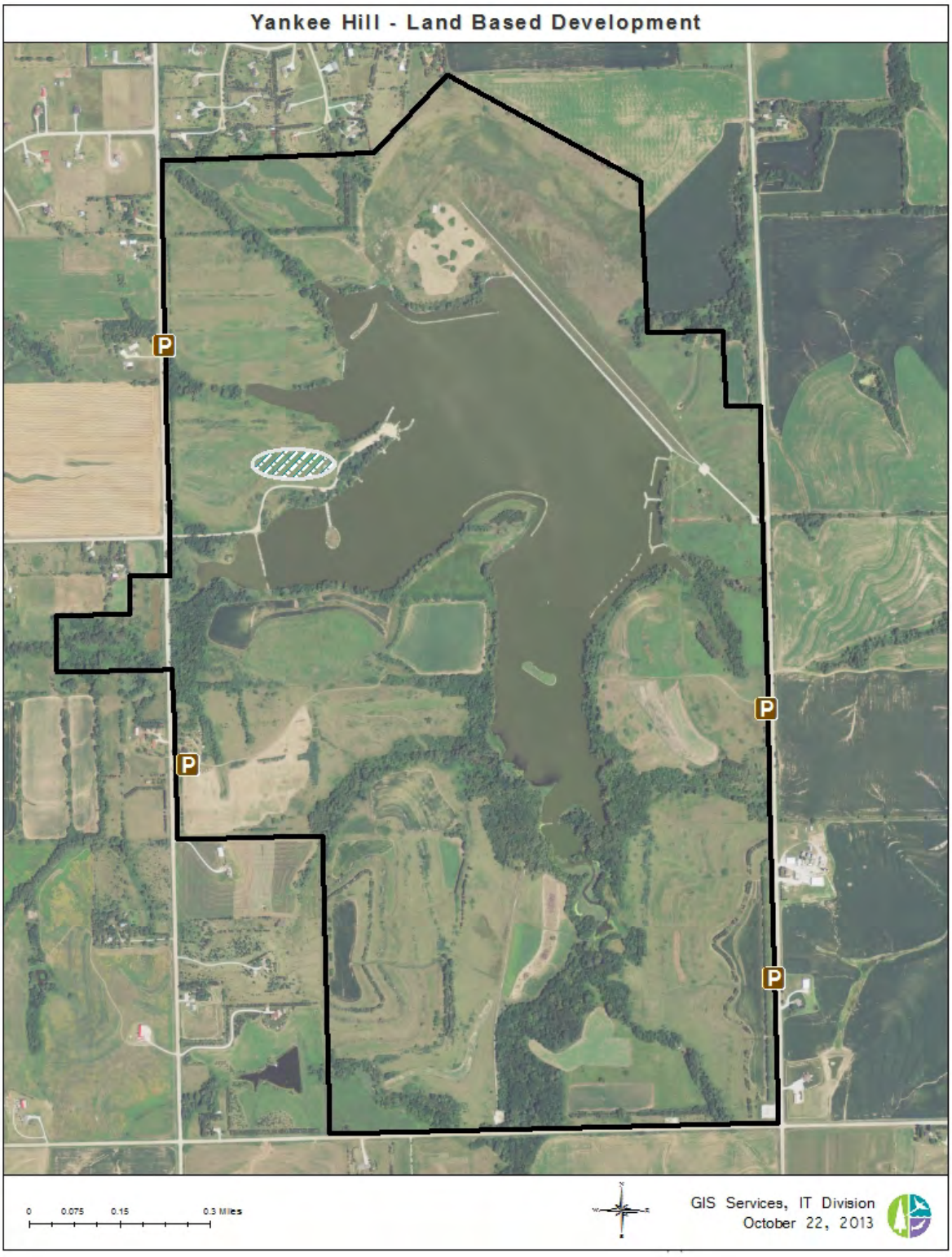


Figure 48: Yankee Hill Lake Future Land Based Development



Deferred Maintenance

All facilities (roads, buildings, campgrounds, toilets, boat ramps, boat docks, picnic areas, etc.) and systems (electrical grid, sewers, water systems, etc.) have a life cycle that eventually requires major repairs or replacement beyond the routine maintenance it receives on a day-to-day basis. These are items that require financial and labor commitments that exceed routine maintenance and are referred to as deferred maintenance.

NGPC's Engineering Division reviewed and evaluated the Salt Valley Lakes in the late summer and early fall of 2013. Items not reviewed include all the area roads, culverts, drainage systems, check dams, boundary fencing, gates, signs, dams, dam control structures, dredging needs, and landscaping. The Nebraska Department of Roads is currently assessing all roads within the park areas and will provide a list of projects for the Recreational Roads program in the near future. Regarding fencing, gates, signs, and landscaping, it was determined that those items should be incorporated within the regular maintenance of the area as opposed to deferred maintenance. Dredging was not assessed because the Fisheries division has identified potential future needs of dredging at lakes within the future development plan section. Because the USACE owns the dams and dam control structures, these items were not reviewed. The remaining items of culverts, if not located within the road system and check dams will be assessed in the future. Engineering broke the assessment into the following categories:

- Facility Deferred Maintenance
- Water System Deferred Maintenance
- Sewer System Deferred Maintenance
- Breakwater Deferred Maintenance
- Angler Access Deferred Maintenance
- Boat Launch and Mooring Deferred Maintenance
- Electrical Deferred Maintenance
- Trails Deferred Maintenance
- Fence Deferred Maintenance
- Shooting Facility Deferred Maintenance
- Playground Deferred Maintenance

Table 18 provides an overview of the deferred maintenance (DM) needs at each of the lake areas. This table shows that there is over $88.3 million in deferred maintenance needs. Inflationary costs were included at 4%, based on the consumer index values over the past 50 years.

Table 18: Existing Deferred Maintenance Needs in Salt Valley Lake Areas

Correction Period	< 1 Year	< 2 Years	< 5 Years	< 10 Years	< 25 Years	< 50 Years
Ave. Period	0.5 years	1.5 years	3.5 years	7.5 years	17.5 years	37.5 years
Total Building	$651,000	$152,500	$191.500	$206,500	$1,939,500	$3,466,541
Total Water	$217,000	$125,500	$232,000	$263,500	$293,000	$1,278,638
Total Sewer		$745,000	$482,000	$31,500	$192,500	$1,117,000
Total Breakwater	$602,000	$479,000	$605,000	$895,000	$1,732,500	$6,761,985
Total Boating		$28,500	$89,000	$57,500	$519,000	$452,100
Total Angler Access	$9,500	$8,500	$25,000	$47,500	$108,500	$267,164
Total Electrical		$130,000	$99,000	$310,000	$80,000	$928,800
Total Beach		$44,000	$30,000	$50,000	$90,000	$211,800
Total Fence			$2,000	$7,500	$37,000	$114,150
Total Retaining Wall		$1,000	$1,940	$1,500	$3,220	$7,884
Total Shooting		$7,000	$3,000	$1,000	$4,500	$105,000
Total Playgrounds			$2,000	$8,000	$13,000	$175,000
Total Trails	$37,620	$37,620	$112,860	$188,100	$564,300	$940,500
Total DM	$1,517,620	$1,758,620	$1,875,300	$2,067,600	$5,577,020	$15,826,561
Inflation Adjustment	$1,547,675	$1,865,185	$2,151,233	$2,774,703	$11,078,619	$68,886,924
Accumulated	$1,547,675	$3,412,860	$5,564,093	$8,338,797	$19,417,416	$88,304,339

Table 19 shows a breakdown of what the existing deferred maintenance needs will be on future development. Future development includes all the ADA upgrades detailed below in Table 20 and other items identified during the assessment that the Engineering Division did. It does not include the future development outlined within this plan for some of the facilities, such as a regional office, cabins and a group conference/lodge because these are new conceptual ideas to the areas. It does, however, include the development of campgrounds and playgrounds and other capital development identified within this plan. Combining the costs in both Tables 17 and 18, it shows that there is $116.8 million of deferred maintenance needs in the next 50 years that will need to be addressed.

Table 19: Future Deferred Maintenance Needs in Salt Valley Areas by Maintenance Category

Category	Future 50 Year
Facility DM	$6,842,209
Water System DM	$1,672,840
Sewer System DM	$1,557,159
Breakwater DM	$10,765,715
Boating Facility DM	$1,283,275
Angler Access DM	$67,703
Electrical System DM	$520,361
Fence DM	$199,230
Shooting Facility DM	$146,626
Playground DM	$3,531,407
Trail DM	$1,944,897
Total DM	**$28,531,423**

The facilities were reviewed under the Americans with Disabilities Act (ADA) at the same time that deferred maintenance assessment took place. The Engineering division broke ADA needs into the following categories:

- Angler Access
- Boat Ramps
- Boat Slip/Mooring
- Campgrounds
- Outdoor Recreation Trails
- Trails
- Parking
- Playgrounds
- Routes
- Shooting Ranges
- Swim Beaches

Table 20 provides a cost summary of ADA needs at the Salt Valley Lakes. It should be noted that these needs are estimated to cost $3.2 million.

Table 20: ADA Cost Summary by Area

Area	ADA Estimate
Bluestem	$473,700
Branched Oak	$1,203,710
Conestoga	$149,200
Olive Creek	$155,800
Pawnee	$723,200
Stagecoach	$150,700
Twin Lakes	$50,800
Wagon Train	$308,040
Yankee Hill	$22,200
Total	$3,237,350

Table 21 identifies the ADA costs by category. It should be noted that this figure is slightly larger than what Table 20 shows because it includes one area that was not included within this development plan. Those dollar figures were removed out of Table 20. The table does provide an overview of all the different facilities that have needs when it comes to addressing ADA at the Salt Valley Lake areas.

Table 21: ADA Cost Summary by Category

Category	ADA Estimate
Angler Access	$83,500
Boat Slip/Mooring	$91,500
Buildings	$478,500
Campgrounds	$925,100
Outdoor Recreation Trails	$711,000
Parking	$334,650
Playgrounds	$255,000
Routes	$249,500
Shooting Ranges	$15,000
Swim Beaches	$50,700
Trails	$61,000
Total	$3,255,450

When looking at the above tables, it shows that the deferred maintenance and the ADA needs at the Salt Valley Lakes equates to an estimated $120 million for the next 50 years.

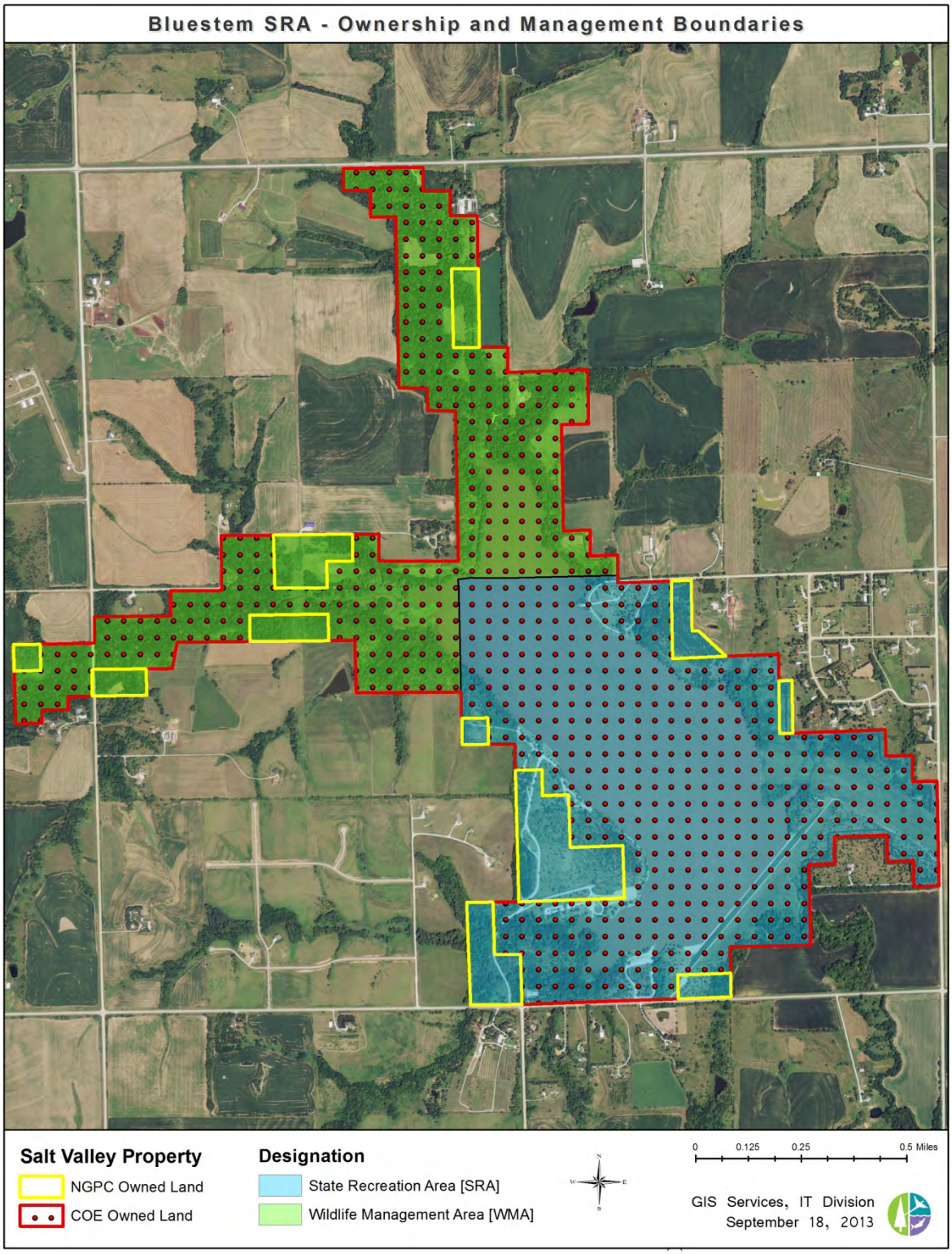
Potential Cost Sharing Measures

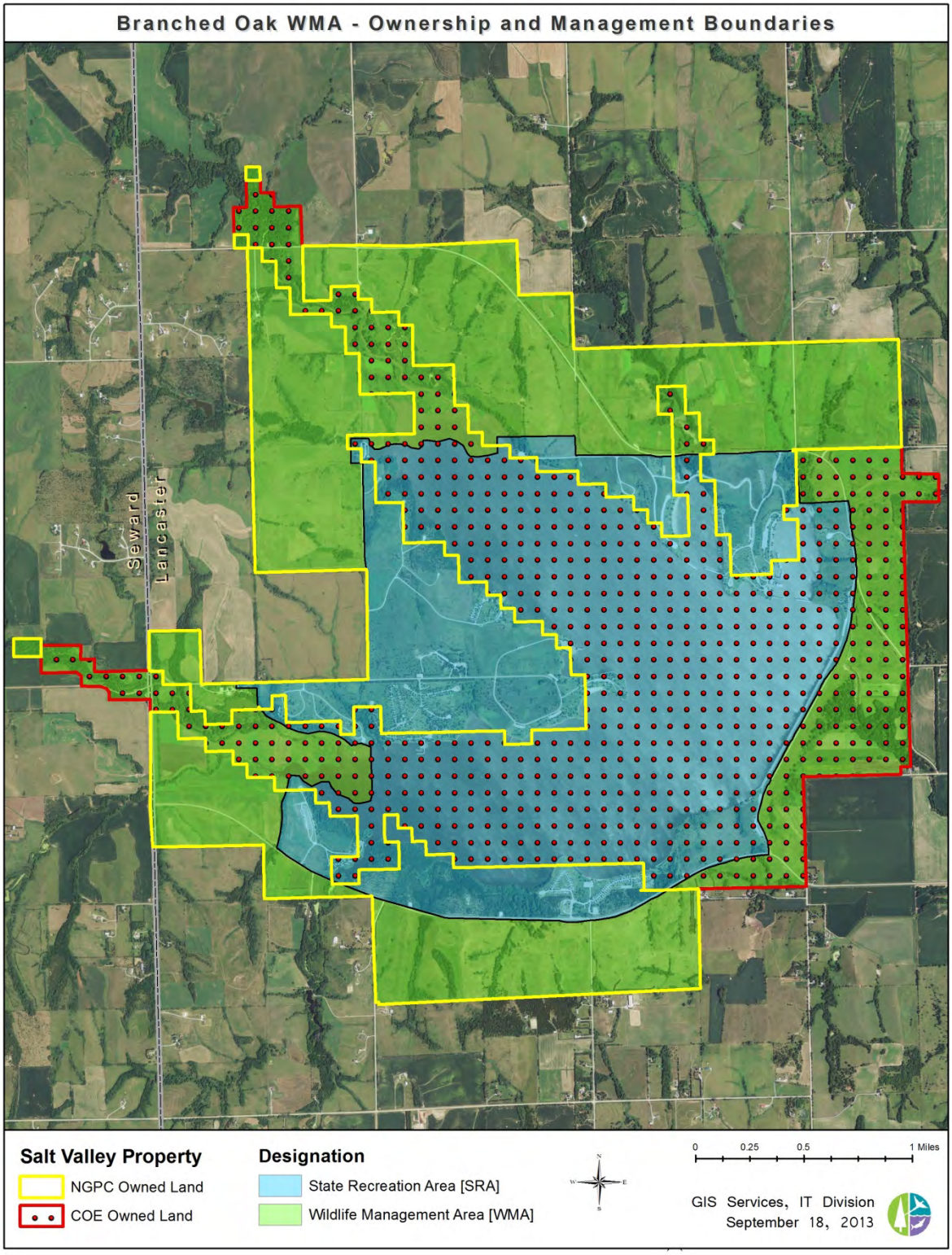
The Salt Valley Lakes require intensive management as well as investment to serve the public of Nebraska and to protect the natural resources available at these areas. The USACE designed these lakes for flood control with a secondary purpose of providing recreation to the public and enhancing the natural habitat of the areas. It is important to look at the mission of the USACE and determine if, for the future, there are opportunities to cost share some of the costs that are tied to operating and maintaining the Lakes. In context of the life of the lakes for the next 50 years, all of the infrastructure will need to be replaced. However, it is also important to continue to develop, where feasible, to meet the changing demands of the public.

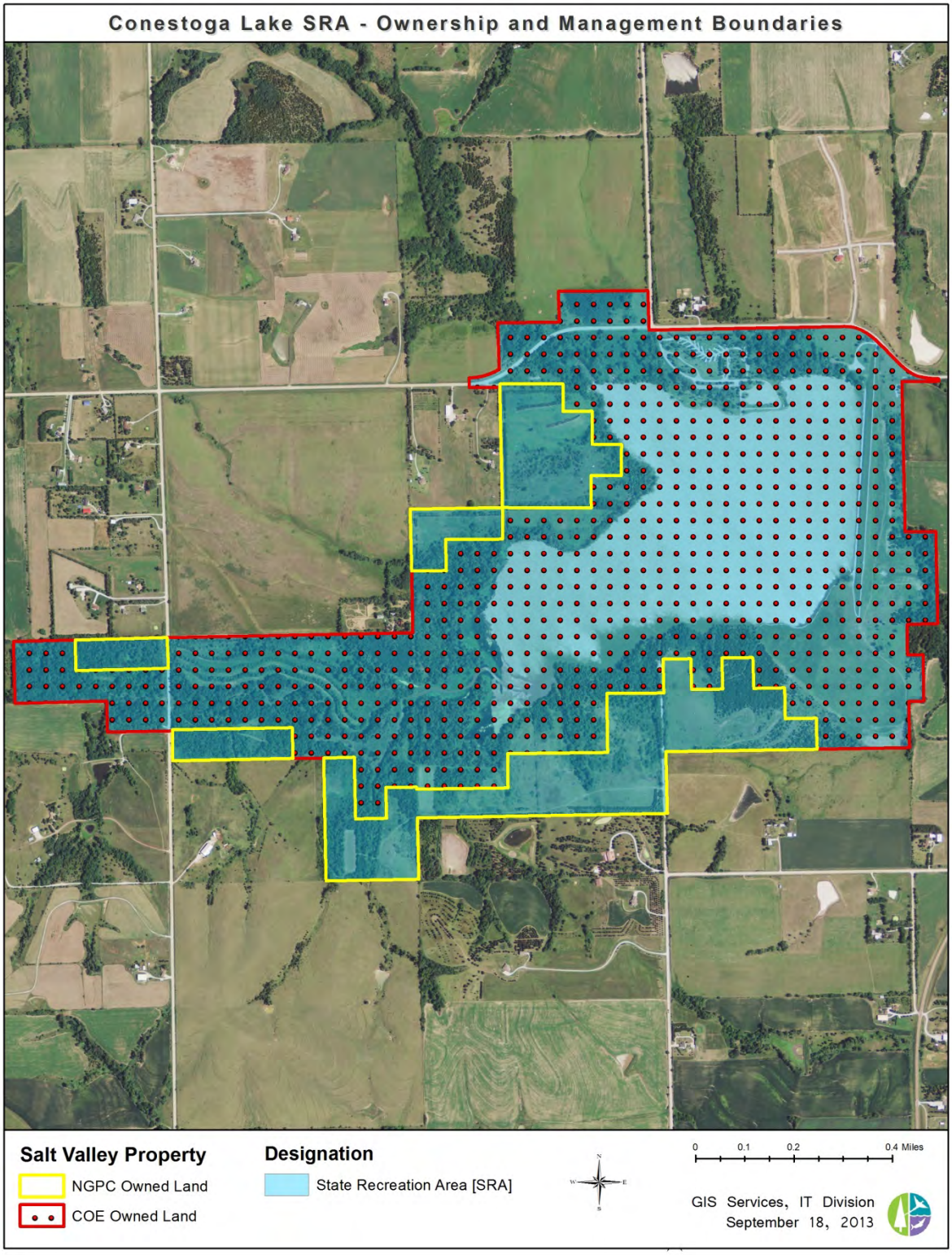
It is recommended that the Commission work with USACE and identify projects that costs could be shared between the agencies. It is vital to work with USACE for the cost sharing opportunities to ensure these activities or operational costs are included within USACE's budgets. Costs that could be shared include, but are not limited to:

- Operational costs to manage the areas (Parks, Fisheries, Wildlife & Law Enforcement Staff)
- Equipment necessary to manage areas
- Aquatic rehabilitation and habitat projects
- Improvements on access (i.e. roads, ADA mandates)
- Campground development, including necessary infrastructure (i.e. water systems, trailer dump stations, shower/restroom facilities)
- Required environmental standard upgrades
- Identified deferred maintenance projects

Appendix A: Property Ownership Maps




Branched Oak WMA - Ownership and Management Boundaries
Seward
Lancaster
Salt Valley Property
NGPC Owned Land
COE Owned Land
Designation
State Recreation Area [SRA]
Wildlife Management Area [WMA]
0
0.25
0.5
1 Miles
GIS Services, IT Division
September 18, 2013


Conestoga Lake SRA - Ownership and Management Boundaries
Salt Valley Property
NGPC Owned Land
COE Owned Land
Designation
State Recreation Area [SRA]
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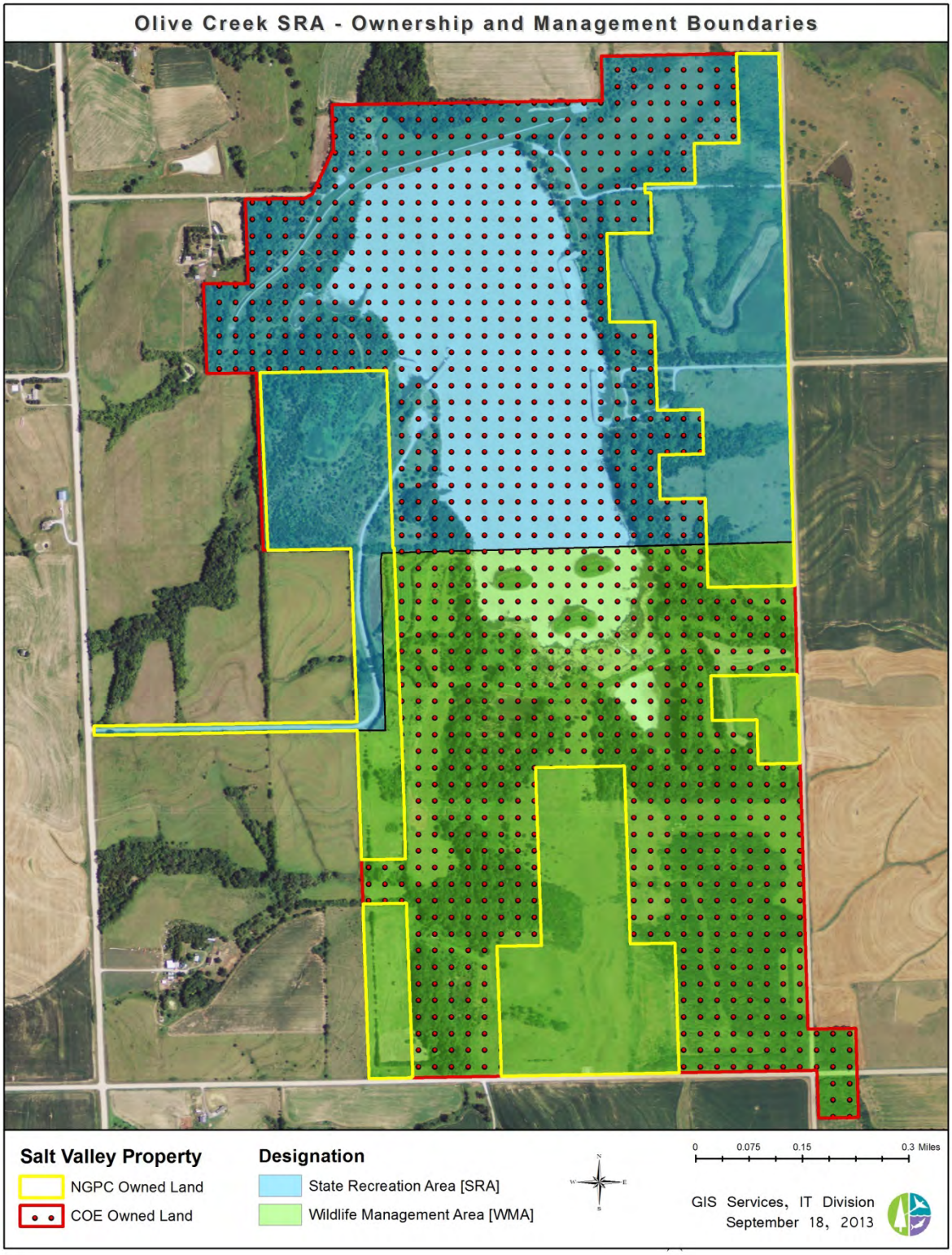
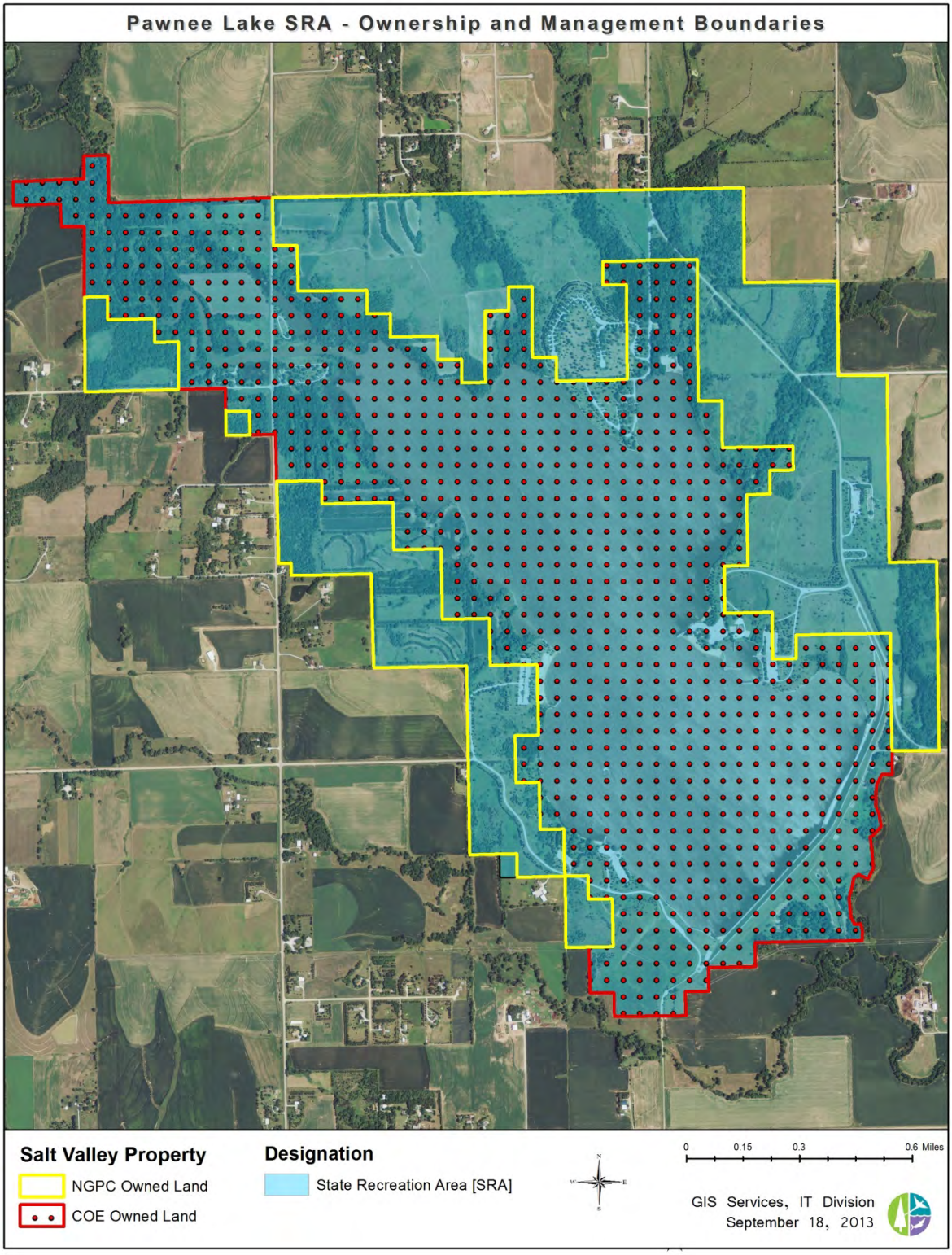
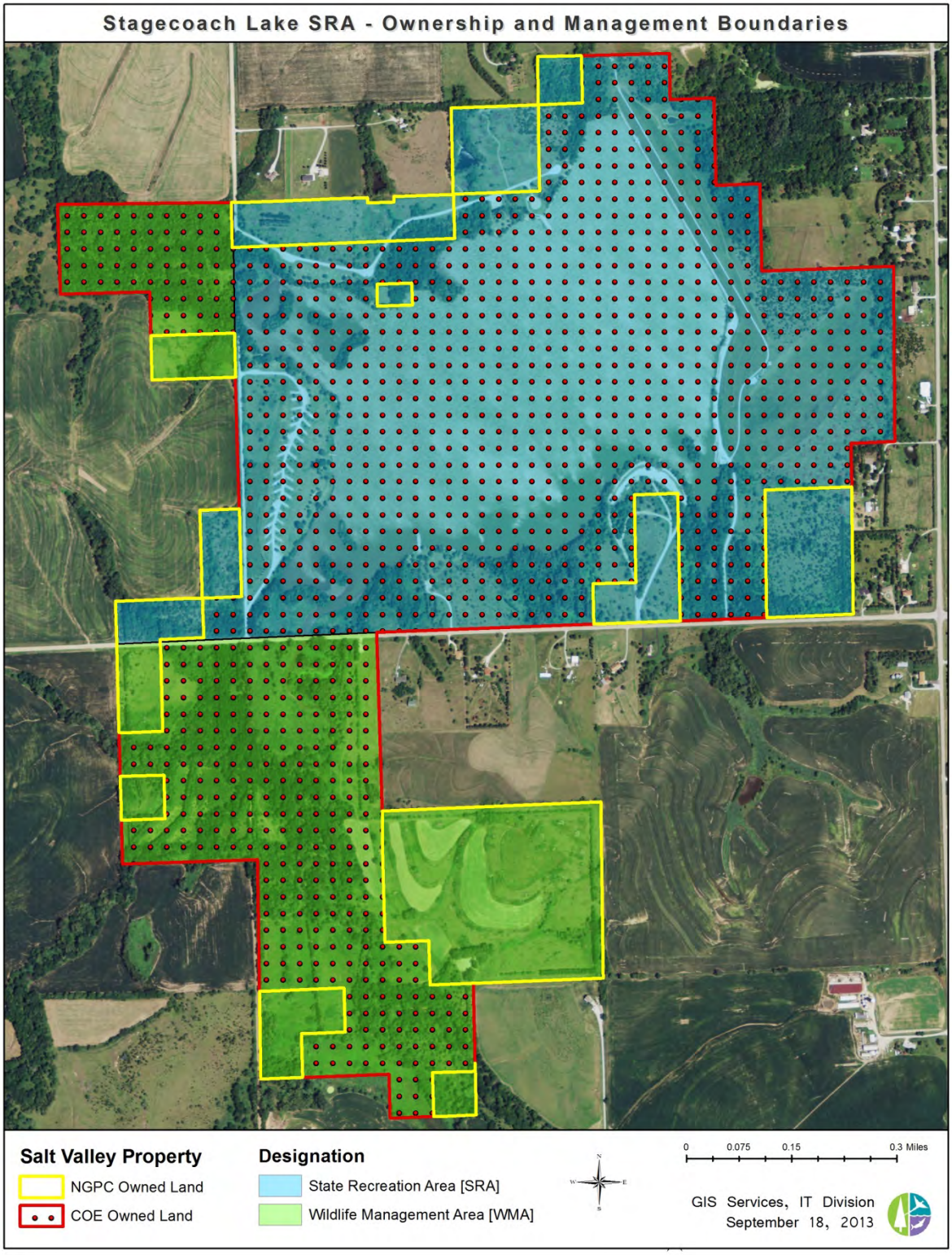
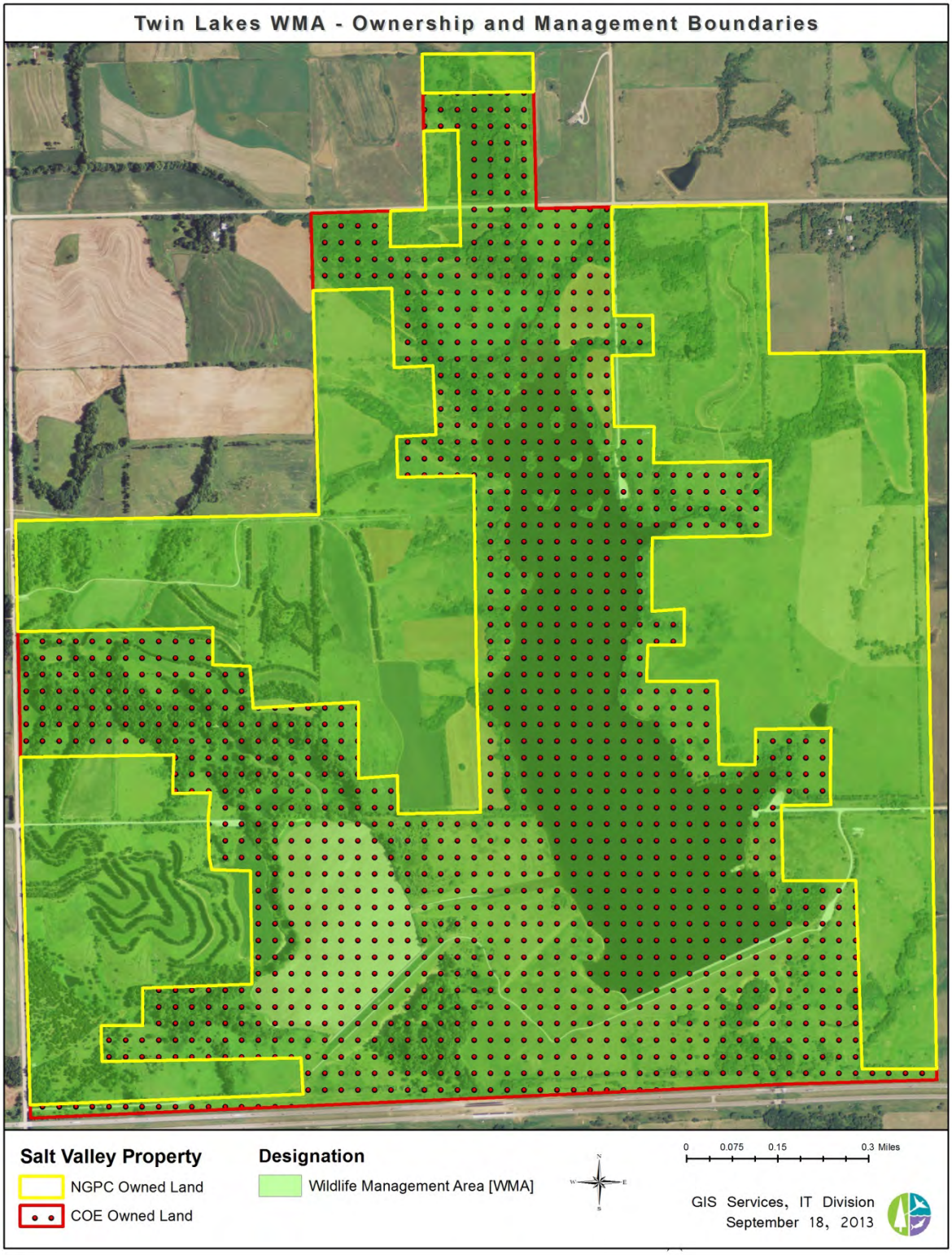
0.1
0.2
0.4 Miles
GIS Services, IT Division
September 18, 2013


Olive Creek SRA - Ownership and Management Boundaries
Salt Valley Property
NGPC Owned Land
COE Owned Land
Designation
State Recreation Area [SRA]
Wildlife Management Area [WMA]
0
0.075
0.15
0.3 Miles
GIS Services, IT Division
September 18, 2013


Pawnee Lake SRA - Ownership and Management Boundaries
Salt Valley Property
NGPC Owned Land
COE Owned Land
Designation
State Recreation Area [SRA]
0
0.15
0.3
0.6 Miles
GIS Services, IT Division
September 18, 2013


Stagecoach Lake SRA - Ownership and Management Boundaries
Salt Valley Property
NGPC Owned Land
COE Owned Land
Designation
State Recreation Area [SRA]
Wildlife Management Area [WMA]
0
0.075
0.15
0.3 Miles
GIS Services, IT Division
September 18, 2013


Twin Lakes WMA - Ownership and Management Boundaries
Salt Valley Property
NGPC Owned Land
COE Owned Land
Designation
Wildlife Management Area [WMA]
N
W
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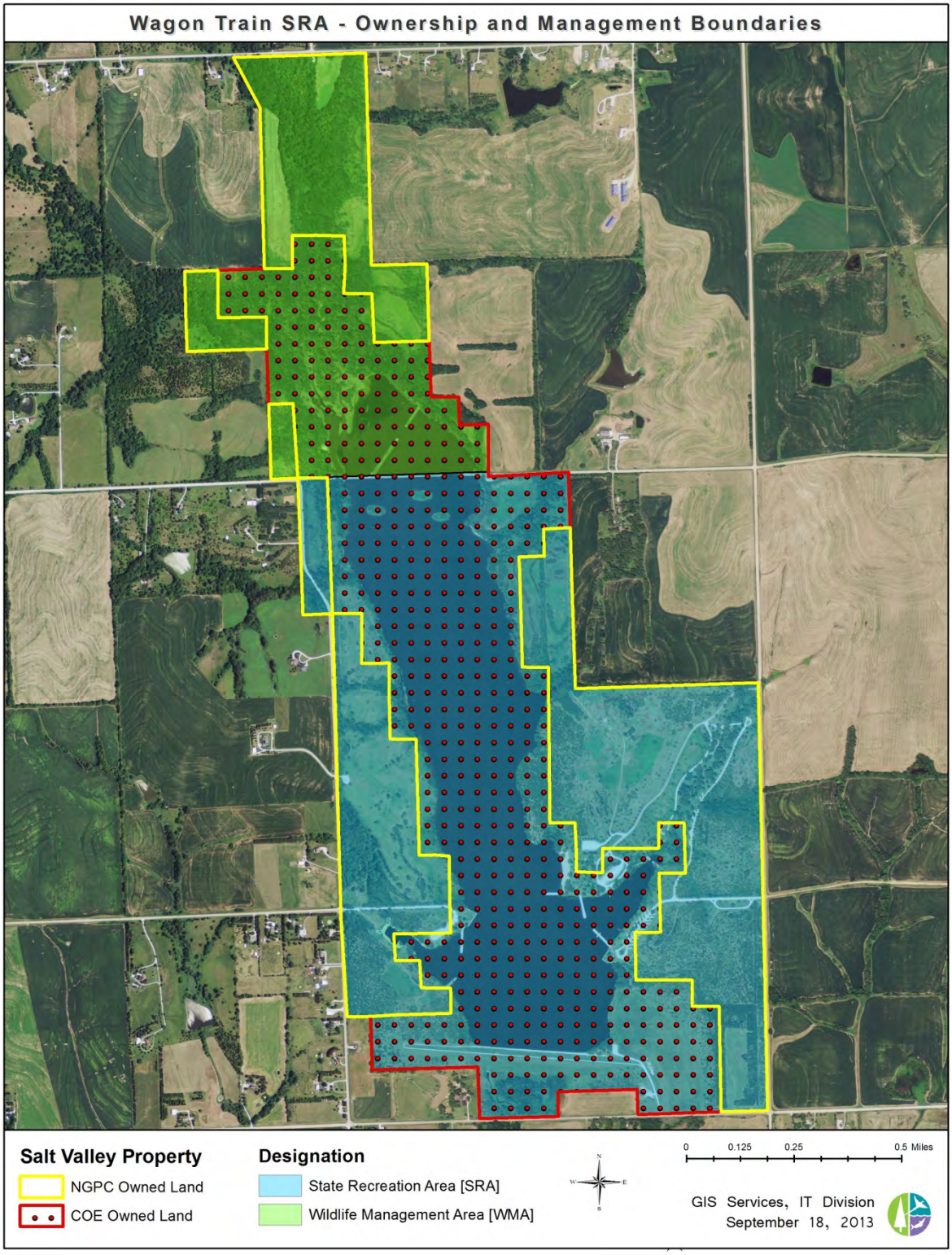
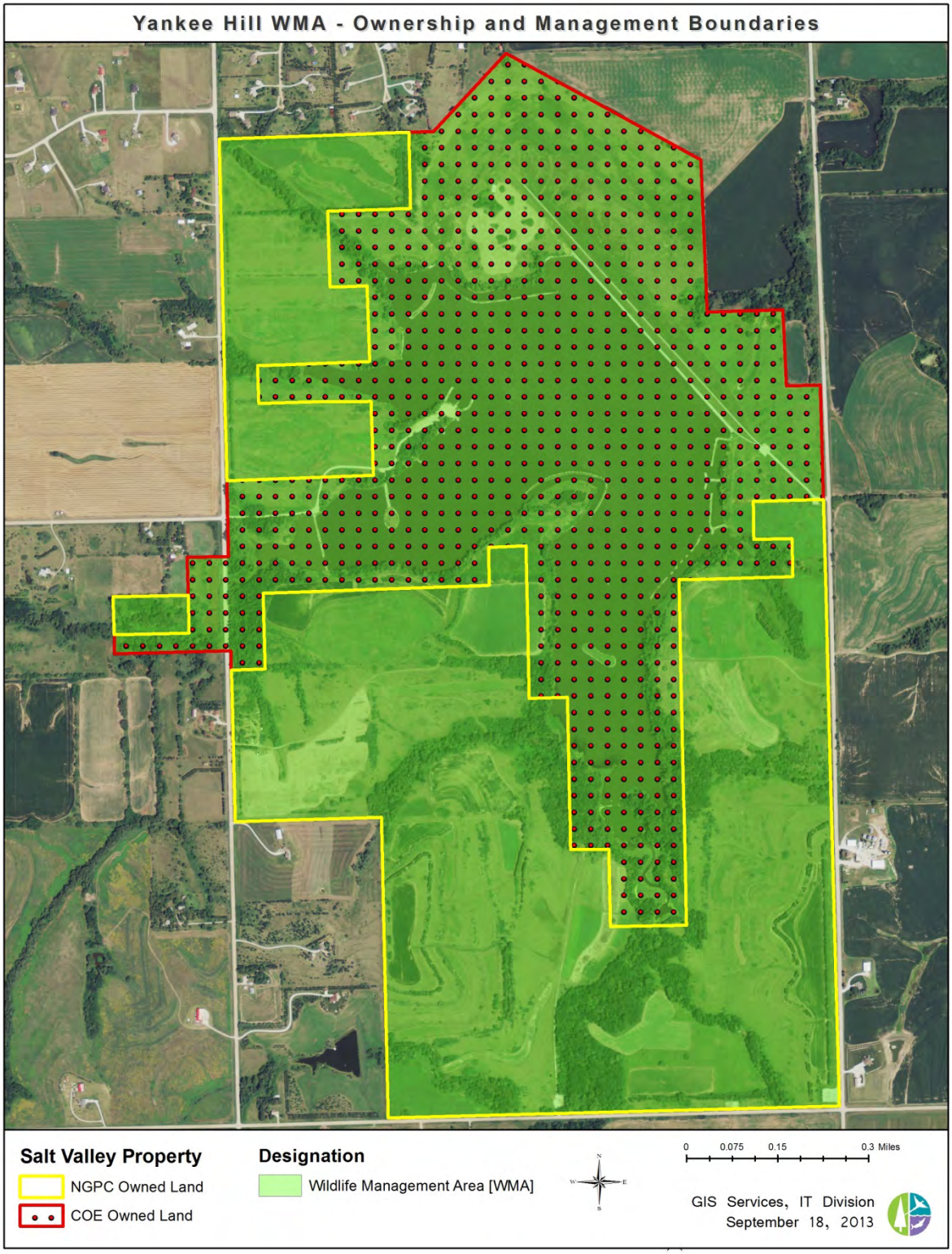
S
0
0.075
0.15
0.3 Miles
GIS Services, IT Division
September 18, 2013


Wagon Train SRA - Ownership and Management Boundaries
Salt Valley Property
NGPC Owned Land
COE Owned Land
Designation
State Recreation Area [SRA]
Wildlife Management Area [WMA]
0
0.125
0.25
0.5 Miles
GIS Services, IT Division
September 18, 2013


Yankee Hill WMA - Ownership and Management Boundaries
Salt Valley Property
NGPC Owned Land
COE Owned Land
Designation
Wildlife Management Area [WMA]
N
W
E
S
0
0.075
0.15
0.3 Miles
GIS Services, IT Division
September 18, 2013

Appendix B: Hunting and Trapping Species at Salt Valley Lakes

Species
Squirrel
Cottontail Rabbit
Pheasant
Quail
Dove
Waterfowl*
Snipe
Virginia Rail
Sora Rail
Woodcock
Crow
Raccoon
Opossum
Badger
Mink
Bobcat
Striped Skunk
Coyote
Muskrat
Beaver
Long-tailed Weasel
White-tailed Deer
*Waterfowl Hunting not allowed on Conestoga SRA

Appendix C: Common, Threatened & Endangered Species potentially at Salt Valley Lakes

Reptile and Amphibian Species	
Barred Tiger Salamander	*Ambystoma mavortium*
Blanchard's Cricket Frog	*Acris blanchrdi*
Boreal Chorus Frog	*Pseudacris maculata*
Brown Snake	*Storeria dekayi*
Bull Frog	*Lithobates catesbeiana*
Bullsnake	*Pituophis catenifer*
Common Garter Snake	*Thamnophis sirtalis*
Common Snapping Turtle	*Chelydra serpentina*
Cope's Gray Treefrog	*Hyla chrysoscelis*
Eastern Racer	*Coluber constrictor*
False Map Turtle	*Graptemys pseudogeographica*
Five-lined Skink	*Plestiodon fasciatus*
Graham's Crayfish Snake	*Regina grahamii*
Gray Treefrog	*Hyla versicolr*
Great Plains Toad	*Anaxyrus cognatus*
Lined Snake	*Tropidoclonion lineatum*
Massasauga	*Sistrurus catenatus*
Milk Snake	*Lampropeltis triangulum*
Northern Leopard Frog	*Lithobates pipiens*
Northern Prairie Skink	*Plestiodon septentrionalis*
Northern Water Snake	*Nerodia sipedon*
Ornate Box Turtle	*Terrapene ornata*
Painted Turtle	*Chrysemys picta*
Plains Garter Snake	*Thamnophis radix*
Plains Leopard Frog	*Lithobates blairi*
Plains Spadefoot Toad	*Spea bombifrons*
Plains Spadefoot Toad	*Spea bombifrons*
Prairie Kingsnake	*Lampropeltis calligaster*
Ringneck Snake	*Diadophis punctatus*
Smooth Softshell	*Apalone mutica*
Speckled Kingsnake	*Lampropeltis holbrooki*
Spiny Softshell	*Apalone spinifera*
Western Fox Snake	*Mintonius vulpina*
Western Rat Snake	*Scotophis obsoleta*
Western Ribbon Snake	*Thamnophis proximus*
Woodhouse's Toad	*Anaxyrus woodhousii*
Mammal Species	

Badger	*Taxidea taxus*
Beaver	*Castor canadensis*
Big brown bat	*Eptesicus fuscus*
Bobcat	*Lynx rufus*
Coyote	*Canis latrans*
Deer mouse	*Peromyscus maniculatus*
Eastern cottontail	*Sylvilagus floridanus*
Eastern mole	*Scalopus aquaticus*
Eastern pipistrelle	*Pipistrellus subflavus*
Evening bat	*Nycticeius humeralis*
Fox squirrel	*Sciurus niger*
Franklin's ground squirrel	*Spermophilus franklinii*
Grey Fox	*Urocyon cinereoargenteus*
Hispid cotton rat	*Sigmodon hispidus*
Hispid pocket mouse	*Chaetodipus hispidus*
Hoary bat	*Lasiurus cinereus*
House mouse	*Mus musculus*
Least shrew	*Cryptotis parva*
Least weasel	*Mustela nivalis*
Little brown myotis	*Myotis lucifugus*
Long-tailed weasel	*Mustela frenata*
Meadow jumping mouse	*Zapus hudsonius*
Meadow vole	*Microtus pennsylvanicus*
Mink	*Mustela vison*
Mule deer	*Odocoileus hemionus*
Muskrat	*Ondatra zibethicus*
Northern myotis	*Myotis septentrionalis*
Norway rat	*Rattus norvegicus*
Plains pocket gopher	*Geomys bursarius*
Prairie vole	*Microtus ochrogaster*
Raccoon	*Procyon lotor*
Red bat	*Lasiurus borealis*
Red fox	*Vulpes vulpes*
River otter	*Lontra canadensis*
Silver-haired bat	*Lasionycteris noctivagans*
Striped skunk	*Mephitis mephitis*
Thirteen-lined ground squirrel	*Spermophilus tridecemlineatus*
Virginia opossum	*Didelphis virginiana*

Western harvest mouse	*Reithrodontomys megalotis*
White-footed mouse	*Peromyscus leucopus*
Woodchuck	*Marmota monax*
Woodland vole	*Microtus pinetorum*
Bird Species	
American Bittern	*Botaurus lentiginosus*
Alder Flycatcher	*Empidonax alnorum*
American Avocet	*Recurvirostra americana*
American Coot	*Fulica americana*
American Crow	*Corvus brachyrhynchos*
American Golden-Plover	*Pluvialis dominica*
American Goldfinch	*Carduelis tristis*
American Kestrel	*Falco sparverius*
American Kestrel	*Falco sparverius*
American Pipit	*Anthus rubescens*
American Redstart	*Setophaga ruticilla*
American Robin	*Turdus migratorius*
American Tree Sparrow	*Spizella arborea*
American White Pelican	*Pelecanus erythrorhynchos*
American Wigeon	*Anas Americana*
American Woodcock	*Scolopax minor*
Baird's Sandpiper	*Calidris bairdii*
Bald Eagle	*Haliaeetus leucocephalus*
Baltimore Oriole	*Icterus galbula*
Baltimore Oriole	*Icterus galbula*
Bank Swallow	*Riparia riparia*
Bank Swallow	*Riparia riparia*
Barn Owl	*Tyto alba*
Barn Swallow	*Hirundo rustica*
Barred Owl	*Strix varia*
Bell's Vireo	*Vireo bellii*
Belted Kingfisher	*Ceryle alcyon*

Black Scoter	*Melanitta nigra*
Black Tern	*Chlidonias niger*
Black-and-White Warbler	*Mniotilta varia*
Black-bellied Plover	*Pluvialis squatarola*
Black-billed Cuckoo	*Coccyzus erythropthalmus*
Black-billed Magpie	*Pica hudsonia*
Blackburnian Warbler	*Dendroica fusca*
Black-capped Chickadee	*Poecile atricapillus*
Black-crowned Night-Heron	*Nycticorax nycticorax*
Black-legged Kittiwake	*Rissa tridactyla*
Blackpoll Warbler	*Dendroica striata*
Black-throated Green Warbler	*Dendroica virens*
Blue Grosbeak	*Passerina caerulea*
Blue Jay	*Cyanocitta cristata*
Blue-gray Gnatcatcher	*Polioptila caerulea*
Blue-headed Vireo	*Vireo solitarius*
Blue-winged Teal	*Anas discors*
Bobolink	*Dolichonyx oryzivorus*
Bonaparte's Gull	*Larus philadelphia*
Brewer's Blackbird	*Euphagus cyanocephalus*
Broad-winged Hawk	*Buteo platypterus*
Brown Creeper	*Certhia americana*
Brown Thrasher	*Toxostoma rufum*
Brown-headed Cowbird	*Molothrus ater*
Buff-breasted Sandpiper	*Tryngites subruficollis*
Bufflehead	*Bucephala albeola*
Cackling Goose	*Branta hutchinsii*
California Gull	*Larus californicus*
Canada Goose	*Branta canadensis*
Canada Warbler	*Wilsonia canadensis*
Canvasback	*Aythya valisineria*

Carolina Wren	*Thryothorus ludovicianus*
Caspian Tern	*Sterna caspia*
Cattle Egret	*Bubulcus ibis*
Cedar Waxwing	*Bombycilla cedrorum*
Chestnut-sided Warbler	*Dendroica pensylvanica*
Chimney Swift	*Chaetura pelagica*
Chipping Sparrow	*Spizella passerina*
Clay-colored Sparrow	*Spizella pallida*
Cliff Swallow	*Petrochelidon pyrrhonota*
Common Goldeneye	*Bucephala clangula*
Common Goldeneye	*Bucephala clangula*
Common Grackle	*Quiscalus quiscula*
Common Loon	*Gavia immer*
Common Merganser	*Mergus merganser*
Common Nighthawk	*Chordeiles minor*
Common Snipe	*Gallinago gallinago*
Common Yellowthroat	*Geothlypis trichas*
Cooper's Hawk	*Accipiter cooperii*
Dark-eyed Junco	*Junco hyemalis*
Dickcissel	*Spiza Americana*
Double-crested Cormorant	*Phalacrocorax auritus*
Downy Woodpecker	*Picoides pubescens*
Dunlin	*Calidris alpina*
Eared Grebe	*Podiceps nigricollis*
Eastern Bluebird	*Sialia sialis*
Eastern Kingbird	*Tyrannus tyrannus*
Eastern Meadowlark	*Sturnella magna*
Eastern Phoebe	*Sayornis phoebe*
Eastern Screech-Owl	*Megascops asio*
Eastern Towhee	*Pipilo erythrophthalmus*
Eastern Wood-Pewee	*Contopus virens*

Eurasian Collared-Dove	*Streptopelia decaocto*
European Starling	*Sturnus vulgaris*
Field Sparrow	*Spizella pusilla*
Forster's Tern	*Sterna forsteri*
Fox Sparrow	*Passerella iliaca*
Franklin's Gull	*Larus pipixcan*
Gadwall	*Anas strepera*
Glaucous Gull	*Larus hyperboreus*
Golden Eagle	*Aquila chrysaetos*
Golden-crowned Kinglet	*Regulus satrapa*
Grasshopper Sparrow	*Ammodramus savannarum*
Gray Catbird	*Dumetella carolinensis*
Gray-cheecked Thrush	*Catharus minimus*
Great Blue Heron	*Ardea herodias*
Great Crested Flycatcher	*Myiarchus crinitus*
Great Egret	*Ardea alba*
Great Horned Owl	*Bubo virginianus*
Greater Prairie-Chicken	*Tympanuchus cupido*
Greater Scaup	*Aythya marila*
Greater White-fronted Goose	*Anser albifrons*
Greater Yellowlegs	*Tringa melanoleuca*
Great-tailed Grackle	*Quiscalus mexicanus*
Green Heron	*Butorides striatus*
Green-winged Teal	*Anas crecca*
Hairy Woodpecker	*Picoides villosus*
Harris's Sparrow	*Zonotrichia querula*
Hermit Thrush	*Catharus guttatus*
Herring Gull	*Larus argentatus*
Hooded Merganser	*Lophodytes cucullatus*
Horned Grebe	*Podiceps auritus*
Horned Lark	*Eremophila alpestris*

House Finch	*Carpodacus mexicanus*
House Sparrow	*Passer domesticus*
House Wren	*Troglodytes aedon*
Hudsonian Godwit	*Limosa haemastica*
Indigo Bunting	*Passerina cyanea*
Killdeer	*Charadrius vociferus*
Lapland Longspur	*Calcarius lapponicus*
Lark Sparrow	*Chondestes grammacus*
Least Bittern	*Ixobrychus exilis*
Least Sandpiper	*Calidris minutilla*
Least Tern	*Sterna antillarum*
LeConte's Sparrow	*Ammodramus leconteii*
Lesser Black-backed Gull	*Larus fuscus*
Lesser Scaup	*Aythya affinis*
Lesser Yellowlegs	*Tringa flavipes*
Least Flycatcher	*Empidonax minimus*
Lincoln's Sparrow	*Melospiza lincolnii*
Loggerhead Shrike	*Lanius ludovicianus*
Long-billed Dowitcher	*Limnodromus scolopaceus*
Long-eared Owl	*Asio otus*
Long-tailed Duck	*Clangula hyemalis*
Magnolia Warbler	*Dendroica magnolia*
Mallard	*Anas platyrhynchos*
Marbled Godwit	*Limosa fedoa*
Marsh Wren	*Cistothorus palustris*
Merlin	*Falco columbarius*
Mourning Dove	*Zenaida macroura*
Mourning Warbler	*Oporornis philadelphia*
Nashville Warbler	*Vermivora ruficapilla*
Northern Bobwhite	*Colinus virginianus*
Northern Cardinal	*Cardinalis cardinalis*

Northern Flicker	*Colaptes auratus*
Northern Goshawk	*Accipiter gentilis*
Northern Harrier	*Circus cyaneus*
Northern Mockingbird	*Mimus polyglottos*
Northern Pintail	*Anas acuta*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Northern Shoveler	*Anas clypeata*
Northern Shrike	*Lanius excubitor*
Northern Waterthrush	*Parkesia noveboracensis*
Olive-sided Flycatcher	*Contopus cooperi*
Orange-crowned Warbler	*Vermivora celata*
Orchard Oriole	*Icterus spurius*
Osprey	*Pandion haliaetus*
Ovenbird	*Seiurus aurocapilla*
Pacific Loon	*Gavia pacifica*
Palm Warbler	*Dendroica palmarum*
Pectoral Sandpiper	*Calidris melanotos*
Peregrine Falcon	*Falco peregrinus*
Pied-billed Grebe	*Podilymbus podiceps*
Pine Siskin	*Carduelis pinus*
Piping Plover	*Charadrius melodus*
Purple Finch	*Carpodacus purpureus*
Purple Martin	*Progne subis*
Red Crossbill	*Loxia curvirostra*
Red-bellied Woodpecker	*Melanerpes carolinus*
Red-breasted Merganser	*Mergus serrator*
Red-breasted Nuthatch	*Sitta canadensis*
Red-eyed Vireo	*Vireo olivaceus*
Redhead	*Aythya americana*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Red-necked Phalarope	*Phalaropus lobatus*

Red-shouldered Hawk	*Buteo lineatus*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoeniceus*
Ring-billed Gull	*Larus delawarensis*
Ring-necked Duck	*Aythya collaris*
Ring-necked Pheasant	*Phasianus colchicus*
Rock Pigeon	*Columba livia*
Rose-breasted Grosbeak	*Pheucticus ludovicianus*
Ross's Goose	*Chen rossii*
Rough-legged Hawk	*Buteo lagopus*
Ruby-crowned Kinglet	*Regulus calendula*
Ruby-throated Hummingbird	*Archilochus colubris*
Ruddy Duck	*Oxyura jamaicensis*
Ruddy Turnstone	*Arenaria interpres*
Rusty Blackbird	*Euphagus carolinus*
Sabine's Gull	*Xema sabini*
Sanderling	*Calidris alba*
Savannah Sparrow	*Passerculus sandwichensis*
Sedge Wren	*Cistothorus platensis*
Semipalmated Plover	*Charadrius semipalmatus*
Semipalmated Sandpiper	*Calidris pusilla*
Sharp-shinned Hawk	*Accipiter striatus*
Short-billed Dowitcher	*Limnodromus griseus*
Short-eared Owl	*Asio flammeus*
Snow Bunting	*Plectrophenax nivalis*
Snow Goose	*Chen caerulescens*
Snowy Egret	*Egretta thula*
Song Sparrow	*Melospiza melodia*
Sora	*Porzana carolina*
Spotted Sandpiper	*Actitis macularia*
Spotted Towhee	*Pipilo maculatus*

Stilt Sandpiper	*Calidris himantopus*
Surf Scoter	*Melanitta perspicillata*
Swainson's Hawk	*Buteo swainsoni*
Swainson's Thrush	*Catharus ustulatus*
Swamp Sparrow	*Melospiza georgiana*
Tennessee Warbler	*Vermivora peregrina*
Thayer's Gull	*Larus thayeri*
Tree Swallow	*Tachycineta bicolor*
Turkey Vulture	*Cathartes aura*
Upland Sandpiper	*Bartramia longicauda*
Vesper Sparrow	*Pooecetes gramineus*
Virginia Rail	*Rallus limicola*
Warbling Vireo	*Vireo gilvus*
Western Grebe	*Aechmophorus occidentalis*
Western Kingbird	*Tyrannus verticalis*
Western Meadowlark	*Sturnella neglecta*
White-breasted Nuthatch	*Sitta carolinensis*
White-crowned Sparrow	*Zonotrichia leucophrys*
White-faced Ibis	*Plegadis chihi*
White-rumped Sandpiper	*Calidris fuscicollis*
White-throated Sparrow	*Zonotrichia albicollis*
White-winged Scoter	*Melanitta fusca*
Wild Turkey	*Meleagris gallopavo*
Willet	*Catoptrophorus semipalmatus*
Willow Flycatcher	*Empidonax traillii*
Wilson's Phalarope	*Phalaropus tricolor*
Wilson's Snipe	*Gallinago delicata*
Wilson's Warbler	*Wilsonia pusilla*
Winter Wren	*Troglodytes troglodytes*
Wood Duck	*Aix sponsa*
Wood Thrush	*Hylocichla mustelina*

Yellow Warbler	*Dendroica petechia*
Yellow-bellied Sapsucker	*Sphyrapicus varius*
Yellow-billed Cuckoo	*Coccyzus americanus*
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
Yellow-rumped Warbler	*Dendroica coronata*
Yellow-throated Vireo	*Vireo flavifrons*

Threatened and Endangered Species potentially at Salt Valley Lakes

Common Name	Scientific Name	Taxonomy	Legacy Status	State Status	Federal Status
Bird					
American Bittern	Botaurus lentiginosus	Bird	2011: Untiered.		
American Wigeon	Anas americana	Bird	Tier 2		
American Woodcock	*Scolopax minor*	Bird	Tier 2		
Bald Eagle	Haliaeetus leucocephalus	Bird	Tier 2		
Barn Owl	Tyto alba	Bird	Tier 2		
Barred Owl	Strix varia	Bird	2011: Untiered.		
Bell's Vireo	Vireo bellii	Bird	Tier 1		
Black Rail	Laterallus jamaicensis	Bird	2011: Untiered.		
Black Tern	Chlidonias niger	Bird	Tier 2		
Black-and-white Warbler	Mniotilta varia	Bird	Tier 2		
Black-crowned Night-Heron	Nycticorax nycticorax	Bird	Tier 2		
Black-necked Stilt	Himantopus mexicanus	Bird	Tier 2		
Brewer's Blackbird	Euphagus cyanocephalus	Bird	Tier 2		
Brown Creeper	Certhia americana	Bird	Tier 2		
Buff-breasted Sandpiper	Tryngites subruficollis	Bird	Tier 1		
Canvasback	Aythya valisineria	Bird	Tier 2		
Carolina Wren	Thryothorus ludovicianus	Bird	Tier 2		
Chuck-will's-widow	Caprimulgus carolinensis	Bird	Tier 2		
Cinnamon	Anas cyanpotera	Bird	Tier 2		

Teal					
Common Moorhen	Gallinula chloropus	Bird			
Cooper's Hawk	Accipiter cooperii	Bird	2011: Untiered.		
Eastern Meadowlark	Sturnella magna	Bird	2011: Untiered.		
Forster's Tern	Sterna forsteri	Bird	Tier 2		
Great Blue Heron	Ardea herodias	Bird			
Greater Prairie-Chicken	Tympanuchus cupido	Bird	Tier 1		
Henslow's Sparrow	Ammodramus henslowii	Bird	Tier 1		
Interior Least Tern	Sternula antillarum athalassos	Bird	Tier 1		
Iowa Skipper	Atrytone arogos iowa	Bird	Tier 1		
King Rail	Rallus elegans	Bird	Tier 2		
Least Bittern	Ixobrychus exilis	Bird	2011: Untiered.		
Lesser Scaup	Aythya affinis	Bird	Tier 2		
Loggerhead Shrike	Lanius ludovicianus	Bird	Tier 1		
Merlin	Falco columbarius	Bird	Tier 2		
Northern Bobwhite	Colinus virginianus	Bird	2011: Untiered.		
Peregrine Falcon	Falco peregrinus	Bird	Tier 2		
Piping Plover	Charadrius melodus	Bird	Tier 1	Threatened	Threatened
Red-shouldered Hawk	Buteo lineatus	Bird	Tier 2		
Ruby-throated Hummingbird	Archilochus colubris	Bird	Tier 2		
Savannah Sparrow	Passerculus sandwichensis	Bird	Tier 2		
Scissor-tailed Flycatcher	Tyrannus forficatus	Bird	Tier 2		
Sedge Wren	Cistothorus platensis	Bird	Tier 2		
Sharp-shinned Hawk	Accipiter striatus	Bird	Tier 2		
Swainson's Hawk	Buteo swainsoni	Bird	Tier 2		
Swamp Sparrow	Melospiza georgiana	Bird	Tier 2		
Townsend's Solitaire	Myadestes townsendi	Bird	Tier 2		

Trumpeter Swan	Cygnus buccinator	Bird	Tier 1		
Tufted Titmouse	Baeolophus bicolor	Bird	Tier 2		
Western Grebe	Aechmophorus occidentalis	Bird	Tier 2		
White-faced Ibis	Plegadis chihi	Bird	Tier 2		
Wilson's Snipe	Gallinago delicata	Bird	Tier 2		
Wood Thrush	Hylocichla mustelina	Bird	Tier 1		
Yellow-throated Vireo	Vireo flavifrons	Bird	Tier 2		
Fish					
Brook Stickleback	Culaea inconstans	Fish	2011: Untiered.		
Common Shiner	Luxilus cornutus	Fish	Tier 2		
Flathead Chub	Platygobio gracilis	Fish	Tier 2		
Plains Minnow	Hybognathus placitus	Fish	Tier 2		
Plains Topminnow	Fundulus sciadicus	Fish	Tier 1		
Tadpole Madtom	Noturus gyrinus	Fish	Tier 2		
Western Silvery Minnow	Hybognathus argyritis	Fish	Tier 2		
Insect					
A Scarab Beetle	Rhyssemus neglectus	Insect	Tier 2		
A Tiger Beetle	Cicindela togata	Insect	Tier 2		
Acadian Hairstreak	Satyrium acadicum	Insect	Tier 2		
Arogos Skipper	Atrytone arogos	Insect	Tier 2		
Banded Hairstreak	Satyrium calanus	Insect	Tier 2		
Coral Hairstreak	Satyrium titus	Insect	Tier 2		
Crossline Skipper	Polites origenes	Insect	Tier 2		
Delaware Skipper	Atrytone logan	Insect	Tier 2		
Desert Forktail	Ischnura barberi	Insect	Tier 2		
Dion Skipper	Euphyes dion	Insect	Tier 2		
Dogface	Colias cesonia	Insect	Tier 2		
Dun Skipper	Euphyes vestris	Insect	Tier 2		
Fiery Skipper	Hylephila phyleus	Insect	Tier 2		
Ghost Tiger Beetle	Cicindela lepida	Insect	Tier 1		
Gray Comma	Polygonia progne	Insect	Tier 2		

Harvester	Feniseca tarquinius	Insect	Tier 2		
Henry's Elfin	Incisalia henrici	Insect	Tier 2		
Hickory Hairstreak	Satyrium caryaevorum	Insect	Tier 2		
Hobomok Skipper	Poanes hobomok	Insect	Tier 2		
Horace's Duskywing	Erynnis horatius	Insect	Tier 2		
Iowa Skipper	Atrytone arogos iowa	Insect	Tier 1		
Juvenal's Duskywing	Erynnis juvenalis	Insect	Tier 2		
Large Heath	Coenonympha tullia	Insect	Tier 2		
Little Glassywing	Pompeius verna	Insect	Tier 2		
Married Underwing	Catocala nuptialis	Insect	Tier 1		
Mottled Duskywing	Erynnis martialis	Insect	Tier 1		
Northern Broken Dash	Wallengrenia egeremet	Insect	Tier 2		
Northern Pearlyeye	Enodia anthedon	Insect	Tier 2		
Olive Hairstreak	Mitoura grynea	Insect	Tier 2		
Regal Fritillary	Speyeria idalia	Insect	Tier 1		
Residua Underwing	Catocala residua	Insect	Tier 2		
Salt Creek Grasshopper	Trimerotropis salina	Insect	Tier 2		
Salt Creek Tiger Beetle	Cicindela nevadica lincolniana	Insect	Tier 1	Endangered	Endangered
Scalloped Sootywing	Staphylus hayhurstii	Insect	Tier 2		
Silver-bordered Fritillary	Boloria selene	Insect	Tier 2		
Silvery Checkerspot	Chlosyne nycteis	Insect	Tier 2		
Sleepy Orange	Eurema nicippe	Insect	Tier 2		
Southern Cloudywing	Thorybes bathyllus	Insect	Tier 2		
Striped Hairstreak	Satyrium liparops	Insect	Tier 2		
Tawny Emperor	Asterocampa clyton	Insect	Tier 2		
White-cloaked Tiger Beetle	Cicindela togata	Insect	Tier 2		
Whitney's Underwing	Catocala whitneyi	Insect	Tier 1		

Wild Indigo Duskywing	Erynnis baptisiae	Insect	Tier 2		
Yellow-grey Underwing	Catocala luctuosa	Insect	Tier 2		
Zabulon Skipper	Poanes zabulon	Insect	Tier 2		
Zebra Swallowtail	Eurytides marcellus	Insect	Tier 2		
Mammal					
Black-tailed Jackrabbit	Lepus californicus	Mammal	Tier 2		
Eastern Spotted Skunk	Spilogale putorius	Mammal	Tier 2		
Evening Bat	Nycticeius humeralis	Mammal	Tier 2		
Least Weasel	Mustela nivalis	Mammal			
Little Brown Myotis	Myotis lucifugus	Mammal	1 Provisional		
Long-tailed Weasel	Mustela frenata	Mammal	Tier 2		
Northern Myotis	Myotis septentrionalis	Mammal	Tier 2		
Plains Pocket Mouse	Perognathus flavescens perniger	Mammal	Tier 1		
Tricolored Bat	Perimyotis subflavus	Mammal	1 Provisional		
Mussel					
Yellow Sandshell	Lampsilis teres	Mussel	Tier 2		
A Mollusk	Lampsilis teres teres	Mussel	2011: Untiered.		
Fatmucket	Lampsilis siliquoidea	Mussel	Tier 2		
Pimpleback	Quadrula pustulosa	Mussel	Tier 1		
Plain Pocketbook	Lampsilis cardium	Mussel	Tier 1		
Pondmussel	Ligumia subrostrata	Mussel	Tier 2		
Plant					
Ashy Sunflower	Helianthus mollis	Plant	Tier 2		
Cobaea Penstemon	Penstemon cobaea	Plant			
Goldenweed	Haplopappus ciliatus	Plant			
Late Boneset	Eupatorium serotinum	Plant			
Lawn Aster	Symphyotrichum divaricatum	Plant			

Prairie Fawn-lily	Erythronium mesochoreum	Plant	Tier 2		
Rocky Mountain Glasswort	Salicornia rubra	Plant	Tier 1	Endangered	
Saltmarsh Aster	Symphyotrichum subulatum	Plant	Tier 2		
Saltwort	Salicornia rubra	Plant	Tier 1	Endangered	
Seaside Heliotrope	Heliotropium curassavicum var. curassavicum	Plant	Tier 2		
Short's Rock Cress	Boechera dentata	Plant	Tier 2		
Small-flower Wallflower	Erysimum inconspicuum	Plant	Tier 2		
Soft Fox Sedge	Carex conjuncta	Plant			
Southern Wild Senna	Senna marilandica	Plant	Tier 2		
Spider Milkweed	Asclepias viridis	Plant			
Spring Ladies'-tresses	Spiranthes vernalis	Plant	Tier 2		
Texas Dropseed	Sporobolus texanus	Plant	Tier 2		
Western Prairie Fringed Orchid	Platanthera praeclara	Plant	Tier 1	Threatened	Threatened
Woolly Croton	Croton capitatus var. capitatus	Plant			
Reptile					
Common Kingsnake	Lampropeltis getula	Reptile	Tier 2	NC	
Eastern Hognose Snake	Heterodon platirhinos	Reptile	Tier 2		
Five-lined Skink	Eumeces fasciatus	Reptile	Tier 2		
Graham's Crayfish Snake	Regina grahamii	Reptile	Tier 2		
Prairie Kingsnake	Lampropeltis calligaster	Reptile	Tier 2		
Smooth Soft-shelled Turtle	Apalone mutica	Reptile	Tier 2		

Key

Tier 1 – species that are globally or nationally at-risk

Tier II – species that are at-risk within Nebraska, but apparently doing well in other parts of their range

2011: un-tiered – species that were listed as Tier II in 2005 but have since been remove from that status