Appendix A

Figures

Proposed Osage Creek Mitigation Bank Areas

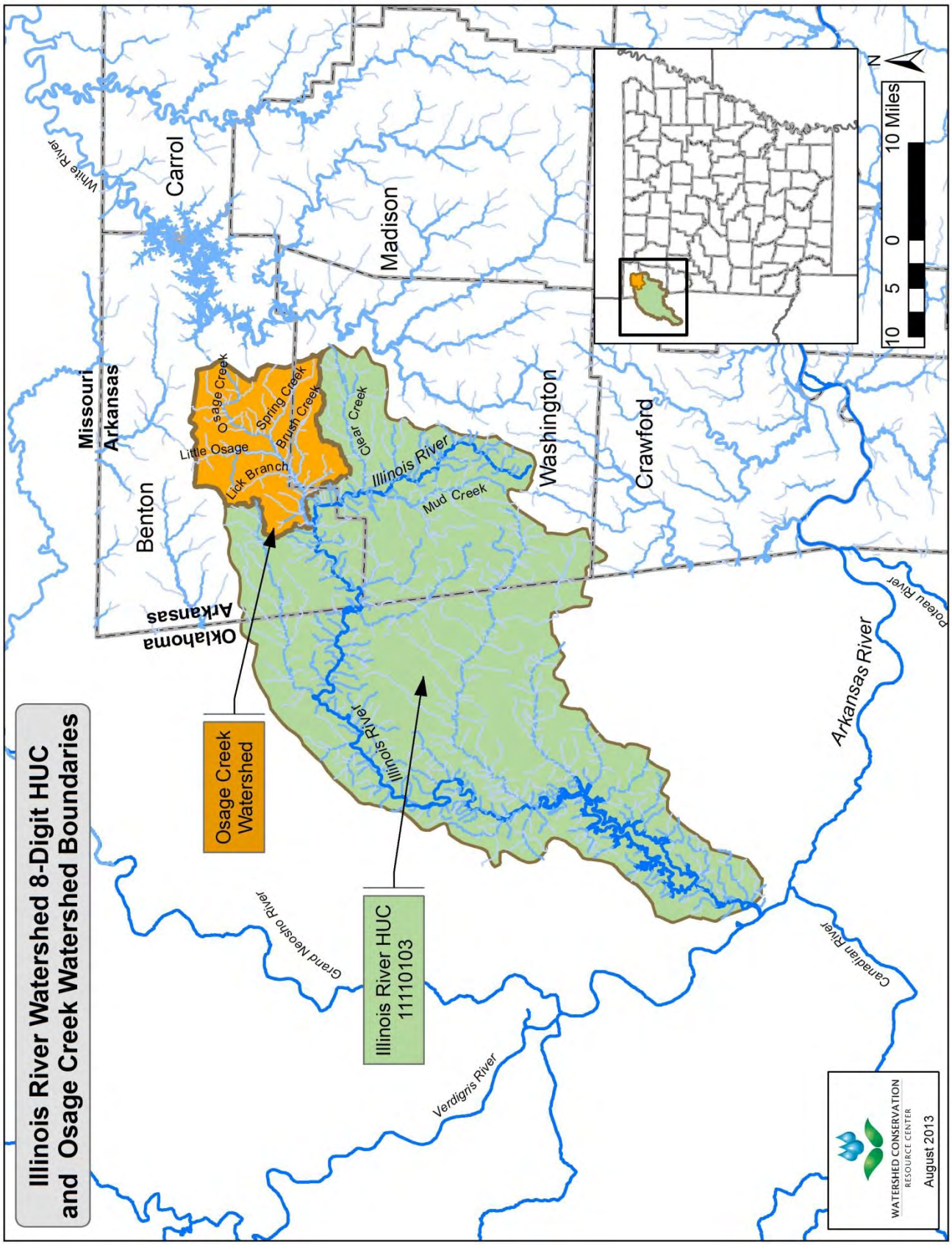

Figure 1 Location of the proposed Osage Creek Mitigation Banking Sites in relation to Illinois River and Osage Creek watersheds

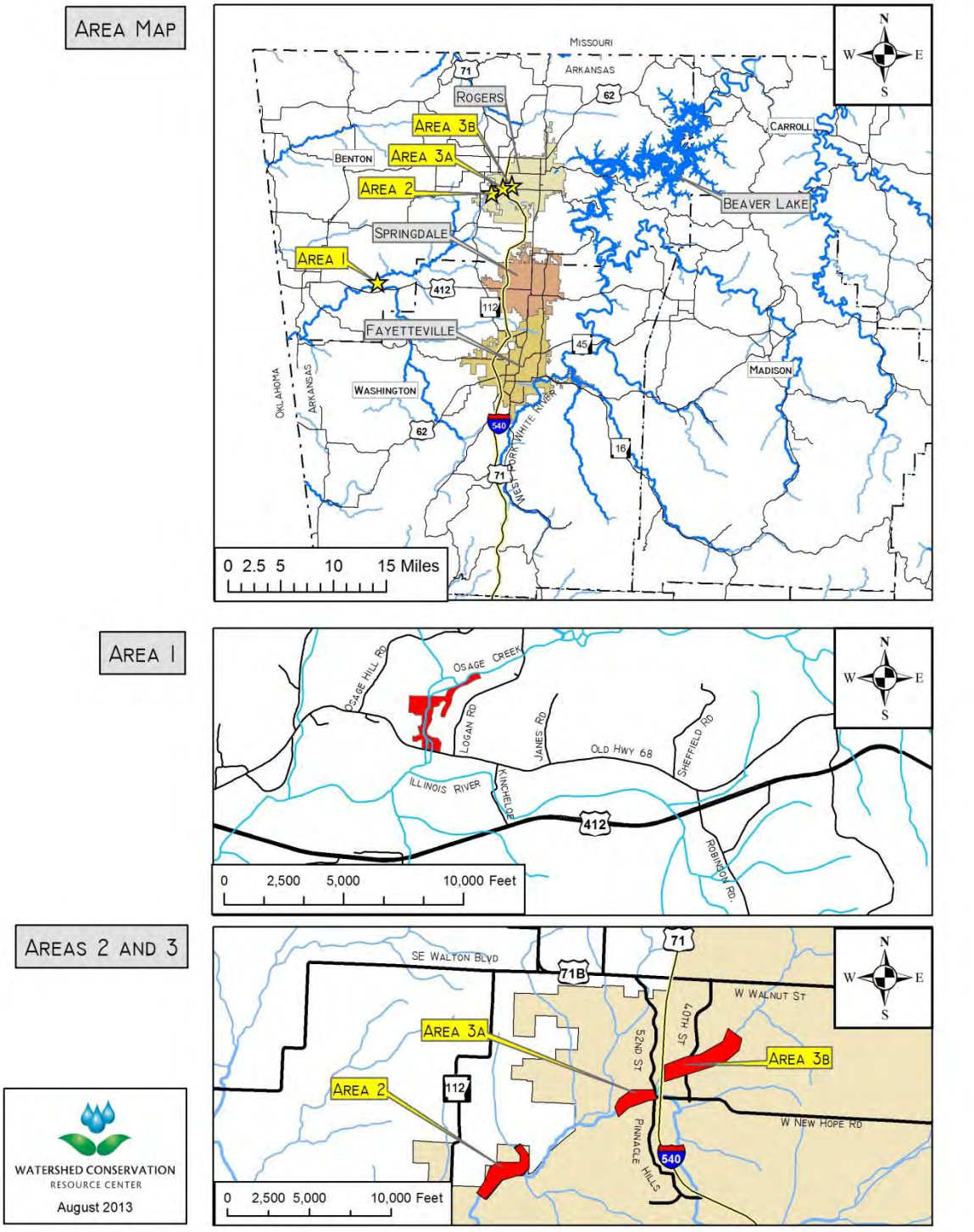

Figure 2 Location of proposed Osage Creek Mitigation Banks – Areas 1, 2, and 3 in relation to the regional area and local vicinity

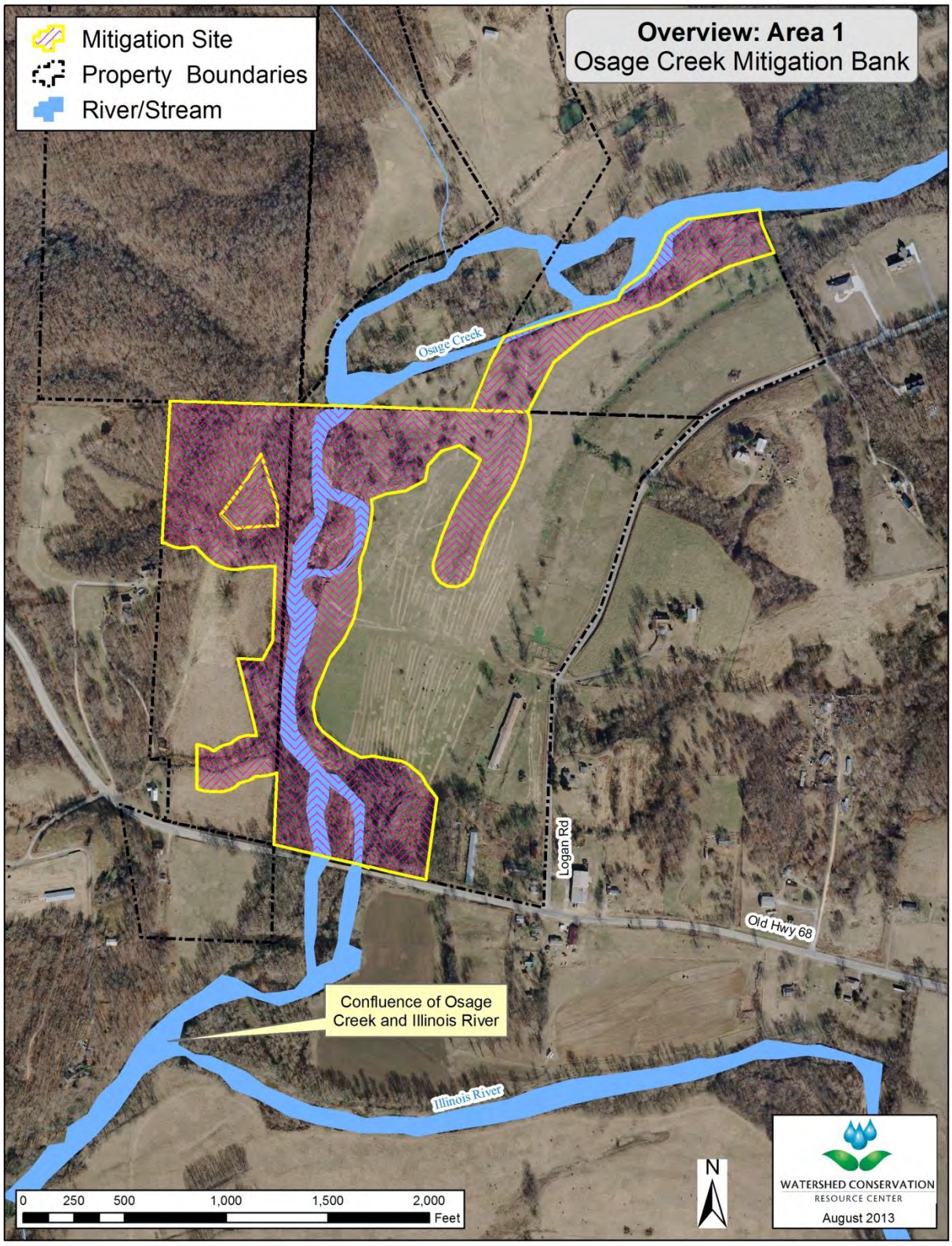

Figure 3 Overview of the proposed Osage Creek Mitigation Bank – Area 1

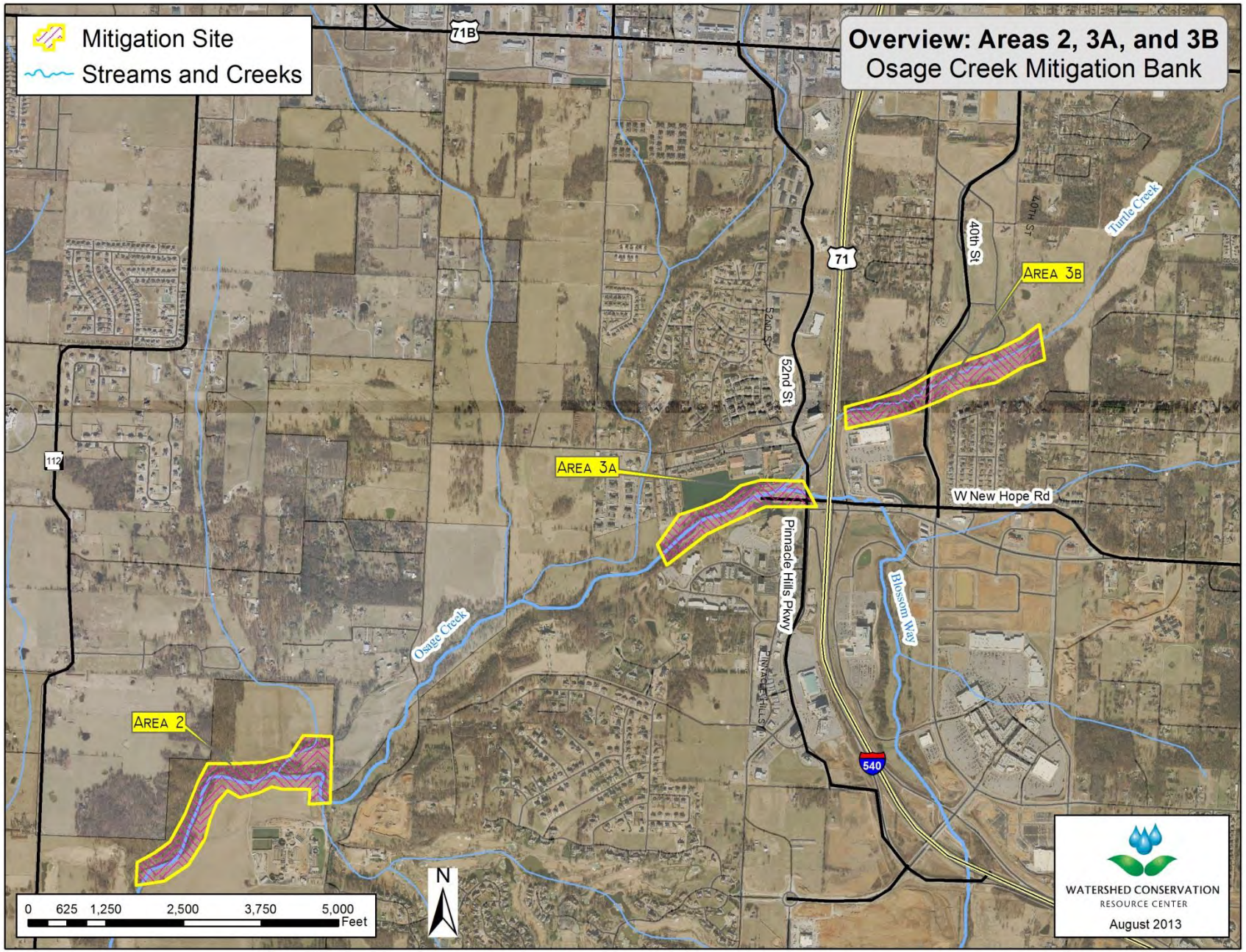

Figure 4 Overview of the proposed Osage Creek Mitigation Bank – Areas 2, 3A and 3B

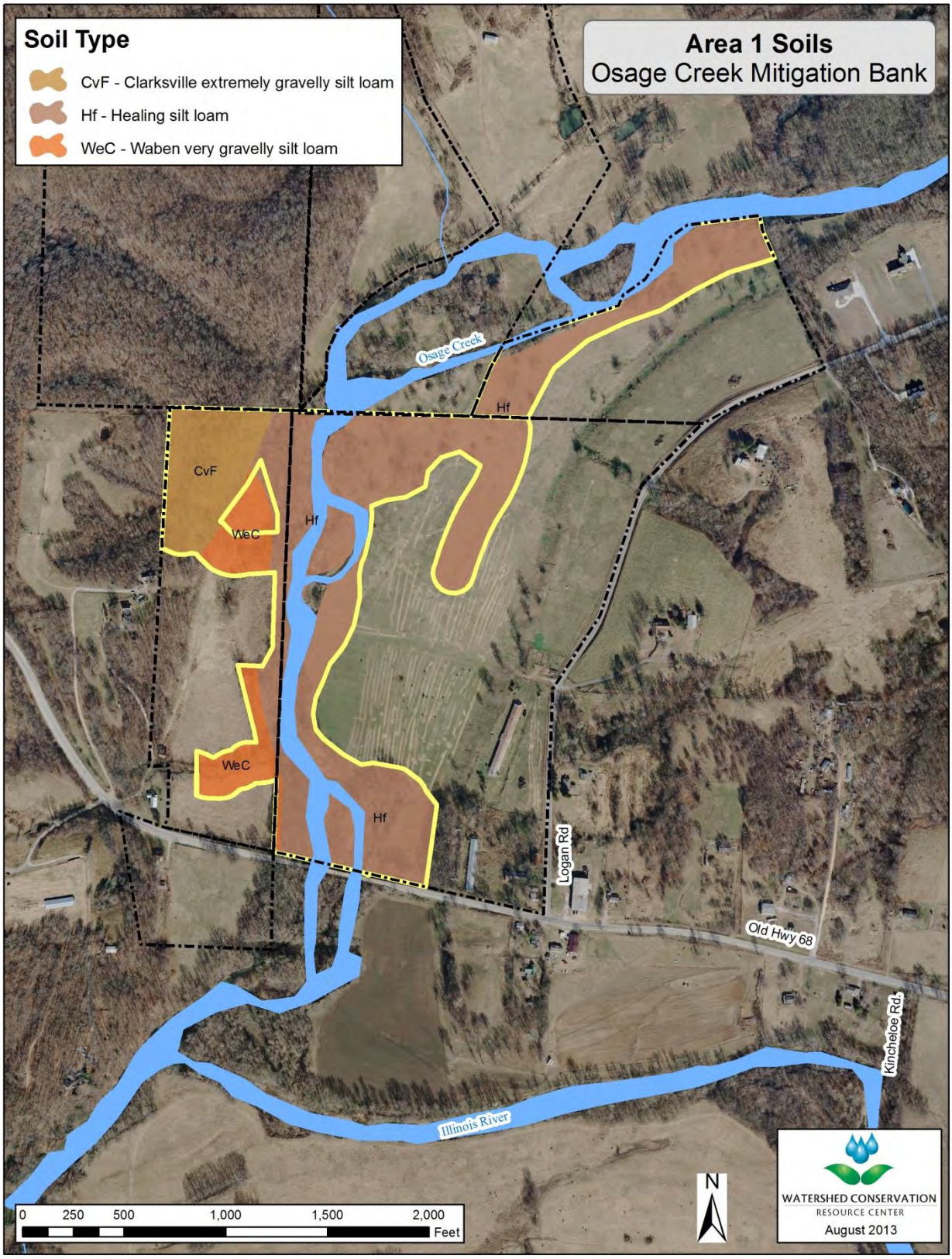

Figure 5 Soils map for Area 1

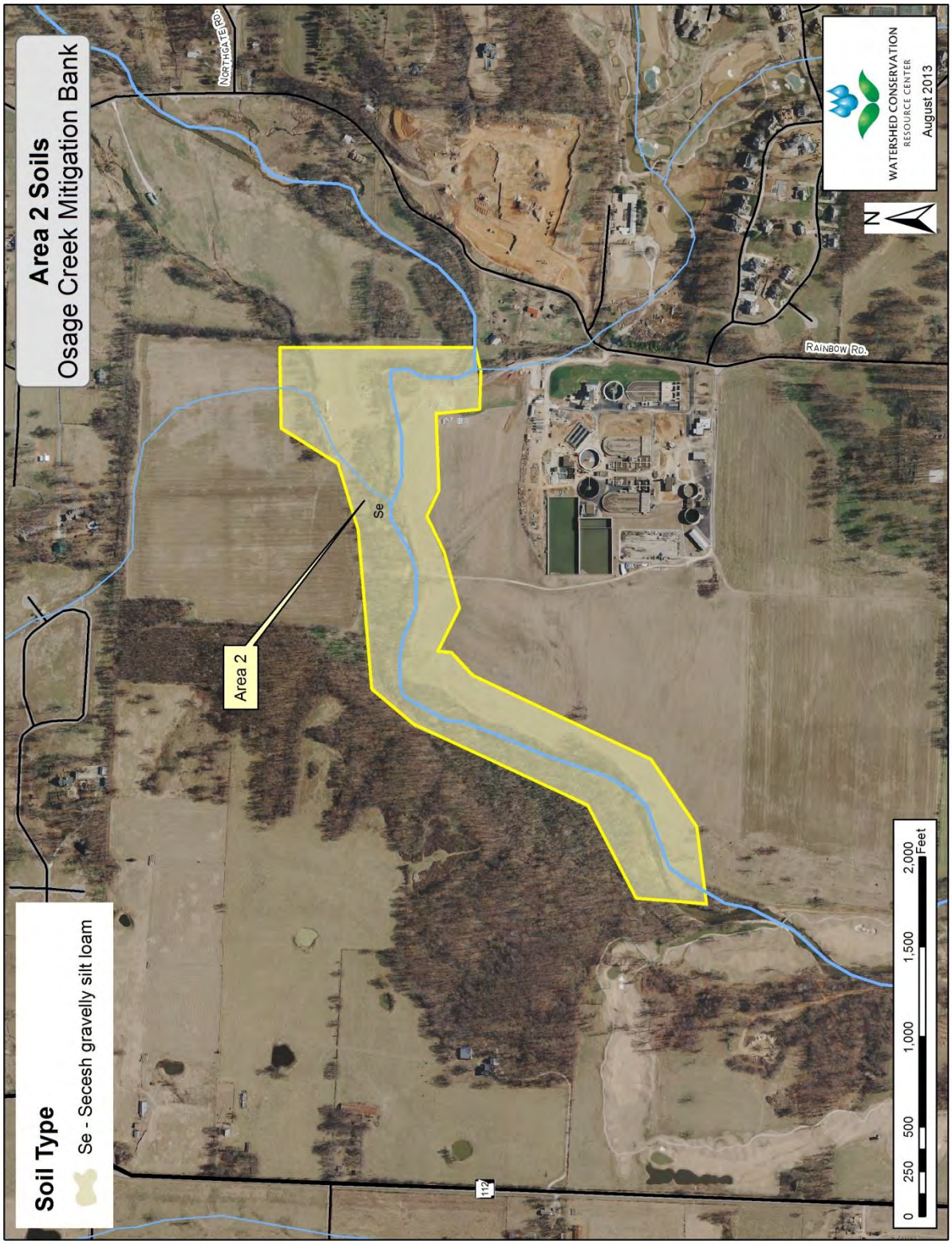

Figure 6 Soils map for Area 2

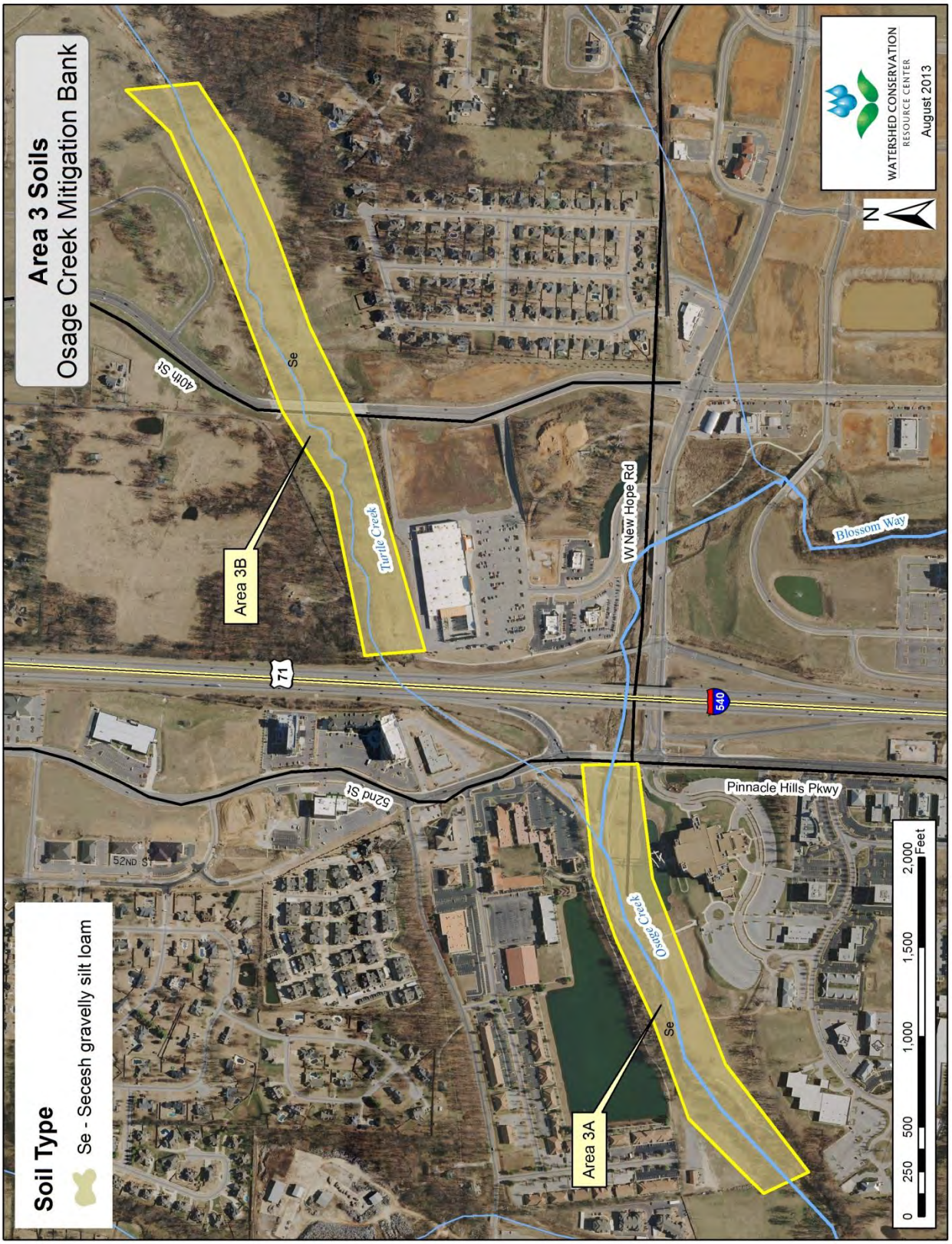

Figure 7 Soils map for Areas 3A and 3B

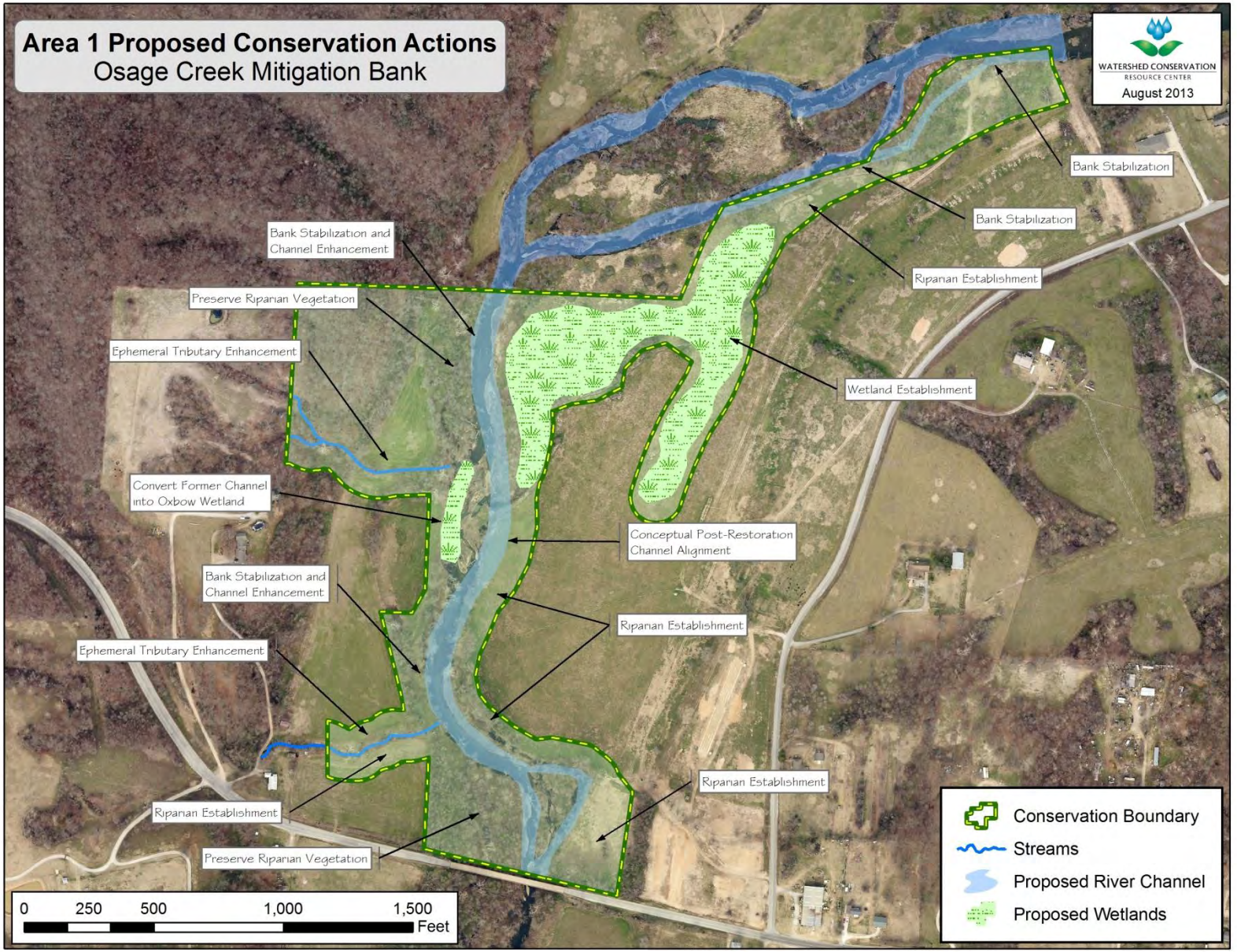

Figure 8 Proposed conservation actions for Area 1

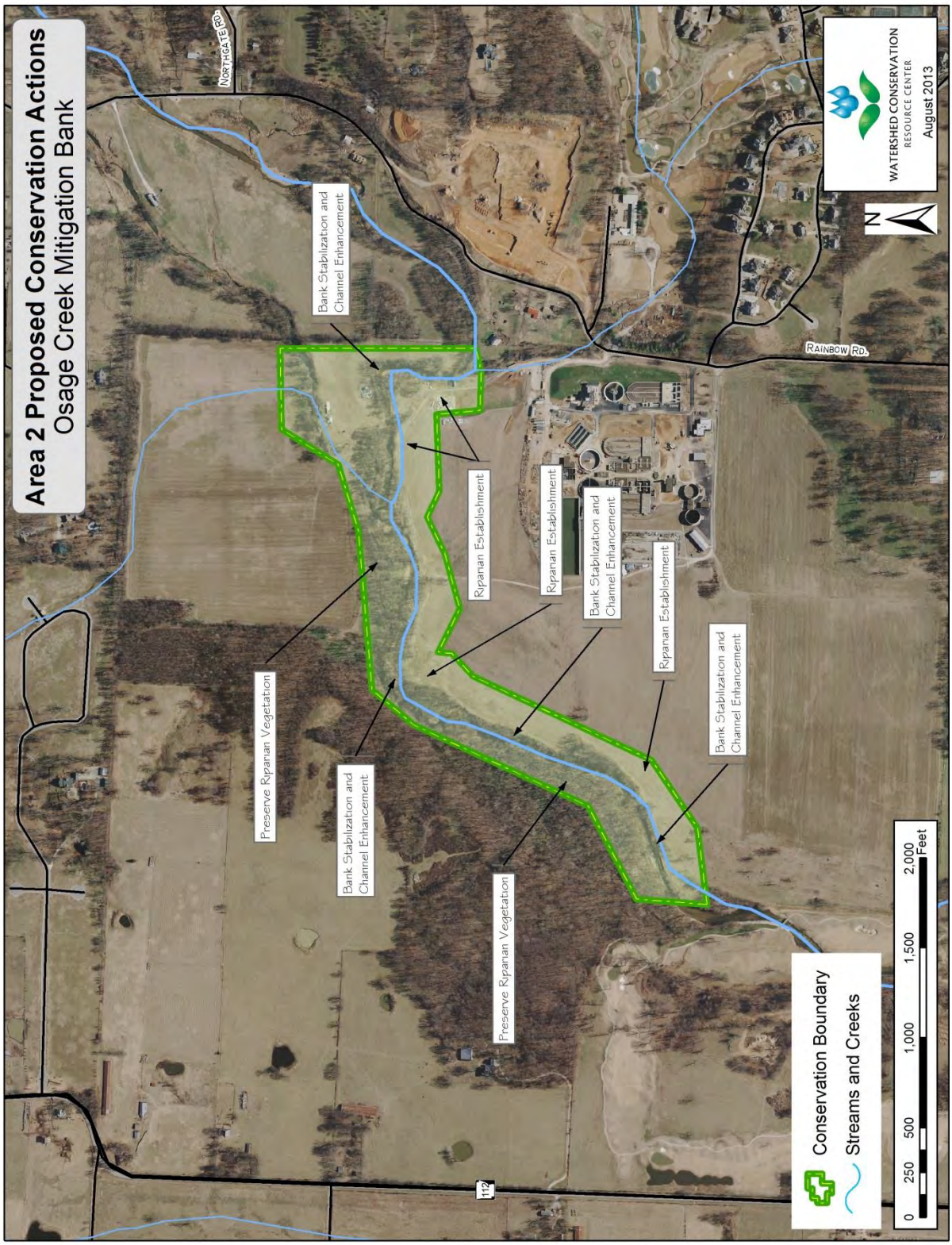

Figure 9 Proposed conservation actions for Area 2

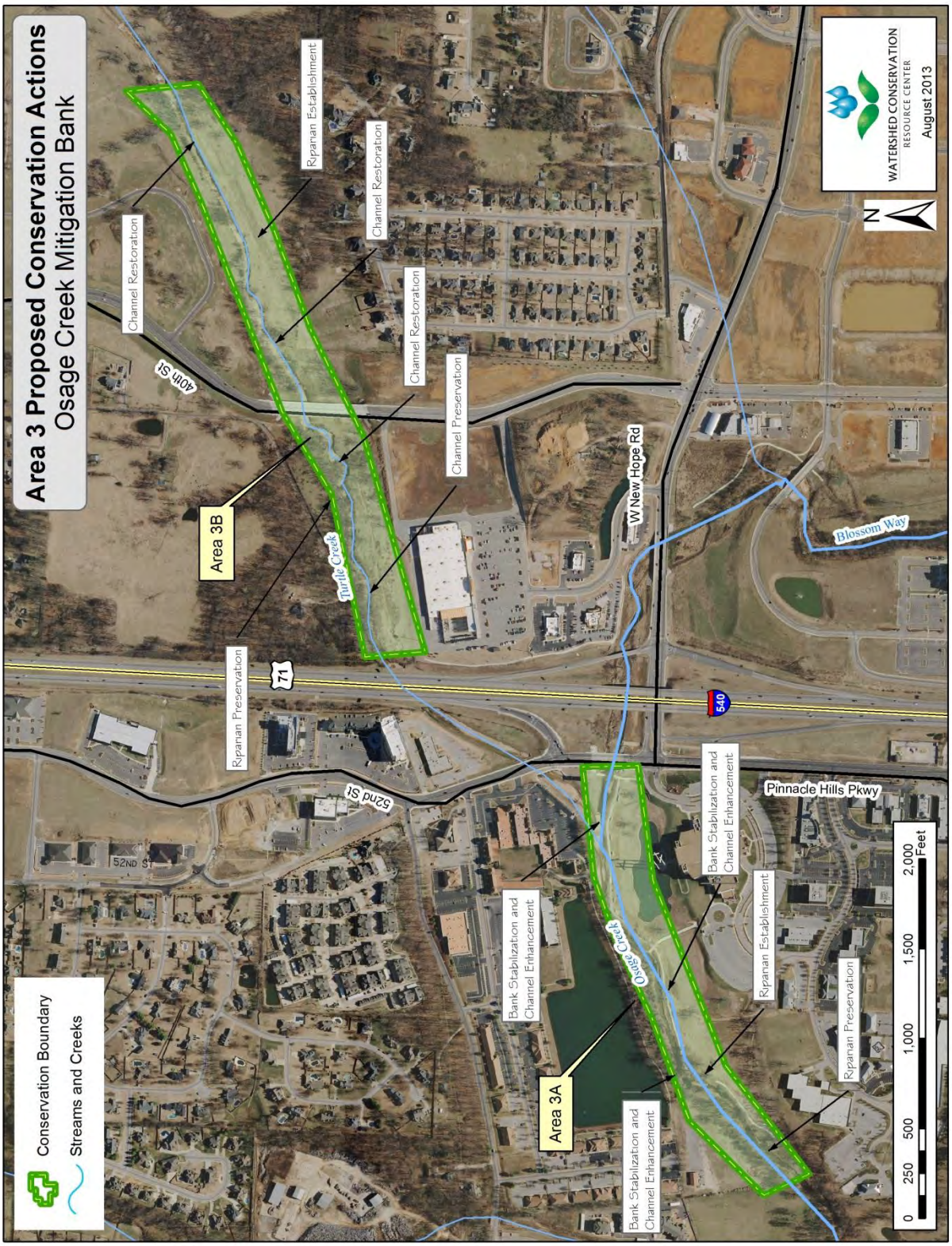

Figure 10 Proposed conservation actions for Areas 3A and 3B

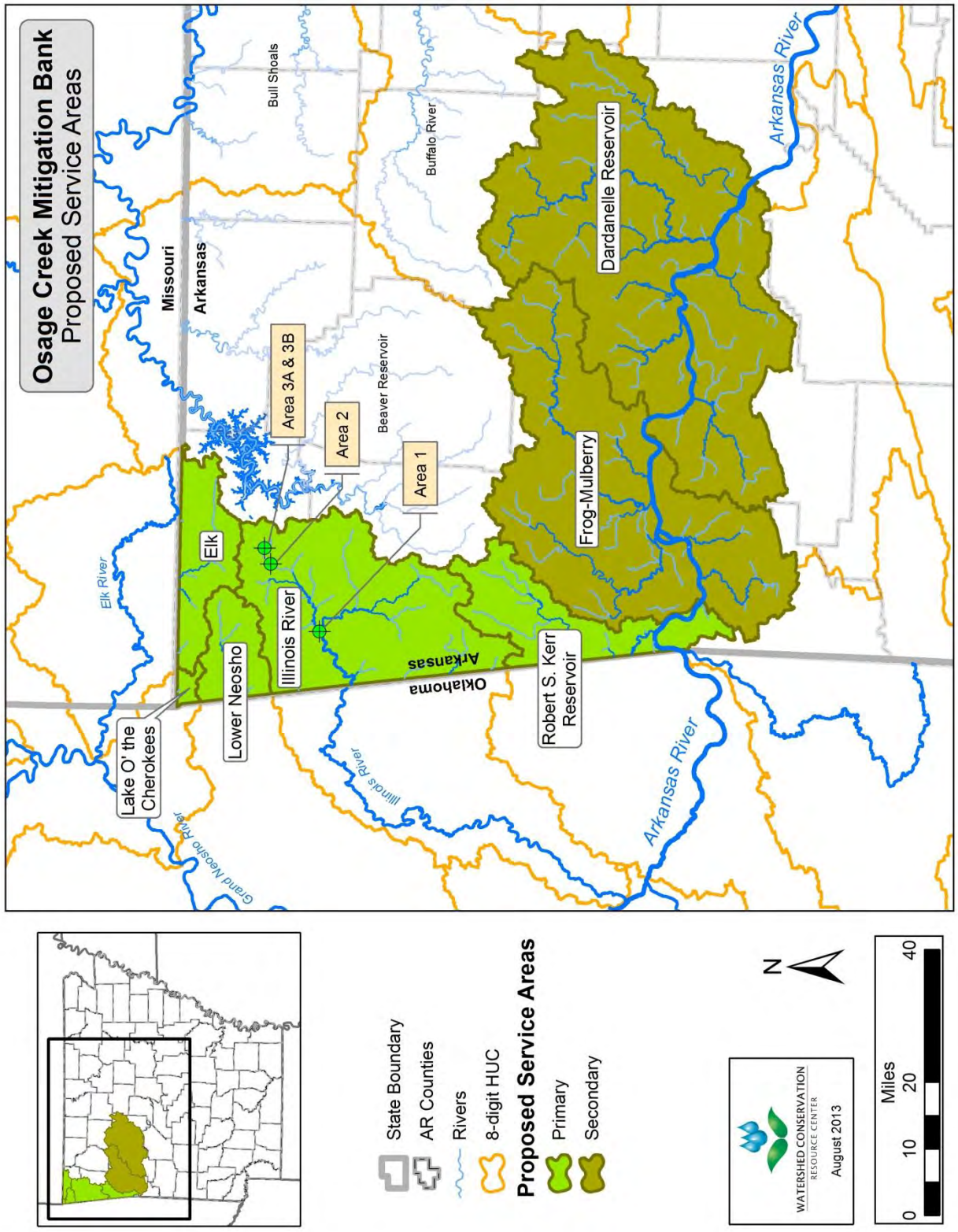

Figure 11 Proposed service areas for the Osage Creek Mitigation Bank

Appendix B

Site Photographs

Proposed Osage Creek Mitigation Bank Areas

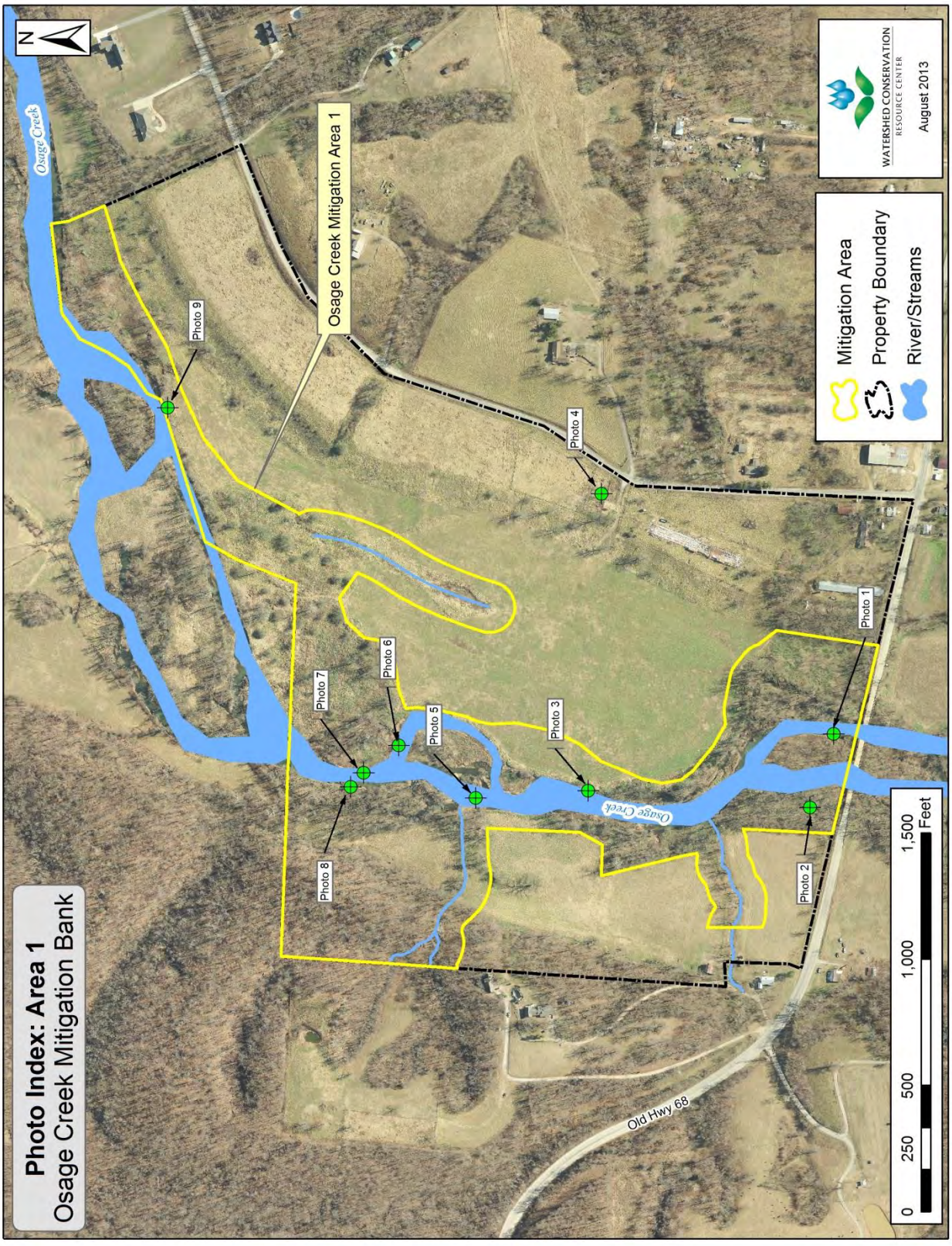

Figure 1 Index of areas depicted in site photographs for Area 1

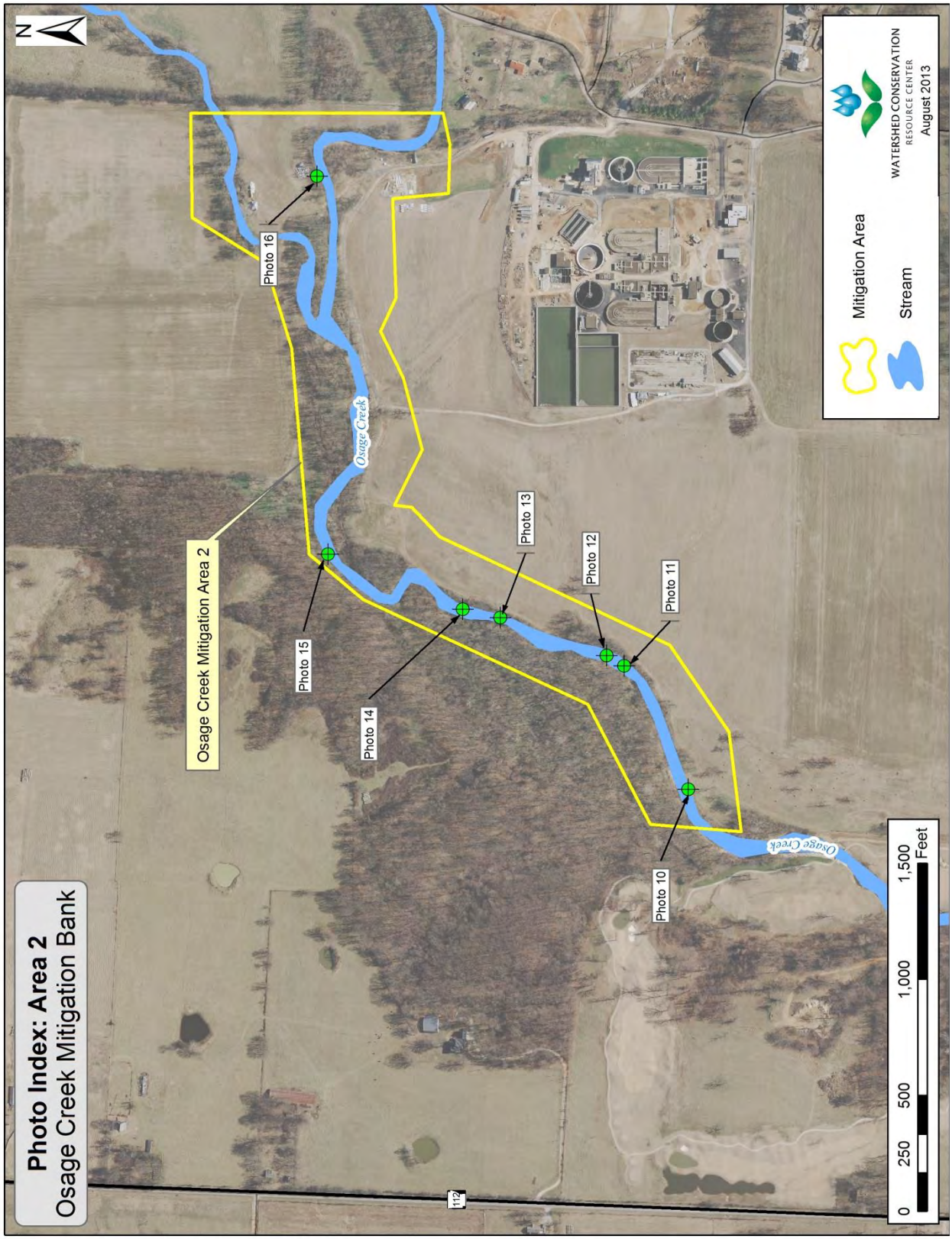

Figure 2 Index of areas depicted in site photographs for Area 2

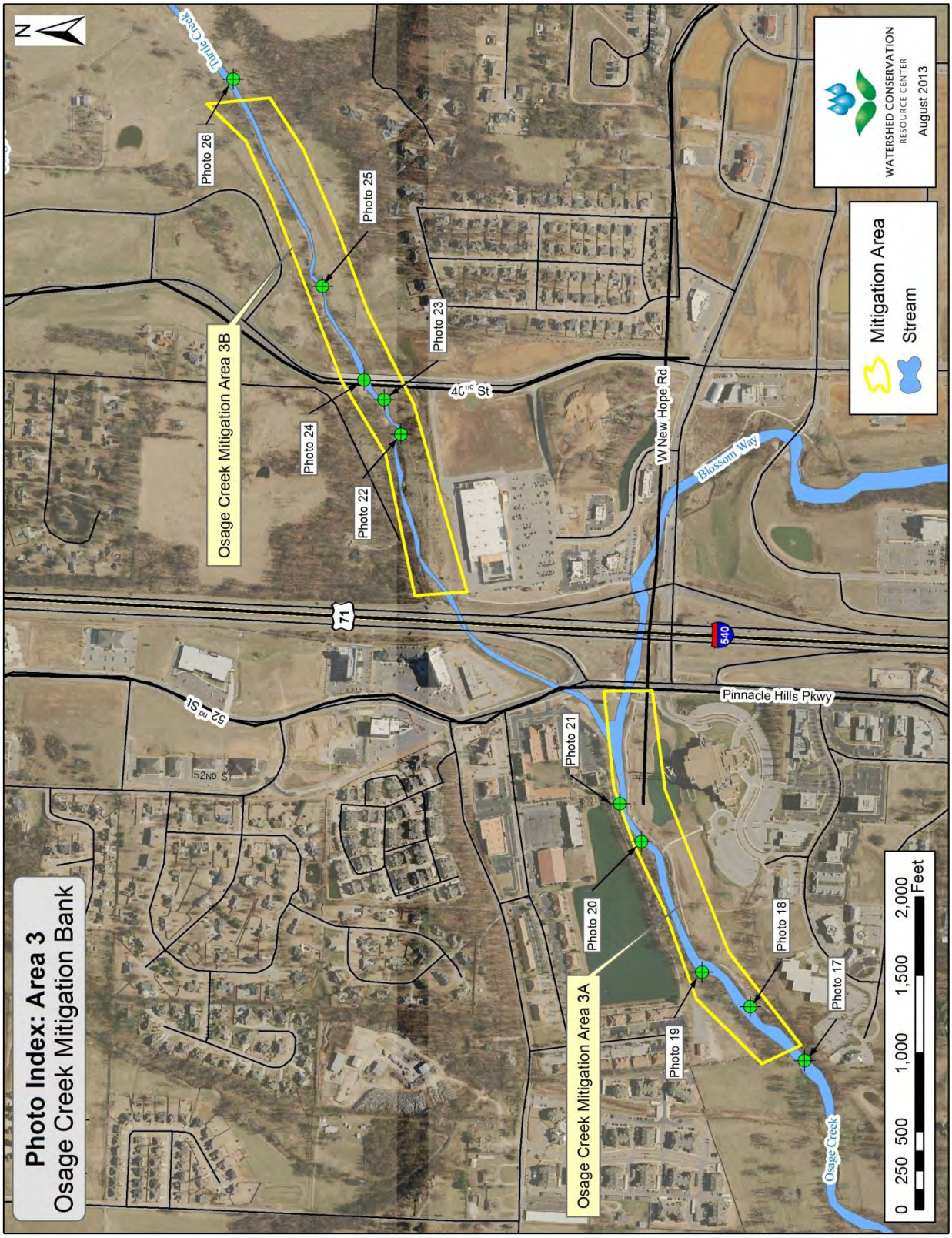

Figure 3 Index of areas depicted in site photographs for Areas 3A and 3B

Photo 1 – Area 1 looking north from Old Highway 68

Photo 2 – Area 1 looking west toward typical near-channel vegetative community near stable sections of the river that will be preserved

Photo 3 – Area 1 looking downstream toward a riverbank that will be restored

Photo 4 – Area 1 looking towards the west from alluvial terrace towards Osage Creek

Photo 5 – Area 1 looking downstream toward a riverbank that will be restored

Photo 6 – Area 1 looking downstream

Photo 7 – Area 1 looking upstream

Photo 8 – Area 1 looking downstream toward a riverbank that will be restored

Photo 9 – Area 1 eroding streambank located along upstream portion of the site

Photo 10 – Eroding streambank in Area 2 that will be restored

Photo 11 – Eroding streambank in Area 2 that will be restored

Photo 12 – Area 2 looking northeast toward a forested riparian area

Photo 13 – Moderate streambank instability that would be addressed at Area 2

Photo 14 – Intermediate bench naturally present along river channel, riparian area will be enhanced at Area 2

Photo 15 – Looking northwest toward an eroding streambank in Area 2

Photo 16 – Area 2 looking north toward an eroding streambank in Area 2

Photo 17 – Looking south toward an eroding streambank and riparian in Area 3A that will be restored

Photo 18 – Area 3A looking south toward an eroding streambank and riparian that will be restored

Photo 19 – Eroding streambank in Area 3A that will be restored

Photo 20 – Eroding streambank in Area 3A that will be restored

Photo 21 – Eroding streambank and riparian in Area 3A that will be restored

Photo 21 – Incised stream channel with bankfull scour lines

Photo 23 – Looking south toward an eroding streambank and riparian in Area 3B that will be restored

Photo 24 – Looking downstream toward an eroding streambank in Area 3B that will be restored

Photo 25 – Area 3B looking downstream toward a severely eroding streambank with no riparian

Photo 26 – Area 3B looking downstream toward a severely eroding streambank with no riparian

Appendix C

Tables

Proposed Osage Creek Mitigation Bank Sites

Species of Greatest Conservation Needed in Osage Creek Watershed					
Name	**Common Name**	**Federally Listed**	**Global Ranking**	**State Ranking**	**Ecoregions**
Vertebrates					
Etheostoma mihileze	Sunburst darter	-	GNR	S3	-
Nocomis asper	Resdspot chub	-	G4	S2	-

Table A. SGCN recorded near mitigation site in the Osage Creek Watershed (10-digit HUC=1111010303)

SGCN in Illinois Watershed near Mitigation Site					
Scientific Name	**Common Name**	**Federal Status**	**State Status**	**Global Rank**	**State Rank**
Animals-Invertebrates					
Alasmidonta marginata	elktoe	-	INV	G4	S3
Caecidotea macropropoda	bat cave isopod	-	INV	G2G3	S2
Caecidotea stiladactyla	an isopod	-	INV	G3G4	S3
Cambarus aculabrum	a crayfish	LE	SE	G1	S1
Hesperochernes occidentalis	a pseudoscorpion	-	INV	G5	S1
Lampsilis rafinesqueana	Neosho mucket	C	SE	G2	S1
Lampsilis siliquoidea	fatmucket	-	INV	G5	S3
Lasmigona costata	flutedshell	-	INV	G5	S3
Ptychobranchus occidentalis	Ouachita kidneyshell	-	INV	G3G4	S3
Quadrula cylindrica cylindrica	rabbitsfoot	C	SE	G3G4T3	S2
Stygobromus onondagaensis	an amphipod	-	INV	G3	S1?
Stygobromus ozarkensis	Ozark cave amphipod	-	INV	G4	S2
Trigenotyla parca	a cave obligate millipede	-	INV	G1G2	S1
Venustaconcha ellipsiformis	ellipse	-	INV	G4	S1
Villosa iris	rainbow	-	INV	G5Q	S2S3
Villosa lienosa	little spectaclecase	-	INV	G5	S3
Amblyopsis rosae	Ozark cavefish	LT	SE	G3	S1
Etheostoma cragini	Arkansas darter	C	SE	G3G4	S1
Eurycea spelaea	grotto salamander	-	INV	G4	S3

Eurycea tynerensis	Oklahoma salamander	-	INV	G3	S3
Myotis grisescens	gray myotis	LE	SE	G3	S2S3
Nocomis asper	redspot chub	-	INV	G4	S2?
Percina phoxocephala	slenderhead darter	-	INV	G5	S2
Asclepias incarnata ssp. incarnata	swamp milkweed	-	INV	G5T5	S2
Carex aggregata	cluster sedge	-	INV	G5	S1
Carex conjuncta	soft fox sedge	-	INV	G4G5	S1
Caulophyllum thalictroides	blue cohosh	-	INV	G4G5	S2
Diphasiastrum digitatum	southern running-pine	-	INV	G5	S1S2
Heuchera villosa var. arkansana	Arkansas alumroot	-	INV	G5T3Q	S3

Table B. SGCN near mitigation site in the Illinois Watershed (HUC = 11110103)

Species of Greatest Conservation Needed in Osage Creek					
Scientific Name	**Common Name**	**Federal Status**	**State Status**	**Global Rank**	**State Rank**
Animals-Invertebrates					
Caecidotea stiladactyla	an isopod	-	INV	G3G4	S3
Cambarus aculabrum	a crayfish	LE	SE	G1	S1
Hesperochernes occidentalis	a pseudoscorpion	-	INV	G5	S1
Heterosternuta sulphuria	Sulphur Springs diving beetle	-	INV	G1?	S1?
Ligidium elrodii	an isopod	-	INV	G4G5	S2
Orconectes meeki brevis	a crayfish	-	INV	G4T3	S2
Orconectes nana	a crayfish	-	INV	G3	S3
Stygobromus onondagaensis	an amphipod	-	INV	G3	S1?
Stygobromus ozarkensis	Ozark cave amphipod	-	INV	G4	S2
Trigenotyla parca	a cave obligate millipede	-	INV	G1G2	S1
Animals-Vertebrates					
Amblyopsis rosae	Ozark cavefish	LT	SE	G3	S1
Ambystoma annulatum	ringed salamander	-	INV	G4	S3
Ambystoma tigrinum tigrinum	eastern tiger salamander	-	INV	G5T5	S3
Ardea herodias	Great Blue Heron	-	MON	G5	S3B,S4N
Etheostoma cragini	Arkansas darter	C	SE	G3G4	S1
Etheostoma microperca	least darter	-	INV	G5	S1
Etheostoma mihileze	sunburst darter	-	INV	GNR	S3
Eurycea spelaea	grotto salamander	-	INV	G4	S3

Eurycea tynerensis	Oklahoma salamander	-	INV	G3	S3
Myotis grisescens	gray myotis	LE	SE	G3	S2S3
Nocomis asper	redspot chub	-	INV	G4	S2?
Thryomanes bewickii	Bewick's Wren	-	INV	G5	S2B,S3N
Plants-Vascular					
Asclepias incarnata ssp. incarnata	swamp milkweed	-	INV	G5T5	S2
Calopogon oklahomensis	Oklahoma grass-pink	-	INV	G3	S2
Carex aggregata	cluster sedge	-	INV	G5	S1
Carex buxbaumii	brown bog sedge	-	INV	G5	S1
Carex conjuncta	soft fox sedge	-	INV	G4G5	S1
Carex conoidea	open-field sedge	-	INV	G5	S1
Carex opaca	opaque prairie sedge	-	SE	G4	S2S3
Carex scoparia var. scoparia	pointed broom sedge	-	INV	G5T5	S1S2
Eleocharis wolfii	Wolf's spike-rush	-	INV	G3G4	S3
Erysimum capitatum var. capitatum	western wallflower	-	INV	G5T5	S2
Koeleria macrantha	prairie June grass	-	INV	G5	S2
Scleria muehlenbergii	Muhlenberg's nut-rush	-	INV	G5	S1S2
Trillium ozarkanum	Ozark trillium	-	INV	G3	S3
Utricularia subulata	zigzag bladderwort	-	INV	G5	S2

Table C. SGCN in the Osage Creek Watershed (10-digit HUC=1111010303)

Global Rank Codes	
G1	Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.
G2	Imperiled globally because of rarity (6-20 occurrences or few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.
G3	Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the East) or because of other factors making it vulnerable to extinction throughout its range; in terms of occurrences, in the range of 21 - 100.
G4	Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5	Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
GH	Of historical occurrence throughout its range, i.e., formerly part of the established biota, with the expectation that it may be rediscovered (e.g., Bachman's Warbler).
GU	Possibly in peril range-wide but status uncertain; more information is needed.
GX	Believed to be extinct throughout range (e.g., Passenger Pigeon) with virtually no likelihood that it will be rediscovered.
T-RANKS	T subranks are given to global ranks when a subspecies, variety, or race is considered at the state level. The subrank is made up of a "T" plus a number or letter (1, 2, 3, 4, 5, H, U, X) with the same ranking rules as a full species.
GNR	Not yet ranked.

Table D. Global ranking codes for conservation status

State Rank Codes	
S1	Extremely rare. Typically 5 or fewer estimated occurrences in the state, or only a few remaining individuals, may be especially vulnerable to extirpation.
S2	Very rare. Typically between 5 and 20 estimated occurrences or with many individuals in fewer occurrences, often susceptible to becoming extirpated.
S3	Rare to uncommon. Typically between 20 and 100 estimated occurrences, may have fewer occurrences but with large number of individuals in some populations, may be susceptible to large-scale disturbances.
S4	Common, apparently secure under present conditions. Typically 100 or more estimated occurrences, but may be fewer with many large populations, may be restricted to only a portion of the state, usually not susceptible to immediate threats.
SH	Historically known from the state, but not verified for an extended period, usually 15 years.
SX	Apparently extirpated from state.
SNR	Not yet ranked.

Table E. State ranking codes for conservation status