Second Atoka Pipeline Project
Habitat Conservation Plan

Appendix B
Biological Evaluation

BIOLOGICAL EVALUATION

ATOKA WATER LINE
ATOKA, COAL, PONTOTOC, SEMINOLE,
POTTAWATOMIE, AND CLEVELAND COUNTIES, OKLAHOMA

ENERCON PROJECT NUMBER: OKCWUT~00016

Prepared for:

City of Oklahoma City
Oklahoma City Water Utilities Trust (OCWUT)
City Hall
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Oklahoma City, Oklahoma 73102

Prepared by:

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1601 Northwest Expressway
Oklahoma City, Oklahoma 73118

February 2019

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1.0 PROJECT OVERVIEW

1.1 Introduction

This Biological Evaluation (BE), prepared by Enercon Services, Inc. (ENERCON) on behalf of the City of Oklahoma City and the Oklahoma City Water Utilities Trust (OCWUT), addresses the proposed Second Atoka Pipeline Project described below. This BE describes the potential effects of the proposed project on species that are Federally listed under the Endangered Species Act (ESA). Specific project design elements are identified that avoid or minimize adverse effects of the proposed project on listed species and designated critical habitat (DCH).

1.2 Project Description

The existing Atoka pipeline consists of a single 60-inch concrete water pipeline located within 100-foot wide easements along the 100-mile route. This pipeline also has ancillary facilities (e.g., pump stations, surge facilities) located along it. The proposed expansion project (Second Atoka Pipeline Project; the Project) adds a second pipeline and ancillary facilities alongside the existing pipeline. The Project includes installation of 98.85 miles of new 72-inch steel pipe and will be located parallel to the existing 60-inch concrete pipeline. Construction and installation of the new pipeline will occur within the existing 100-foot easements. The Project will require construction of three new pump stations and some pump stations will require installation of intermediate surge protection facilities.

Coordinates for the approximate center of the project area are 34.8811 x -96.7093 (NAD 83). The project will take place in six (6) Oklahoma counties: Atoka, Coal, Pontotoc, Seminole, Pottawatomie, and Cleveland. The purpose of the upgrade is to establish the necessary infrastructure to meet the projected water needs of Oklahoma City and participating central Oklahoma communities through 2060.

1.3 Project Area and Setting

The project study area consists of a linear pipeline corridor approximately 100-miles long and 100-feet wide. The project study area is approximately 1,243 acres in size and is located between Atoka Reservoir in Atoka County, Oklahoma and Lake Stanley Draper in Cleveland County, Oklahoma. (Figure 1). This part of Oklahoma is a rural area characterized by maintained residential/commercial lawns, agricultural fields, improved grass pastures/hayfields, mixed grass pastures/hayfields, native grass pastures, riparian forest, upland forests, and riparian forest (Figures 2.1 – 2.50). Site photographs are included as Attachment 1.

The project study area is located within the Northern Cross Timbers subset of the Cross Timbers ecoregion (29a), the Fourche Mountains subset of the Ouachita Mountains ecoregion (36d), and the Lower Canadian Hills subset of the Arkansas Valley ecoregion (37e) of Oklahoma.

The Northern Cross Timbers are comprised of hills, cuestas (areas where a harder sedimentary rock overlies a softer layer, the whole being tilted somewhat from the horizonal), and ridges that are naturally covered by a mosaic of oak savanna, scrubby oak forest, eastern red cedar (*Juniperus virginiana*), and tall grass prairie. Post oak (*Quercus stellata*), blackjack oak (*Q. marilandica*), and native understory grasses occur on porous, course-textured soils. Tall grass prairie naturally occurs on fine-textured soils (Woods et al. 2005).

The Fourche Mountains are comprised of east to west trending, folding, sandstone-capped ridges and intervening shale valleys. Natural vegetation is oak-hickory-pine forest. Forests on steep, north-facing slopes are more mesic than on southern aspects. Steep, south-facing slopes with shallow, moisture deficient soils support shrubs and rocky glades (Woods et al. 2005).

The Lower Canadian Hills act as a transition between the drier Cross Timbers Ecoregion to the west and moister parts of the Arkansas Valley Ecoregion to the east. The Lower Canadian Hills are underlain by Pennsylvanian-age shale, sandstone, and coal. Native vegetation is a mixture of oak woodland, tall grass prairie, oak-hickory forest, and oak-hickory-pine forest (Woods et al. 2005).

The project study area is historically located in the Postoak-Blackjack Oak Forest and Tallgrass Prairie Game Types by Duck and Fletcher (1943). Natural vegetation consists of post oak, blackjack oak, black hickory (*Carya texana*), Shumard's oak (*Quercus shumardii*), chittamwood (*Bumelia lanuginose*), sugarberry (*Celtis laevigata*), and northern hackberry (*Celtis occidentalis*) in the Postoak-Blackjack Oak Forest Game Type. Natural vegetation consists of little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), and silver beardgrass (*Bothriochloa saccharoides*) in the Tallgrass Prairie Game Type (Duck and Fletcher, 1943).

The project action area includes those areas directly affected by construction activities within the project construction footprint, as well as areas within 0.25 linear mile of the project study area where noise due to construction could impact listed species, and where impacts to aquatic species could occur, if present in those areas.

2.0 FEDERALLY LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

The ESA of 1973 prohibits any person from "take" (harm, pursue, hunt, shoot, wound, kill, trap, capture, relocate, or collect or attempt to engage in any such conduct) of any Federally listed threatened or endangered species. Section 7 of the ESA requires that Federal actions do not jeopardize the continued existence of any threatened or endangered species or result in critical

habitat destruction. Adverse habitat modification or degradation that results in death or injury to Federally protected species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering is also prohibited. Administration and enforcement of the ESA are the responsibility of the United States Fish and Wildlife Service (USFWS).

ENERCON conducted literature and database reviews as well as an onsite assessment of the project study area to identify potential impacts to listed species. The onsite assessment was conducted in March, April, and May of 2016 and May 2018 by B.W. Barnes, W.A. Ward, J.P. Schatte, C.B. McCoy, and E. Ellis. In order to determine which species could possibly occur in or near the project area, ENERCON obtained an official species list from the USFWS Information, Planning, and Conservation System (IPaC) website for the project area (USFWS, 2018b) (Attachment 2). ENERCON also reviewed the USFWS critical habitat map to identify DCH for species potentially occurring near the project area (USFWS, 2018a). This review resulted in a list of seven (7) Federally listed species for the project area (Table 1). For those species occurring or suspected to occur within or near the project area, we conducted searches of the scientific literature to determine confirmed occurrence locations and specific habitat requirements for each species. Our onsite assessment consisted of attempts to observe individuals of listed species or sign indicating their presence (including but not limited to tracks, scat, relict shells, and nests). We also assessed plant community structure and composition, as well as edaphic and hydrologic factors of the site in order to identify potential habitats for the various species considered. Additionally, we submitted a request for element occurrence records (EOR) from the Oklahoma Biological Survey's Oklahoma Natural Heritage Inventory (ONHI) database along the Canadian River crossing in Seminole and Pontotoc counties (Attachment 4). The Canadian River crossing is the only location within the project study area that provides potential habitat for the interior least tern, piping plover, red knot, and Arkansas River shiner. ONHI identified seven (7) database records associated with this location. The whooping crane, American burying beetle and northern long-eared bat (NLEB) can be found in a larger portion of the project study area.

Table 1 Federally Listed Species for the Proposed Action Area

SPECIES / CRITICAL HABITAT	LISTING STATUS	HABITAT REQUIREMENTS	SPECIES' STATUS WITHIN COUNTY
BIRDS			
Interior Least Tern (*Sterna antillarum*)	E	Islands or sandbars along large rivers, mostly clear of vegetation for nesting and loafing and with shallow water nearby for fishing.	The project study area provides habitat for the species and contains a site that could provide nesting, loafing, and foraging habitat. The Canadian River crossing located on the border of Seminole and Pontotoc counties provides habitat for the interior least tern and is listed as a dependent aquatic watershed for the species.
Piping Plover (*Charadrius melodus*)	T	Migratory stopover and foraging habitat includes sparsely vegetated sandy or gravelly shorelines and islands associated with the major river systems.	The project study area is within the probable migratory pathway between breeding and winter habitats for the species and contains a site that could provide stopover and foraging habitat. The Canadian River crossing located on the border of Seminole and Pontotoc counties provides habitat for the piping plover.
Red Knot (*Calidris canutus rufa*)	T	Migratory stopover and foraging habitat includes broad shorelines associated with the major river systems.	The project study area is within the probable migratory pathway between breeding and winter habitats for the species and contains a site that could provide stopover and foraging habitat. The Canadian River crossing located on the border of Seminole and Pontotoc counties provides habitat for the red knot.
Whooping Crane (*Grus americana*)	E	Migratory stopover, roosting and foraging habitat includes marshy areas, reservoirs, rivers, and agricultural fields.	The project study area is within the probable migratory pathway between breeding and winter habitats for the species and contains a site that could provide stopover, foraging, and roosting habitat. Numerous streams, wetlands, agricultural fields, and ponds within the project study area provide habitat for the whooping crane.

SPECIES / CRITICAL HABITAT	LISTING STATUS	HABITAT REQUIREMENTS	SPECIES' STATUS WITHIN COUNTY
MAMMALS			
Northern Long-Eared Bat (*Myotis septentrionalis*)	T	Roosts underneath bark, in crevices, or in cavities of dead and living trees during summer months.	The project study area provides roosting and foraging habitat.
FISHES			
Arkansas River Shiner* (*Notropis girardi*)	T	Inhabits unshaded, broad, sandy, main channels of major streams and rivers.	The project study area is within a known occupied watershed for the species. The Canadian River crossing located on the border of Seminole and Pontotoc counties provides habitat for the Arkansas River shiner and is listed as DCH.
INSECTS			
American Burying Beetle (*Nicrophorus americanus*)	E	Habitat generalist that can inhabit oak-pine woodlands, open fields, oak-hickory forest, open grasslands, and edge habitat.	Project study area within the historic range and with historic ABB sightings. Project study area has suitable foraging and reproductive habitat.
T = Threatened, E = Endangered, * = Designated Critical Habitat (DCH)			

None of the species listed in Table 1 were observed within the project study area at the time of the site visits.

Along with the species listed in Table 1 the Ouachita rock pocketbook, the scaleshell mussel, and the winged mapleleaf are also listed within Atoka County, OK.

The Ouachita rock pocketbook typically occurs within large, diverse mussel beds within stable streams with coarse sediment and gravel at the bottom of river channels. No habitat for the Ouachita rock pocketbook is present within the project study area in Atoka County; therefore, the Ouachita rock pocketbook will not be affected by the proposed project.

The scaleshell mussel lives in medium-sized and large rivers with stable channels and good water quality. They bury themselves in sand and gravel on the bottom with only the edge of their partially-opened shells exposed. No habitat for the scaleshell mussel is present within the project study area in Atoka County; therefore, the scaleshell mussel will not be affected by the proposed project.

The winged mapleleaf is found in riffles with clean gravel, sand, or rubble bottoms and in clear, high quality water. In the past, it may also have been found in large rivers and streams on mud, mud-covered gravel, and gravel bottoms. No habitat for the winged mapleleaf is present within

the project study area in Atoka County; therefore, the winged mapleleaf will not be affected by the proposed project.

3.0 ENVIRONMENTAL BASELINE

3.1 Ecological Processes and Conditions

3.1.1 Soils

Numerous soils are located within the project study area. The descriptions of individual soils are detailed in a separate **Atoka Water Line Section 404 Delineation Report**.

3.1.2 Climate

The average annual precipitation for the project study area varies from 34 inches on the north/west end to 42 inches on the south/east end. The growing season is from 210 days on the north/west end to 224 days on the south/east end (Duck and Fletcher, 1943).

3.1.3 River System and Wetlands

Numerous drainages, streams, rivers, and wetlands are located within the project study area. The descriptions of individual streams, ponds, and wetlands are detailed in a separate **Atoka Water Line Section 404 Delineation Report**. The project area crosses the following major rivers: Muddy Boggy Creek, Canadian River, Salt Creek, and Little River. The proposed project area is located in the Little Watershed (HUC #11090203), Lower Canadian-Walnut Watershed (HUC #11090202), Muddy Boggy Watershed (HUC ##11140103), and Clear Boggy Watershed (HUC ##11140104).

3.1.4 Land Use and Land Ownership

The project study area is comprised primarily of maintained residential/commercial lawns, agricultural fields, improved grass pastures/hayfields, mixed grass pastures/hayfields, native grass pastures, riparian forest, upland forests, and emergent, scrub-shrub, and forested wetlands. The project easement is controlled by the City of Oklahoma City.

3.1.5 Vegetation

The project study area was comprised of the following community types:

Maintained Residential/Commercial Lawn: Dominant vegetation within this community type included Bermudagrass (*Cynodon dactylon*), fescue (*Schedonorus spp.*), and clover (*Trifolium repens*) (Photograph 1).

Agricultural Fields: Dominant vegetation in this community type was wheat (*Triticum* spp.) (Photograph 2).

Improved grass pastures/hayfield: Dominant vegetation in this community type included Bermudagrass and brome (*Bromus* spp.) (Photograph 3).

Mixed grass pastures/hayfield: Dominant vegetation in this community type included brome, broomsedge (*Andropogon virginicus*), Bermudagrass, longspike tridens (*Tridens strictus*), blackberry (*Rubus* spp.), silver bluestem (*Bothriochloa saccharoides*), little bluestem (*Schizachyrium scoparium*), fescue, clover, foxtail (*Setaria* spp.), broomweed (*Amphiachyris* spp.), and ragweed (*Ambrosia* spp.) (Photograph 4).

Native grass pasture: Dominant vegetation in this community type included blackberry, little bluestem, broomsedge, goldenrod (*Solidago* spp.), and big bluestem (*Andropogon gerardii*) (Photograph 5).

Riparian forest: Dominant vegetation in this community type included green ash (*Fraxinus pennsylvanica*), hedge (*Maclura pomifera*), pecan (*Carya illinoinensis*), American elm (*Ulmus americana*), cottonwood (*Populus deltoides*), hackberry (*Celtis occidentalis*), black willow (*Salix nigra*), water oak (*Quercus nigra*), privet (*Forestiera* spp.), persimmon (*Diospyros virginiana*), Indian wood-oats (*Chasmanthium latifolium*), honeysuckle (*Lonicera* spp.), horsetail (*Equisetum hyemale*), sedge (*Carex* spp.), greenbrier (*Smilax* spp.), poison ivy (*Toxicodendron radicans*), and coralberry (*Symphoricarpos orbiculatus*) (Photograph 6).

Upland Forest: Dominant vegetation in this community type included eastern red cedar, hickory (*Carya* spp.), blackjack oak, post oak, honey locust (*Gleditsia triacanthos*), winged elm (*Ulmus alata*), greenbrier, poison ivy, and coralberry (Photograph 7).

Emergent Wetland: Dominant vegetation in this community type included broadleaf cattail (*Typha latifolia*), smartweed (*Persicaria hydropiperoides*), pondweed (*Potamogeton* spp.), sedge, spikerush (*Eleocharis* spp.), rush (*Juncus* spp.), curly doc (*Rumex crispus*), bushy broomsedge (*Andropogon glomeratus*), and buttercup (*Ranunculus* spp.) (Photograph 8).

Scrub-Shrub Wetland: Dominant vegetation in this community type included green ash saplings, willow saplings, and American elm saplings (Photograph 9).

Forested Wetland: Dominant vegetation in this community type included green ash, willow, and sedges (Photograph 10).

3.2 Species Habitat within the Action Area

3.2.1 Interior Least Tern

Suitable nesting, loafing, or foraging habitat for this species was present within the project study area associated with the Canadian River (Photograph 11), which is the county dividing line for Seminole and Pontotoc counties. Within the vicinity of suitable habitat, one (1) occurrence of interior least terns was noted in element occurrence records at the ONHI within the vicinity of

the project study area in Section 18, Township 5 North, Range 6 East. The project area is located within a Federally listed aquatic dependent species (HUC 11) watershed known to be occupied by this species (USFWS, 2011b) (Figure 3.2).

3.2.2 Piping Plover

Potentially suitable stopover and foraging habitat for this species was observed within the project study area associated with the Canadian River, which is the county dividing line for Seminole and Pontotoc counties. Within the vicinity of the proposed project study area crossing the Canadian River, no historical or recent observations of piping plovers are listed in element occurrence records at the ONHI.

3.2.3 Red Knot

Potentially suitable stopover and foraging habitat for this species was observed within the project study area associated with the Canadian River, which is the county dividing line for Seminole and Pontotoc counties. Within the vicinity of the proposed project study area crossing the Canadian River, no historical or recent observations of the red knot are listed in element occurrence records at the ONHI.

3.2.4 Whooping Crane

Potentially suitable stopover, roosting, and foraging habitat for this species was observed within the project study area associated with the many major rivers, ponds, agricultural fields, and wetlands throughout the project study area. Within the vicinity of the proposed project study area crossing the Canadian River, no historical or recent observations of the whooping crane are listed in element occurrence records at the ONHI.

3.2.5 Northern Long-Eared Bat

Potentially suitable roosting and foraging habitat for the NLEB was observed within the project study area in Atoka County, Oklahoma, where the species is listed. No known caves or roost trees are located within the vicinity of the project study area (Attachment 3). According to USFWS guidelines, the proposed project meets the requirements for exemption under the 4(d) rule for the NLEB.

3.2.6 Arkansas River Shiner

Potentially suitable habitat for this species was observed within the project study area at the Canadian River. Within the vicinity of suitable habitat, four (4) occurrences of Arkansas River shiner were noted in element occurrence records at the ONHI within the vicinity of the project study area in Section 4, Township 5 North, Range 6 East. The project area is located within a Federally listed aquatic species (HUC 11) watershed known to be occupied by this species (USFWS, 2011a) (Figure 3.1).

3.2.7 American Burying Beetle

The entire study area within the current ABB range (excluding wetlands, waters of the US, maintained lawns, and developed areas/roads) was considered to provide foraging and reproductive habitat for the ABB (approximately 778 acres) (Figures 4.1 – 4.50). This species is covered more in depth in the Second Atoka Pipeline Project Habitat Conservation Plan (HCP).

4.0 ANALYSIS OF EFFECTS

4.1 Direct Effects

A field survey of the proposed project site was conducted in March, April, and May of 2016 and May 2018 by B.W. Barnes, W.A. Ward, J.P. Schatte, C.B. McCoy, and E. Ellis**.** A pedestrian survey of the entire study area was made during the multiple site visits. Results of field investigations, potential impacts from the proposed project and effects determinations are summarized in Table 2 for each listed species and DCH. Further discussions for species and critical habitat that may be affected by the proposed project are detailed in the subsequent sections.

Table 2 Species Conclusions Table for Atoka Water Line

SPECIES / RESOURCE	CONCLUSION	ESA SECTION 7	NOTES / DOCUMENTATION
Interior Least Tern	Potential nesting, loafing, and foraging habitat present along Canadian River	No Effect	USFWS, 2011b; ONHI, 2018
Piping Plover	Potential stopover and foraging habitat present along Canadian River	No Effect	ONHI, 2018
Red Knot	Potential stopover and foraging habitat present along Canadian River	No Effect	ONHI, 2018
Whooping Crane	Potential stopover, roosting and foraging habitat present throughout project study area	May Affect, Unlikely to Adversely Affect	ONHI, 2018
Northern Long-Eared Bat	Potential roosting and foraging habitat	May Affect, Unlikely to Adversely Affect	USFWS Attachment 3
Arkansas River Shiner	Suitable habitat present and DCH associated with Canadian River	No Effect	USFWS, 2011a; ONHI, 2018
American Burying Beetle	Suitable habitat present	May Affect, Likely to Adversely Affect	Habitat Conservation Plan; ONHI, 2018

The Canadian River provides potential habitat for the interior least tern, piping plover, red knot, and Arkansas River shiner. The project study area in this location will be crossed via micro-tunneling/bore. The entrance and exit locations will be located greater than 300 feet from the banks of the suitable habitat located at the Canadian River crossing; therefore there will be **no effect** on the interior least tern, piping plover, red knot, and Arkansas River shiner.

Potentially suitable stopover, roosting, and foraging habitat associated with the many major rivers, ponds, agricultural fields, and wetlands throughout the project study area for the whooping crane was observed within the project study area. The portion of the project study area located within Cleveland County is within the whooping crane migration corridor, which accounts for 95% of whooping crane sightings. There is potential for whooping cranes to occur within the project area during migration (March-June and August-November). The mobility of avian species and temporary nature of the disturbance should remove much of the risk for direct impacts to the whooping crane. The proposed project **may affect but is unlikely to adversely affect** whooping cranes.

Potentially suitable roosting and foraging habitat for the NLEB is present within Atoka County, where the species is listed. According to the USFWS, no known caves or roost trees are located within the vicinity of the project study area (Attachment 3). With no known roost trees located within the project vicinity, the temporary nature of disturbance, and mobility of the species, much of the risk for direct impacts are removed for the NLEB. The proposed project **may affect but is unlikely to adversely affect** NLEB.

Within the current ABB range, the entire study area (excluding wetlands, waters of the US, maintained lawns, and developed areas/roads) was considered to provide foraging and reproductive habitat for the ABB (Figures 4.1 – 4.50). The proposed project may affect, and is likely to adversely affect the ABB. This species is covered more in depth in the accompanying Second Atoka Pipeline Project Habitat Conservation Plan (HCP).

4.2 Indirect Effects

4.2.1 Long-Term Habitat Alterations

Indirect effects may result from loss of potential roosting and foraging habitat for the NLEB due to tree removal within the current, partially cleared, pipeline ROW within Atoka County. Indirect effects may result from direct loss of potential roosting and foraging habitat for the Whooping Crane due to the temporary disturbance, removal, or alteration of ponds, agricultural fields, and marshes within the project area. Indirect and direct effects of the proposed construction on the American burying beetle have been addressed in the accompanying **Second Atoka Pipeline Project Habitat Conservation Plan (HCP).**

4.2.2 Indirect Land Use Impacts

Because this project involves the placement of a new pipeline within an existing, partially cleared pipeline ROW, no indirect changes in land use are anticipated.

4.2.3 Interrelated and Interdependent Actions and Activities

Because this project involves placement of a new pipeline within an existing, partially cleared, pipeline ROW, no interrelated and interdependent actions are expected.

4.3 Conclusions

The proposed project will have no effect on the interior least tern, piping plover, red knot, or Arkansas River shiner. The Canadian River crossing will be constructed via micro-tunnel/bore, and bore entrance and exit locations will be located greater than 300 feet from the banks of the suitable habitat located at the Canadian River crossing. The proposed project may affect, but will be unlikely to adversely affect the whooping crane and NLEB. The proposed project may affect, and is likely to adversely affect, the ABB. Effects on the ABB have been addressed in the accompanying **Second Atoka Pipeline Project Habitat Conservation Plan (HCP).**

4.4 Recommended Conservation Measures

Enhanced water quality protection measures should be implemented during construction to reduce or eliminate sedimentation. The construction is proposed to bore/tunnel beneath the Canadian River crossing. The bore entrance and exit locations will be located greater than 300 feet from the banks. Additional conservation measures associated with the ABB are provided in the accompanying **Second Atoka Pipeline Project Habitat Conservation Plan (HCP).**

5.0 BALD EAGLE ASSESSMENT

The **bald eagle** (*Haliaeetus leucocephalus*) was Federally delisted on August 8, 2007. However, bald eagles continue to receive protection from the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). As such, the eagle remains protected from "take" of their offspring, eggs, parts, or nests as well as being disturbed. "Disturb" means to agitate an eagle to the degree that causes or is likely to (1) cause injury, (2) interfere with breeding, feeding, or sheltering behavior, or (3) cause nest abandonment. The MBTA and BGEPA are enforced by the USFWS.

Bald eagles require large trees or cliffs near water with abundant fish for breeding and reproduction. They congregate near open water in tall trees for spotting prey and night roosts for sheltering (USFWS, 2007). The breeding season for bald eagles within the area is from September 1st to July 31st (USFWS, 2018b). No bald eagles, eagle nests, or evidence of use was observed in the project study area. However, suitable nesting, perching, and foraging habitat was

observed within the project study area and the immediate vicinity. The project study area will be evaluated prior to the start of construction, to identify any bald eagle nests located within 660 feet of the proposed construction activities. In the unlikely event an eagle nest is observed in or near the project area, the applicant will contact the USFWS field office to coordinate efforts to minimize disturbance of eagle nests. Such efforts may include: (1) maintaining a distance of 660 feet between the activity and the nest (distance buffers), (2) maintaining forested (or natural) areas between the activity and around nest trees (landscape buffers), and (3) avoiding disruptive (loud) activities during the breeding season. Therefore, take is not anticipated to result from the construction and maintenance of the Project.

6.0 REFERENCES

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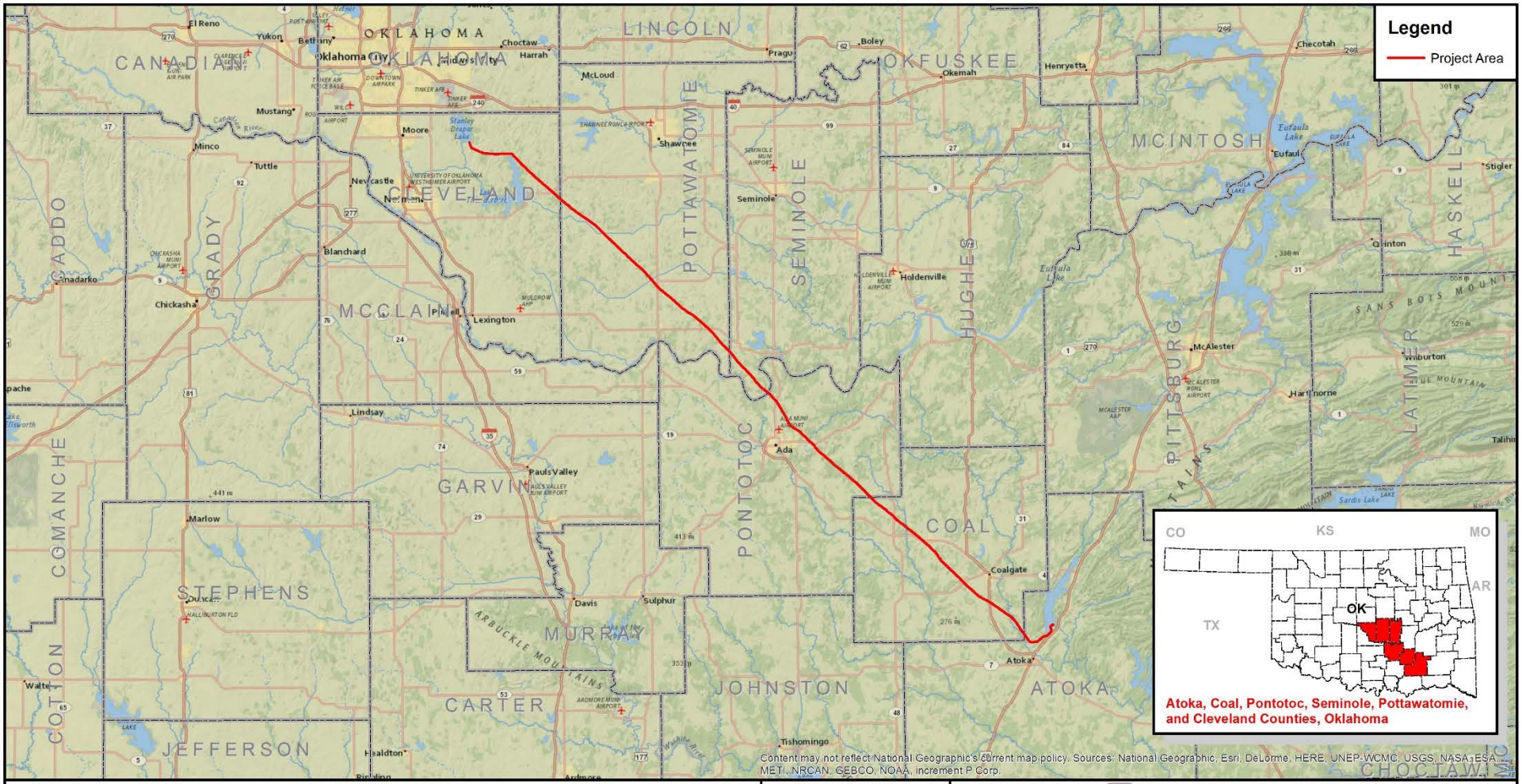
Figures



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Atoka, Coal, Pontotoc, Seminole, Pottawatomie, and Cleveland Counties, Oklahoma

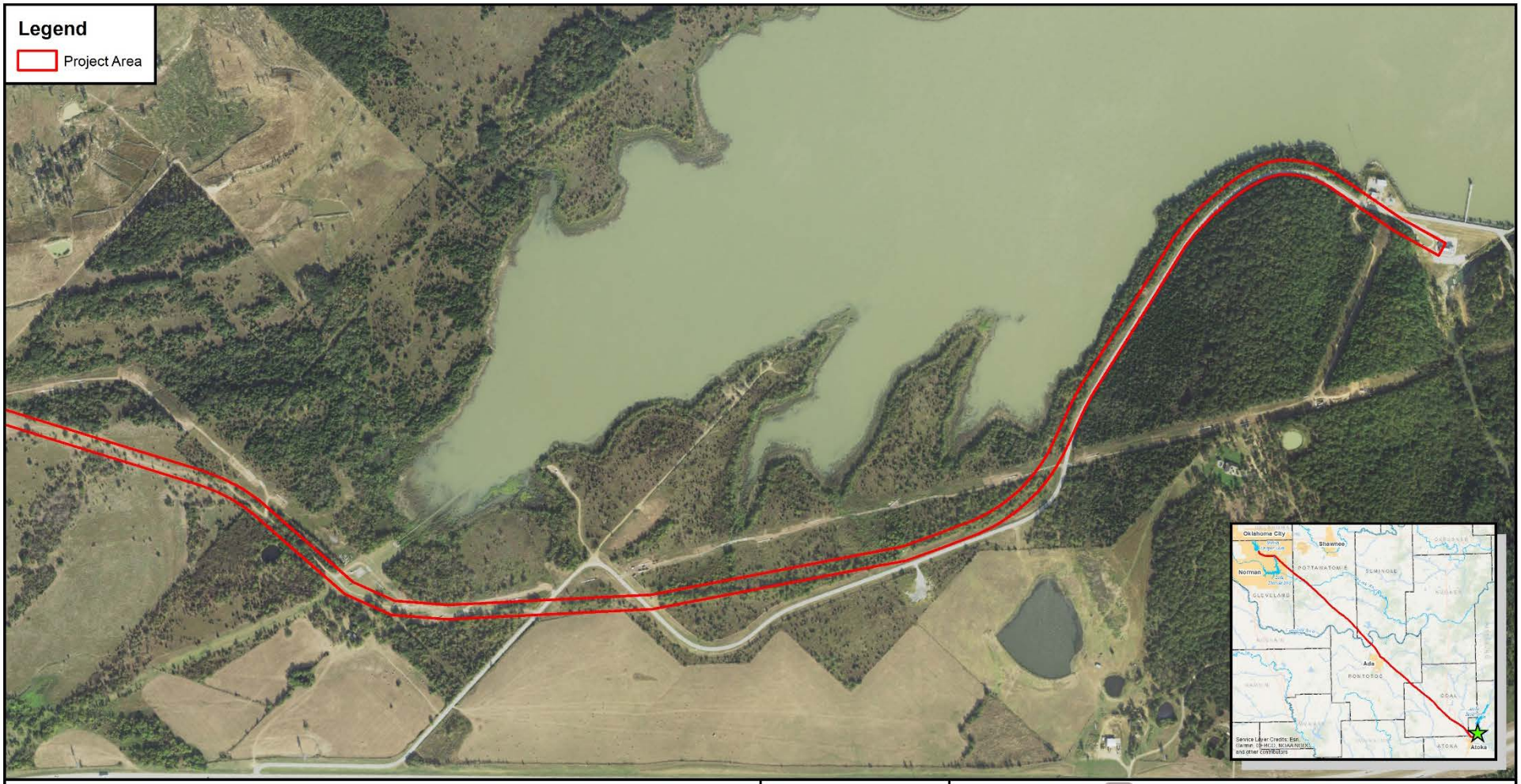
N
W E
S

1:750,000

ENERCON

Figure 1: Project Vicinity Map
Source: ESRI National Geographic World Map Basemap
Prepared by: A. Couch; April 25, 2017

Miles
0 10 20 40



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 30 & 31, T1S R12E; Section 36, T1S R11E
Atoka County, Oklahoma

1:8,000

ENERCON

Figure 2.1: Site Map
Source: 2017 USDA NAIP
Atoka County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

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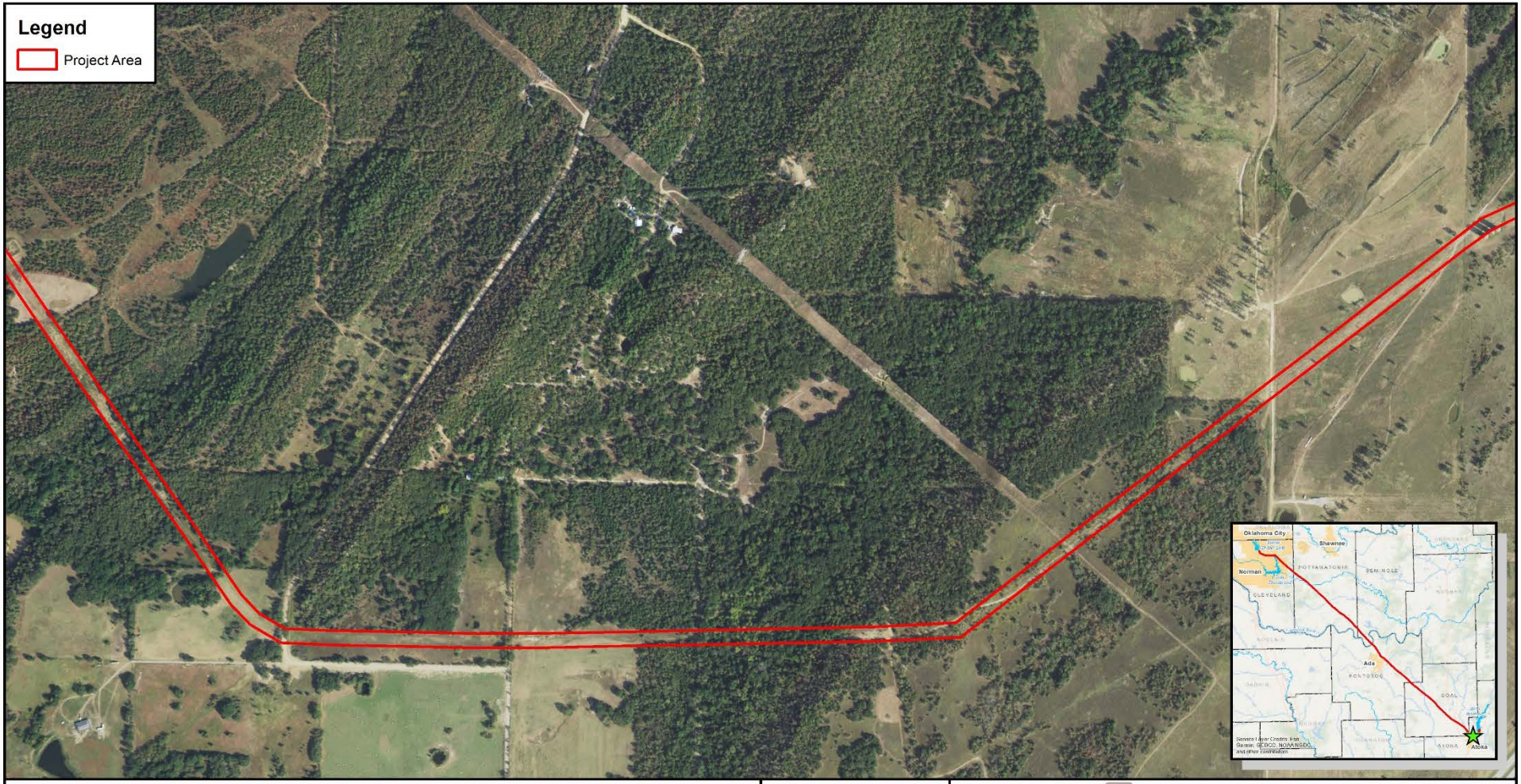
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 36, 35 & 34, T1S R11E; Sections 2 & 3, T2S R11E
Atoka County, Oklahoma

N
W E
S

1:8,000

ENERCON

Figure 2.2: Site Map
Source: 2017 USDA NAIP
Atoka County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
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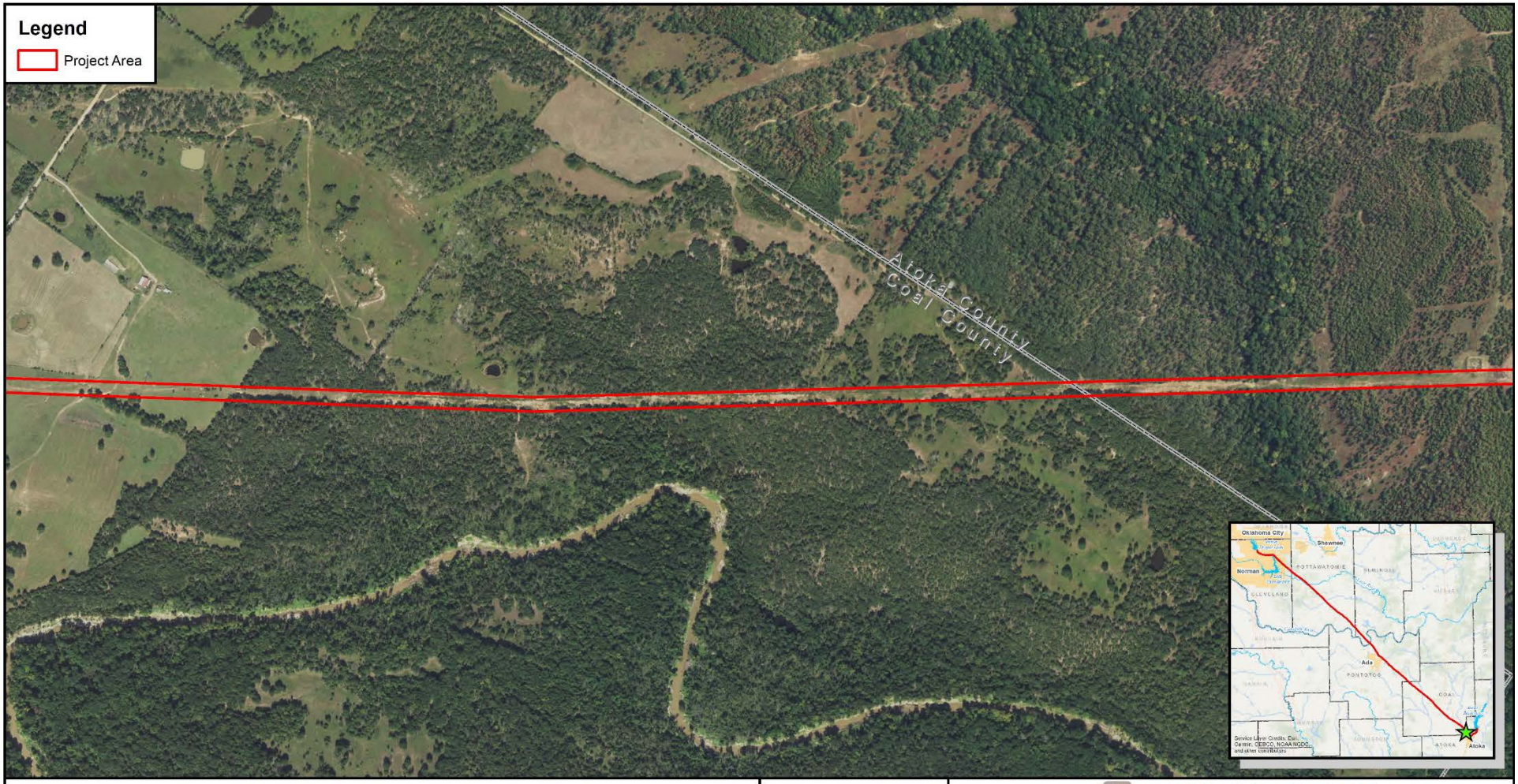


Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 34, 33 & 28, T1S R11E
Atoka and Coal Counties, Oklahoma

1:8,000

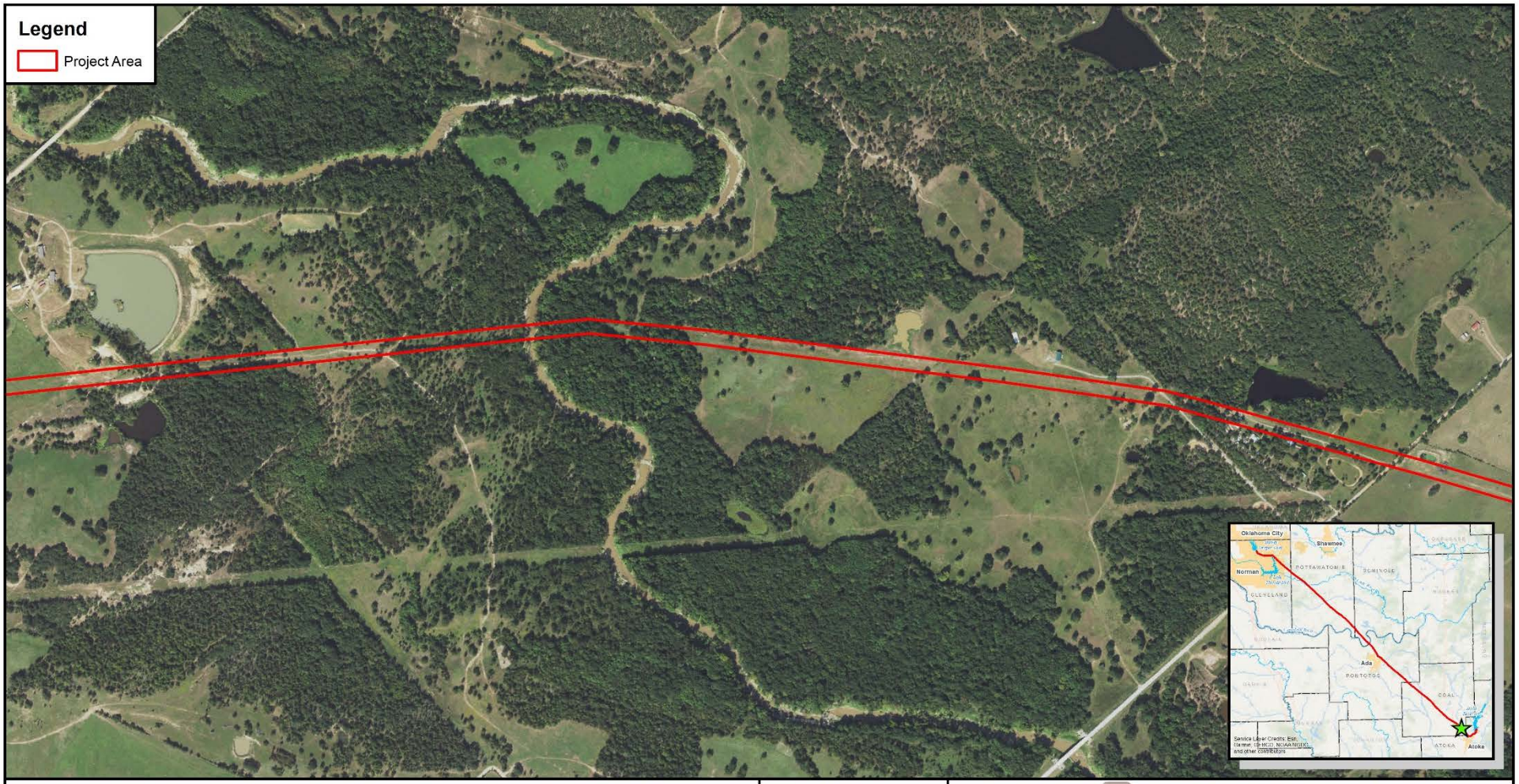
ENERCON

Figure 2.3: Site Map

Source: 2017 USDA NAIP
Atoka and Coal Counties, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 28, 21, 20, 17 & 18, T1S R11E
Coal County, Oklahoma

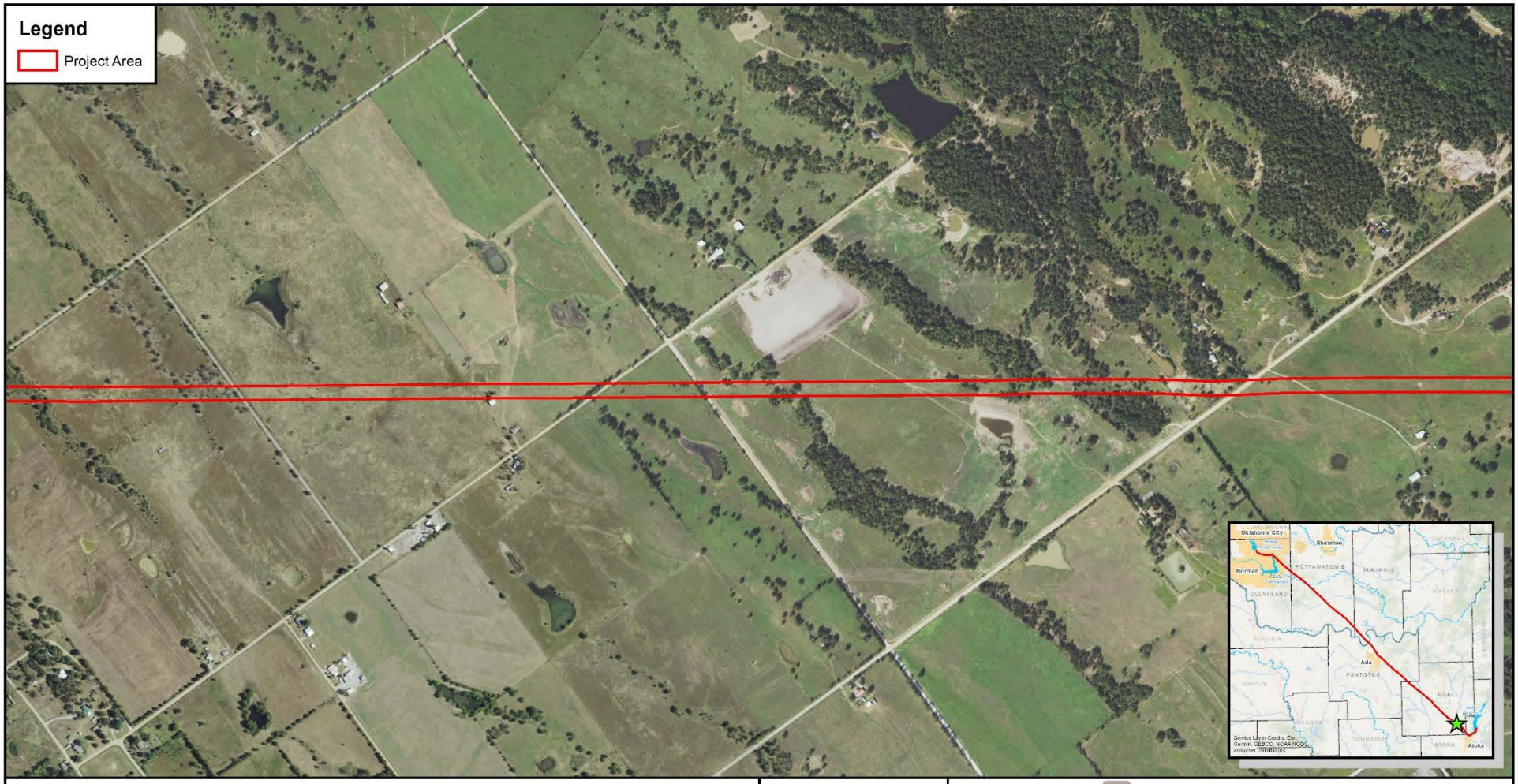
1:8,000

ENERCON

Figure 2.4: Site Map
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Section 18, T1S R11E; Sections 13 & 12, T1S R10E
Coal County, Oklahoma

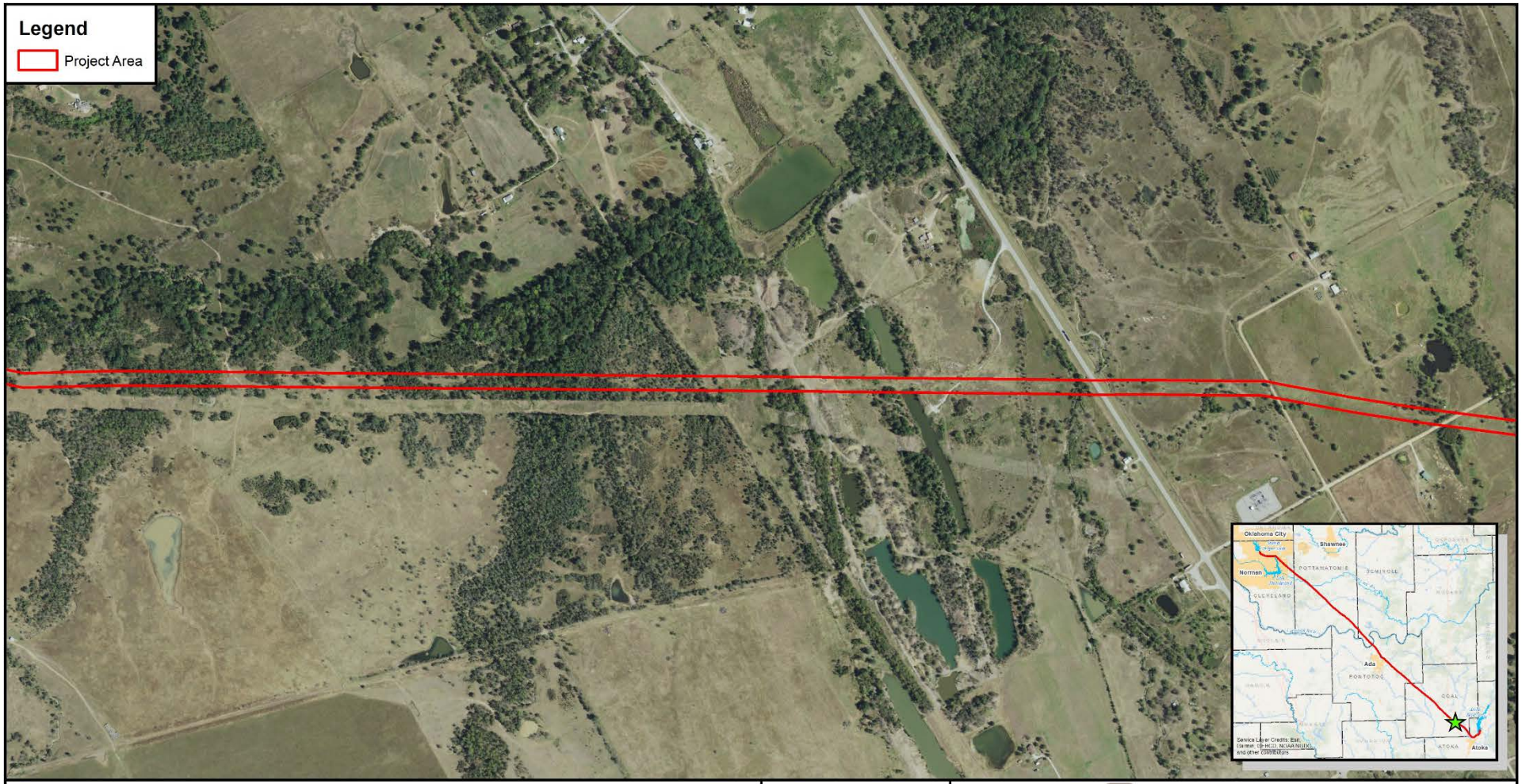
1:8,000

ENERCON

Figure 2.5: Site Map
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 12, 11, 2 & 3, T1S R10E
Coal County, Oklahoma

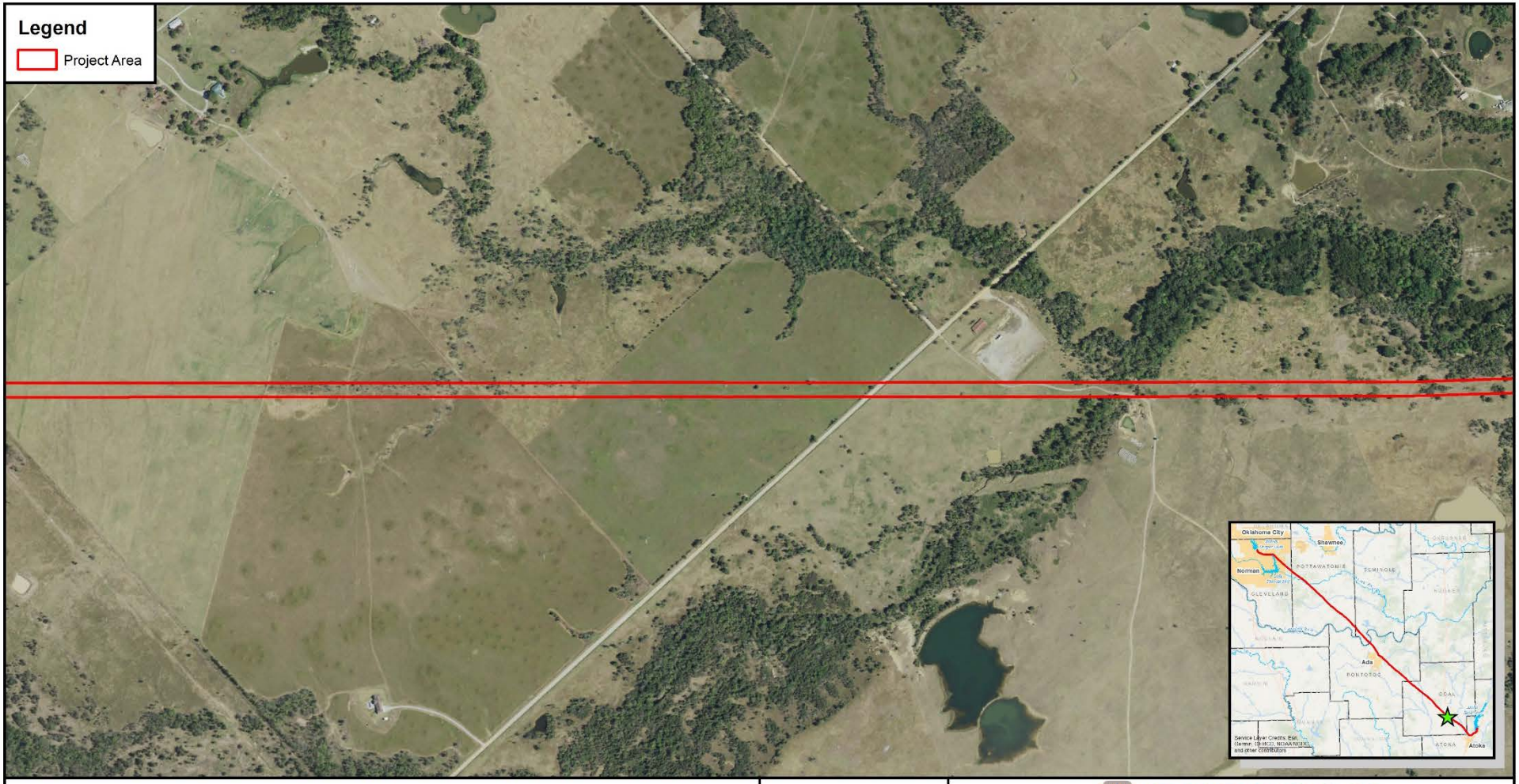
1:8,000

ENERCON

Figure 2.6: Site Map
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

0 500 1,000 2,000 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 3 & 4, T1S R10E; Section 33, T1N R10E
Coal County, Oklahoma

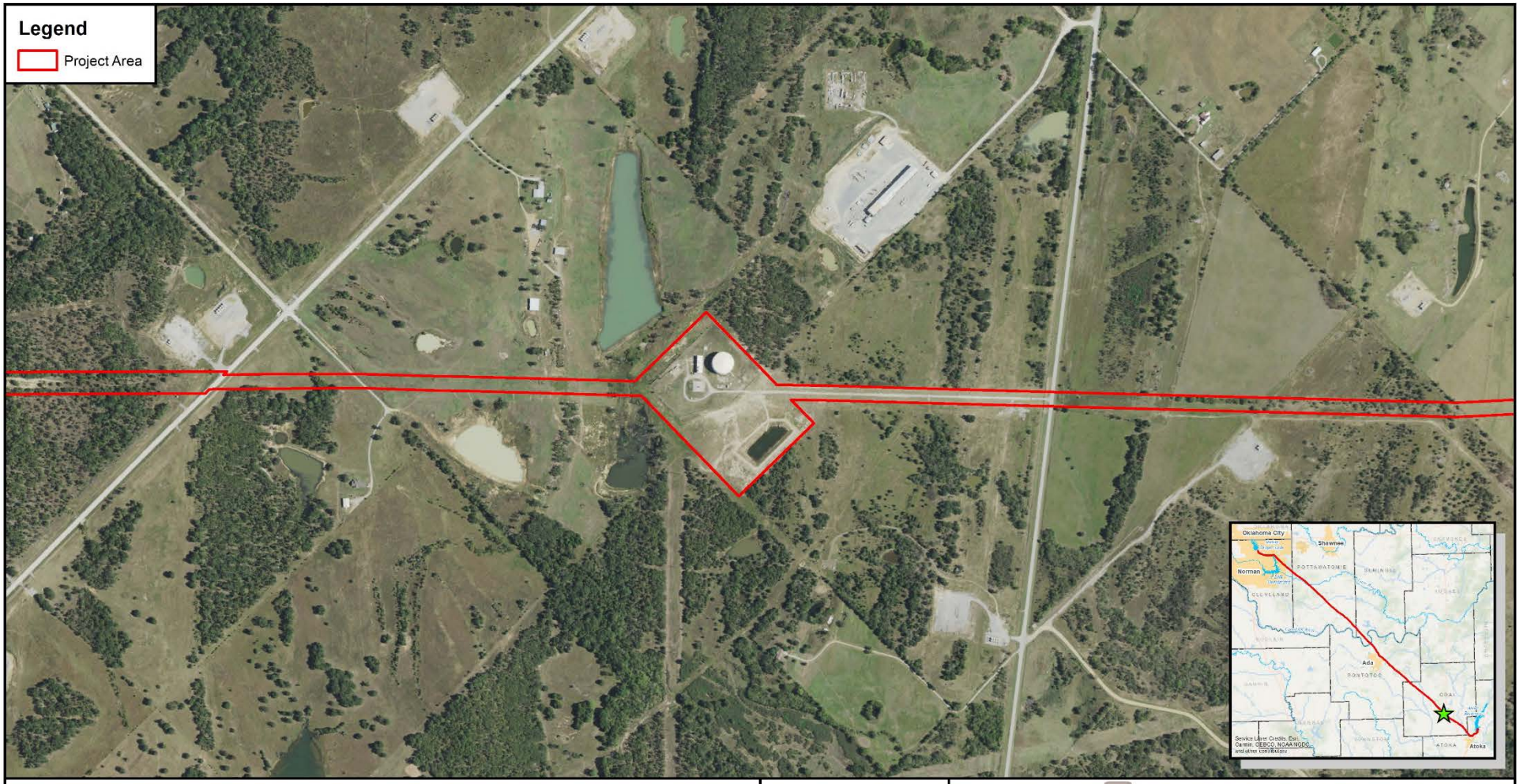
1:8,000

ENERCON

Figure 2.7: Site Map
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 33, 32, 29, 30 & 19, T1N R10E
Coal County, Oklahoma

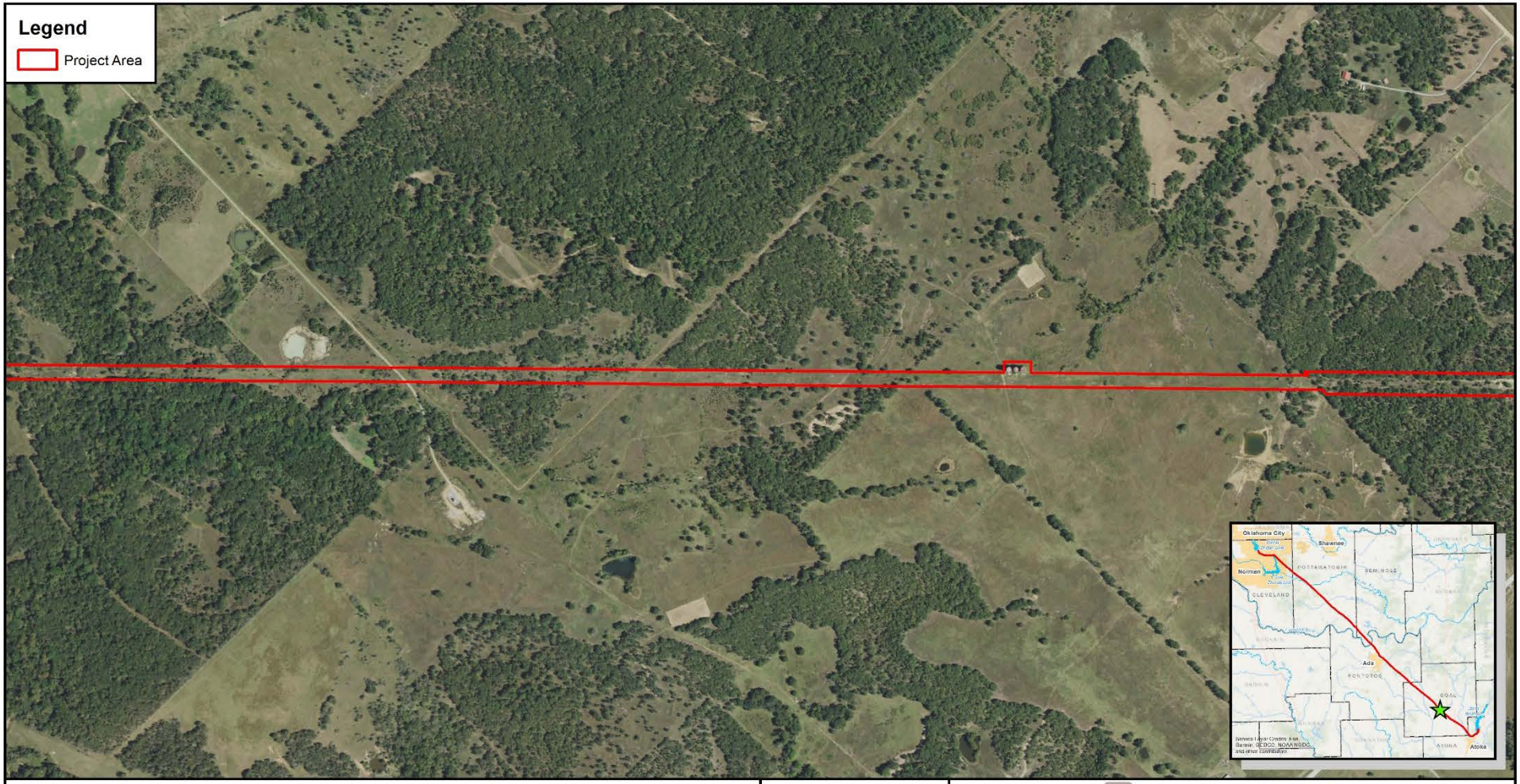
1:8,000

ENERCON

Figure 2.8: Site Map
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Section 19, T1N R10E; Sections 24 & 13, T1N R9E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 2.9: Site Map
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 13, 14, 11 & 2, T1N R9E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 2.10: Site Map
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 2 & 3, T1N R9E; Sections 34 & 33, T2N R9E
Coal County, Oklahoma

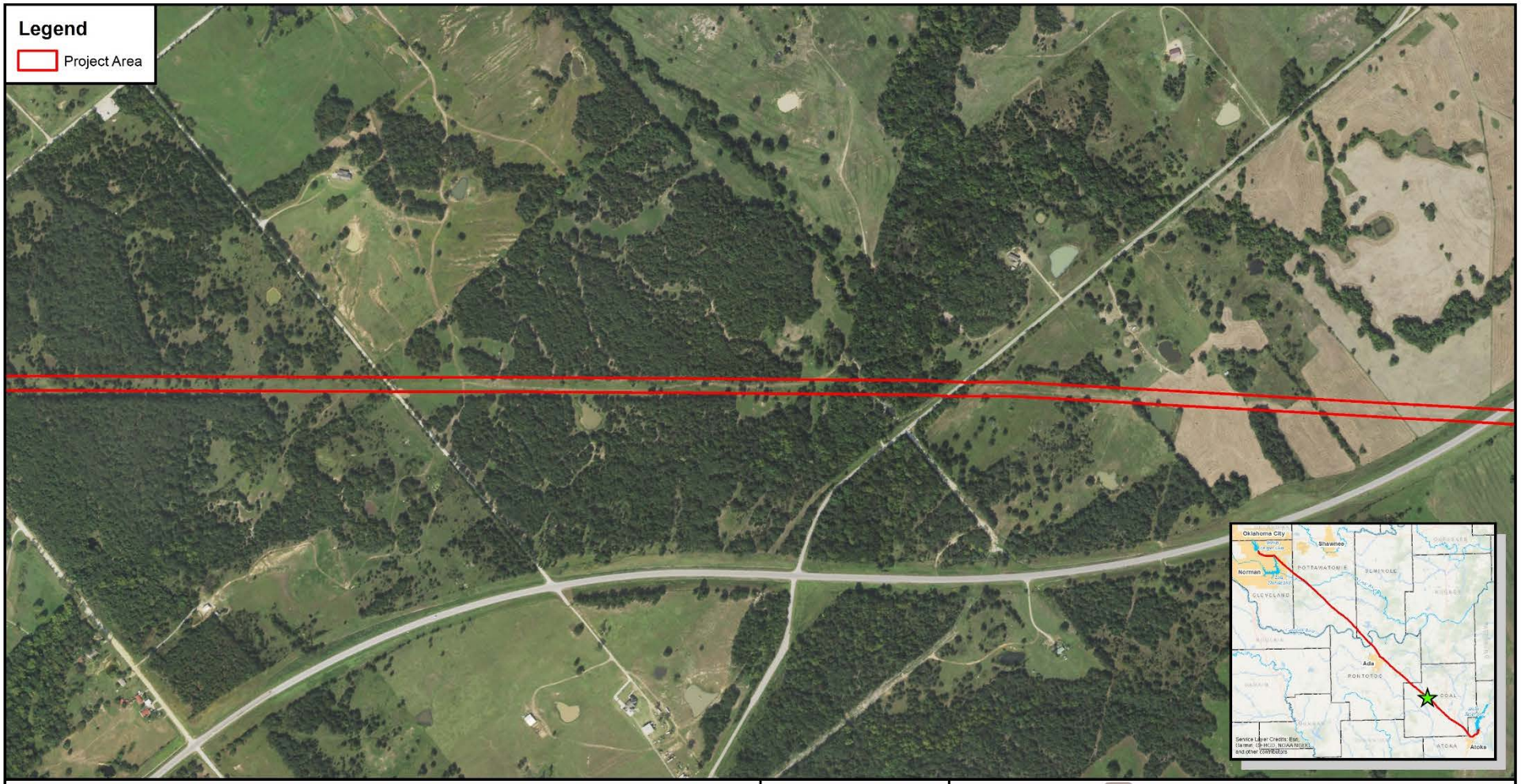
1:8,000

ENERCON

Figure 2.11: Site Map
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 33, 28 & 29, T2N R9E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 2.12: Site Map

Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 29, 30 & 19, T2N R9E; Sections 24 & 13, T2N R8E
Coal County, Oklahoma

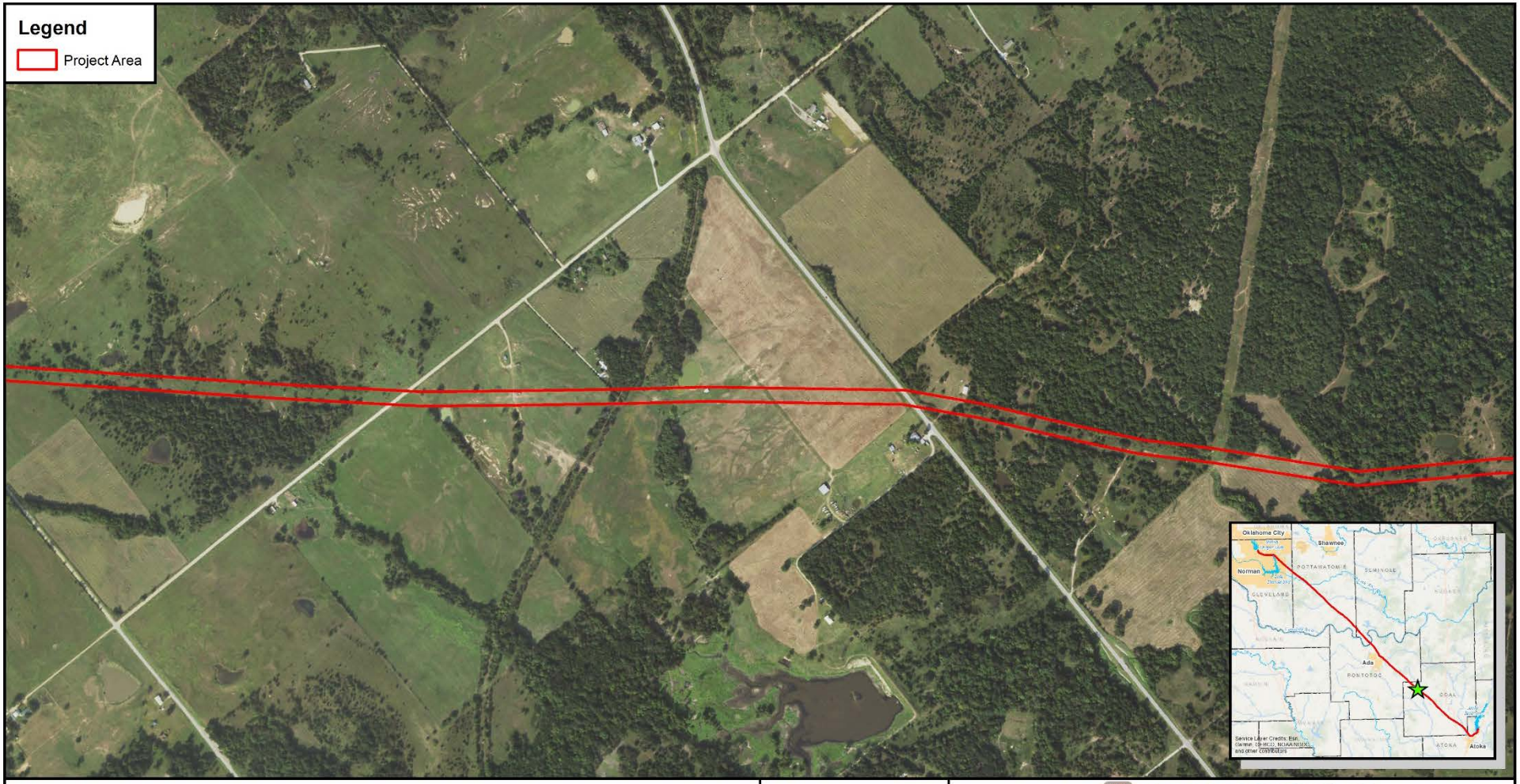
1:8,000

ENERCON

Figure 2.13: Site Map
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Sections 13, 14 & 11, T2N R8E
Coal County, Oklahoma

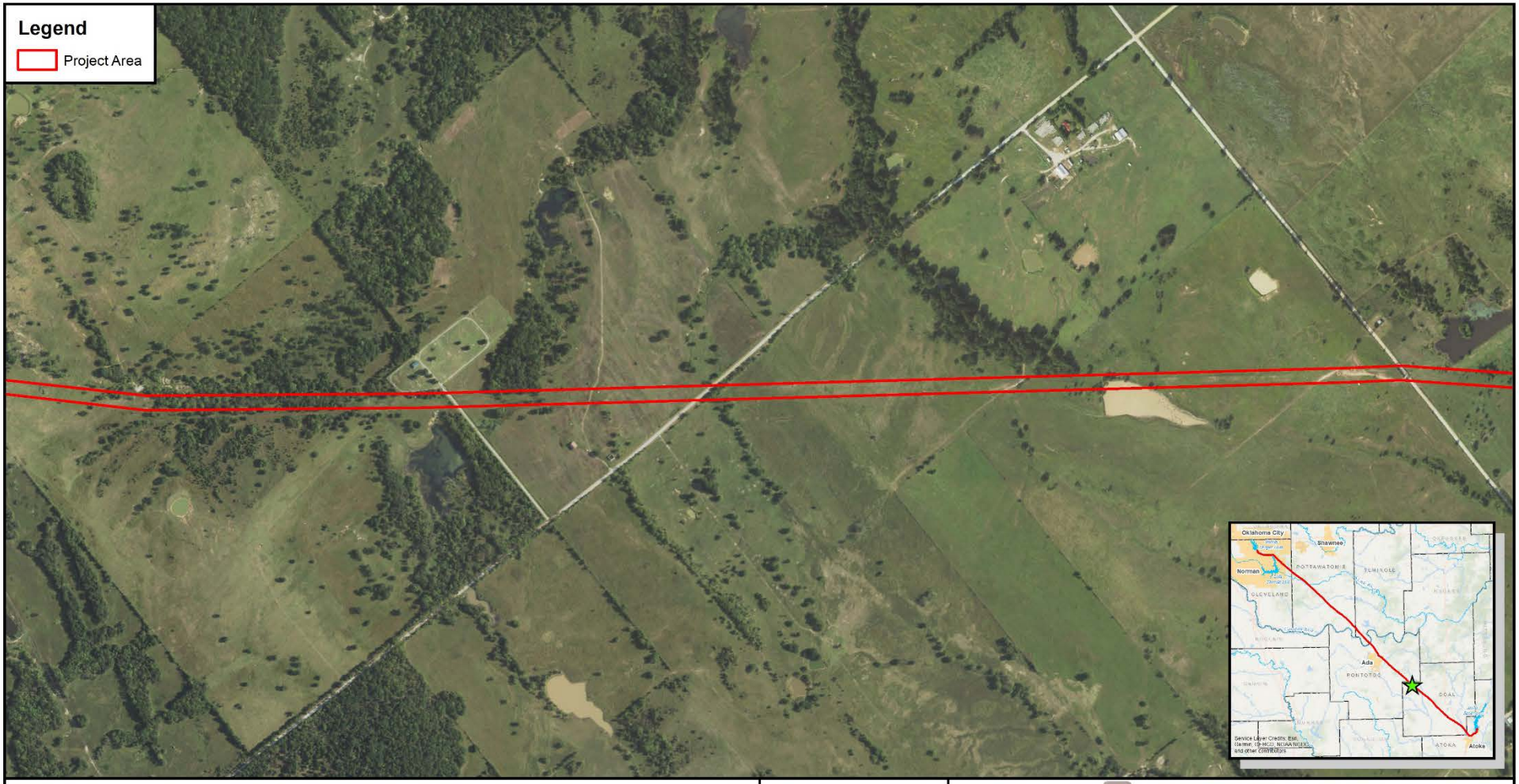
1:8,000

ENERCON

Figure 2.14: Site Map
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 11, 10, 3 & 4, T2N R8E
Coal County, Oklahoma

1:8,000

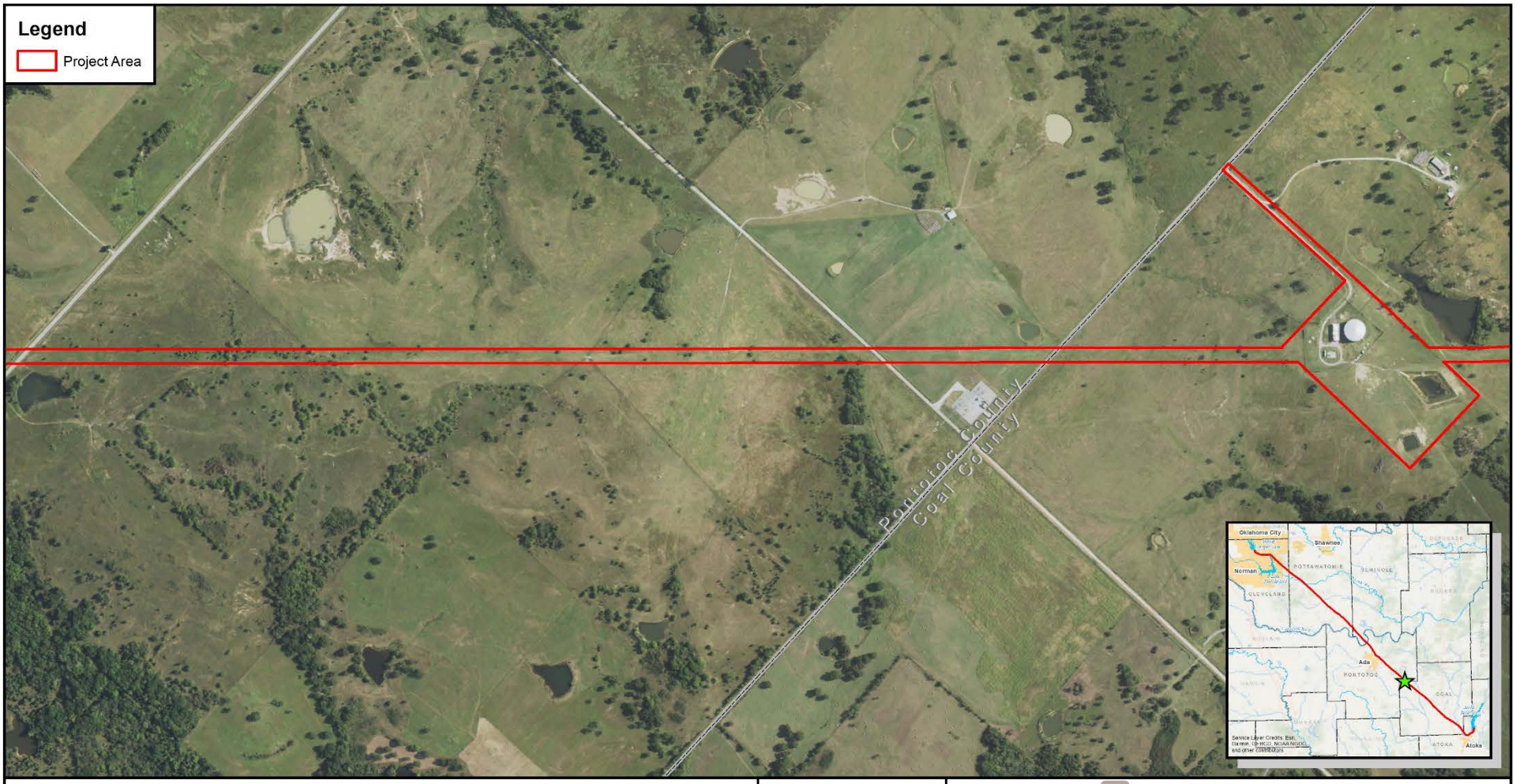
ENERCON

Figure 2.15: Site Map

Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Section 4, T2N R8E; Sections 33, 32 & 29, T3N R8E
Coal and Pontotoc Counties, Oklahoma

1:8,000

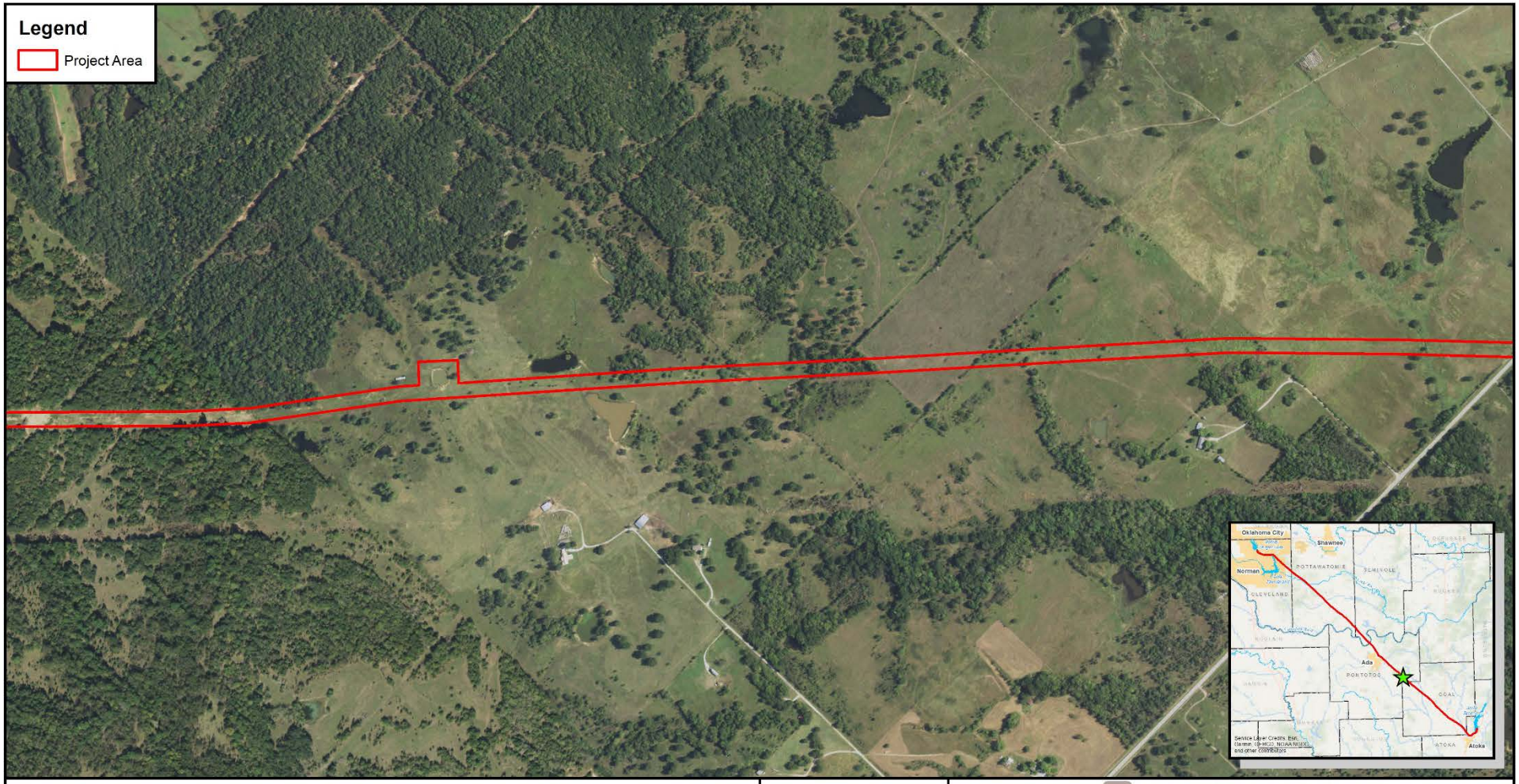
ENERCON

Figure 2.16: Site Map

Source: 2017 USDA NAIP
Coal and Pontotoc Counties, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 29, 30 & 19, T3N R8E; Section 24, T3N R7E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 2.17: Site Map
Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Sections 24, 13 & 14, T3N R7E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 2.18: Site Map
Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 14, 15, 10 & 9, T3N R7E
Pontotoc County, Oklahoma

1:8,000

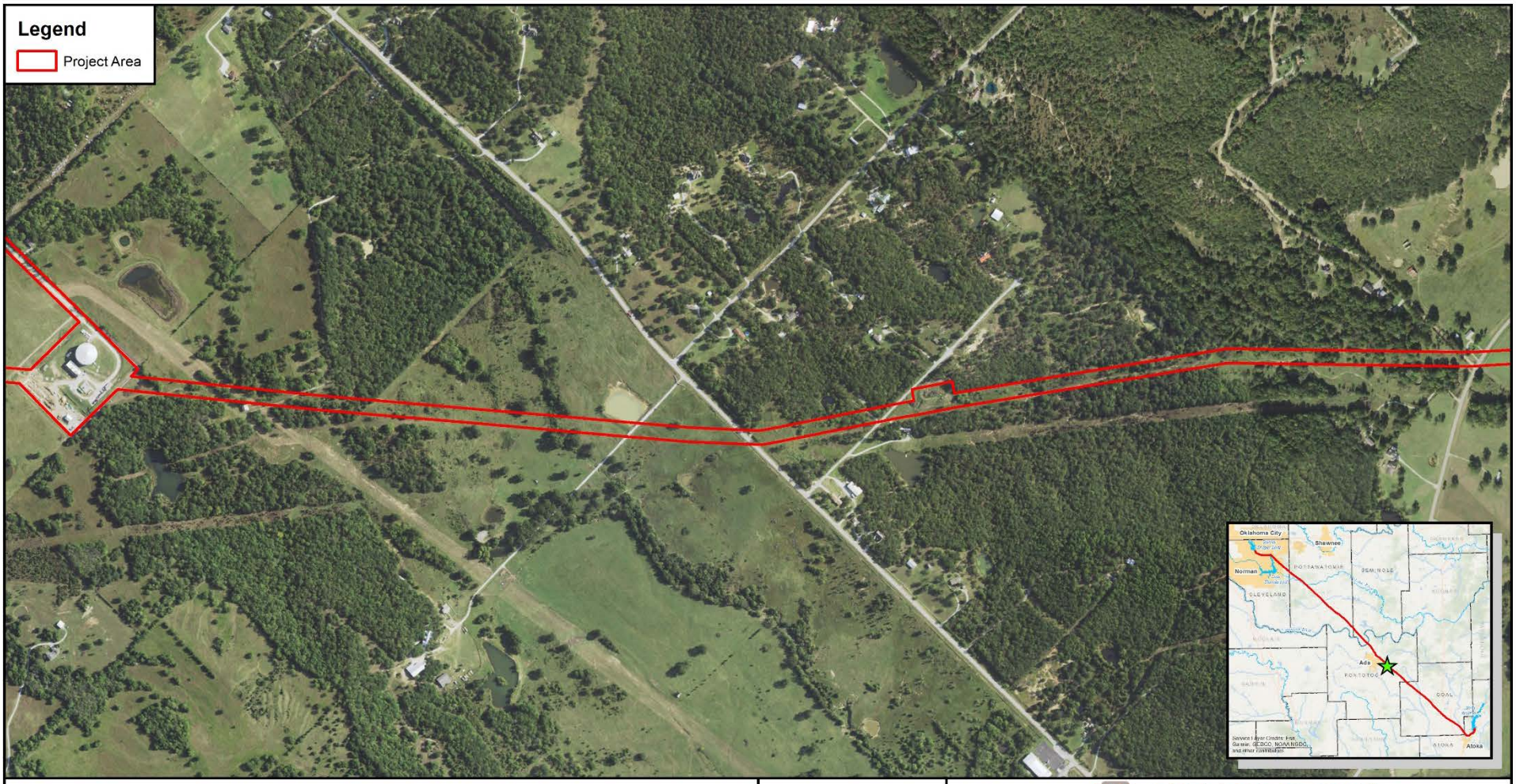
ENERCON

Figure 2.19: Site Map

Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 9, 4 & 5, T3N R7E; Section 32, T4N R7E
Pontotoc County, Oklahoma

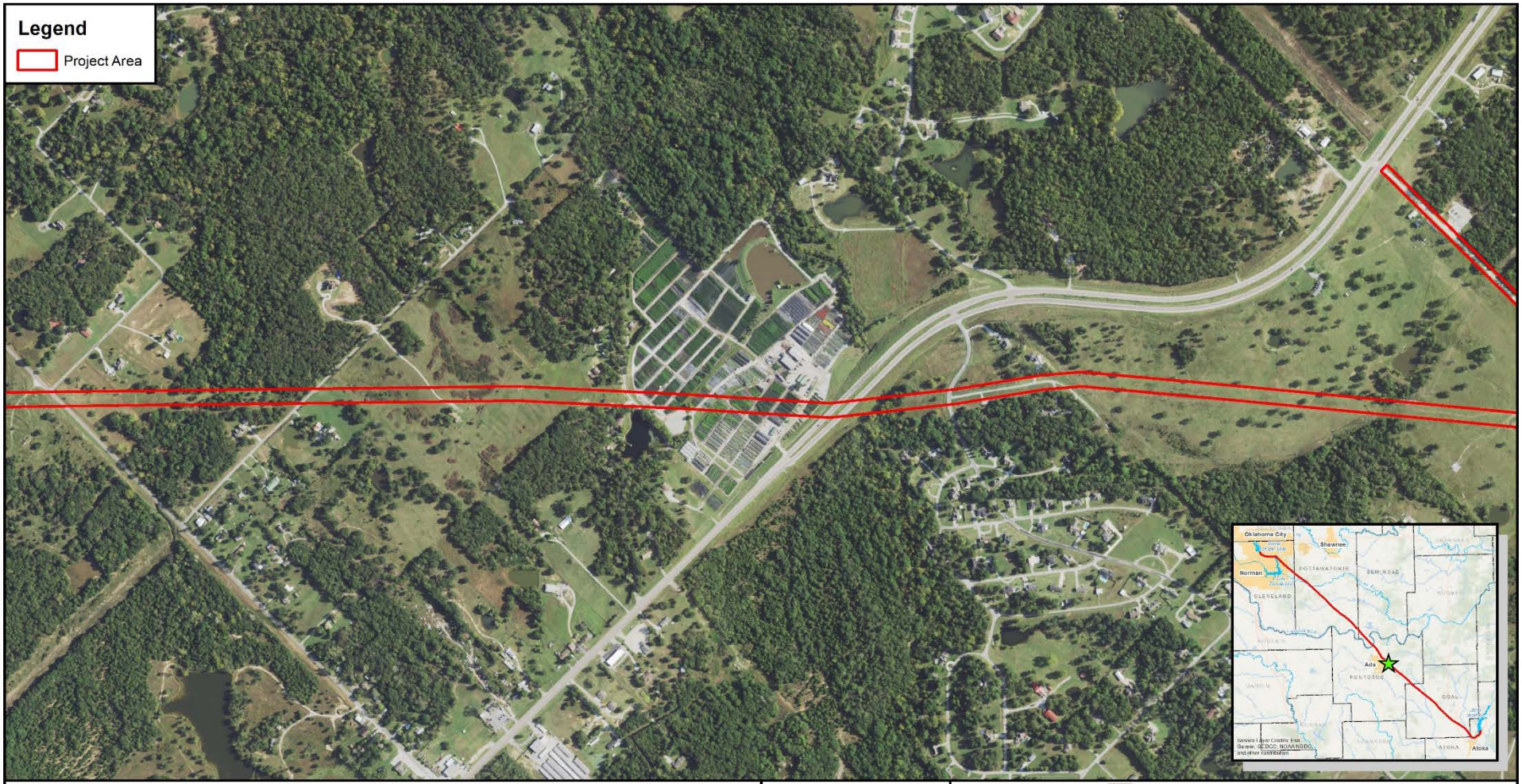
1:8,000

ENERCON

Figure 2.20: Site Map
Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 32, 31 & 30, T4N R7E; Section 25, T4N R6E
Pontotoc County, Oklahoma

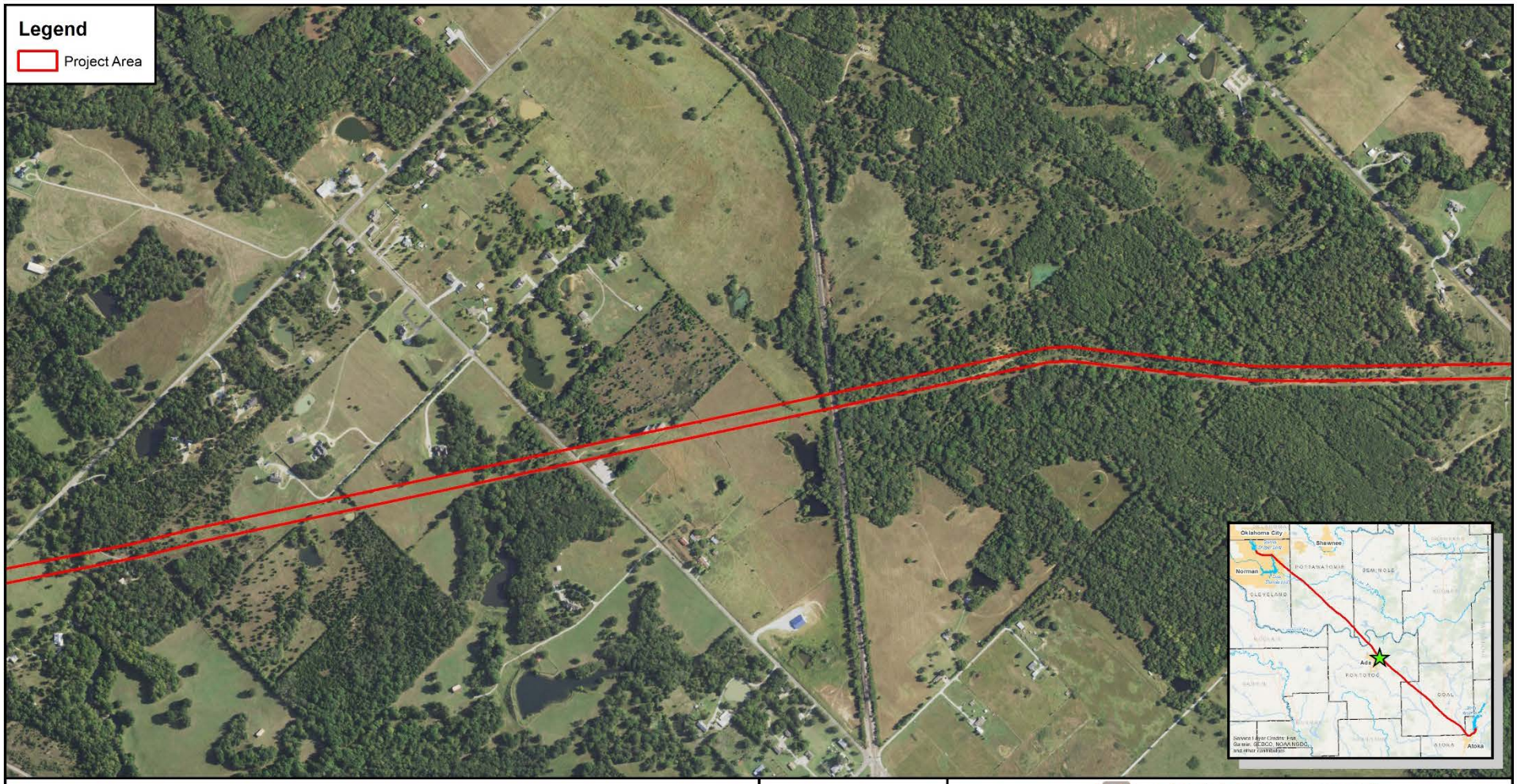
1:8,000

ENERCON

Figure 2.21: Site Map
Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Sections 25, 24 & 23, T4N R6E
Pontotoc County, Oklahoma

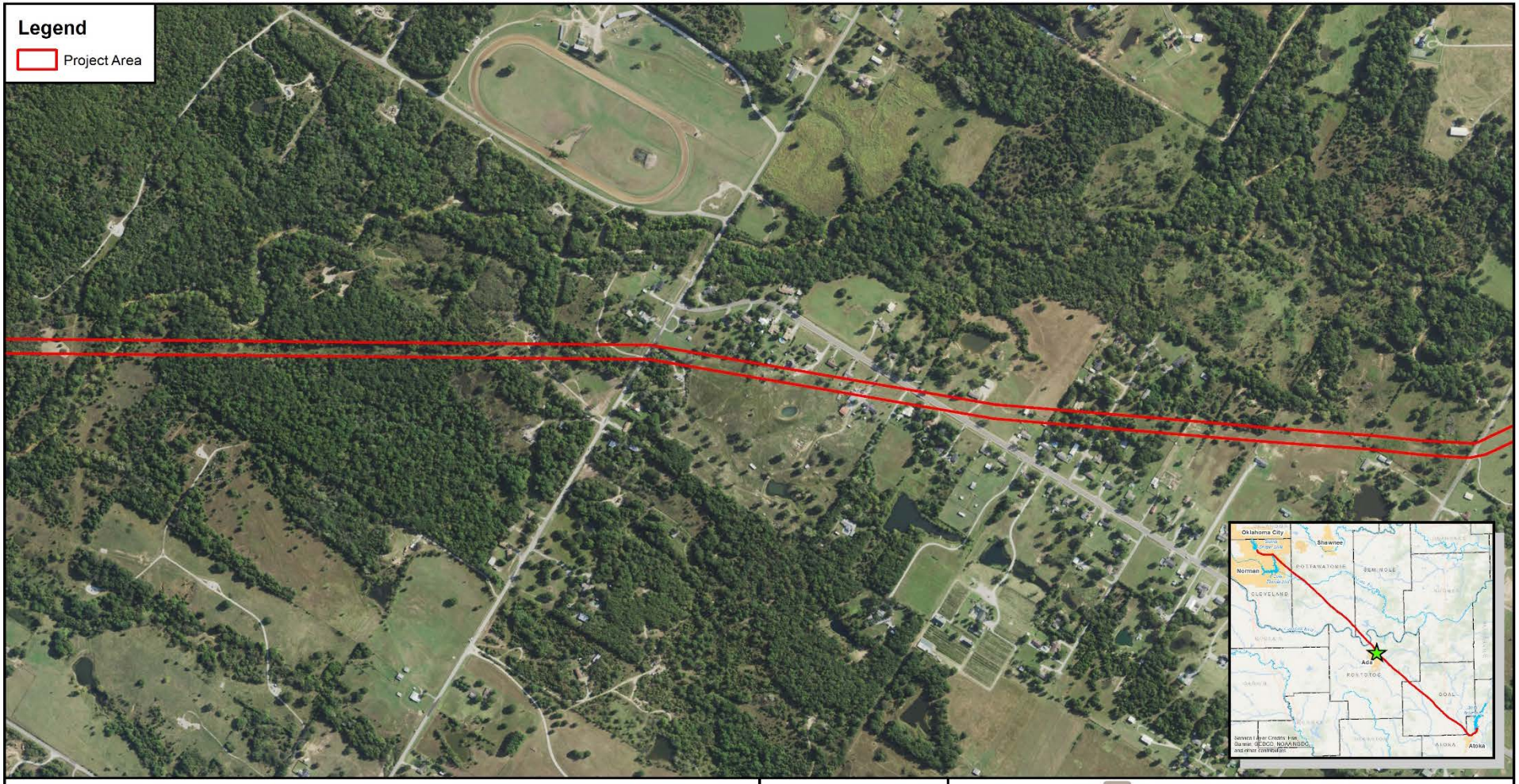
1:8,000

ENERCON

Figure 2.22: Site Map
Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 23, 14, 15 & 10, T4N R6E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 2.23: Site Map
Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 10, 3 & 4, T4N R6E; Section 33, T5N R6E
Pontotoc County, Oklahoma

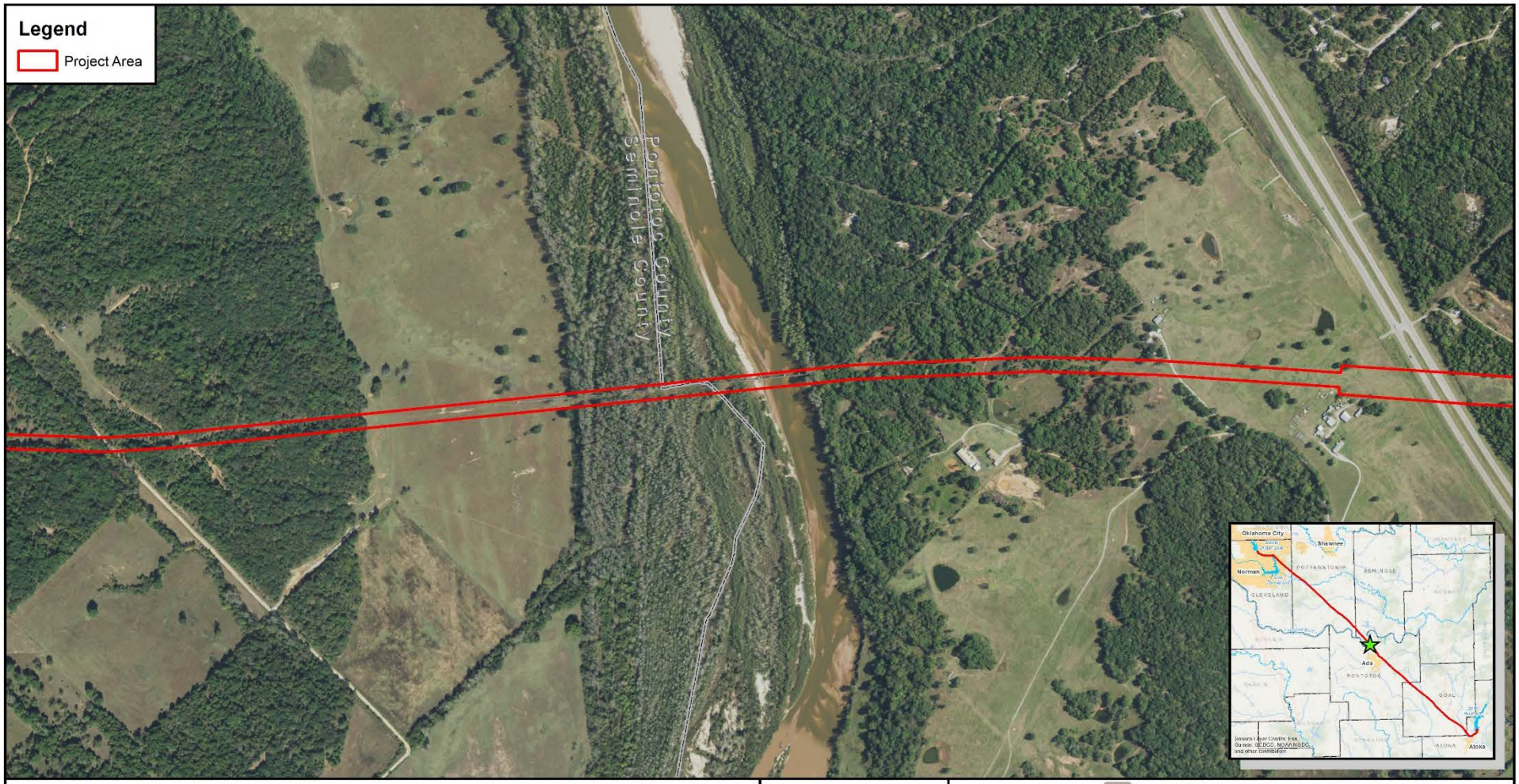
1:8,000

ENERCON

Figure 2.24: Site Map
Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

0 500 1,000 2,000 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 33, 32, 29 & 30, T5N R6E
Pontotoc and Seminole Counties, Oklahoma

1:8,000

ENERCON

Figure 2.25: Site Map

Source: 2017 USDA NAIP
Pontotoc and Seminole Counties, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 30 & 19, T5N R6E; Sections 24 & 13, T5N R5E
Seminole County, Oklahoma

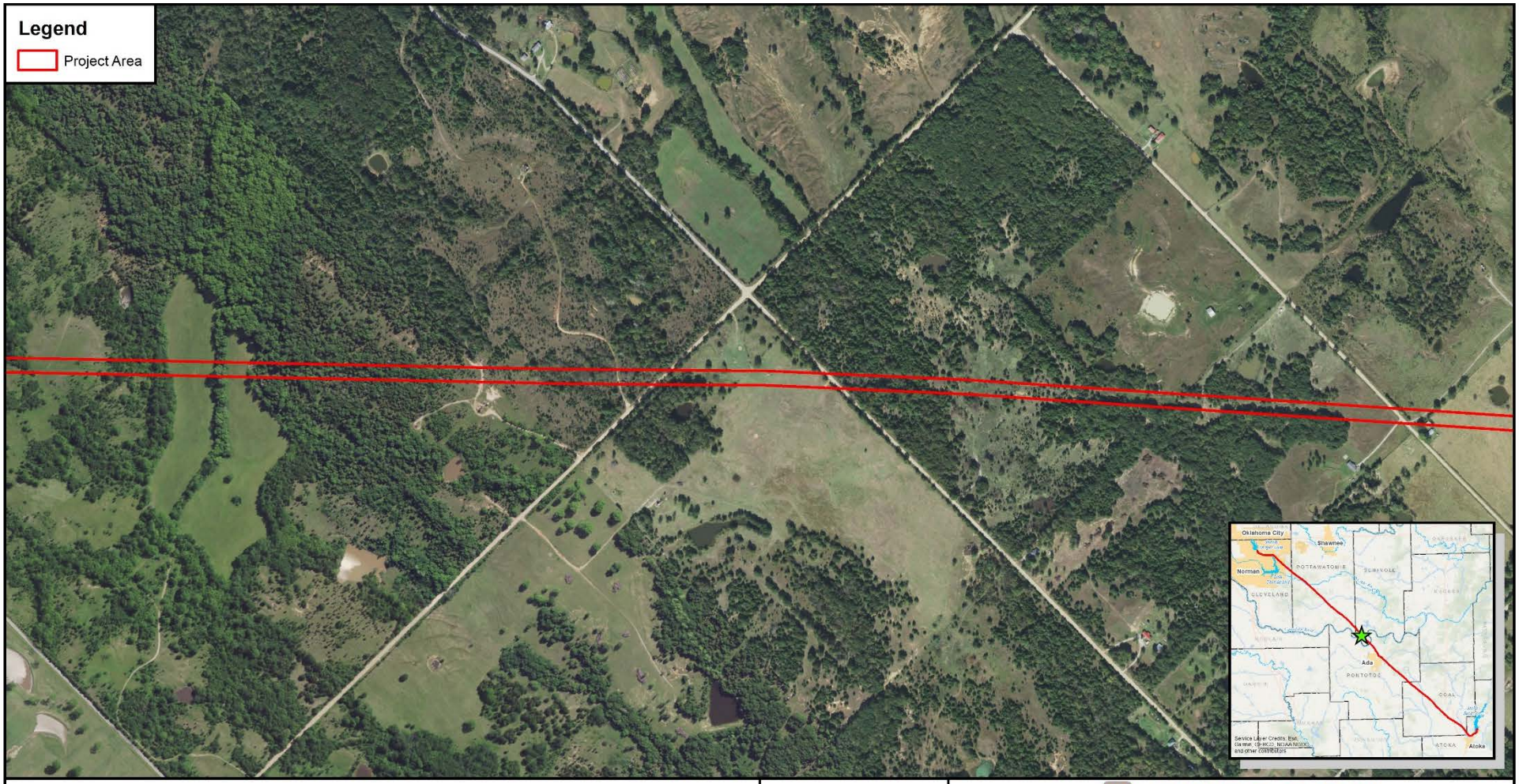
1:8,000

ENERCON

Figure 2.26: Site Map
Source: 2017 USDA NAIP
Seminole County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Sections 13, 14 & 11, T5N R5E
Seminole County, Oklahoma

1:8,000

ENERCON

Figure 2.27: Site Map
Source: 2017 USDA NAIP
Seminole County, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 11, 10 & 3, T5N R5E; Section 34, T6N R5E
Seminole County, OKlahoma

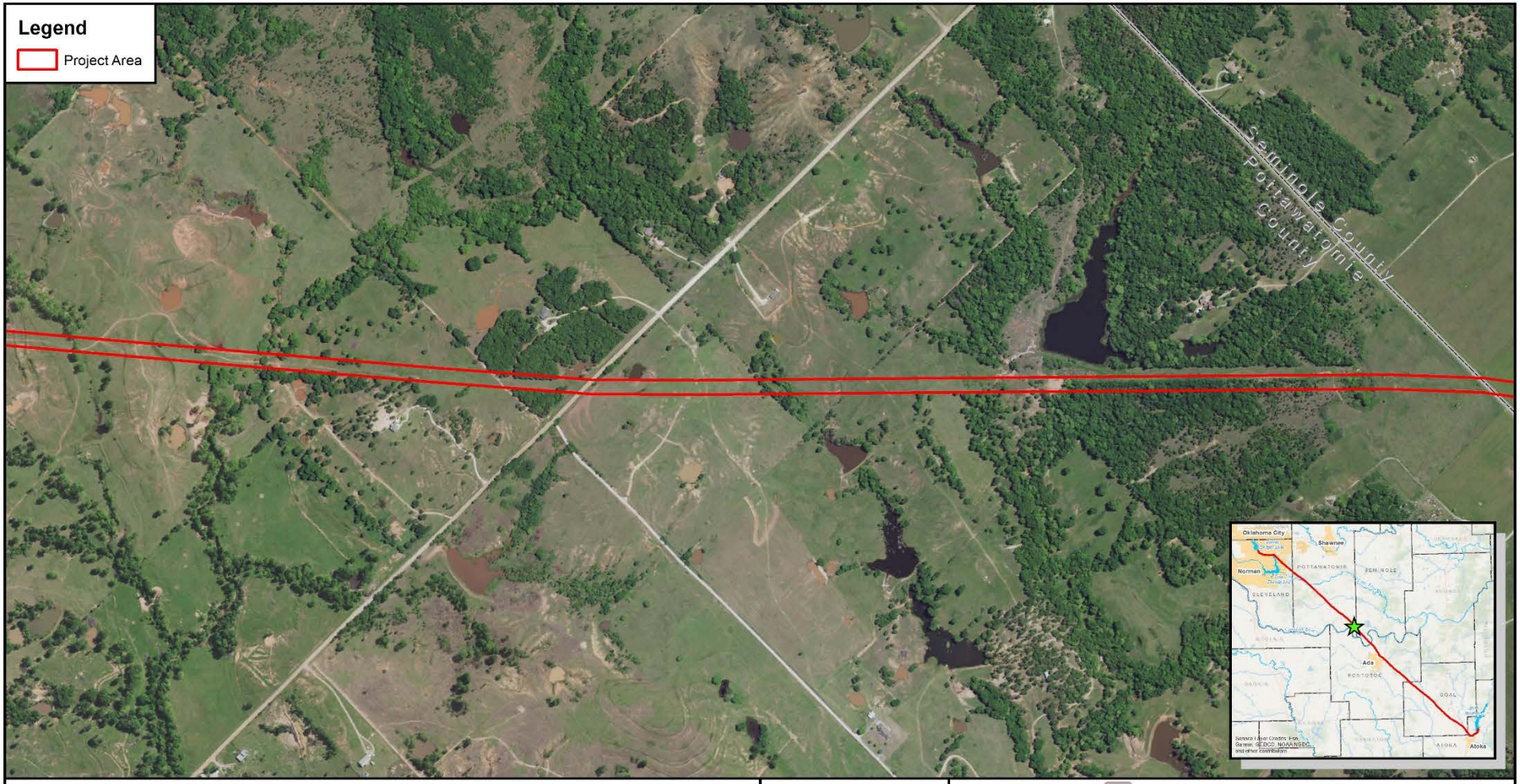
1:8,000

ENERCON

Figure 2.28: Site Map
Source: 2017 USDA NAIP
Seminole County, OKlahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 34, 33, 28 & 29, T6N R5E
Seminole and Pottawatomie Counties, Oklahoma

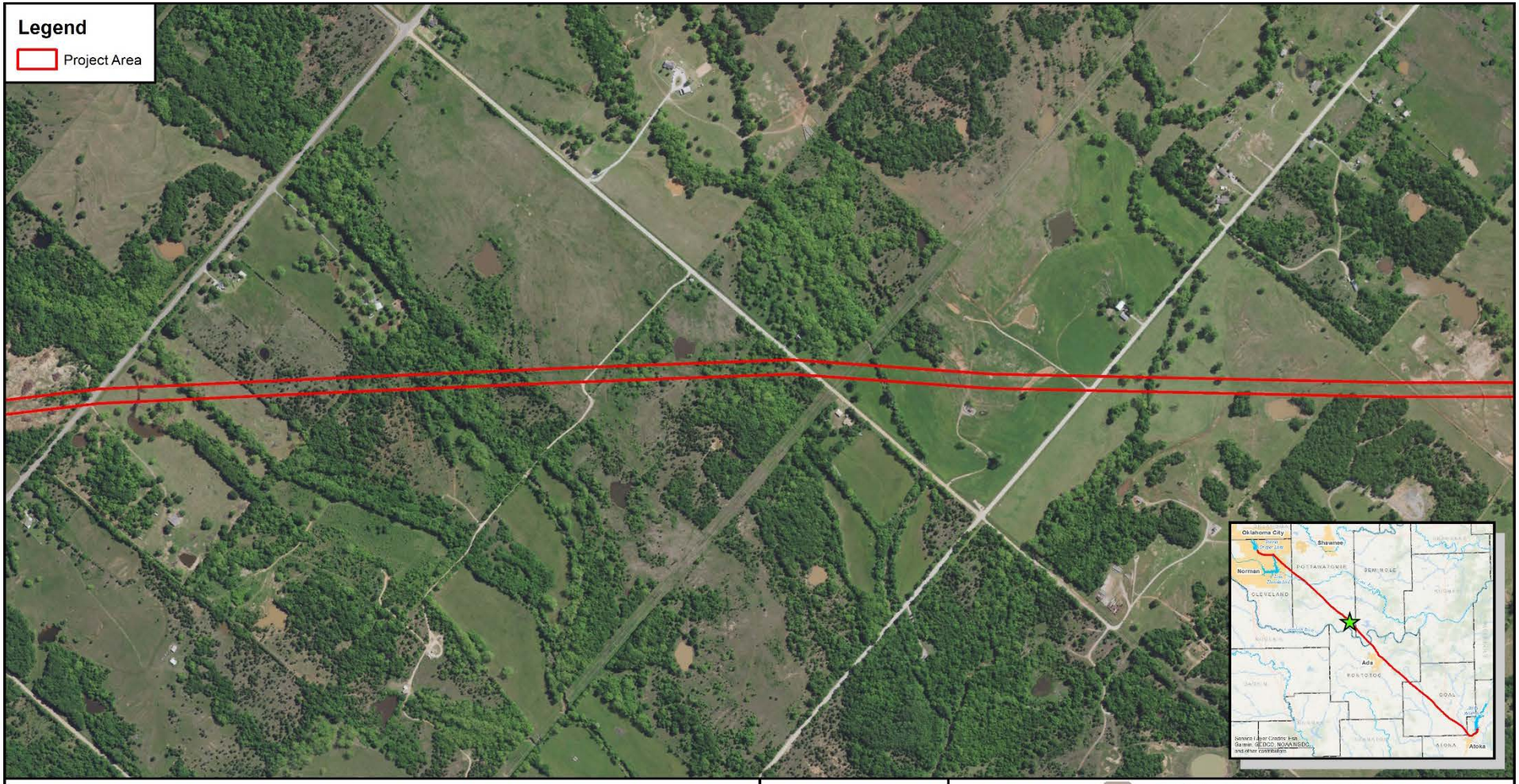
1:8,000

ENERCON

Figure 2.29: Site Map
Source: 2017 USDA NAIP
Seminole and Pottawatomie Counties, Oklahoma

Prepared by: F. Woolridge; October 12, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 29, 20, 19 & 18, T6N R5E
Pottawatomie County, Oklahoma

1:8,000

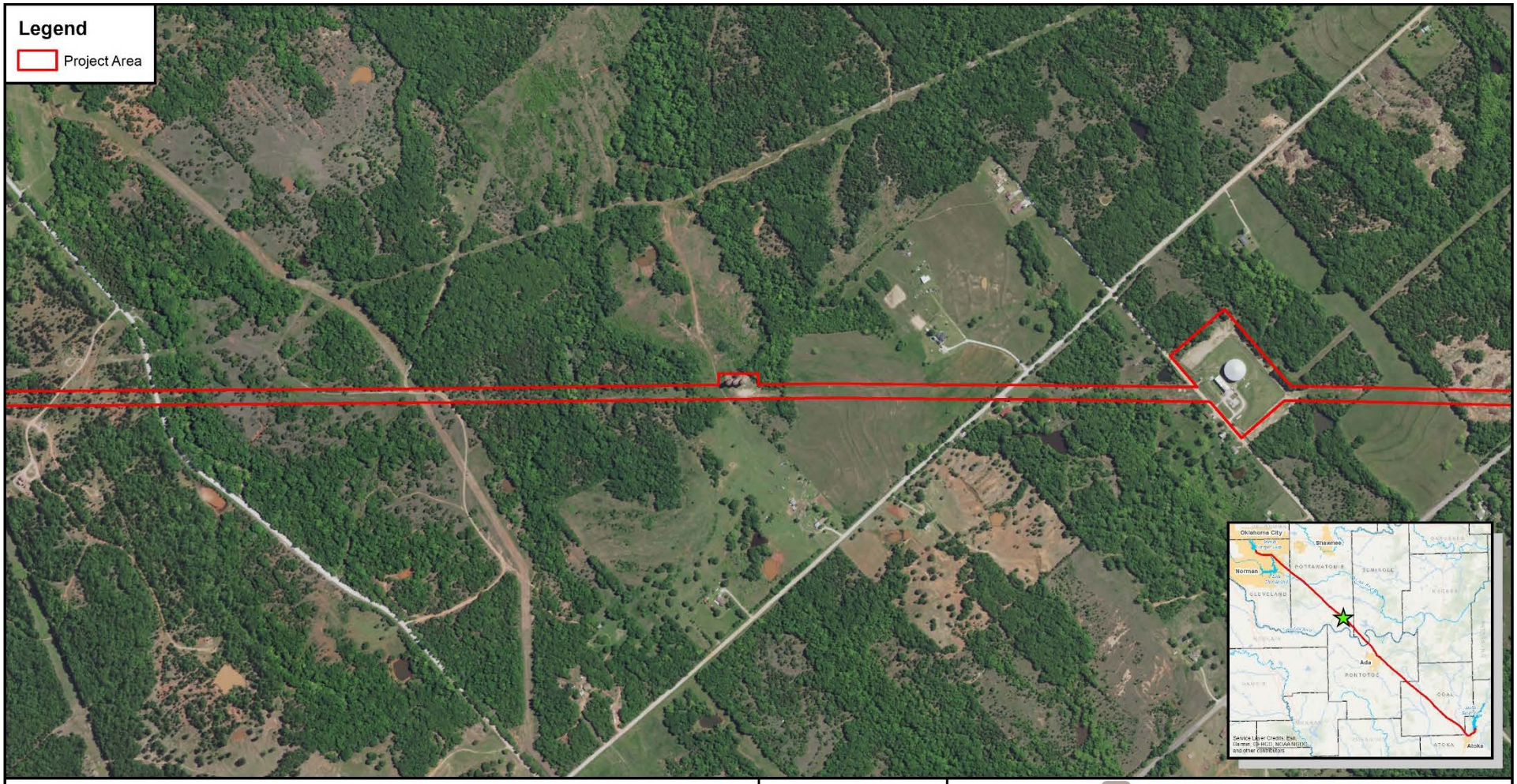
ENERCON

Figure 2.30: Site Map

Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Section 18, T6N R5E; Sections 13, 12 & 11, T6N R4E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 2.31: Site Map
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 11, 10 & 3, T6N R4E
Pottawatomie County, Oklahoma

1:8,000

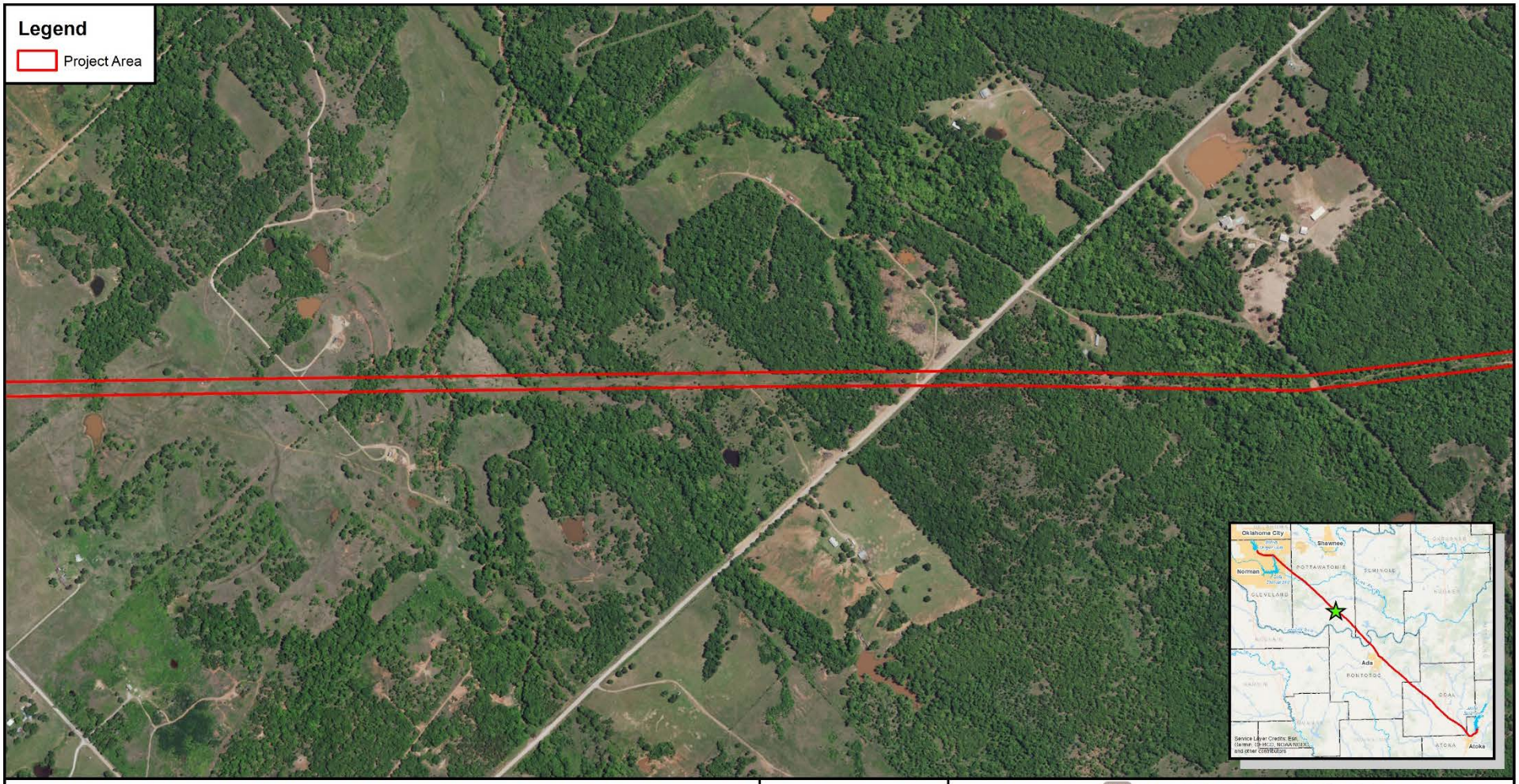
ENERCON

Figure 2.32: Site Map

Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 3 & 4, T6N R4E; Sections 33 & 32, T7N R4E
Pottawatomie County, Oklahoma

1:8,000

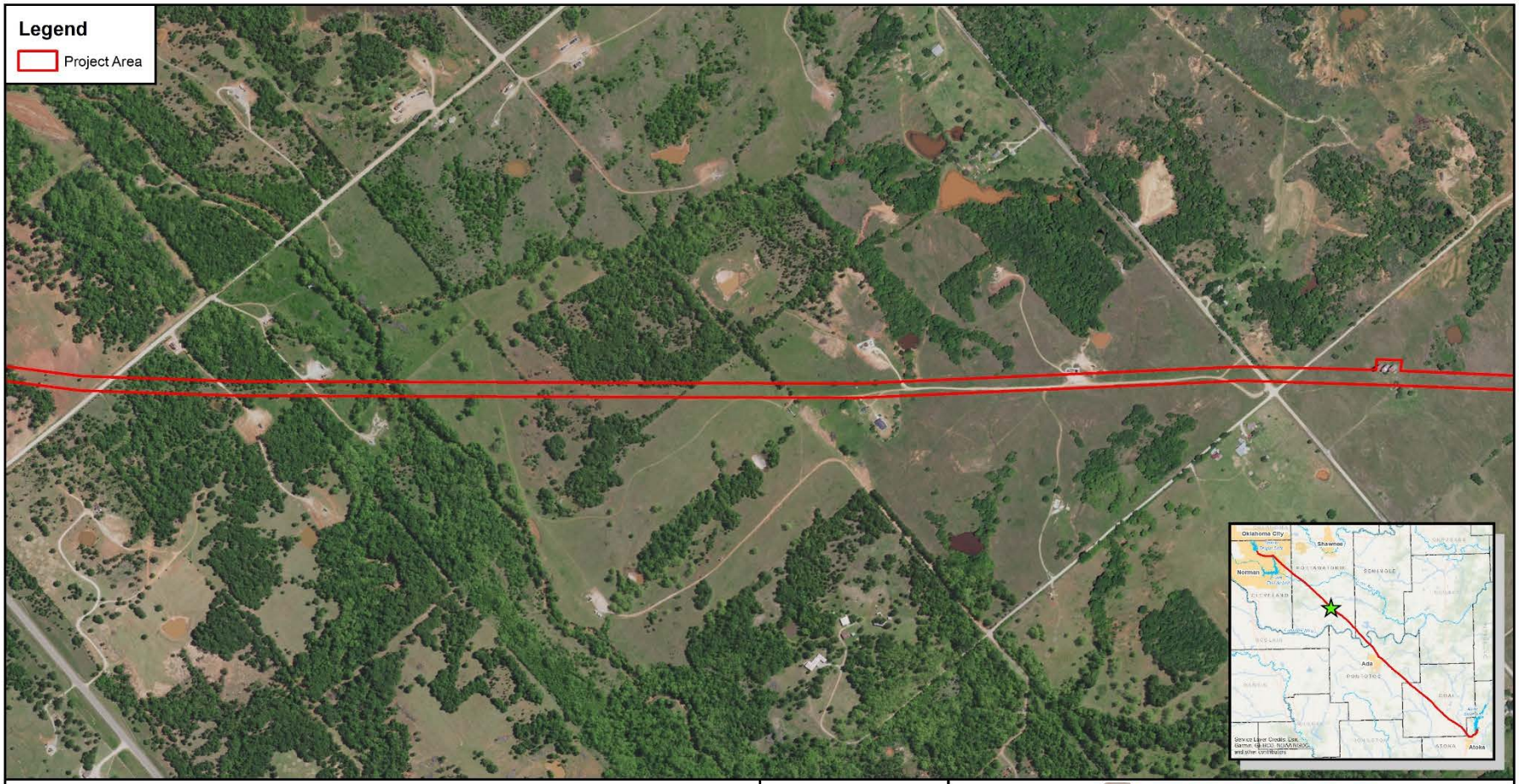
ENERCON

Figure 2.33: Site Map

Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 32, 29, 30 & 19, T7N R4E
Pottawatomie County, Oklahoma

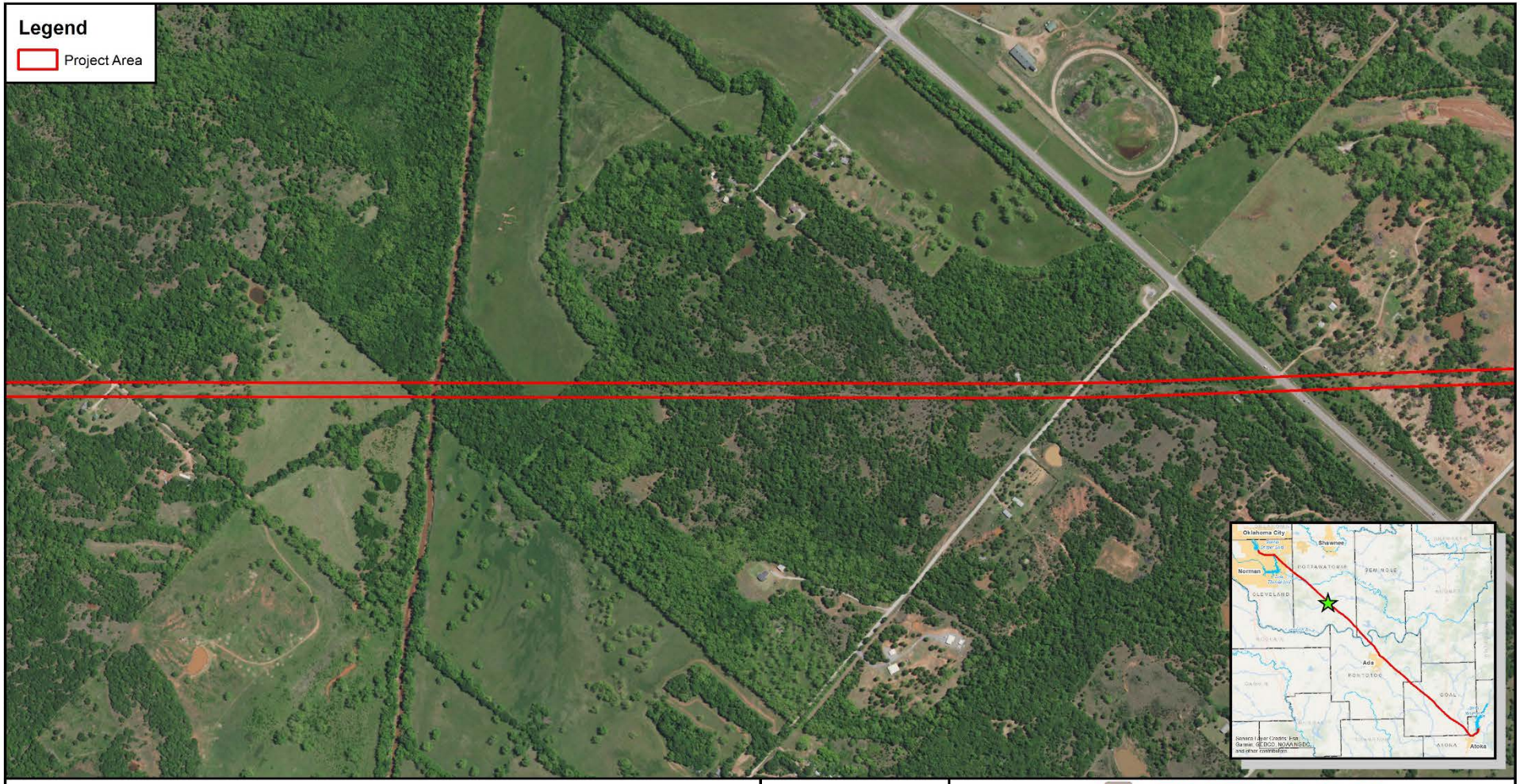
1:8,000

ENERCON

Figure 2.34: Site Map
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

0 500 1,000 2,000 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Section 19, T7N R4E; Sections 24, 13 & 14, T7N R3E
Pottawatomie County, Oklahoma

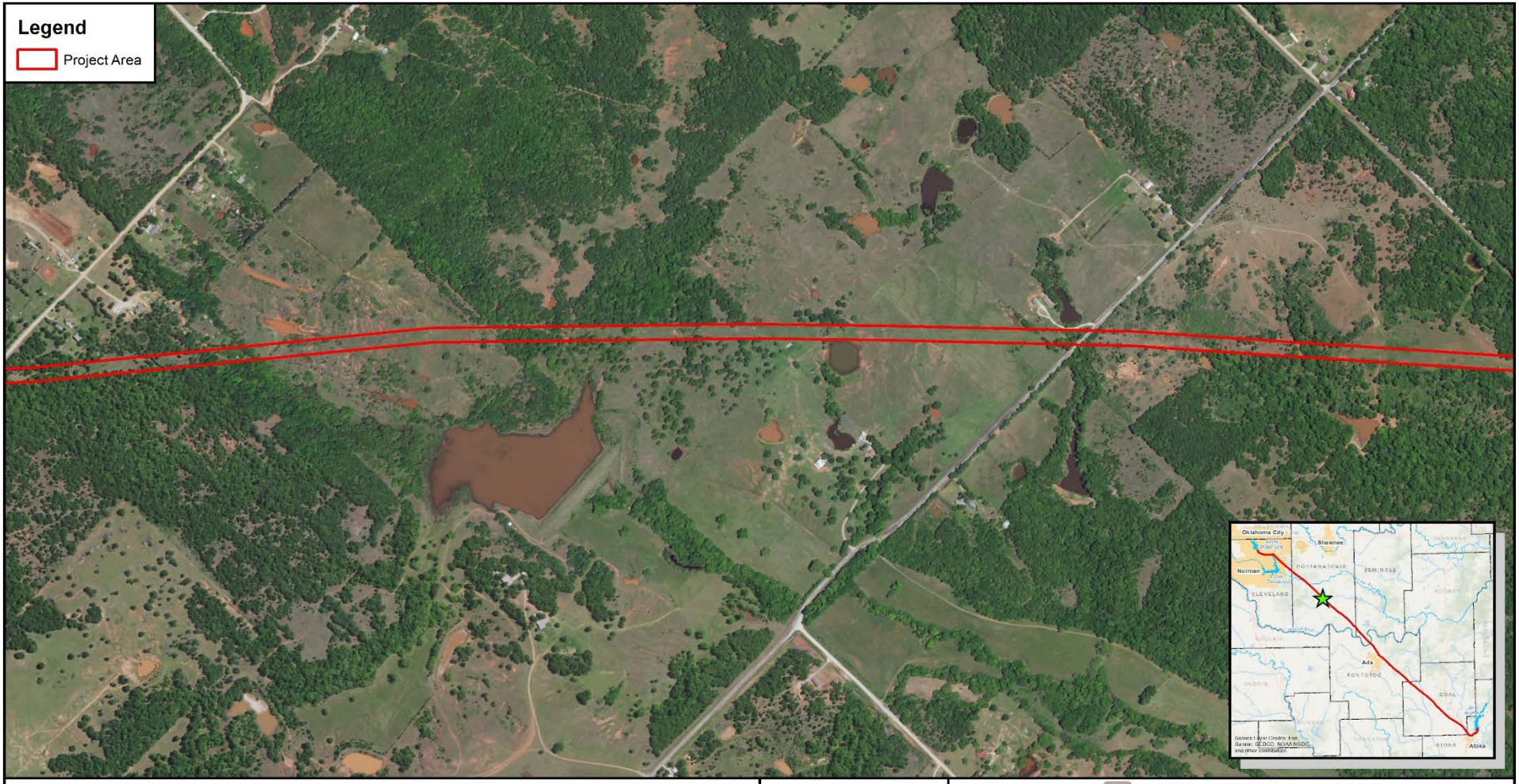
1:8,000

ENERCON

Figure 2.35: Site Map
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 14, 11 & 10, T7N R3E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 2.36: Site Map

Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Sections 10, 3 & 4, T7N R3E; Section 33, T8N R3E
Pottawatomie County, Oklahoma

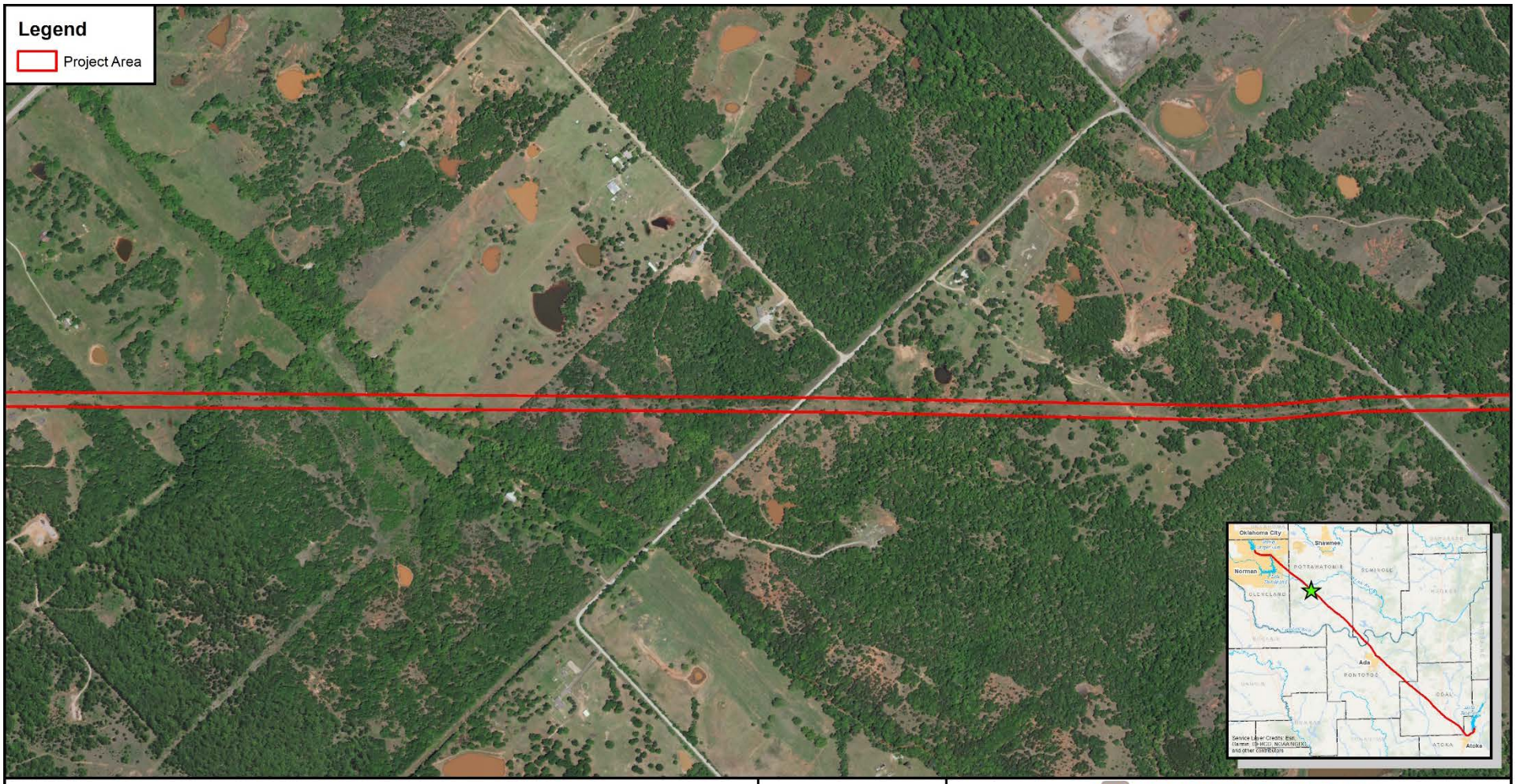
1:8,000

ENERCON

Figure 2.37: Site Map
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 33, 32, 29 & 30, T8N R3E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 2.38: Site Map

Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Sections 30 & 19, T8N R3E; Sections 24 & 13, T8N R2E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 2.39: Site Map
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 13, 14, 11 & 10, T8N R2E
Pottawatomie County, Oklahoma

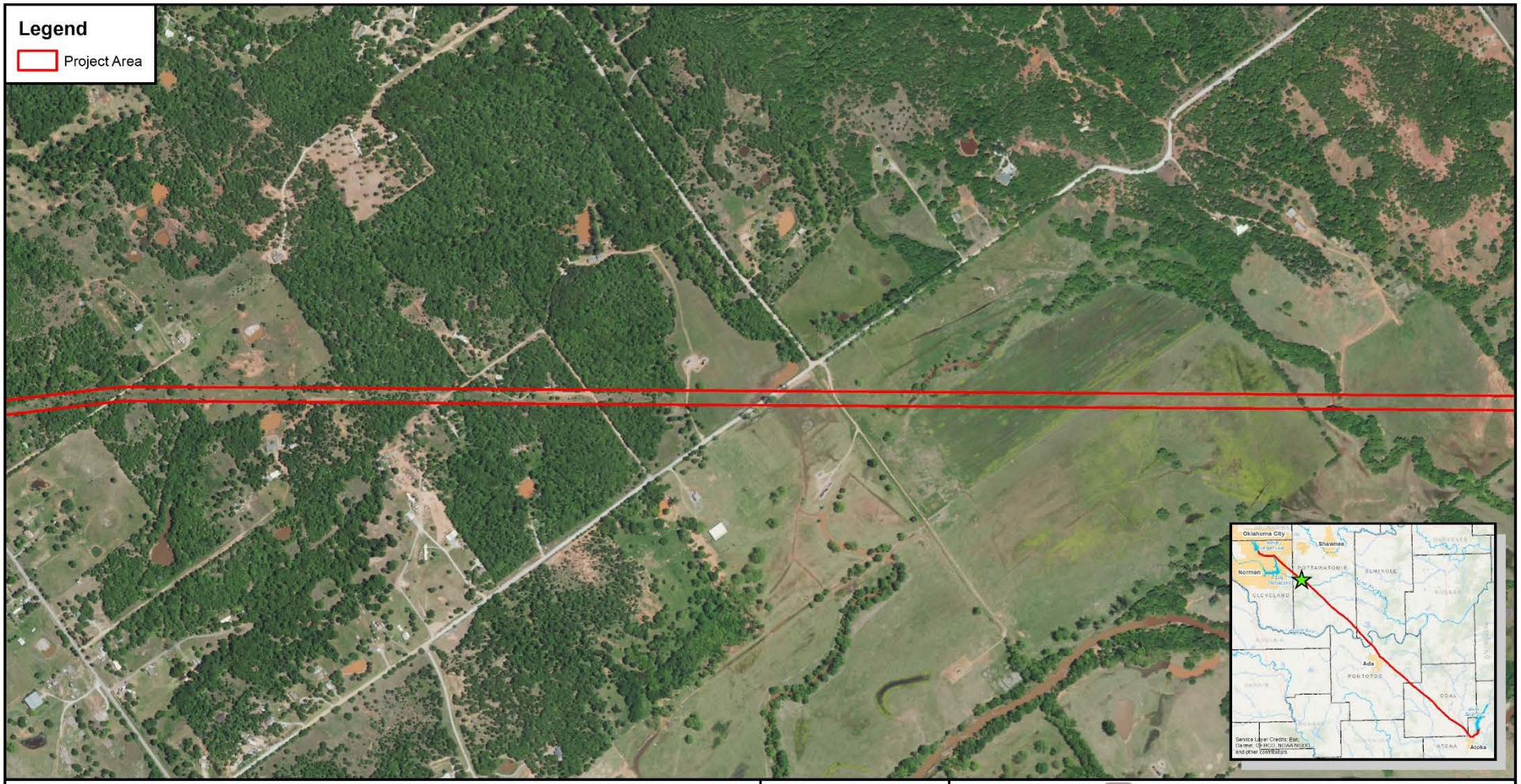
1:8,000

ENERCON

Figure 2.40: Site Map
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 10, 9 & 4, T8N R2E
Pottawatomie County, Oklahoma

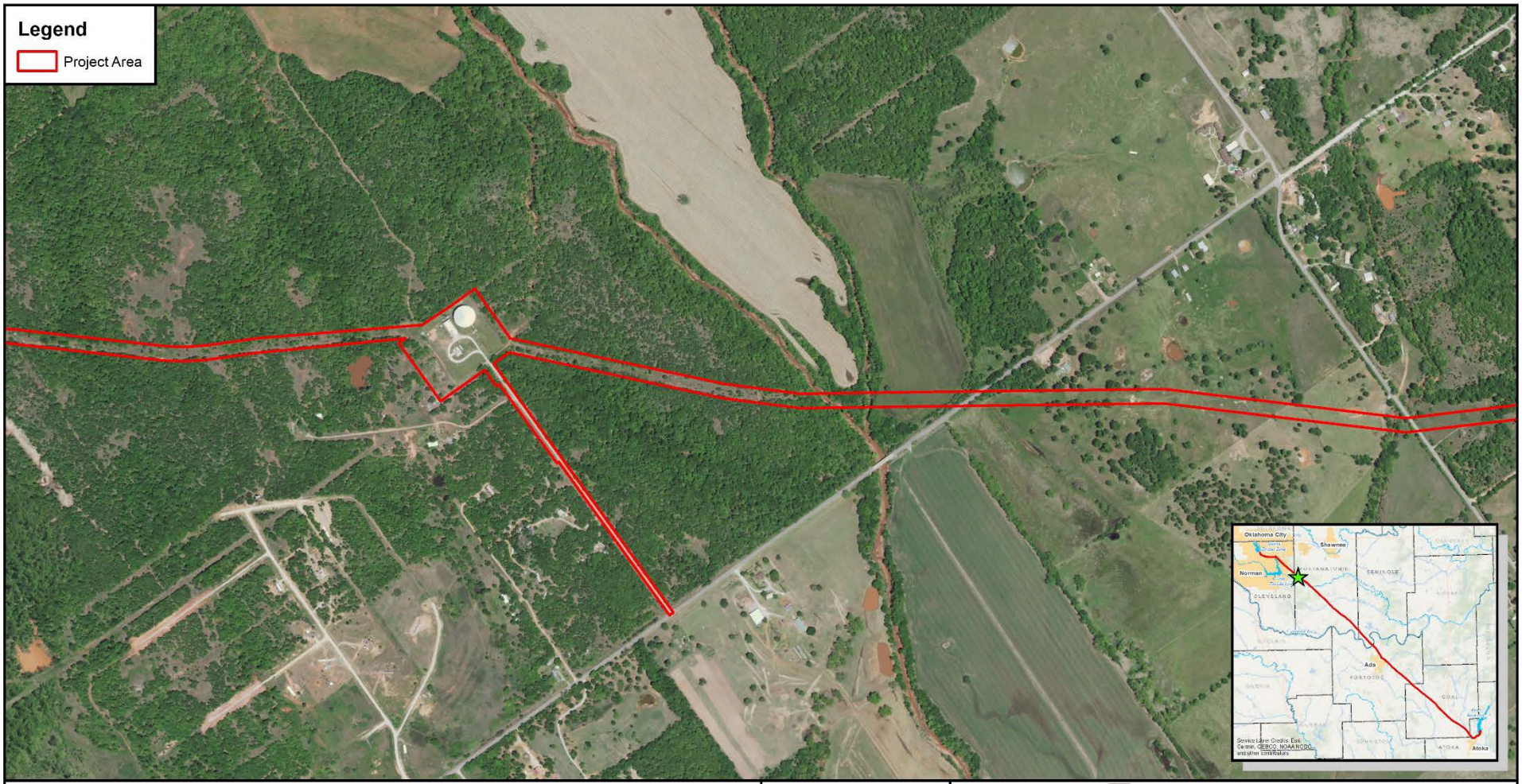
1:8,000

ENERCON

Figure 2.41: Site Map
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 4 & 5, T8N R2E; Sections 32 & 31, T9N R2E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 2.42: Site Map
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 31 & 30, T9N R2E; Sections 25 & 24, T9N R1E
Pottawatomie and Cleveland Counties, Oklahoma

1:8,000

ENERCON

Figure 2.43: Site Map

Source: 2017 USDA NAIP
Pottawatomie and Cleveland Counties, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 24, 23, 14 & 15, T9N R1E
Cleveland County, Oklahoma

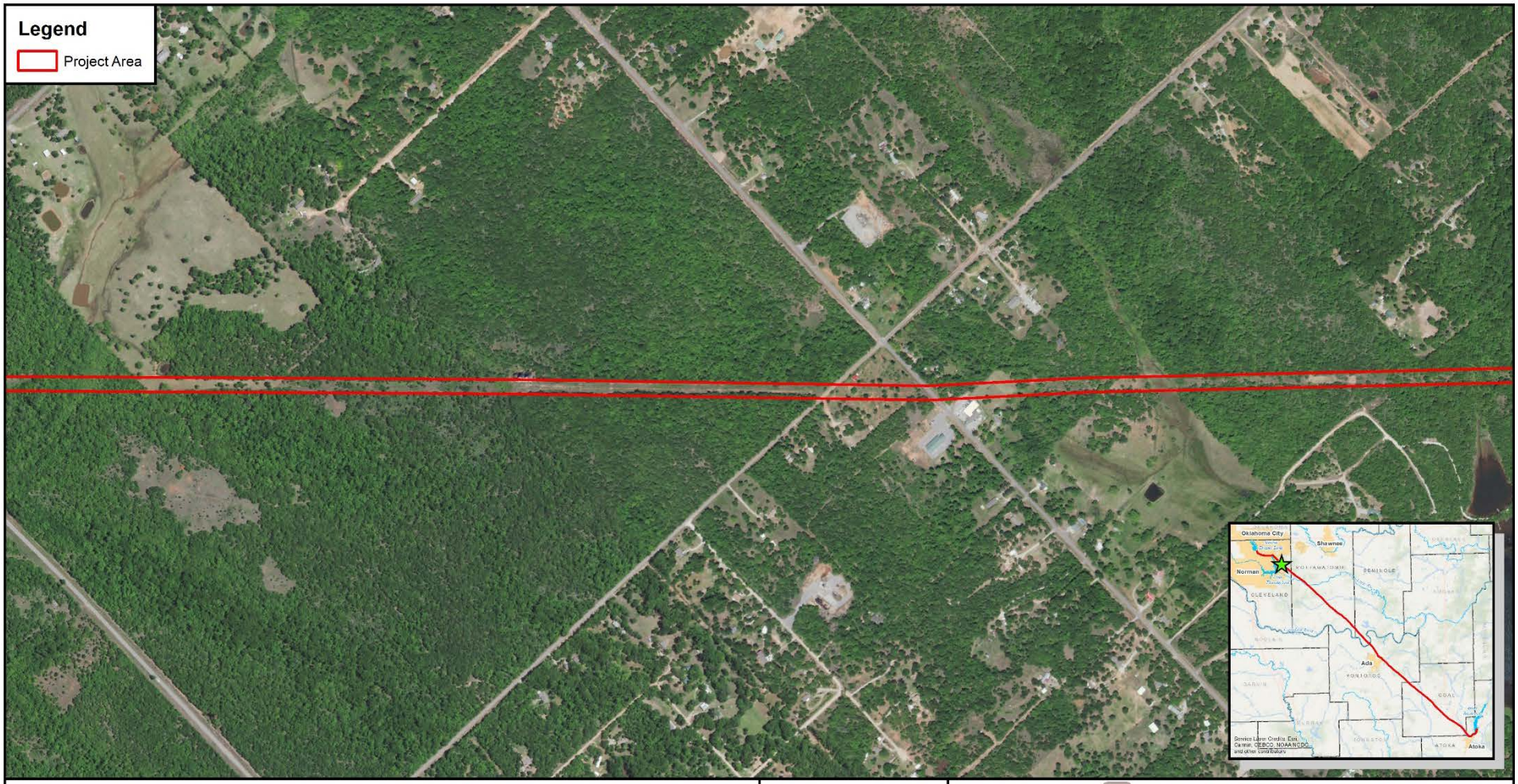
1:8,000

ENERCON

Figure 2.44: Site Map
Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Sections 15, 16 & 9, T9N R1E
Cleveland County, Oklahoma

1:8,000

ENERCON

Figure 2.45: Site Map
Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 9, 8, 5 & 6, T9N R1E; Section 31, T10N R1E
Cleveland County, Oklahoma

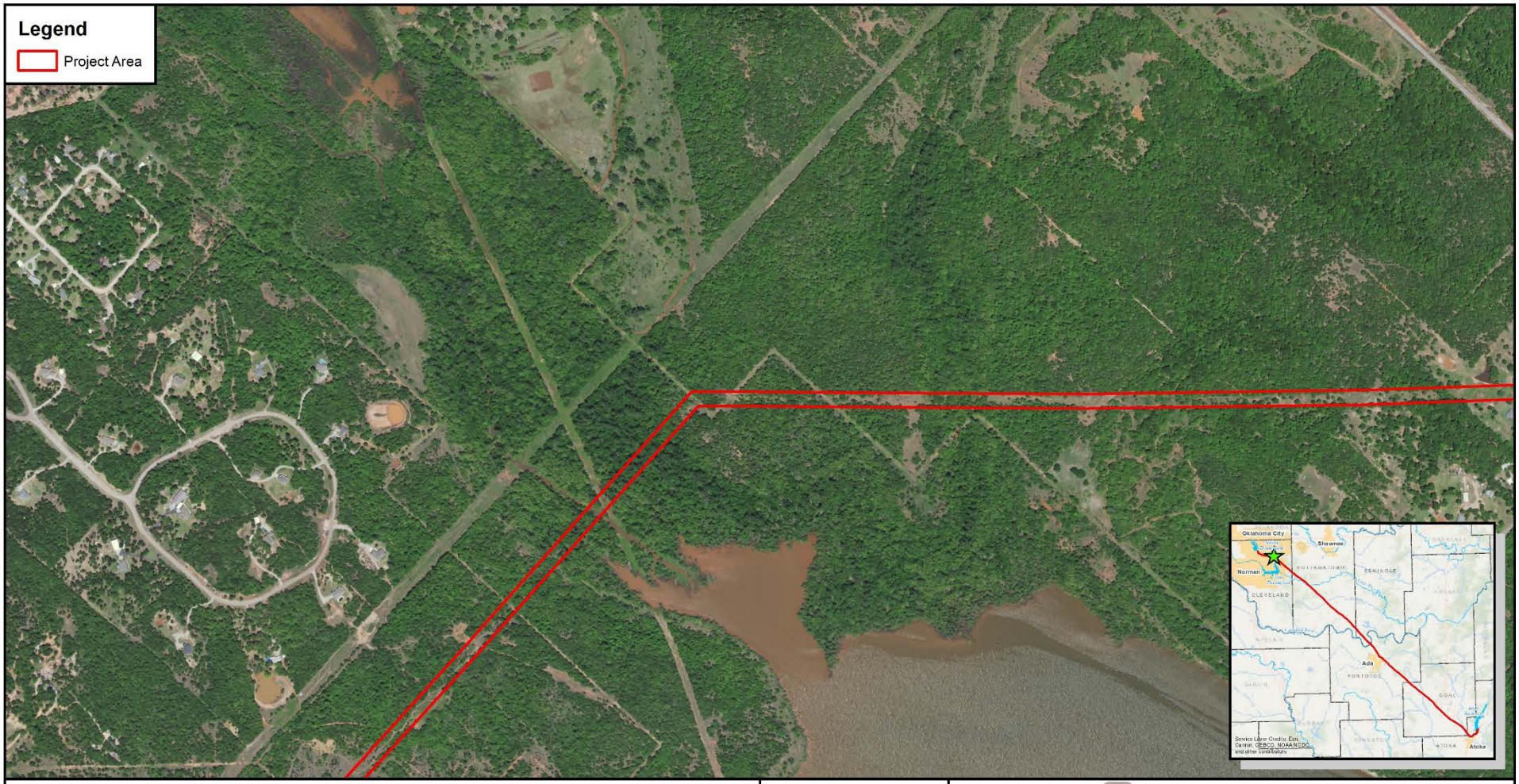
1:8,000

ENERCON

Figure 2.46: Site Map
Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Section 31, T10N R1E; Section 36, T10N R1W
Cleveland County, Oklahoma

1:8,000

ENERCON

Figure 2.47: Site Map
Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 36, 35 & 34, T10N R1W
Cleveland County, Oklahoma

N
W E
S

1:8,000

ENERCON

Figure 2.48: Site Map
Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 34, 33, 28 & 29, T10N R1W
Cleveland County, Oklahoma

1:8,000

ENERCON

Figure 2.49: Site Map
Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 29, 30 & 19, T10N R1W
Cleveland County, Oklahoma

1:8,000

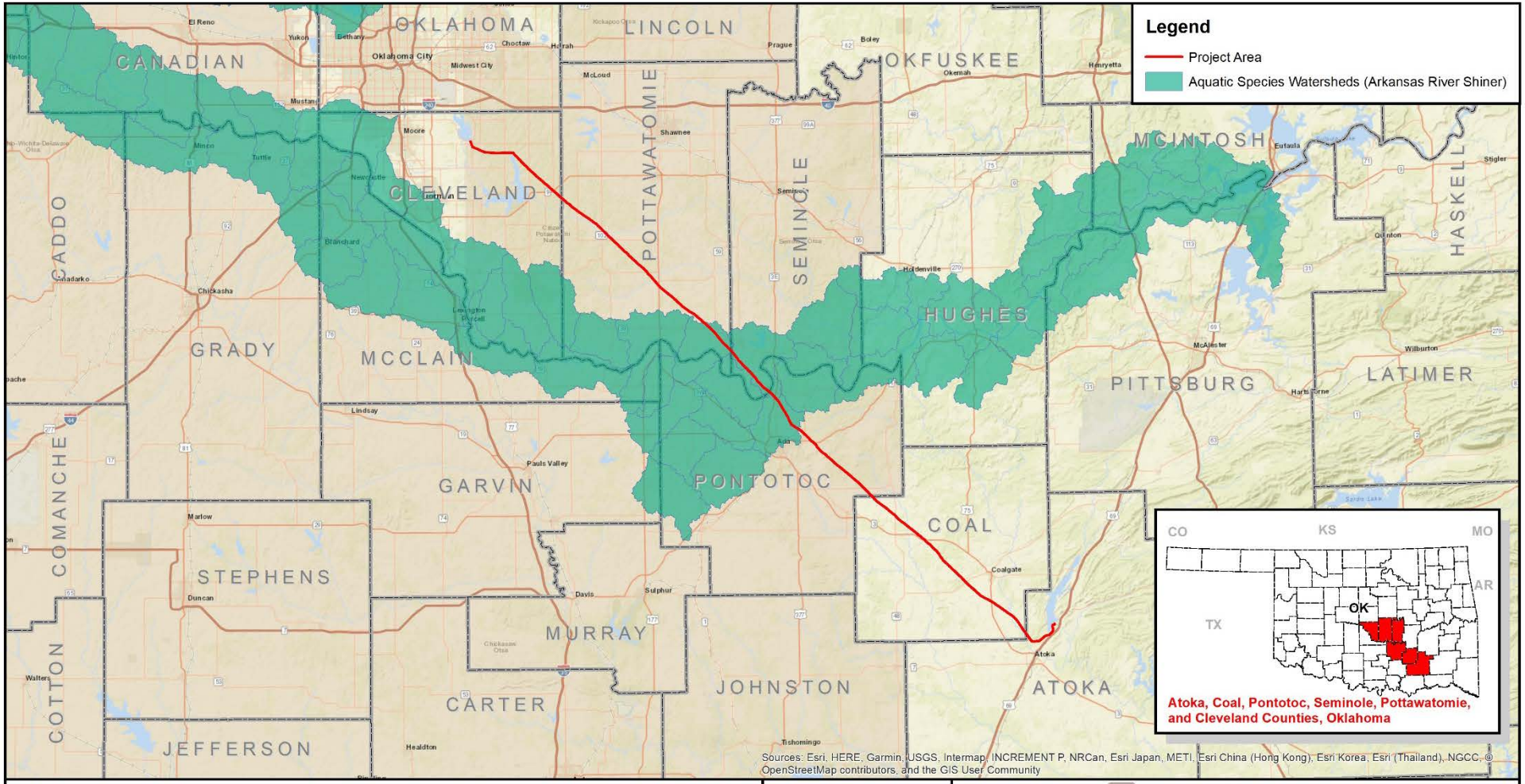
ENERCON

Figure 2.50: Site Map

Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: F. Woolridge; October 15, 2018

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Atoka, Coal, Pontotoc, Seminole, Pottawatomie, and Cleveland Counties, Oklahoma

N
W E
S

1:750,000

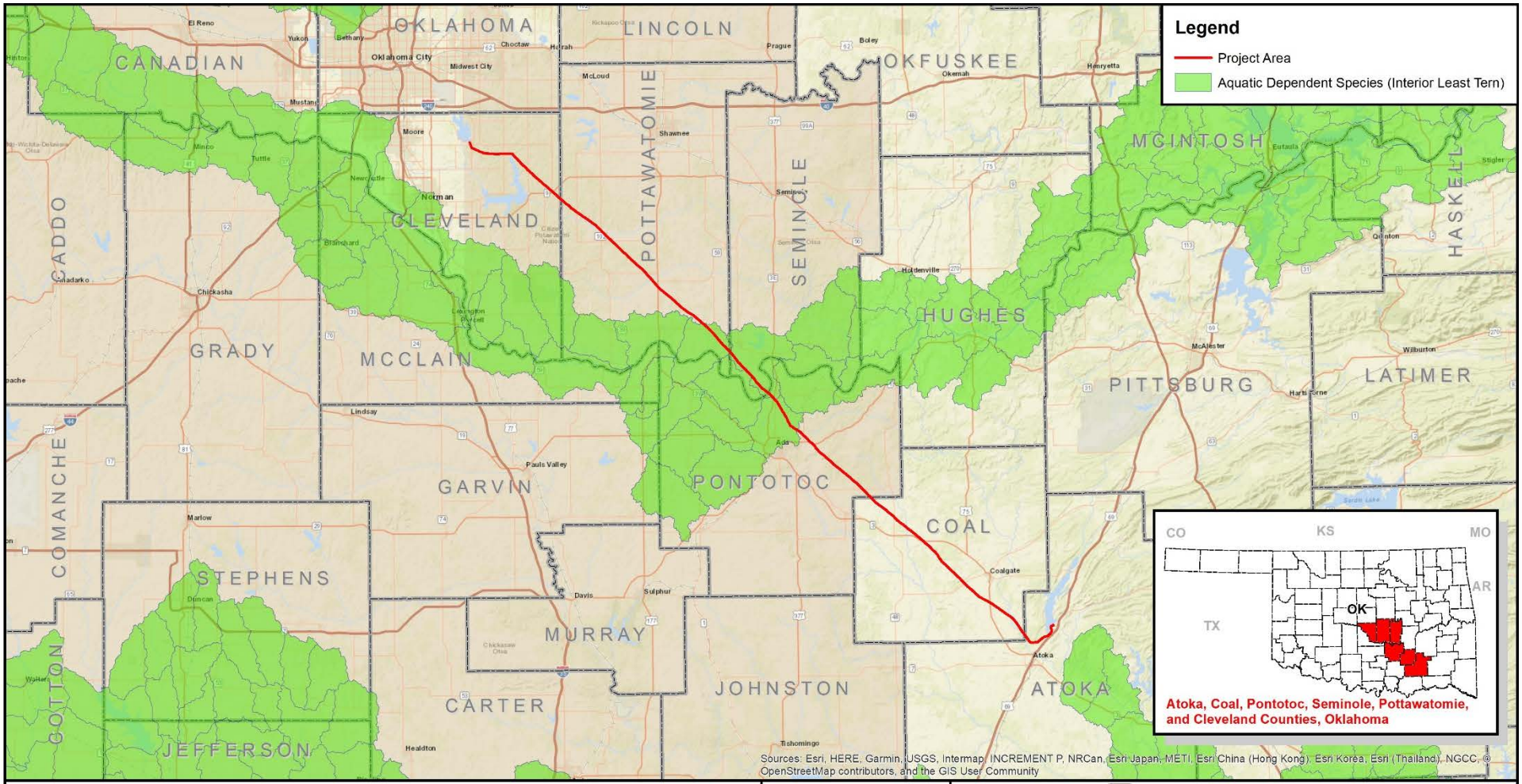
ENERCON

Figure 3.1: Federally-Listed Aquatic Species Watersheds Map

Source: USFWS - Oklahoma Ecological Services Field Office, Federally-Listed Aquatic Species Watersheds of Oklahoma (PDF); ESRI World Street Basemap

Prepared by: F. Woolridge; October 15, 2018

0 10 20 40 Miles



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Atoka, Coal, Pontotoc, Seminole, Pottawatomie, and Cleveland Counties, Oklahoma

N
W E
S

1:750,000

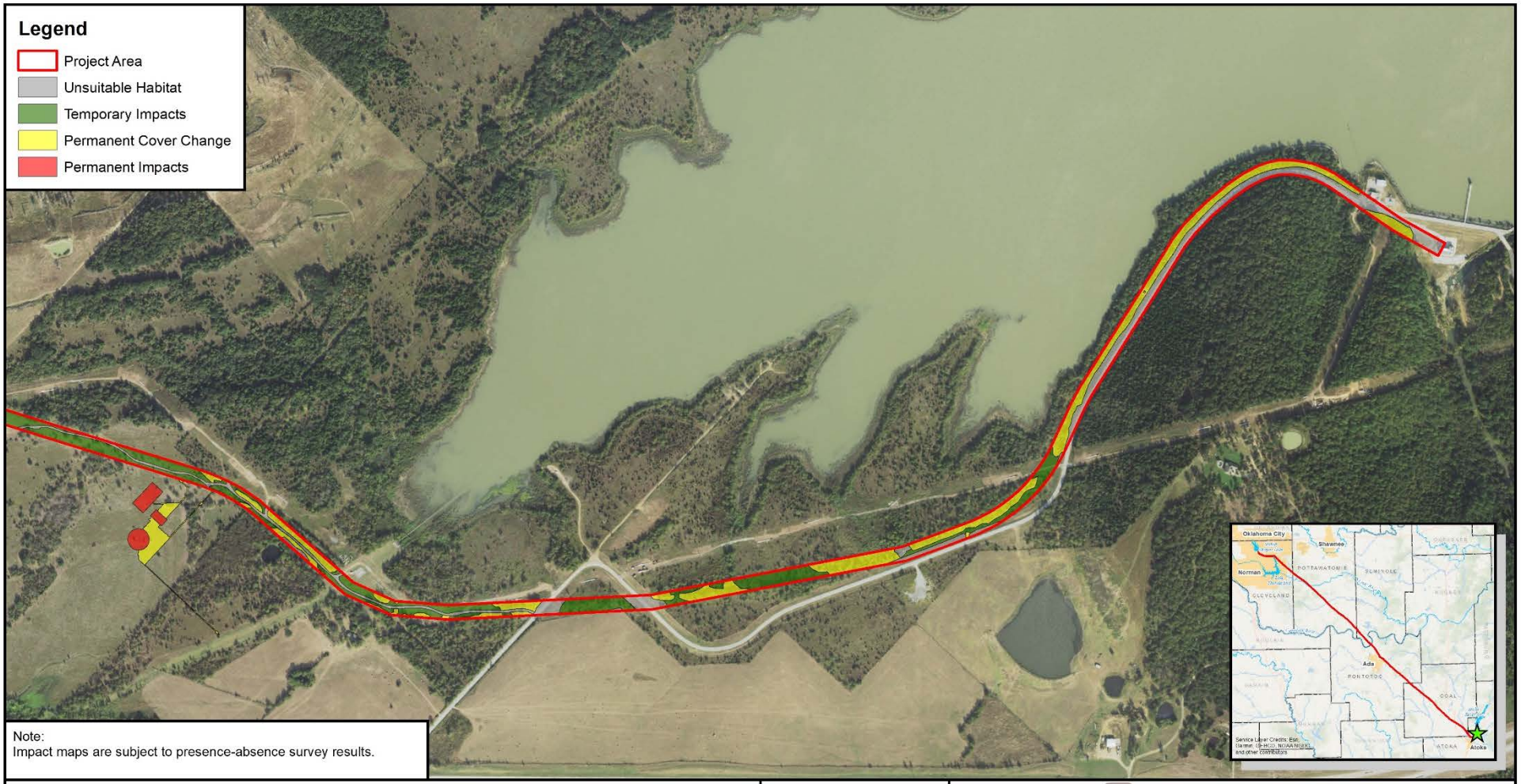
ENERCON

Figure 3.2: Federally-Listed Aquatic Dependent Species Watersheds Map

Source: USFWS - Oklahoma Ecological Services Field Office, Federally-Listed Aquatic Dependent Species Watersheds of Oklahoma (PDF); ESRI World Street Basemap

Prepared by: F. Woolridge; February 7, 2019

Miles
0 10 20 40



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 30 & 31, T1S R12E; Section 36, T1S R11E
Atoka County, Oklahoma

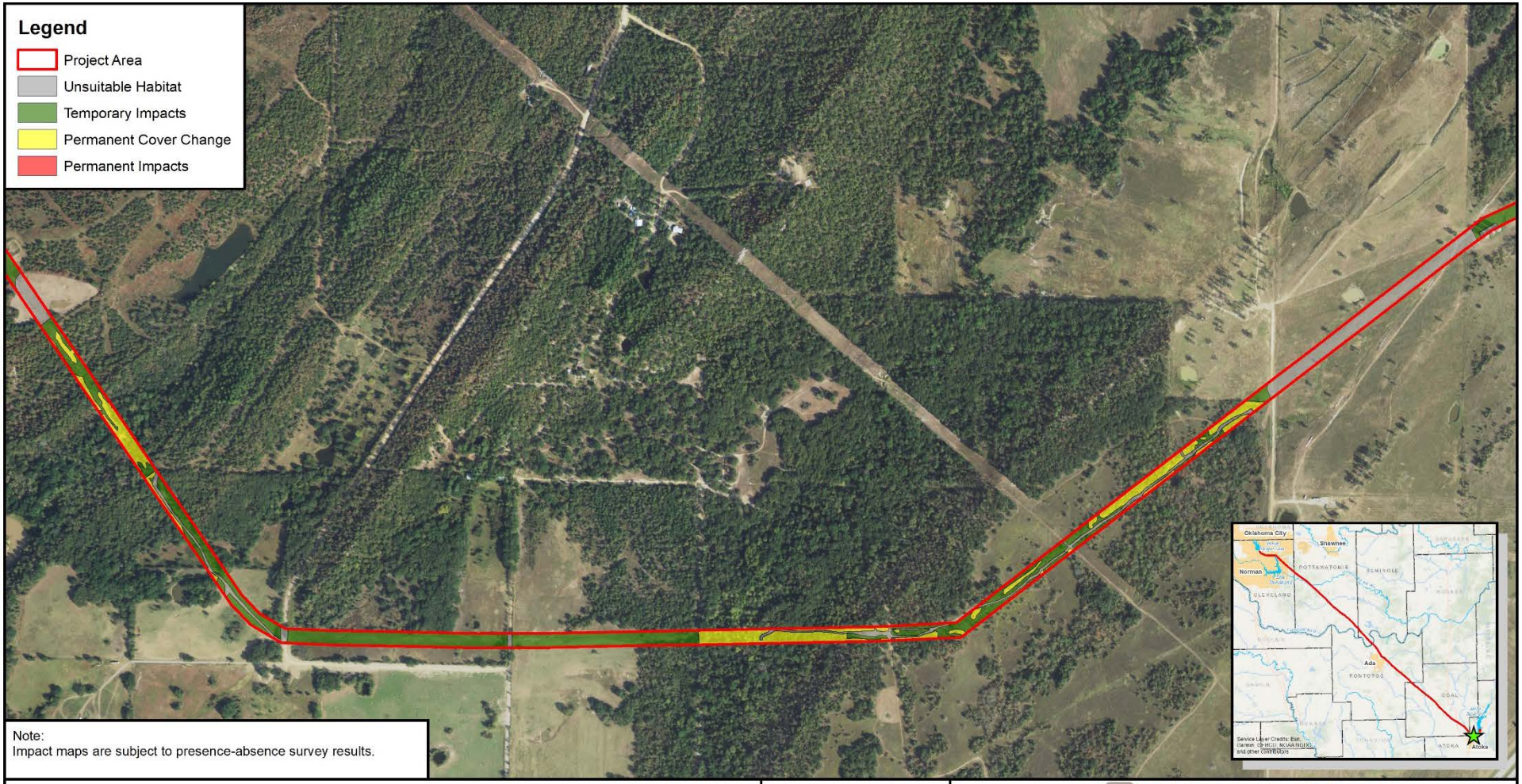
1:8,000

ENERCON

Figure 4.1: ABB Habitat Impacts
Source: 2017 USDA NAIP
Atoka County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 36, 35 & 34, T1S R11E; Sections 2 & 3, T2S R11E
Atoka County, Oklahoma

N
W E
S

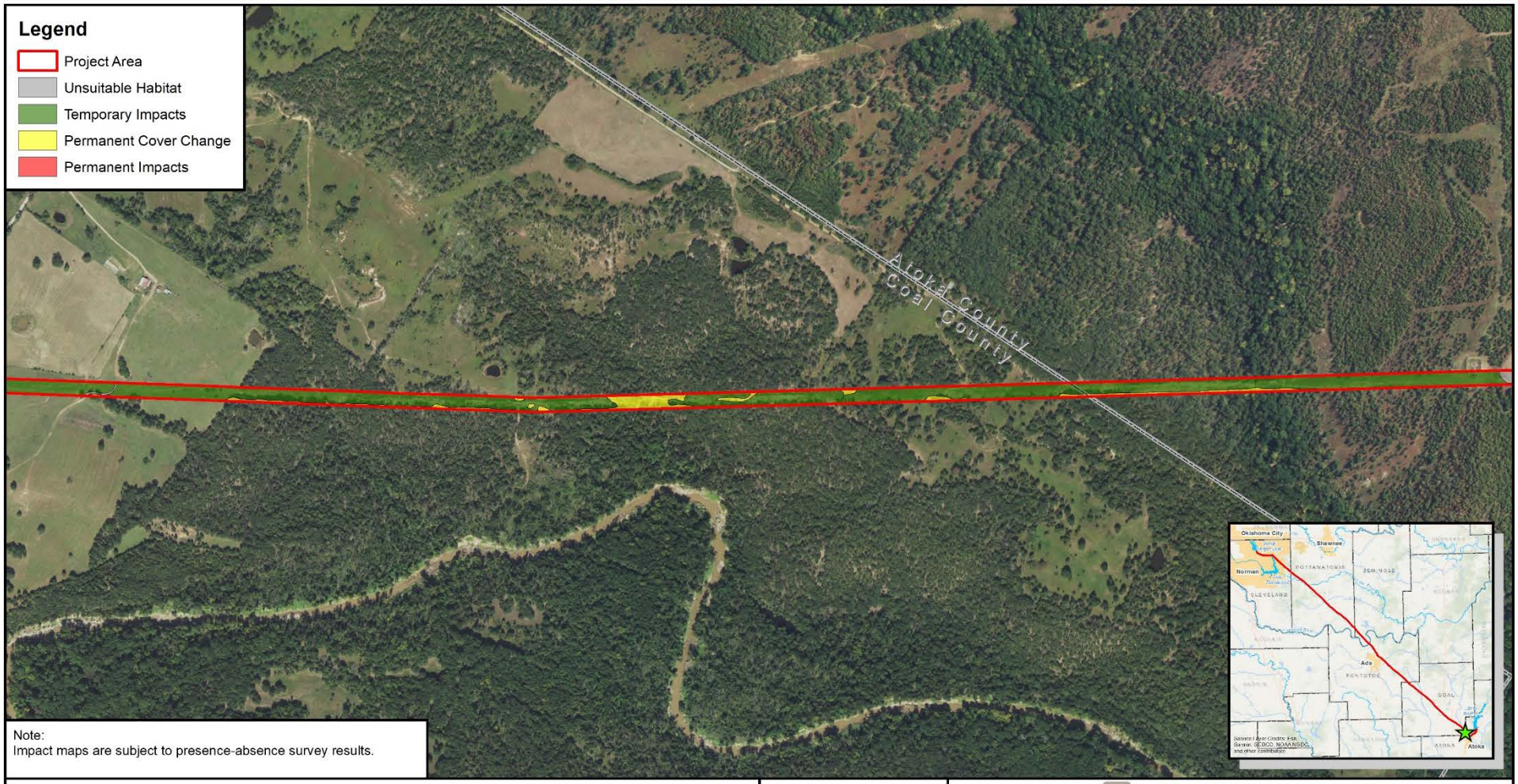
1:8,000

ENERCON

Figure 4.2: ABB Habitat Impacts
Source: 2017 USDA NAIP
Atoka County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 34, 33 & 28, T1S R11E
Atoka and Coal Counties, Oklahoma

1:8,000

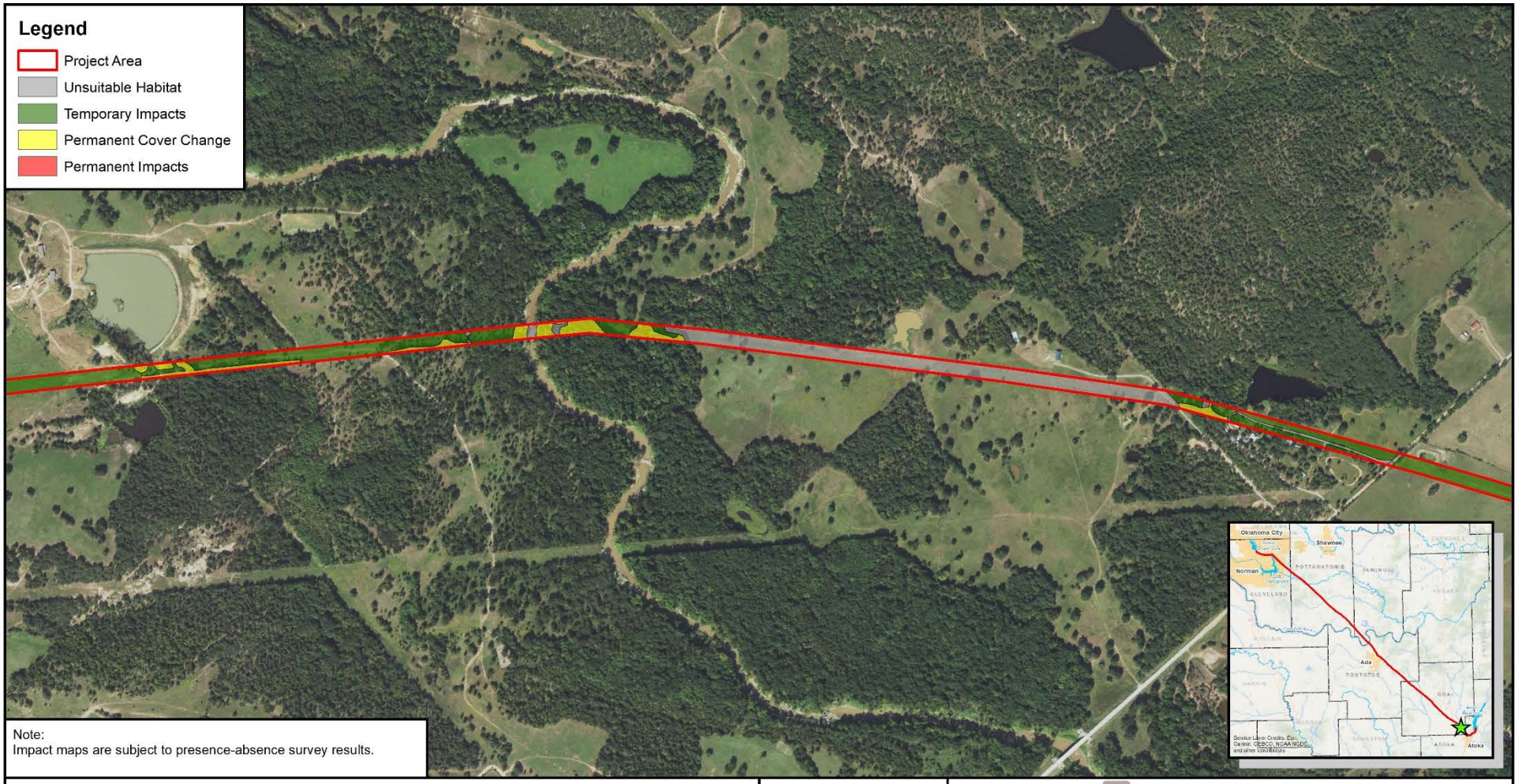
ENERCON

Figure 4.3: ABB Habitat Impacts

Source: 2017 USDA NAIP
Atoka and Coal Counties, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Note:
Impact maps are subject to presence-absence survey results.

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 28, 21, 20, 17 & 18, T1S R11E
Coal County, Oklahoma

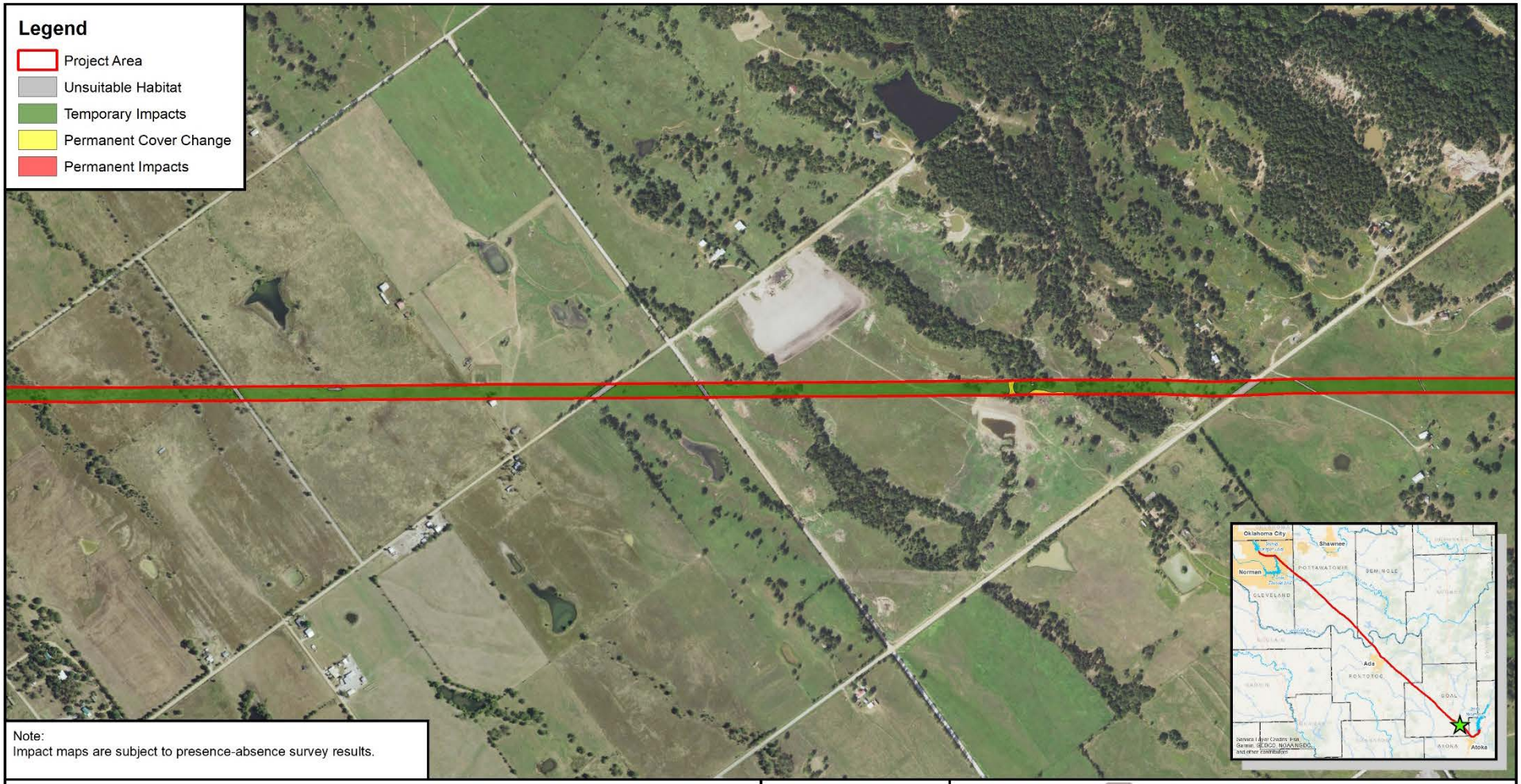
1:8,000

ENERCON

Figure 4.4: ABB Habitat Impacts
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Section 18, T1S R11E; Sections 13 & 12, T1S R10E
Coal County, Oklahoma

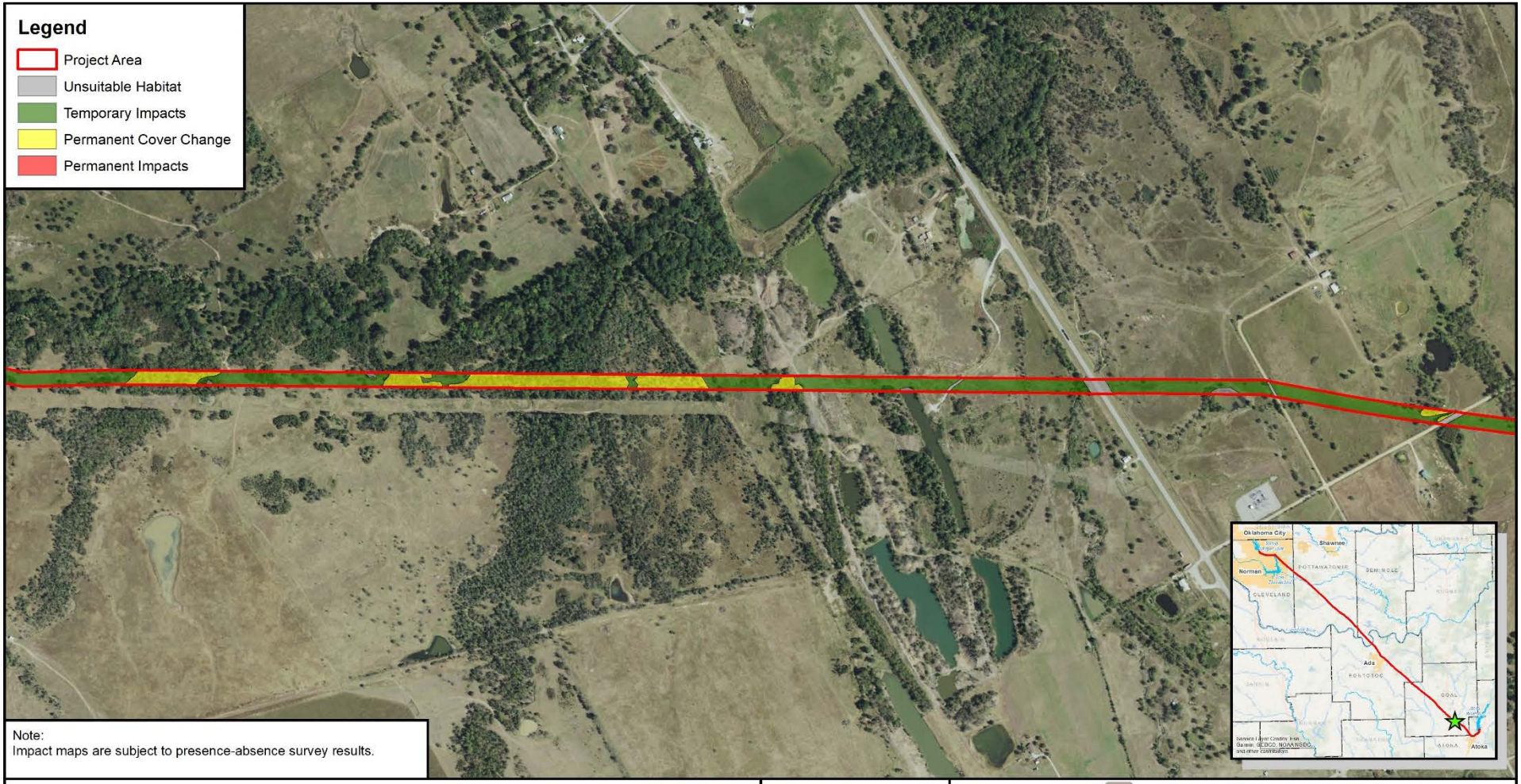
1:8,000

ENERCON

Figure 4.5: ABB Habitat Impacts
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 12, 11, 2 & 3, T1S R10E
Coal County, Oklahoma

1:8,000

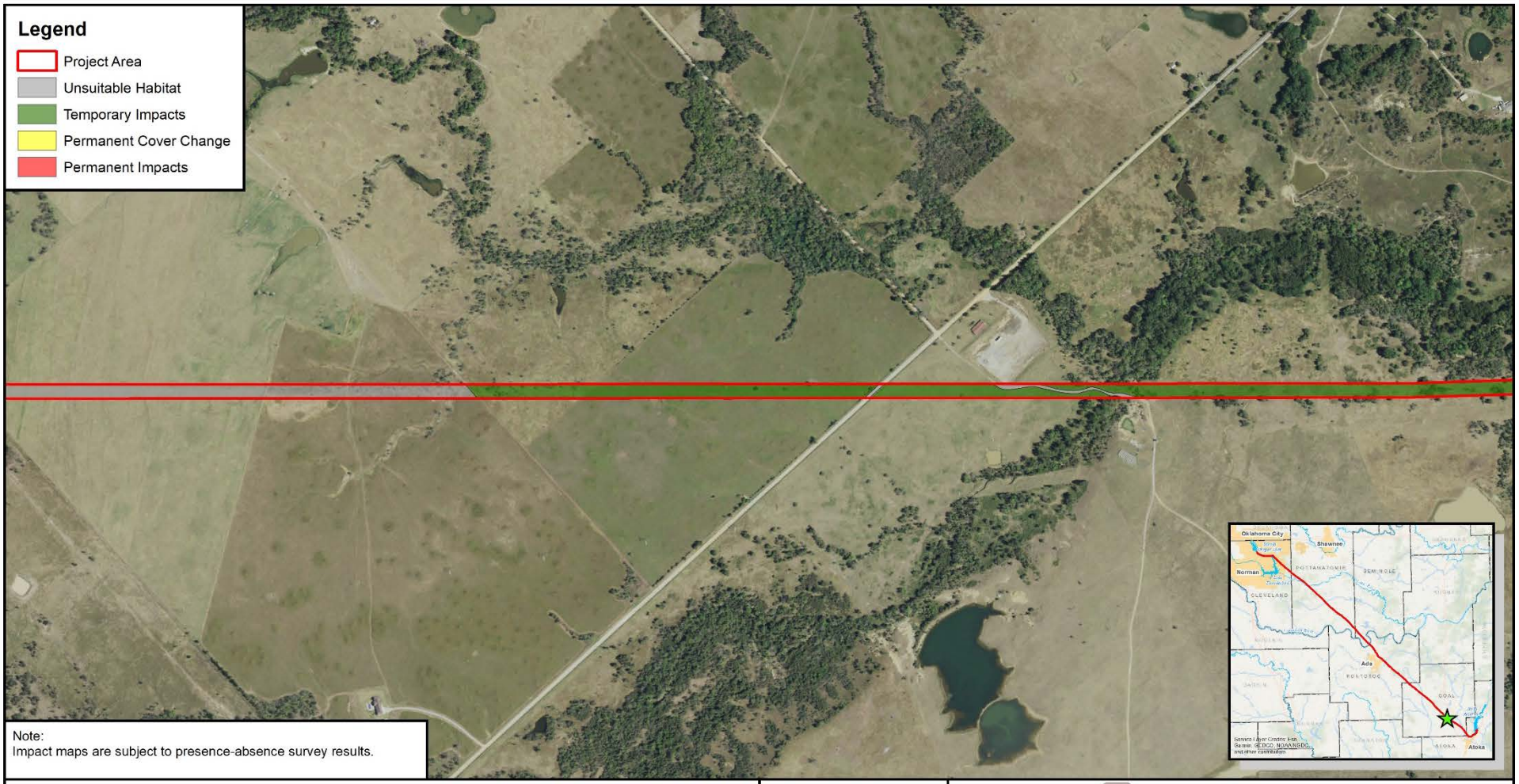
ENERCON

Figure 4.6: ABB Habitat Impacts

Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 3 & 4, T1S R10E; Section 33, T1N R10E
Coal County, Oklahoma

1:8,000

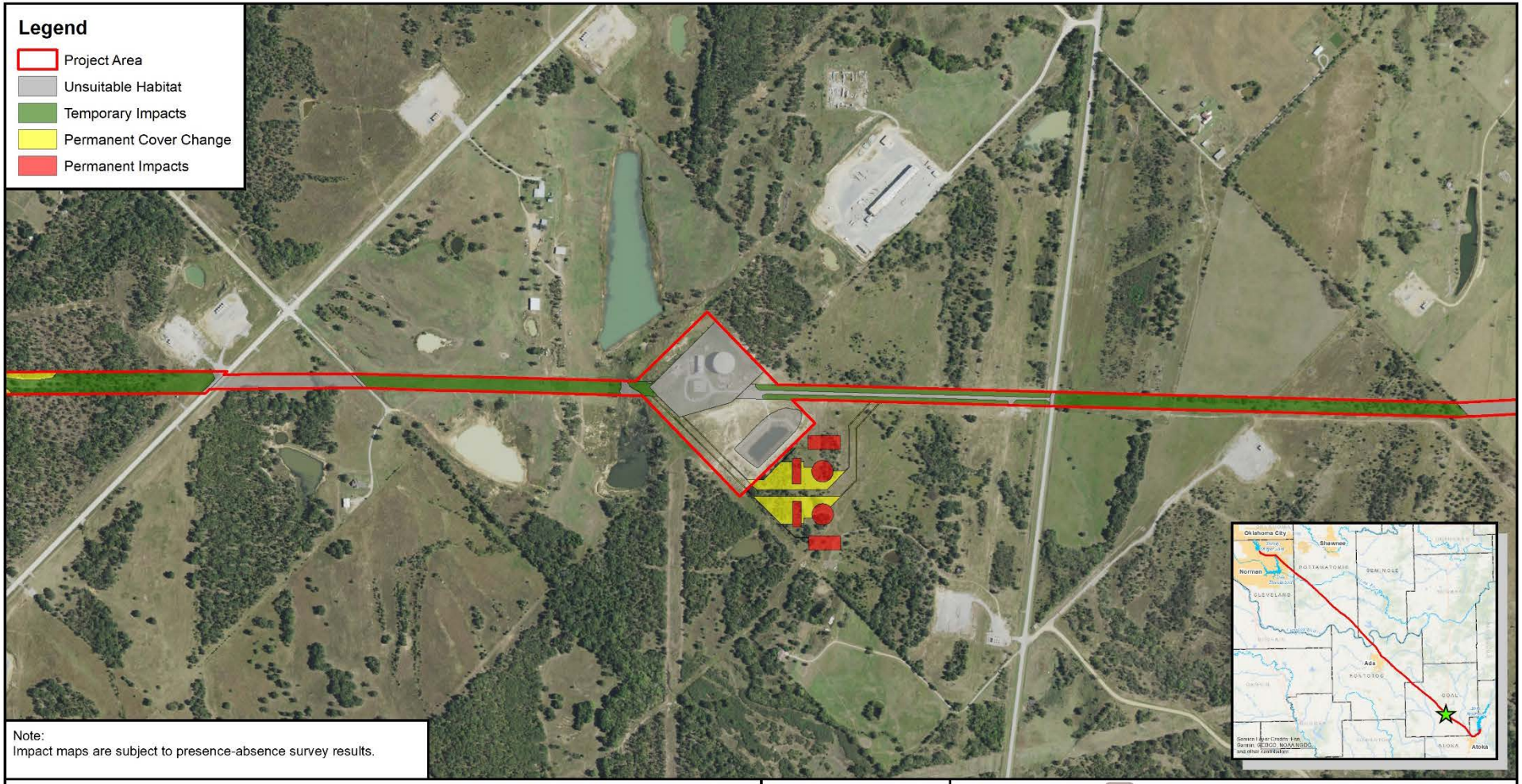
ENERCON

Figure 4.7: ABB Habitat Impacts

Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 33, 32, 29, 30 & 19, T1N R10E
Coal County, Oklahoma

1:8,000

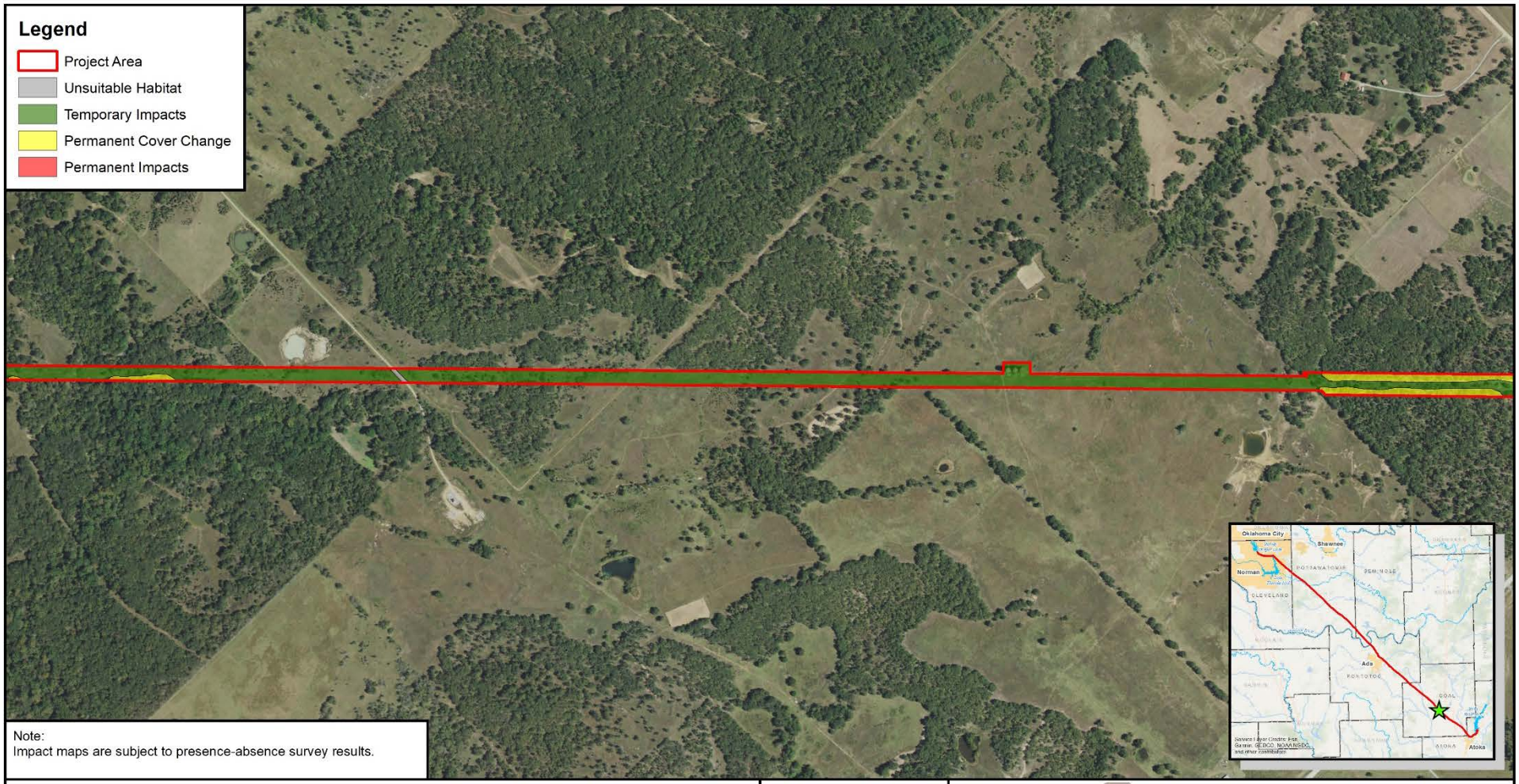
ENERCON

Figure 4.8: ABB Habitat Impacts

Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Section 19, T1N R10E; Sections 24 & 13, T1N R9E
Coal County, Oklahoma

1:8,000

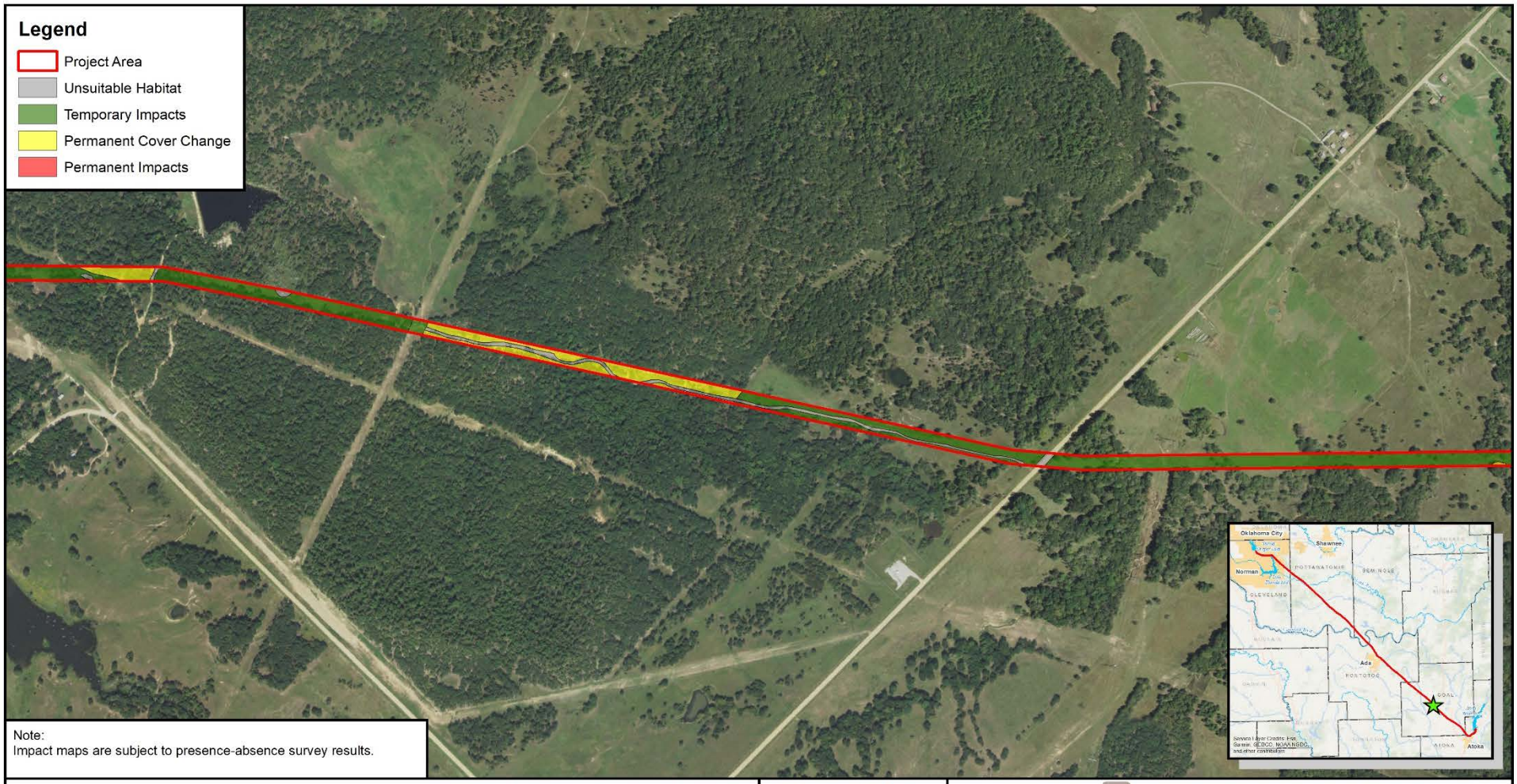
ENERCON

Figure 4.9: ABB Habitat Impacts

Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 13, 14, 11 & 2, T1N R9E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 4.10: ABB Habitat Impacts

Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 2 & 3, T1N R9E; Sections 34 & 33, T2N R9E
Coal County, Oklahoma

1:8,000

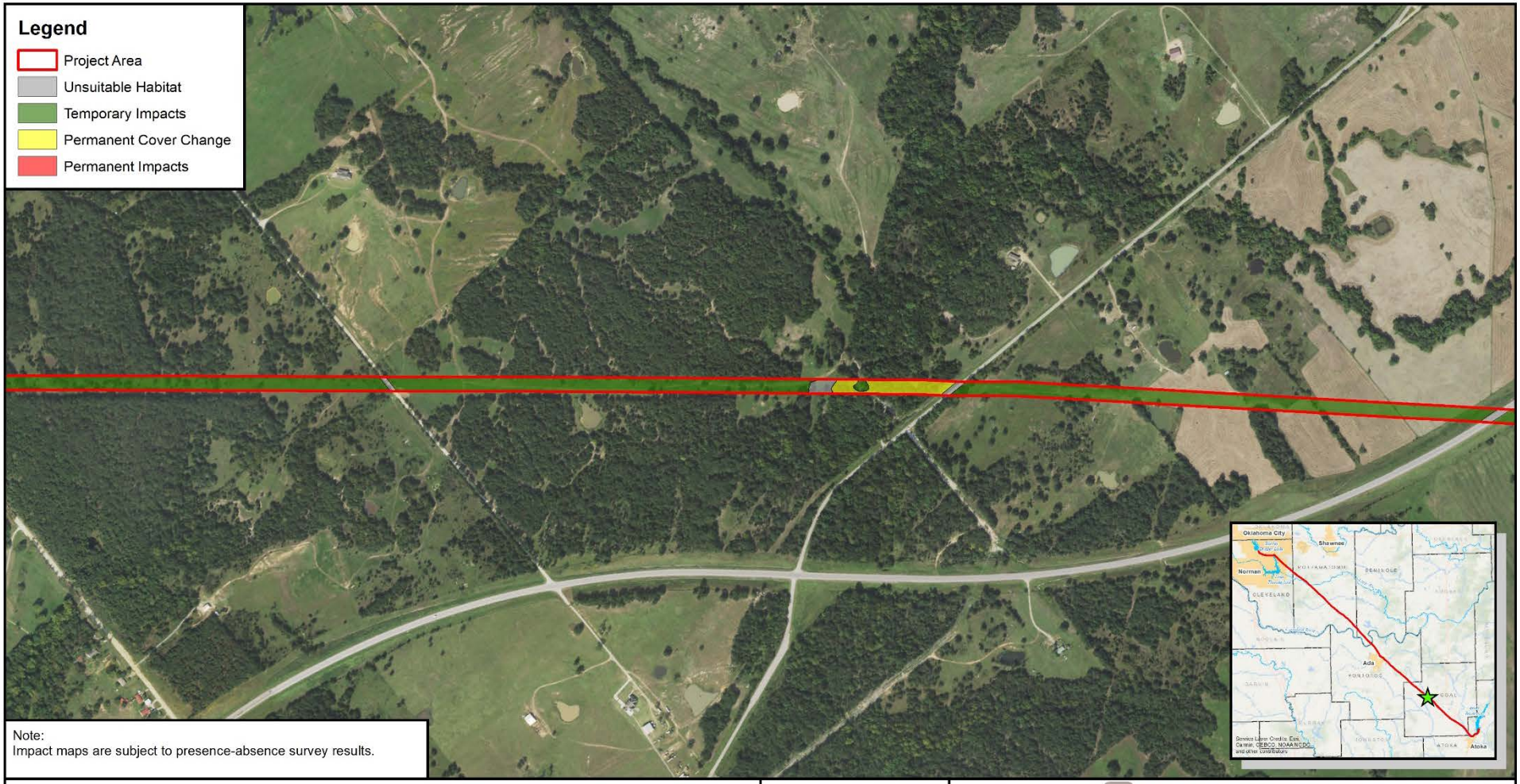
ENERCON

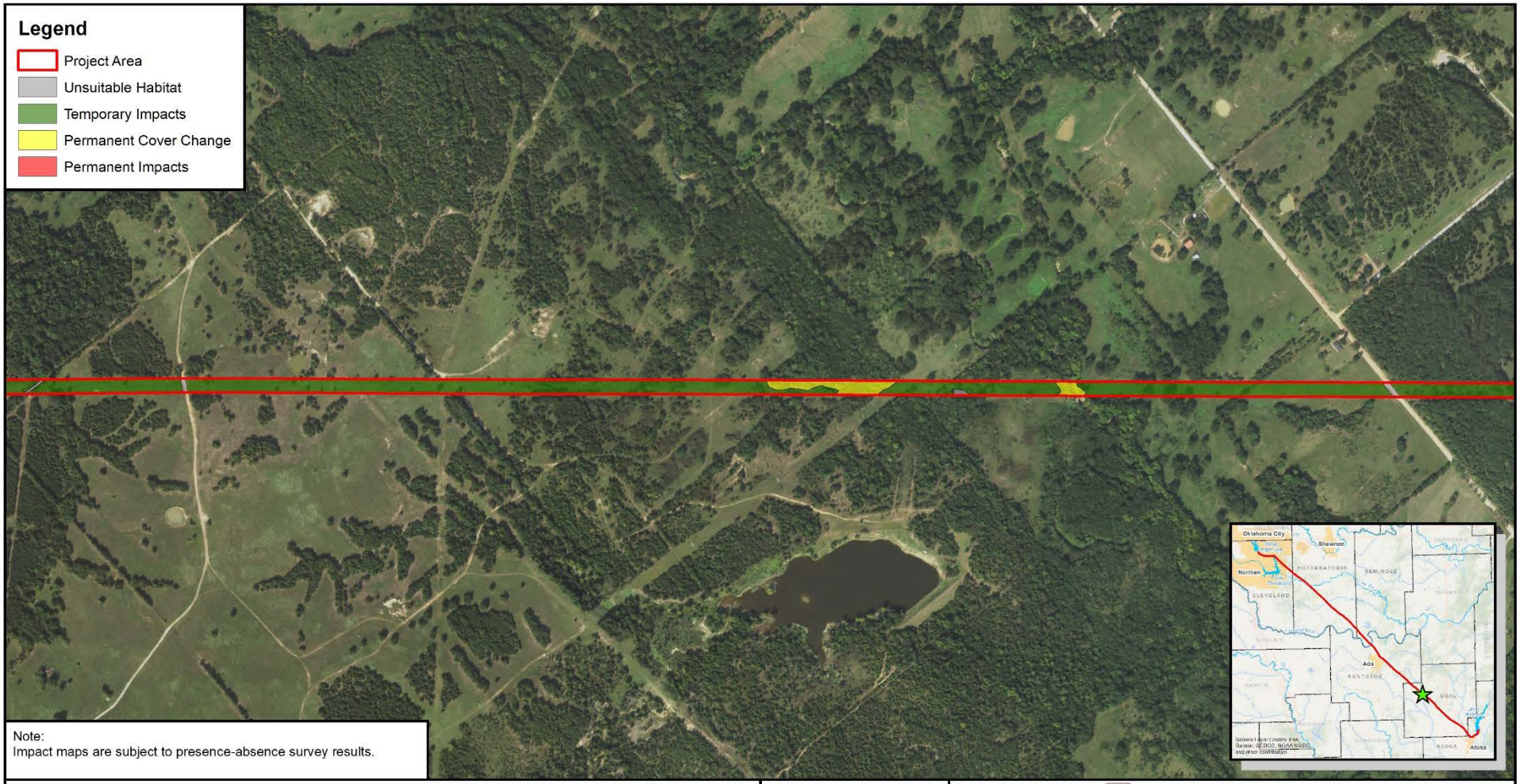
Figure 4.11: ABB Habitat Impacts

Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000


Legend
Project Area
Unsuitable Habitat
Temporary Impacts
Permanent Cover Change
Permanent Impacts
Note:
Impact maps are subject to presence-absence survey results.
Oklahoma City
Norman
Shawnee
Ada
Atoka
Prepared for: Oklahoma City Water Utilities Trust
Subject Property:
Atoka Water Pipeline Project
Sections 33, 28 & 29, T2N R9E
Coal County, Oklahoma
1:8,000
ENERCON
Figure 4.12: ABB Habitat Impacts
Source: 2017 USDA NAIP
Coal County, Oklahoma
Prepared by: B Wesbury; May 29, 2020
Feet
0
500
1,000
2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 29, 30 & 19, T2N R9E; Sections 24 & 13, T2N R8E
Coal County, Oklahoma

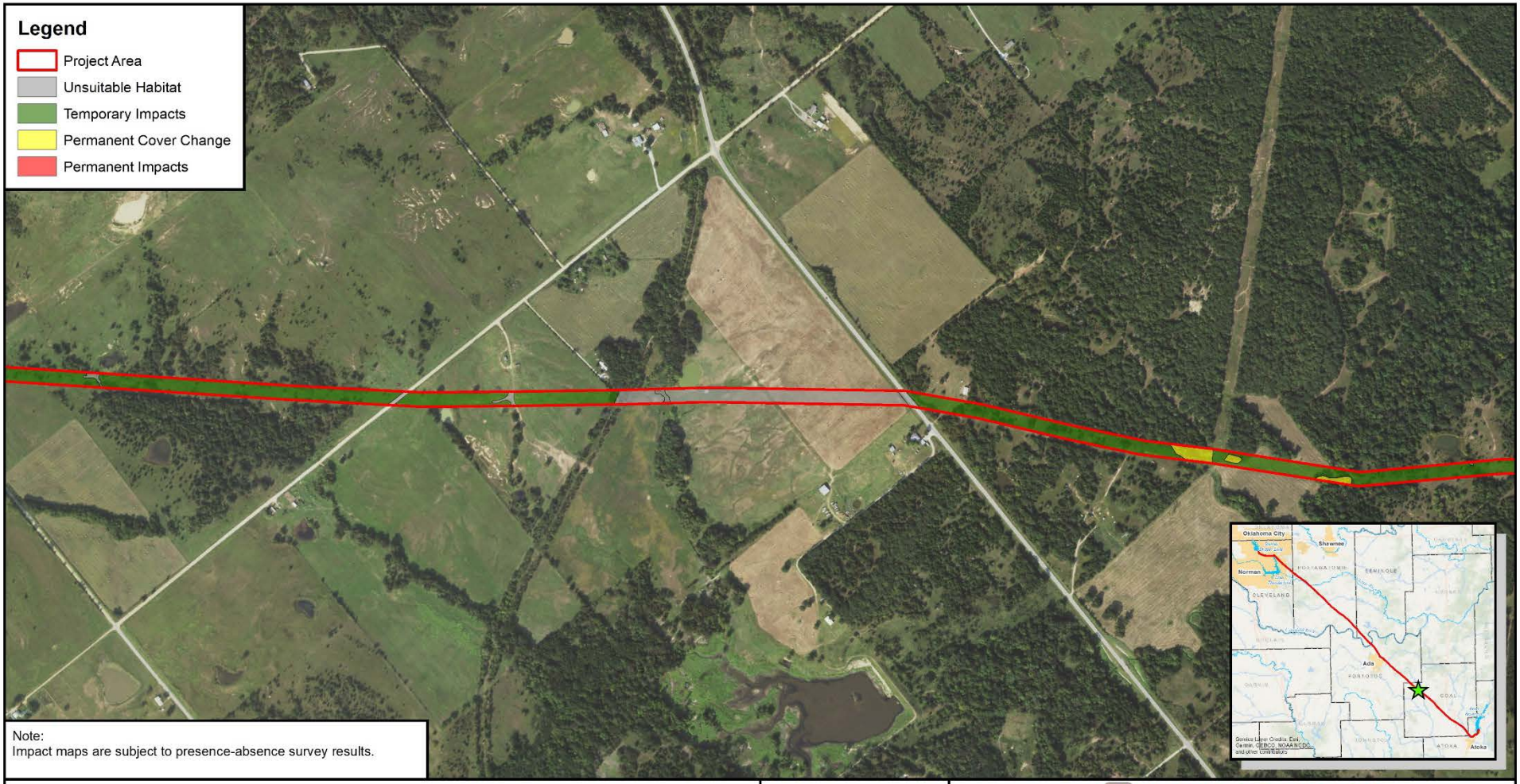
1:8,000

ENERCON

Figure 4.13: ABB Habitat Impacts
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Sections 13, 14 & 11, T2N R8E
Coal County, Oklahoma

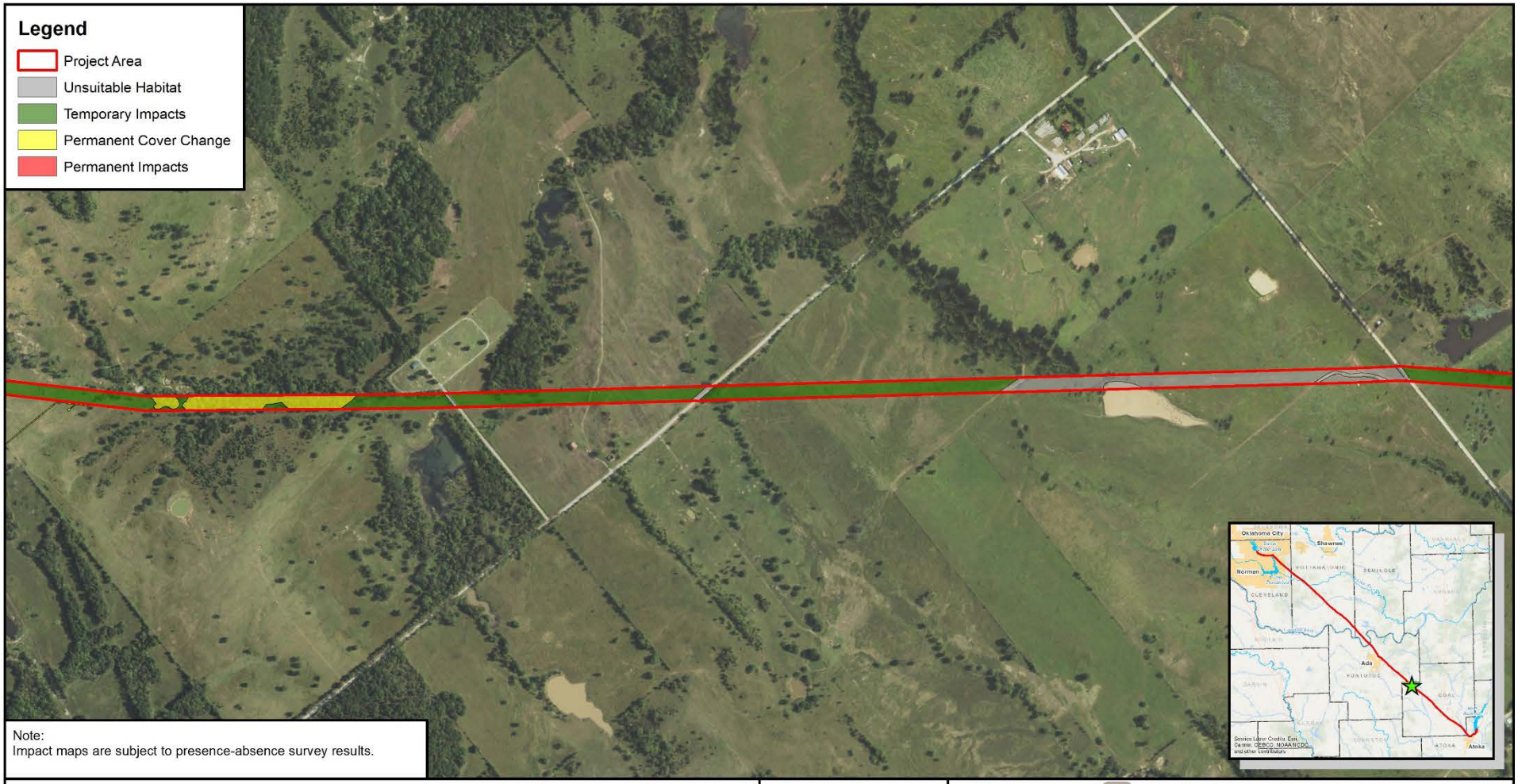
1:8,000

ENERCON

Figure 4.14: ABB Habitat Impacts
Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 11, 10, 3 & 4, T2N R8E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 4.15: ABB Habitat Impacts

Source: 2017 USDA NAIP
Coal County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Section 4, T2N R8E; Sections 33, 32 & 29, T3N R8E
Coal and Pontotoc Counties, Oklahoma

1:8,000

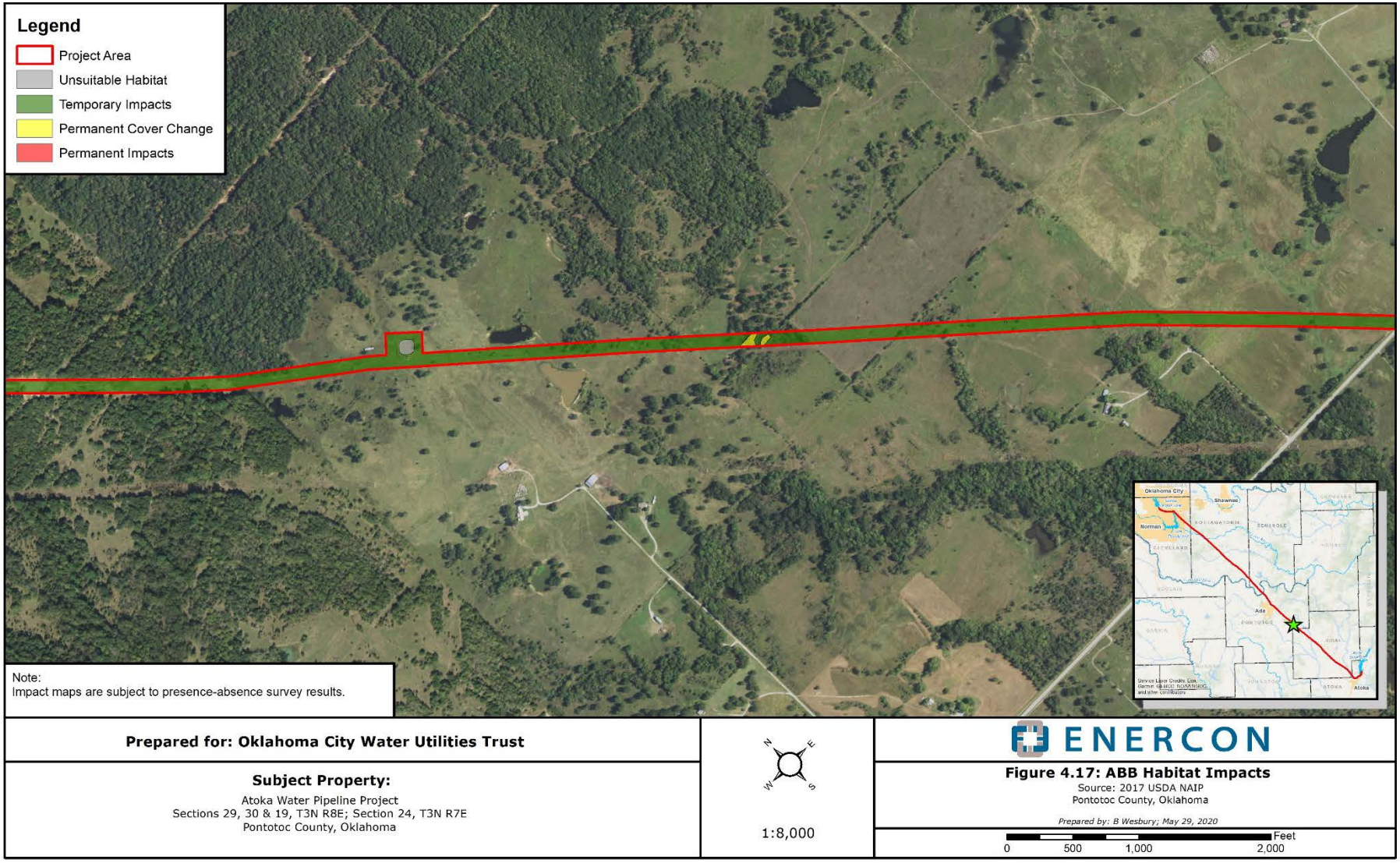
ENERCON

Figure 4.16: ABB Habitat Impacts

Source: 2017 USDA NAIP
Coal and Pontotoc Counties, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 29, 30 & 19, T3N R8E; Section 24, T3N R7E
Pontotoc County, Oklahoma

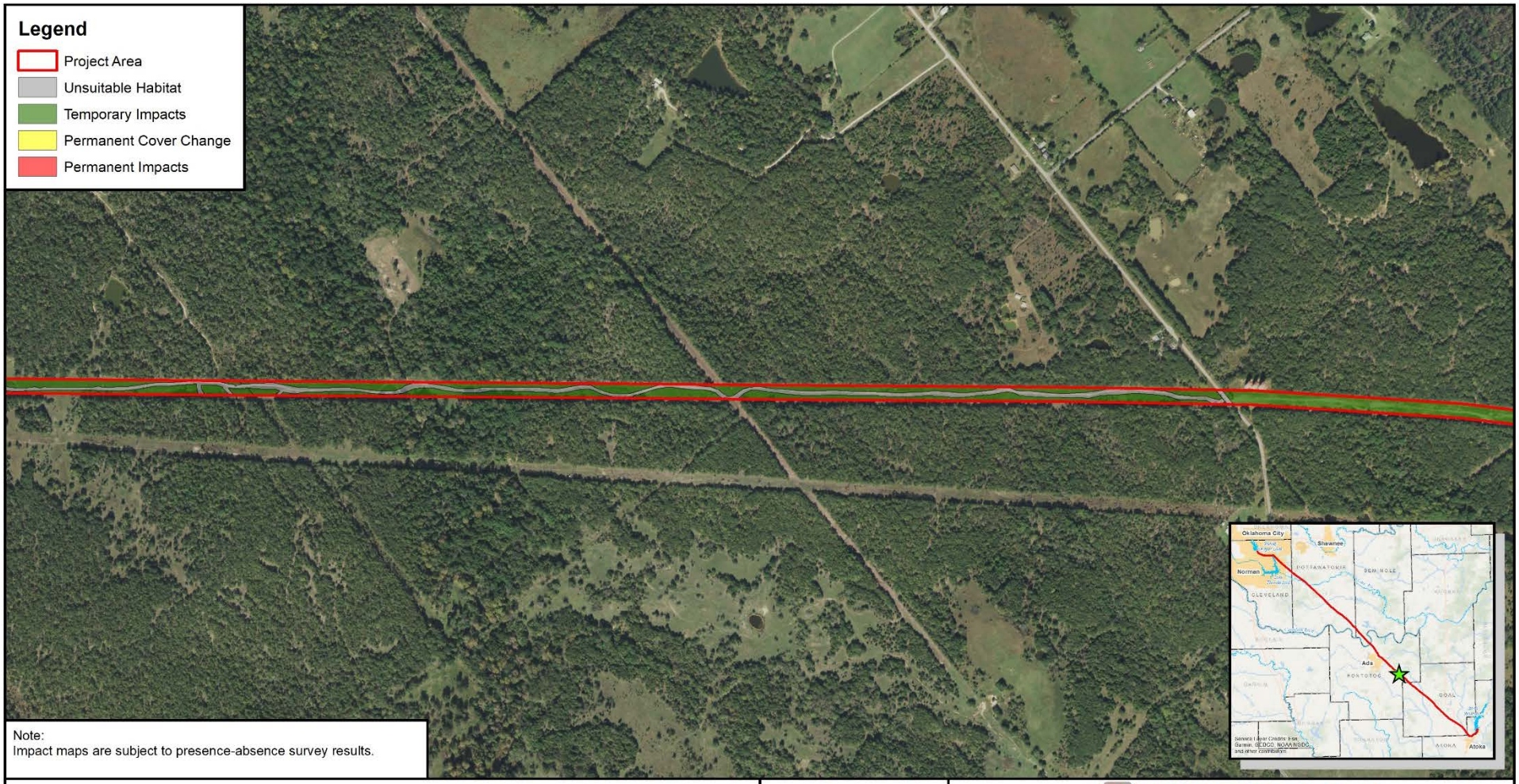
1:8,000

ENERCON

Figure 4.17: ABB Habitat Impacts
Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Sections 24, 13 & 14, T3N R7E
Pontotoc County, Oklahoma

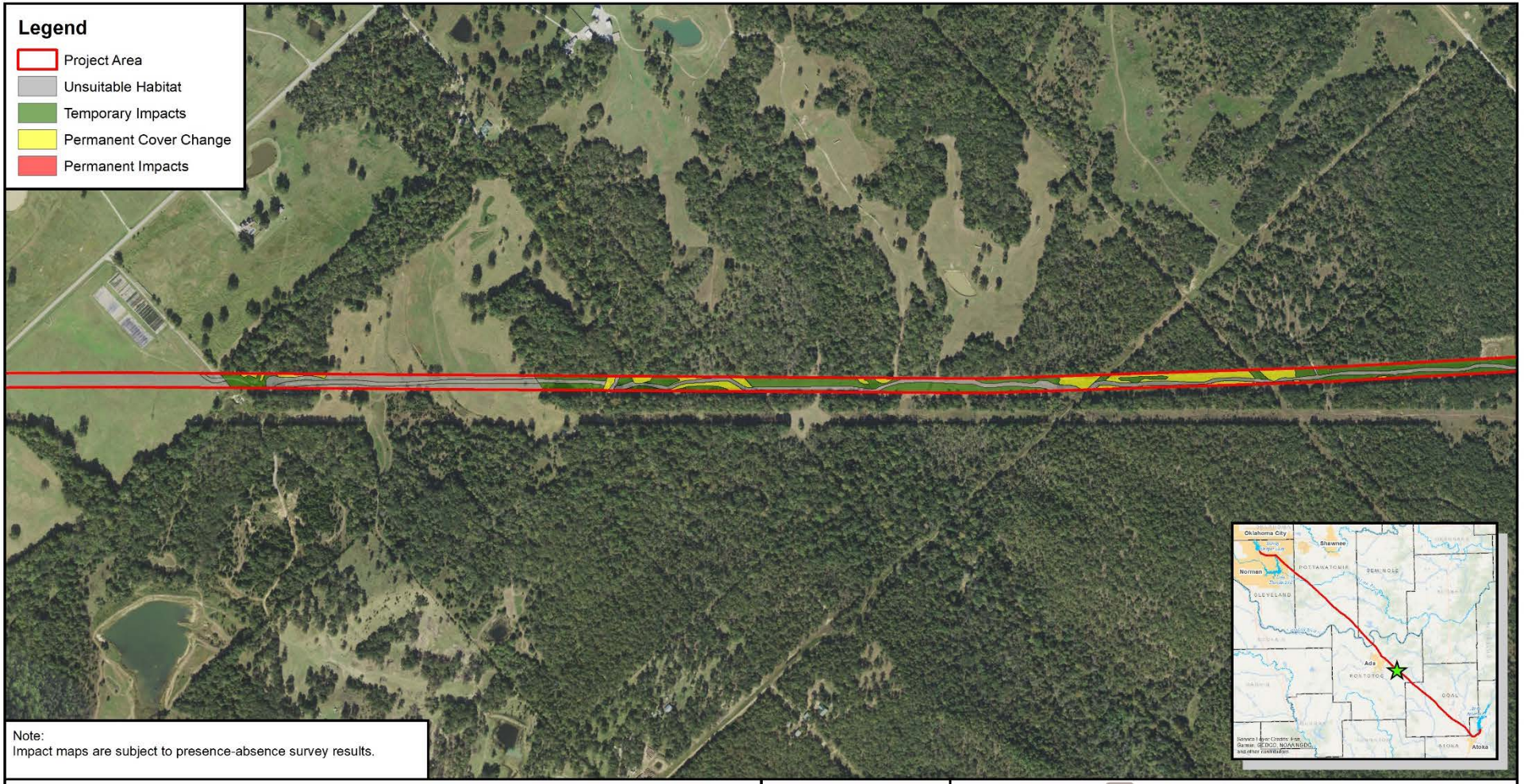
1:8,000

ENERCON

Figure 4.18: ABB Habitat Impacts
Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 14, 15, 10 & 9, T3N R7E
Pontotoc County, Oklahoma

1:8,000

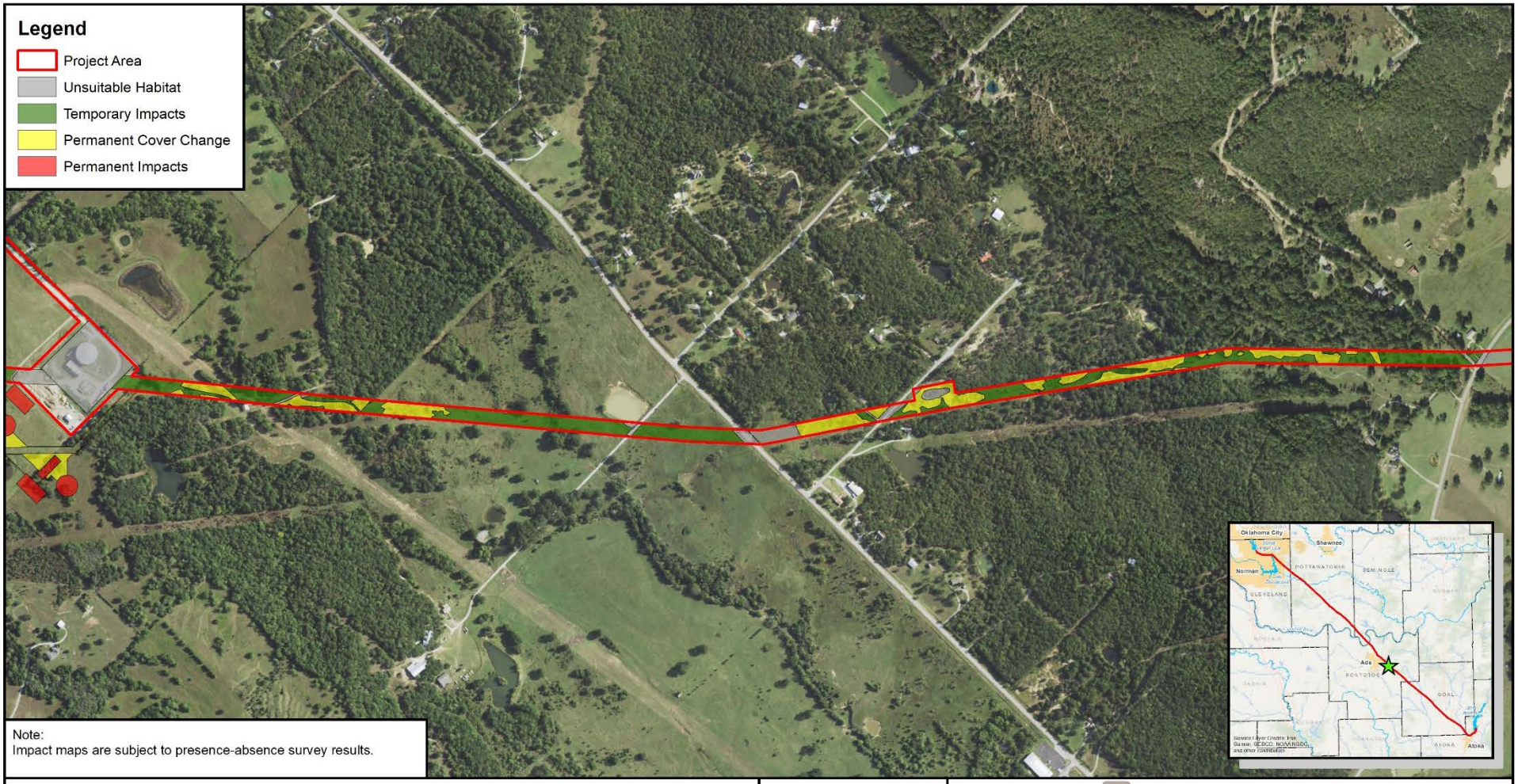
ENERCON

Figure 4.19: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 9, 4 & 5, T3N R7E; Section 32, T4N R7E
Pontotoc County, Oklahoma

1:8,000

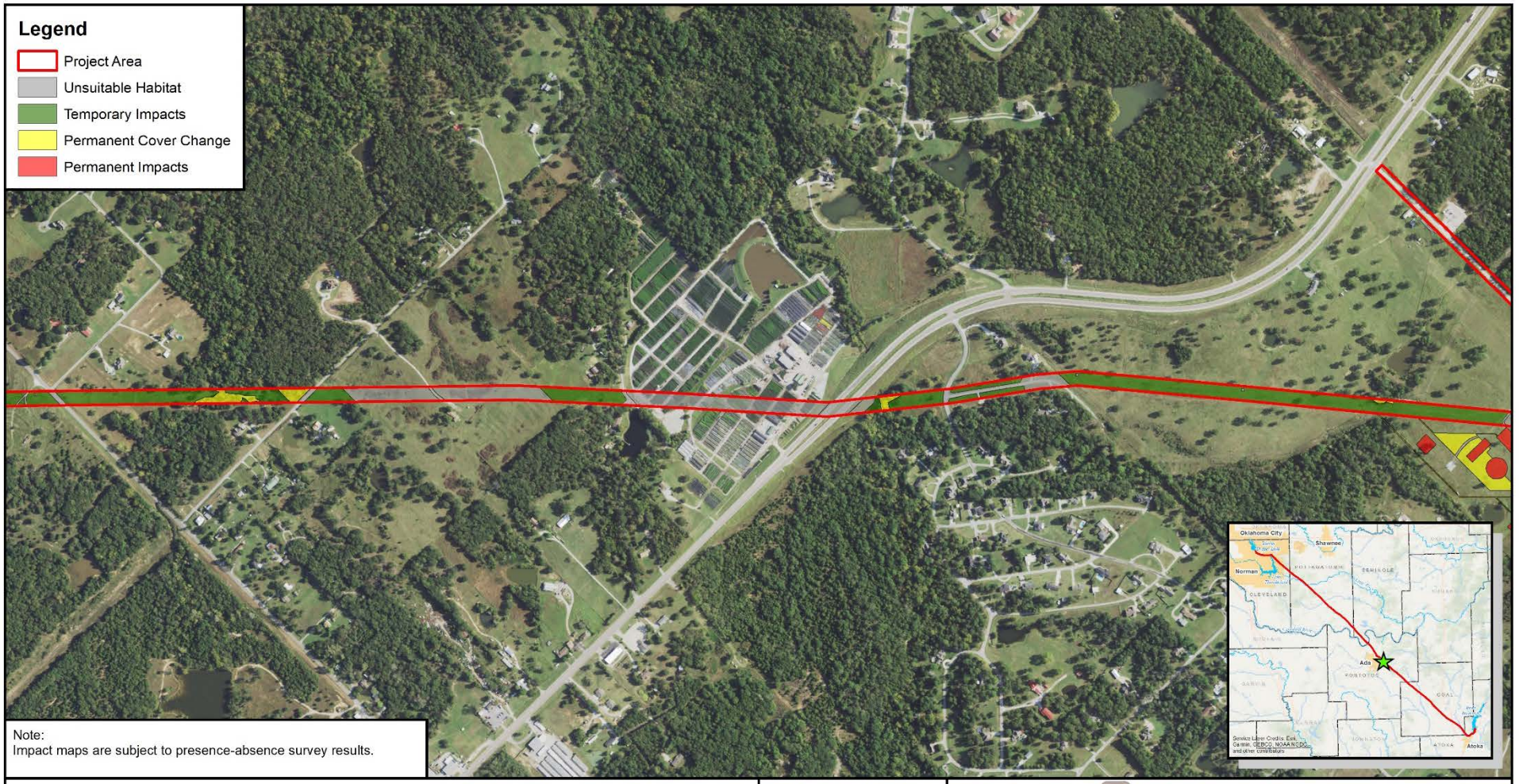
ENERCON

Figure 4.20: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

0 500 1,000 2,000 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 32, 31 & 30, T4N R7E; Section 25, T4N R6E
Pontotoc County, Oklahoma

1:8,000

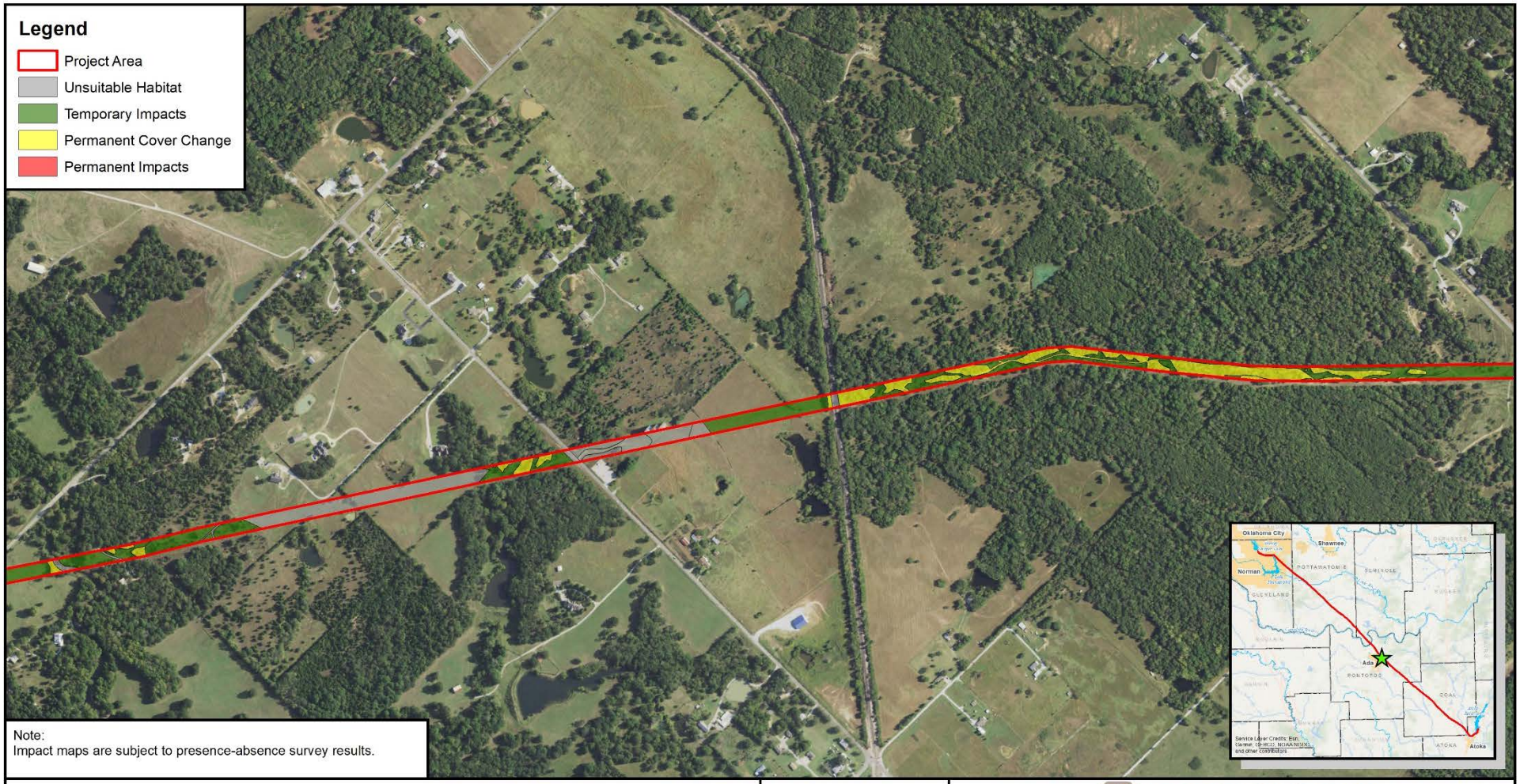
ENERCON

Figure 4.21: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

0 500 1,000 2,000 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 25, 24 & 23, T4N R6E
Pontotoc County, Oklahoma

1:8,000

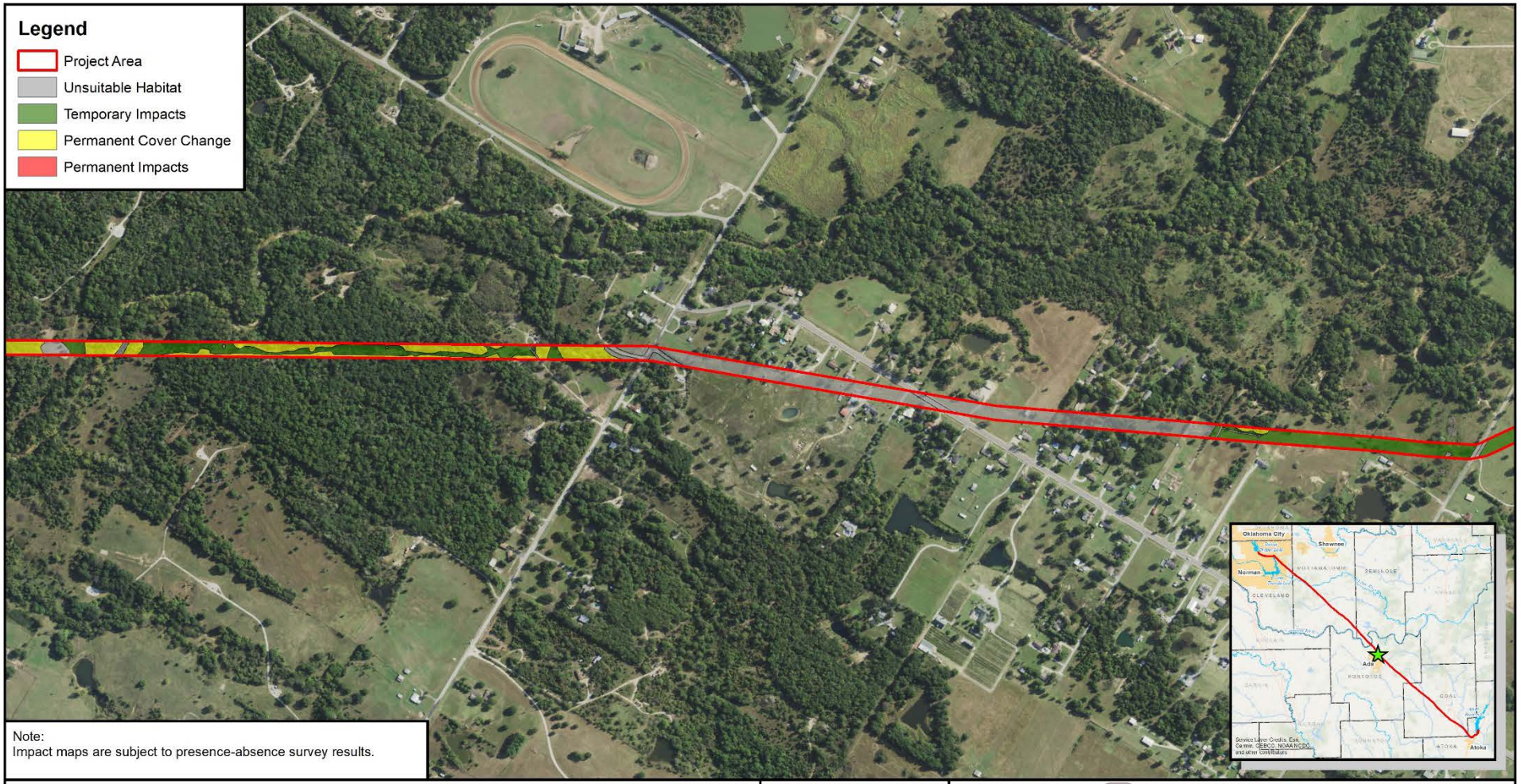
ENERCON

Figure 4.22: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 23, 14, 15 & 10, T4N R6E
Pontotoc County, Oklahoma

1:8,000

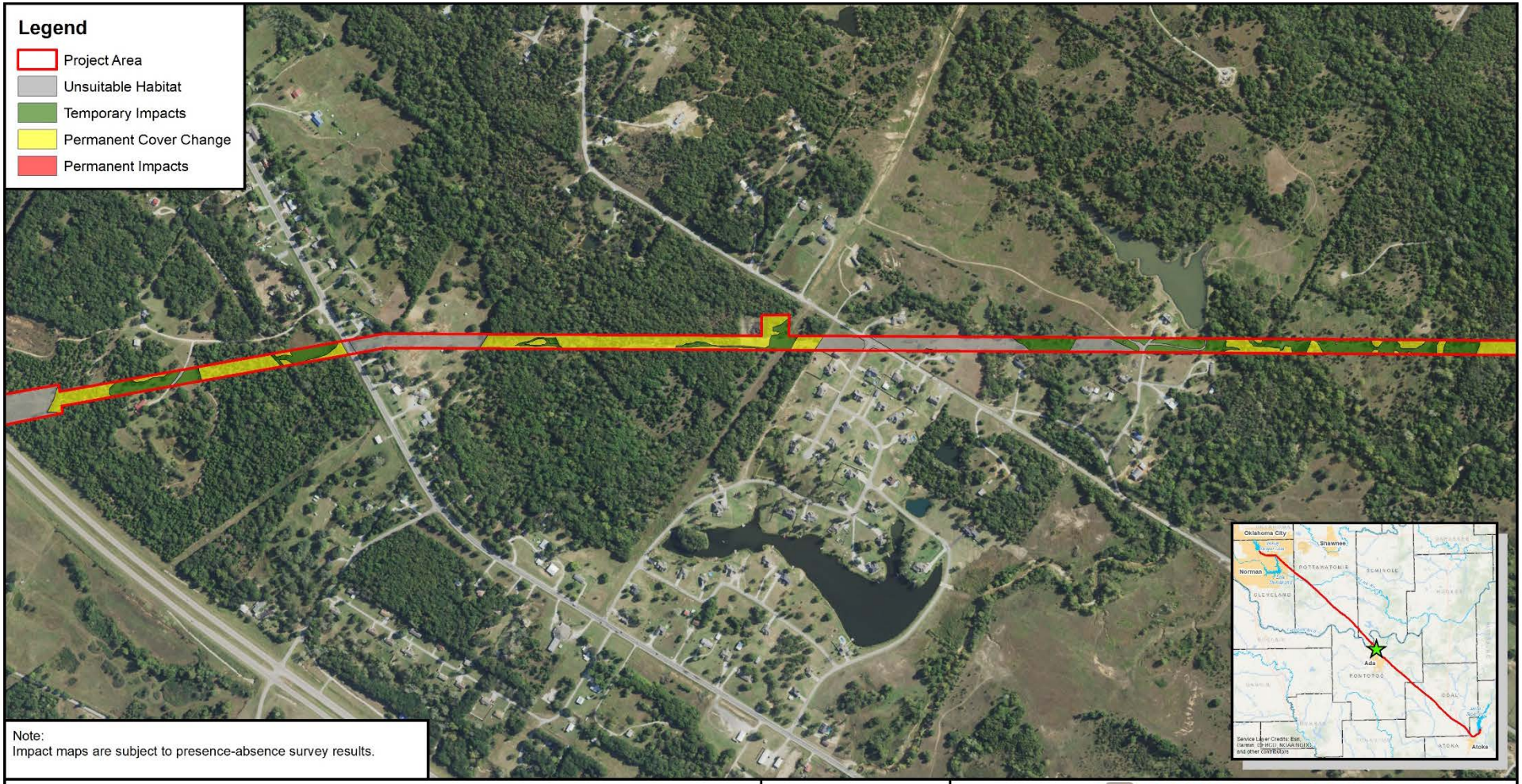
ENERCON

Figure 4.23: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

0 500 1,000 2,000 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 10, 3 & 4, T4N R6E; Section 33, T5N R6E
Pontotoc County, Oklahoma

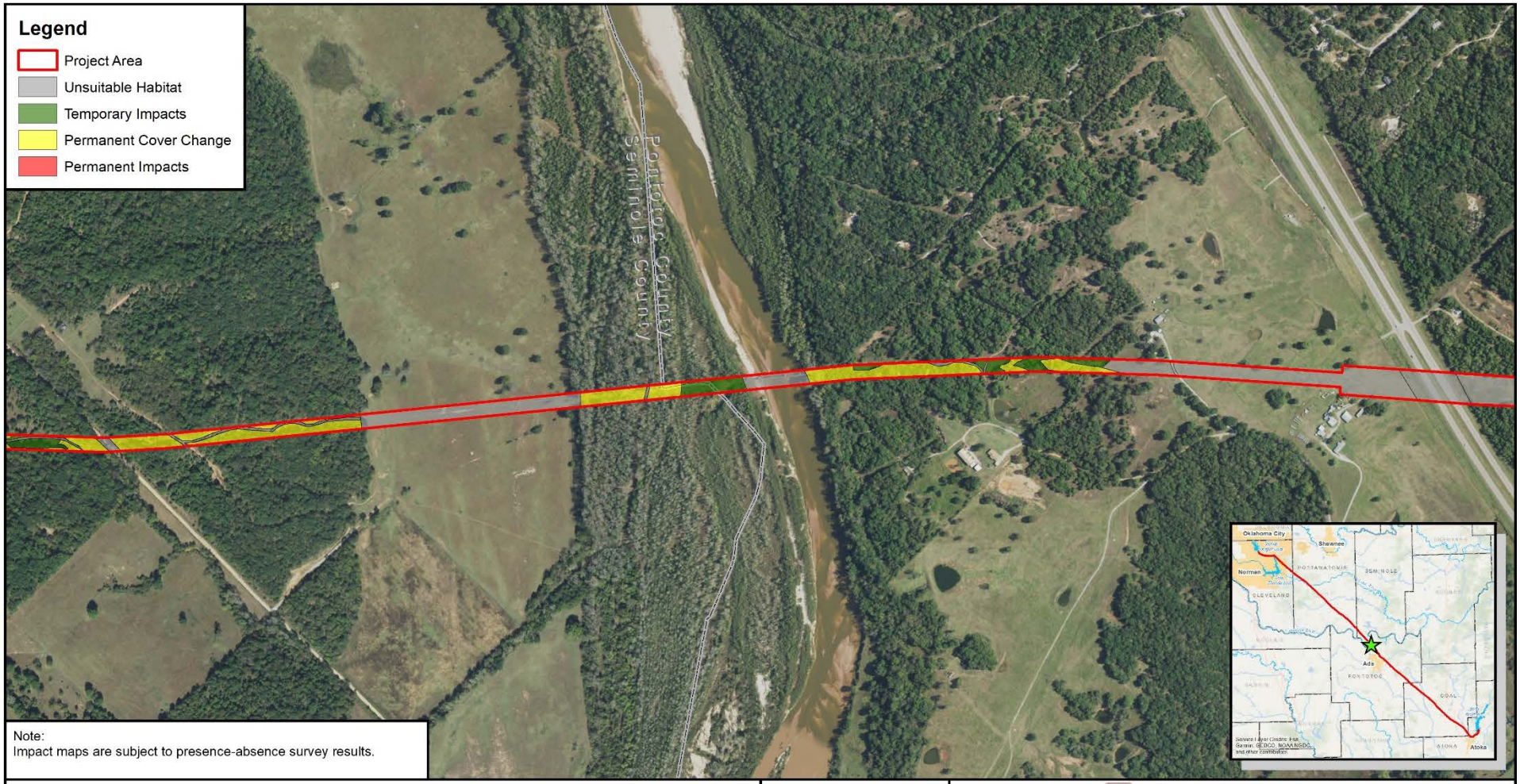
1:8,000

ENERCON

Figure 4.24: ABB Habitat Impacts
Source: 2017 USDA NAIP
Pontotoc County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 33, 32, 29 & 30, T5N R6E
Pontotoc and Seminole Counties, Oklahoma

1:8,000

ENERCON

Figure 4.25: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pontotoc and Seminole Counties, Oklahoma

Prepared by: B Wesbury; May 29, 2020

0 500 1,000 2,000 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 30 & 19, T5N R6E; Sections 24 & 13, T5N R5E
Seminole County, Oklahoma

1:8,000

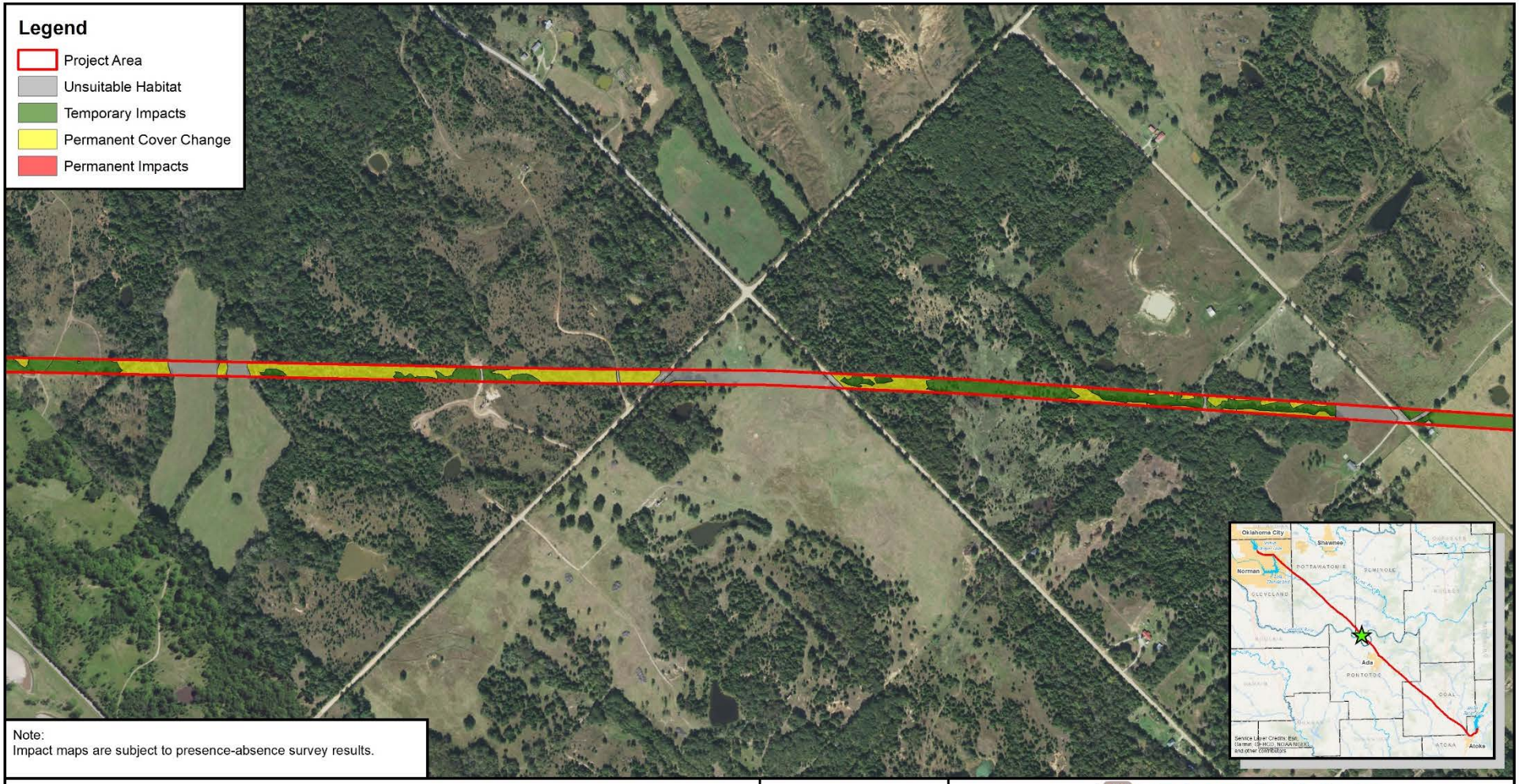
ENERCON

Figure 4.26: ABB Habitat Impacts

Source: 2017 USDA NAIP
Seminole County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 13, 14 & 11, T5N R5E
Seminole County, Oklahoma

1:8,000

ENERCON

Figure 4.27: ABB Habitat Impacts

Source: 2017 USDA NAIP
Seminole County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 11, 10 & 3, T5N R5E; Section 34, T6N R5E
Seminole County, OKlahoma

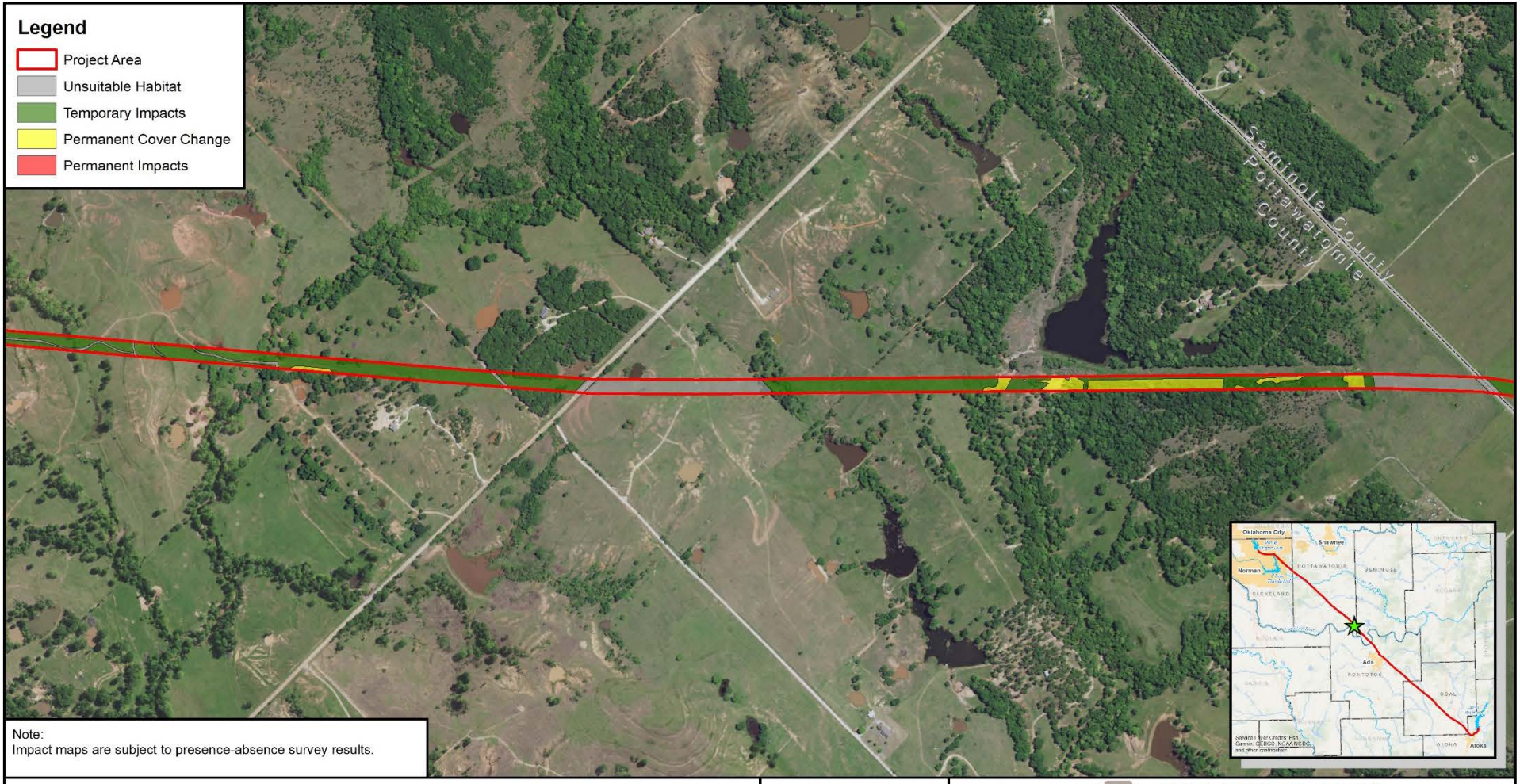
1:8,000

ENERCON

Figure 4.28: ABB Habitat Impacts
Source: 2017 USDA NAIP
Seminole County, OKlahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 34, 33, 28 & 29, T6N R5E
Seminole and Pottawatomie Counties, Oklahoma

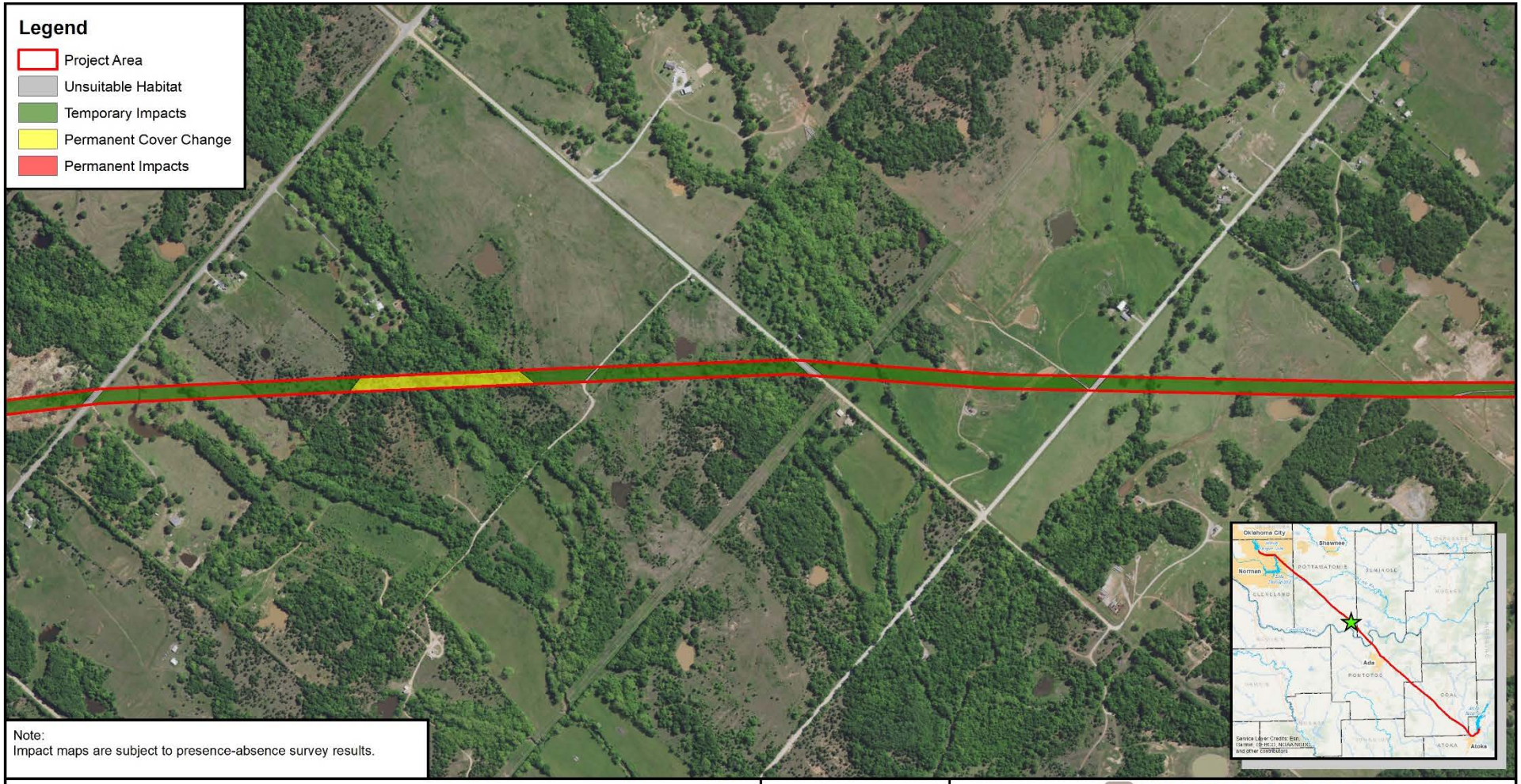
1:8,000

ENERCON

Figure 4.29: ABB Habitat Impacts
Source: 2017 USDA NAIP
Seminole and Pottawatomie Counties, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Sections 29, 20, 19 & 18, T6N R5E
Pottawatomie County, Oklahoma

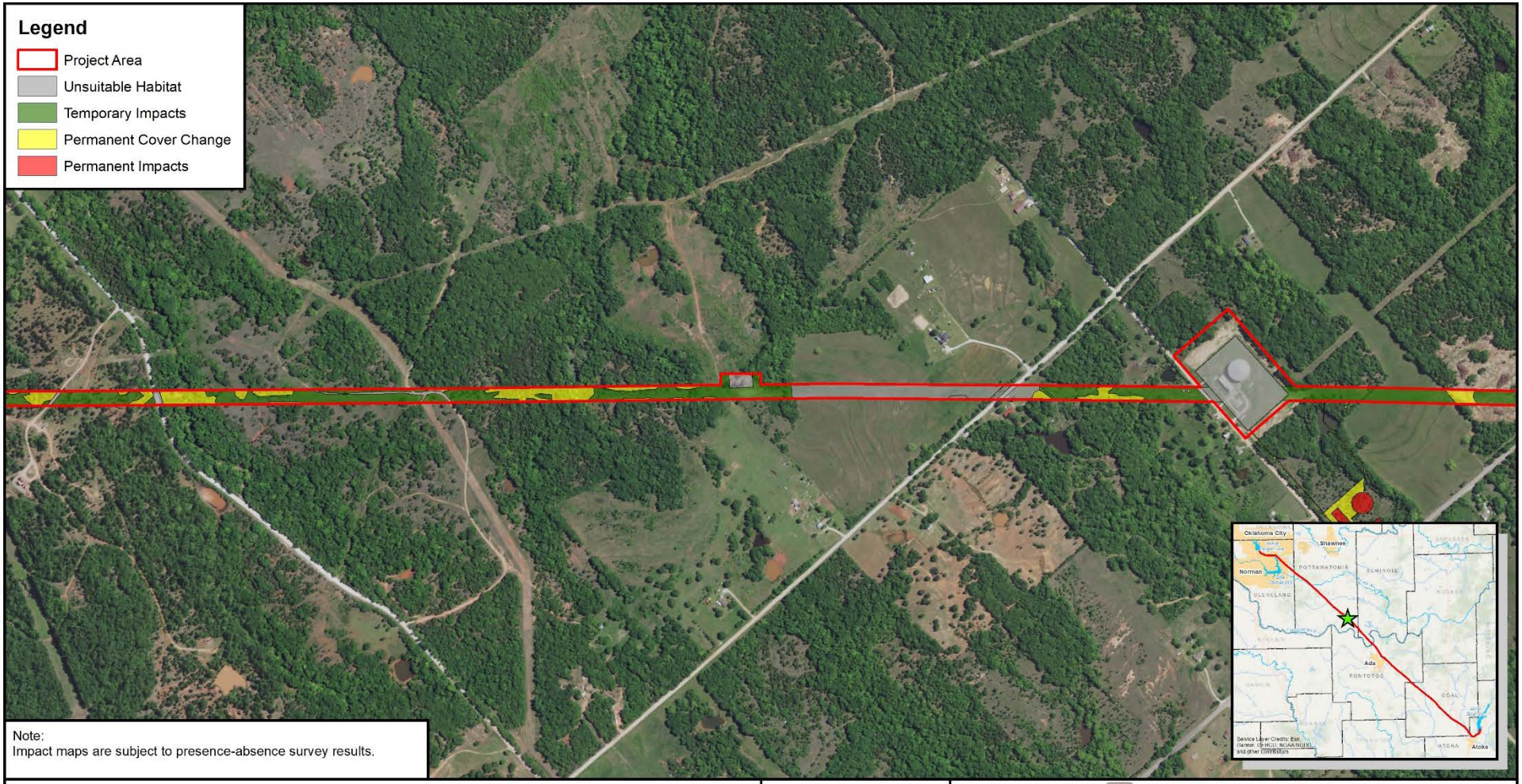
1:8,000

ENERCON

Figure 4.30: ABB Habitat Impacts
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Section 18, T6N R5E; Sections 13, 12 & 11, T6N R4E
Pottawatomie County, Oklahoma

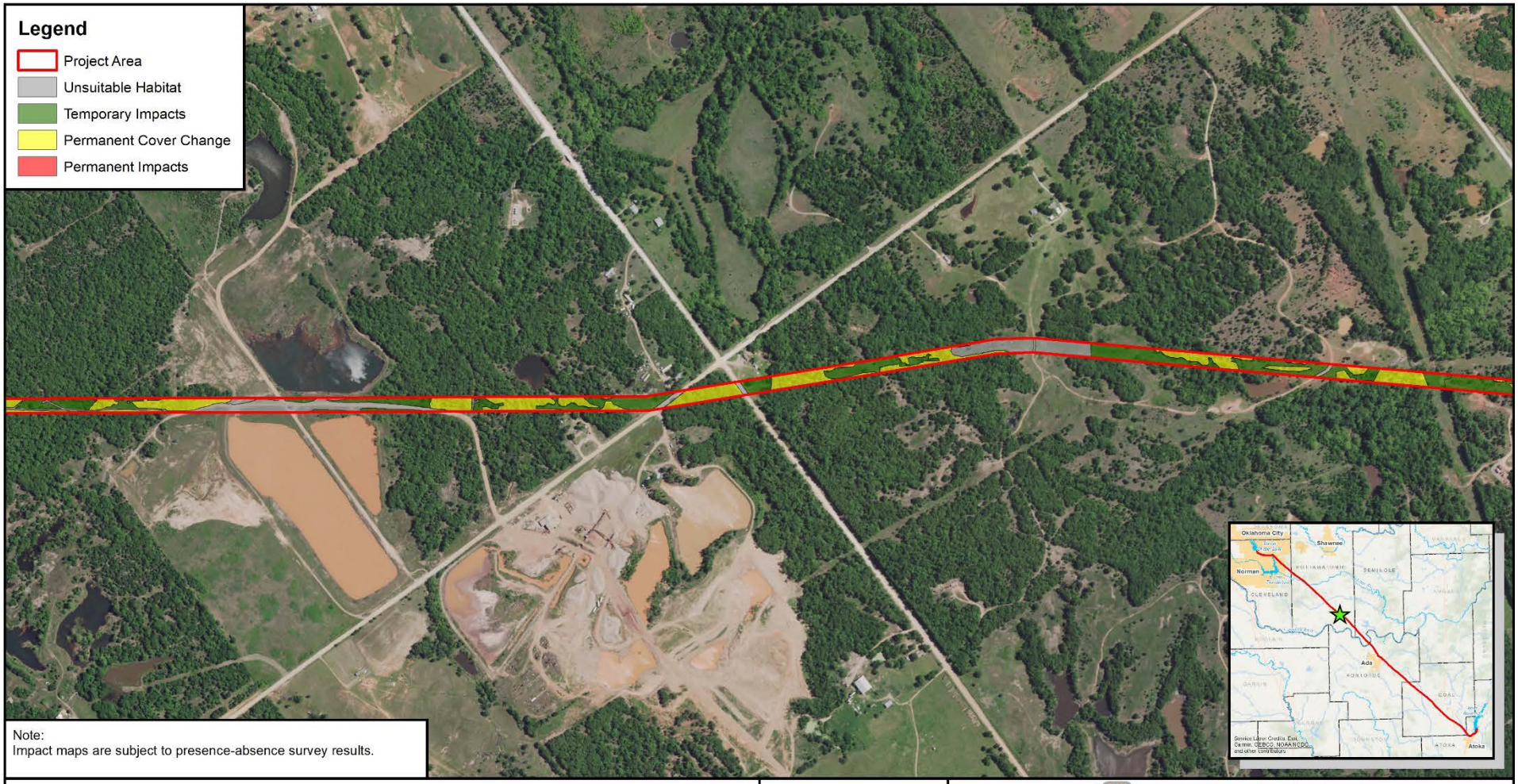
1:8,000

ENERCON

Figure 4.31: ABB Habitat Impacts
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

0 500 1,000 2,000 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Sections 11, 10 & 3, T6N R4E
Pottawatomie County, Oklahoma

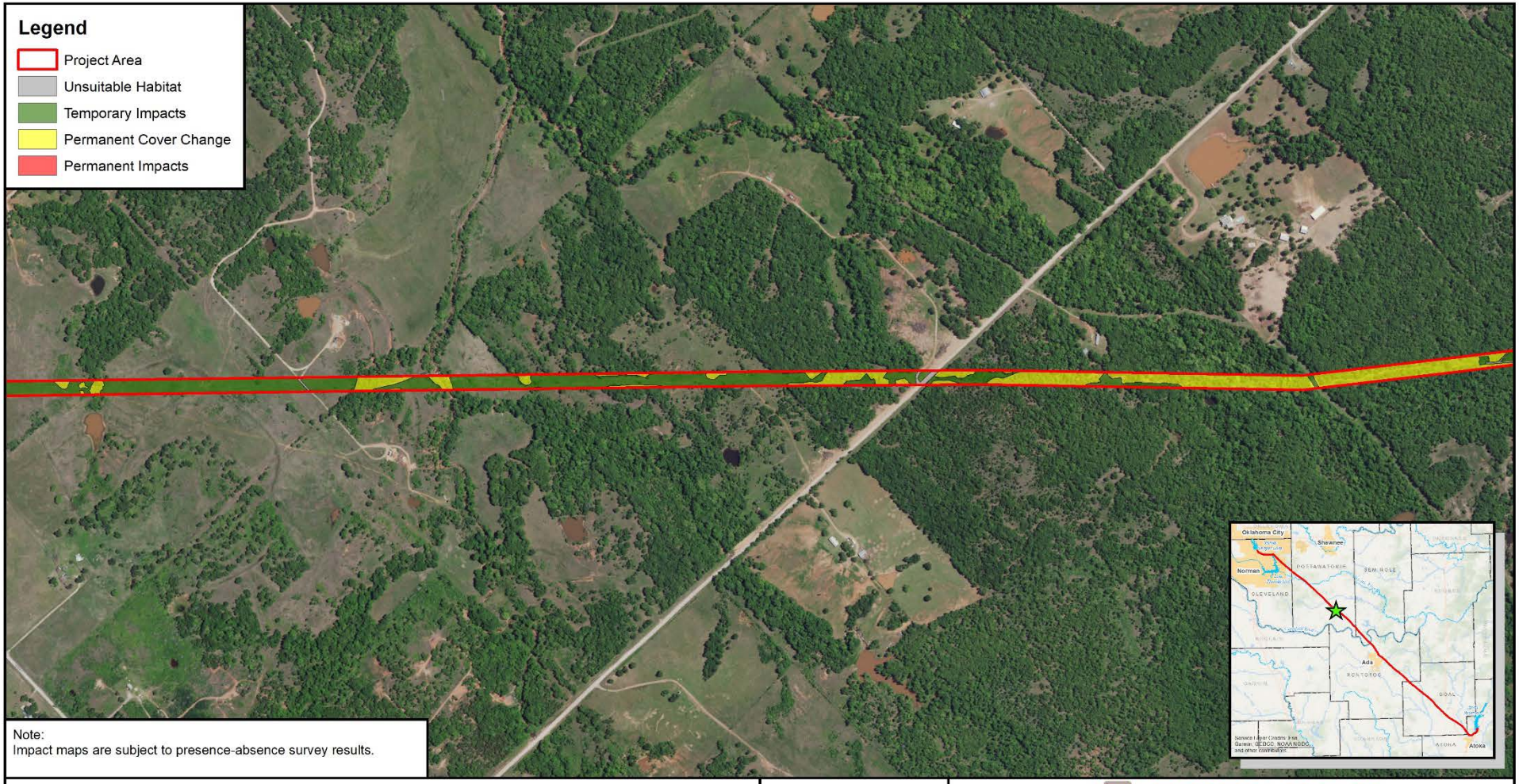
1:8,000

ENERCON

Figure 4.32: ABB Habitat Impacts
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 3 & 4, T6N R4E; Sections 33 & 32, T7N R4E
Pottawatomie County, Oklahoma

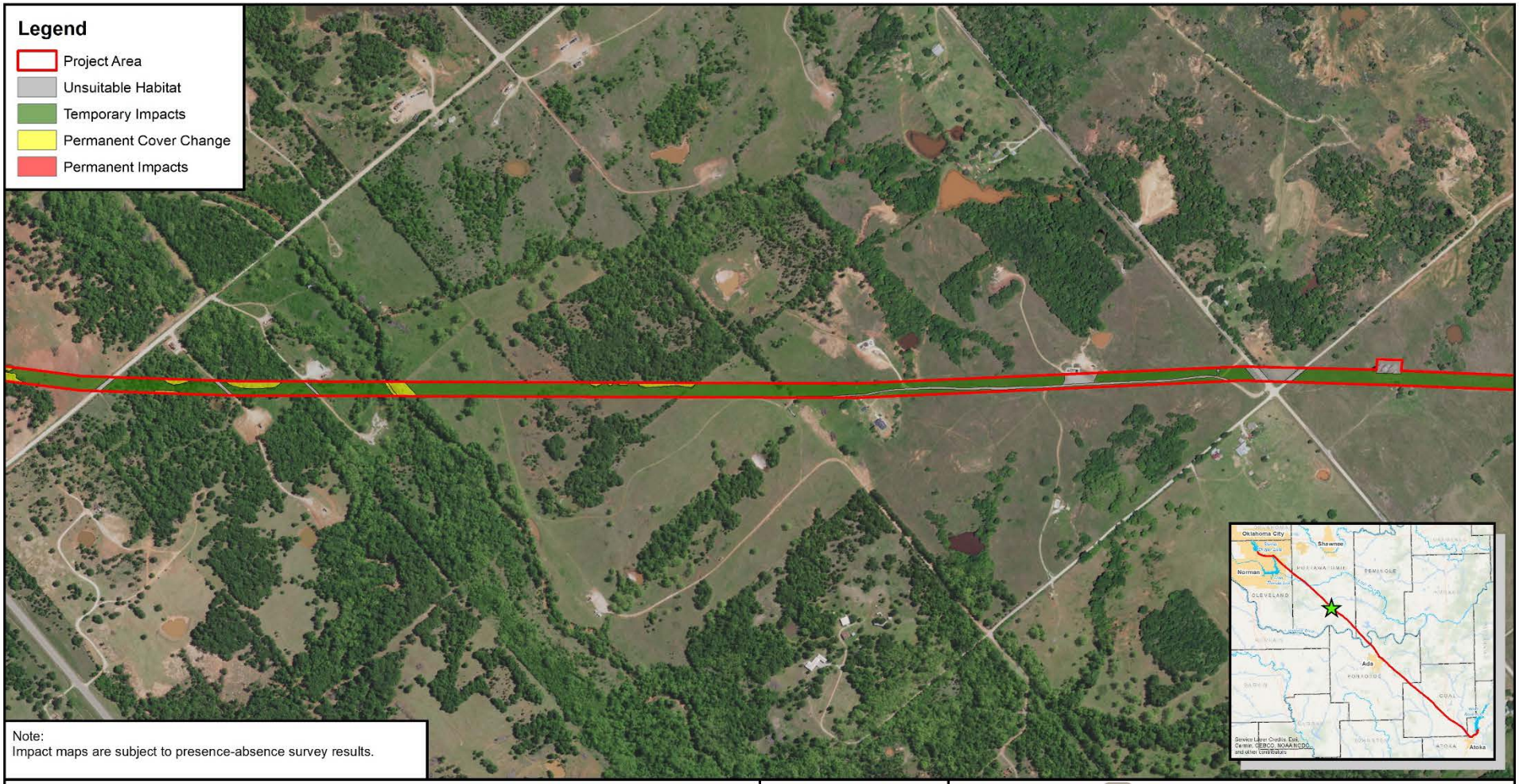
1:8,000

ENERCON

Figure 4.33: ABB Habitat Impacts
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 32, 29, 30 & 19, T7N R4E
Pottawatomie County, Oklahoma

1:8,000

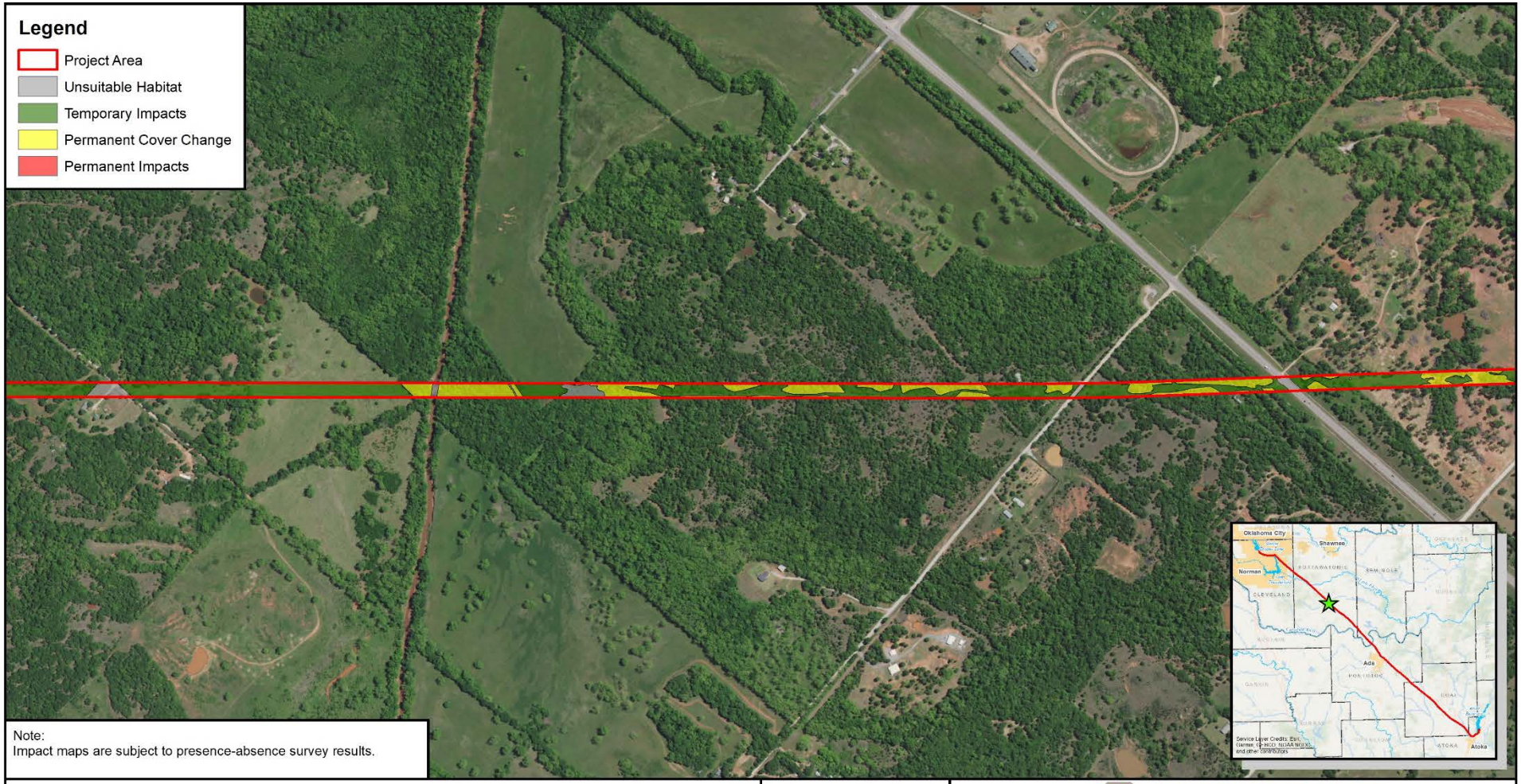
ENERCON

Figure 4.34: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Pipeline Project
Section 19, T7N R4E; Sections 24, 13 & 14, T7N R3E
Pottawatomie County, Oklahoma

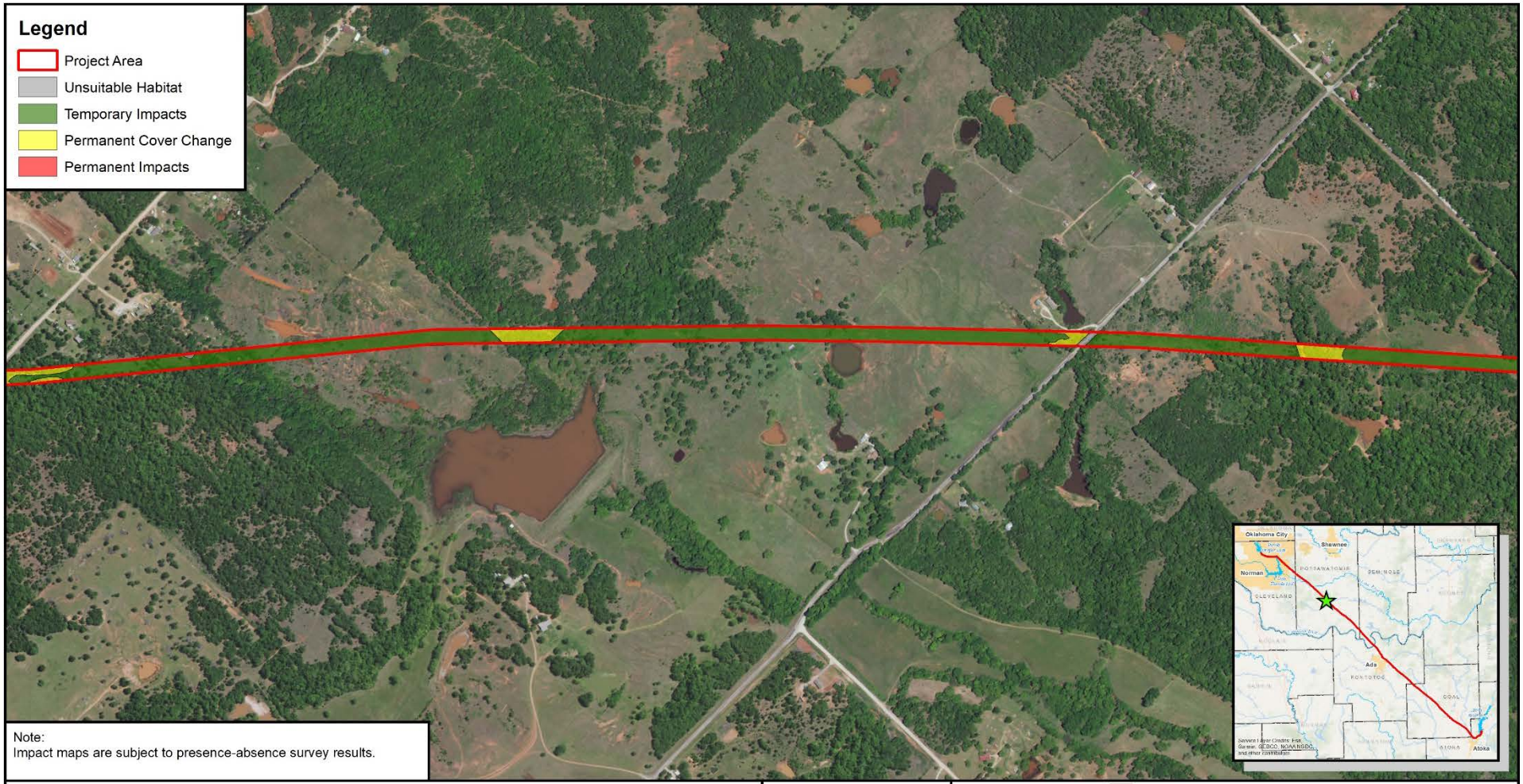
1:8,000

ENERCON

Figure 4.35: ABB Habitat Impacts
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

0 500 1,000 2,000 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 14, 11 & 10, T7N R3E
Pottawatomie County, Oklahoma

1:8,000

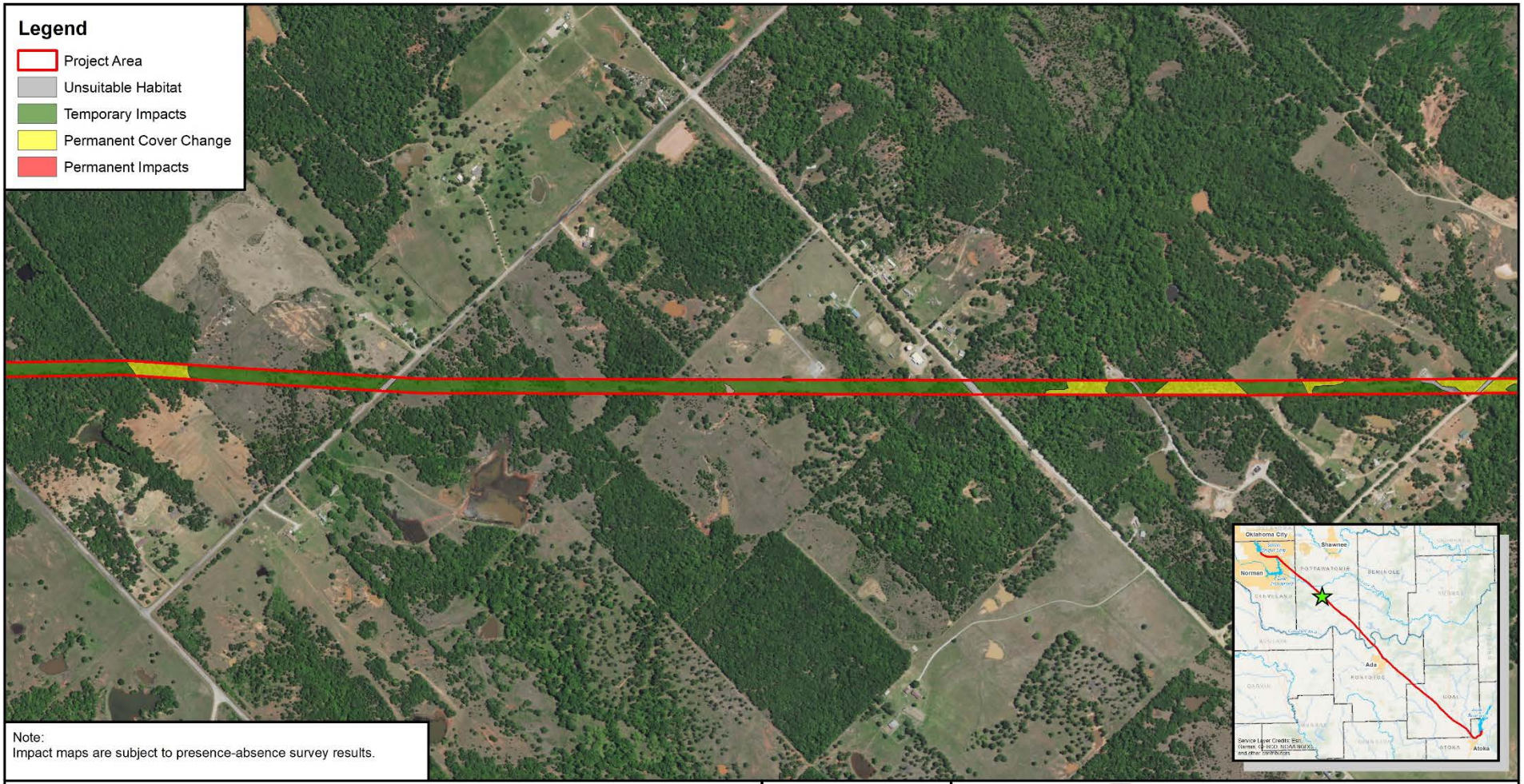
ENERCON

Figure 4.36: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 10, 3 & 4, T7N R3E; Section 33, T8N R3E
Pottawatomie County, Oklahoma

1:8,000

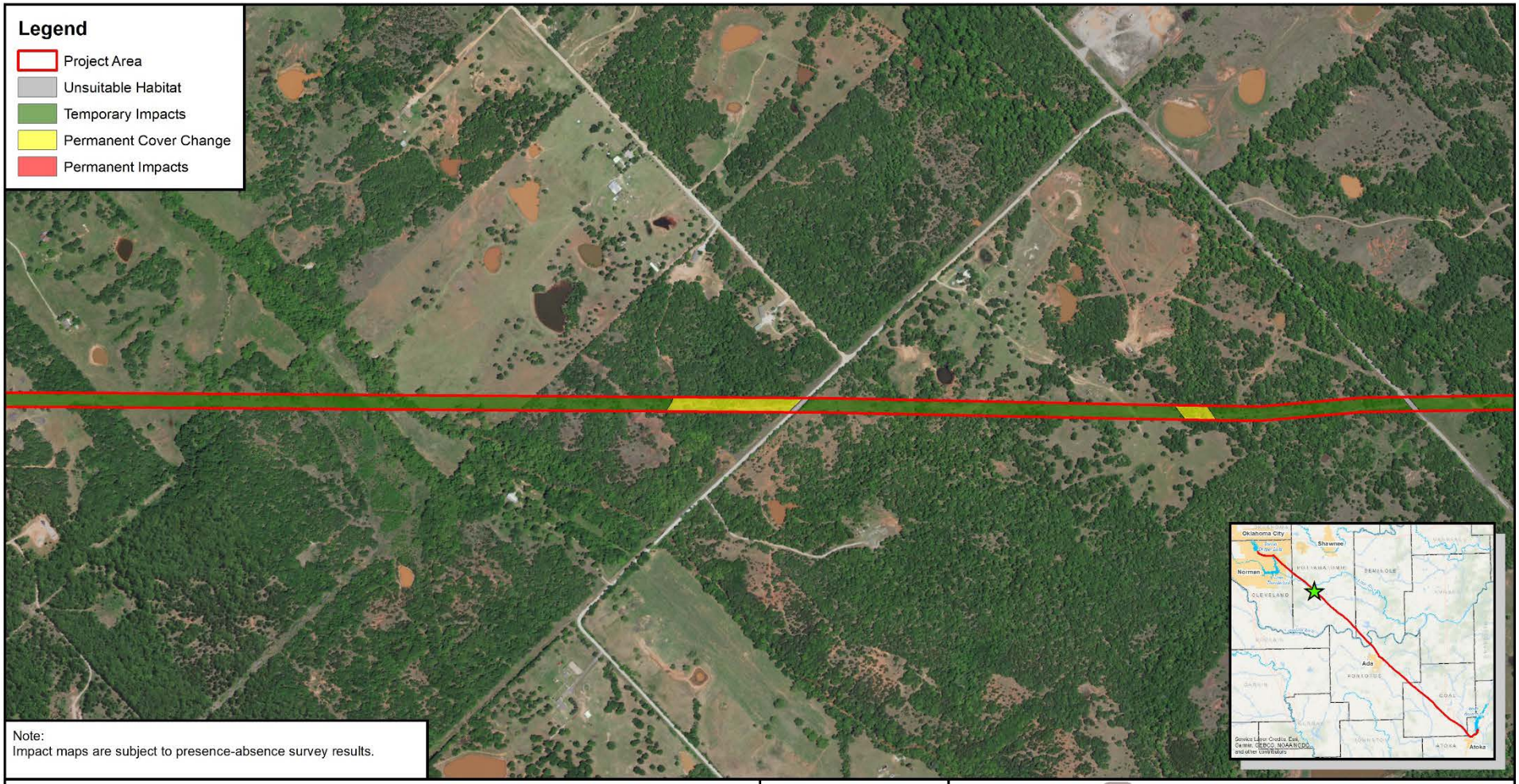
ENERCON

Figure 4.37: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 33, 32, 29 & 30, T8N R3E
Pottawatomie County, Oklahoma

1:8,000

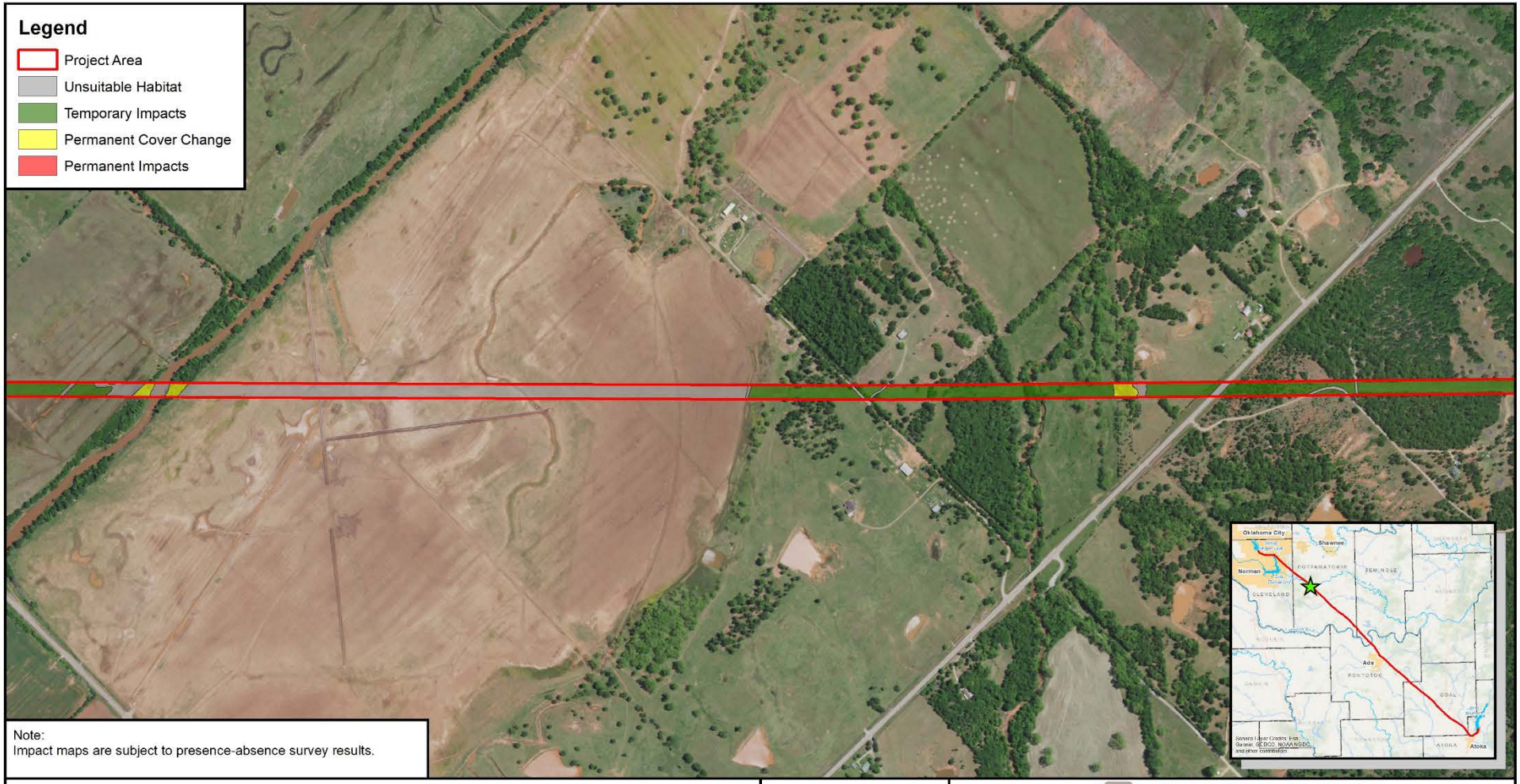
ENERCON

Figure 4.38: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 30 & 19, T8N R3E; Sections 24 & 13, T8N R2E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 4.39: ABB Habitat Impacts
Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 13, 14, 11 & 10, T8N R2E
Pottawatomie County, Oklahoma

1:8,000

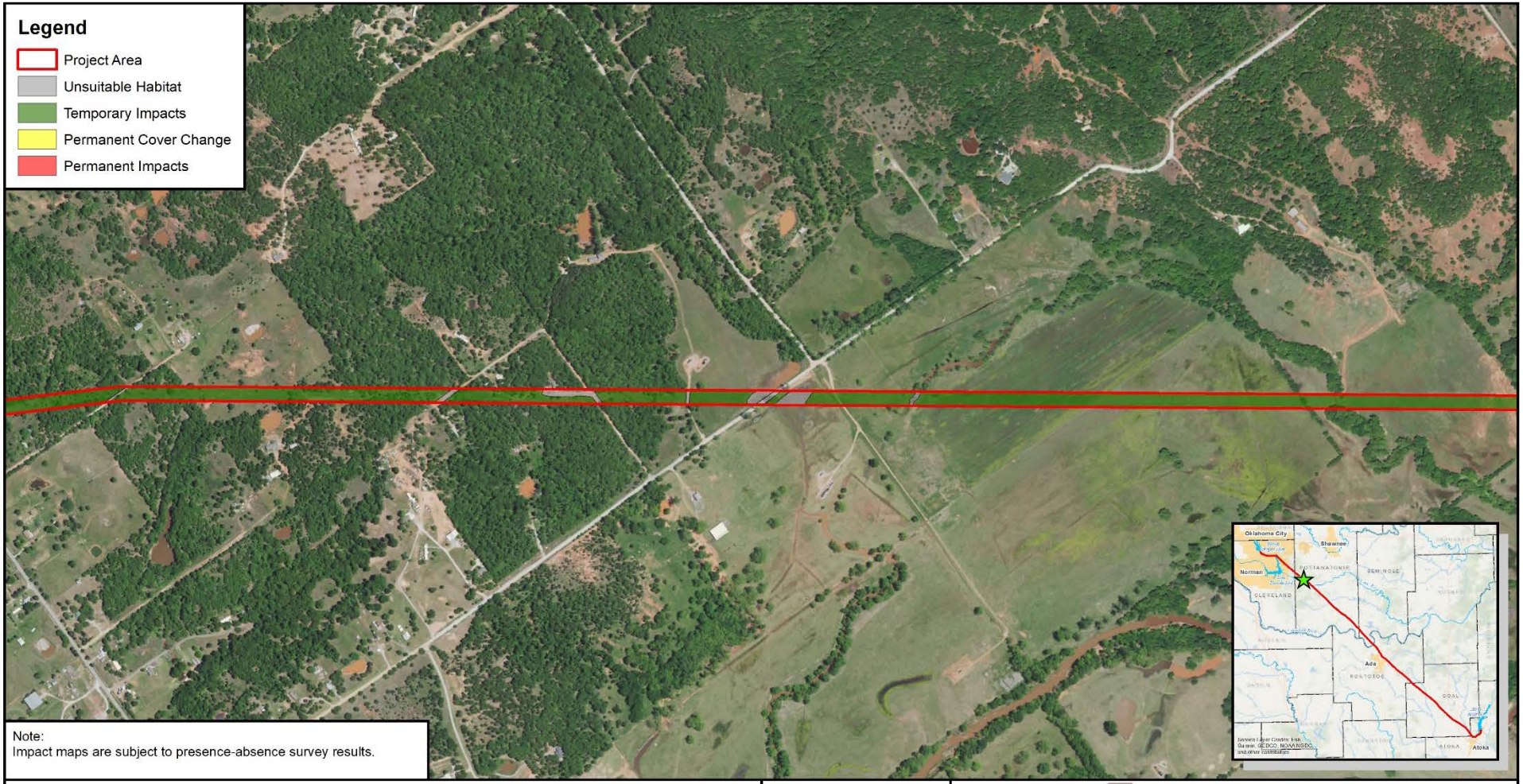
ENERCON

Figure 4.40: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 10, 9 & 4, T8N R2E
Pottawatomie County, Oklahoma

1:8,000

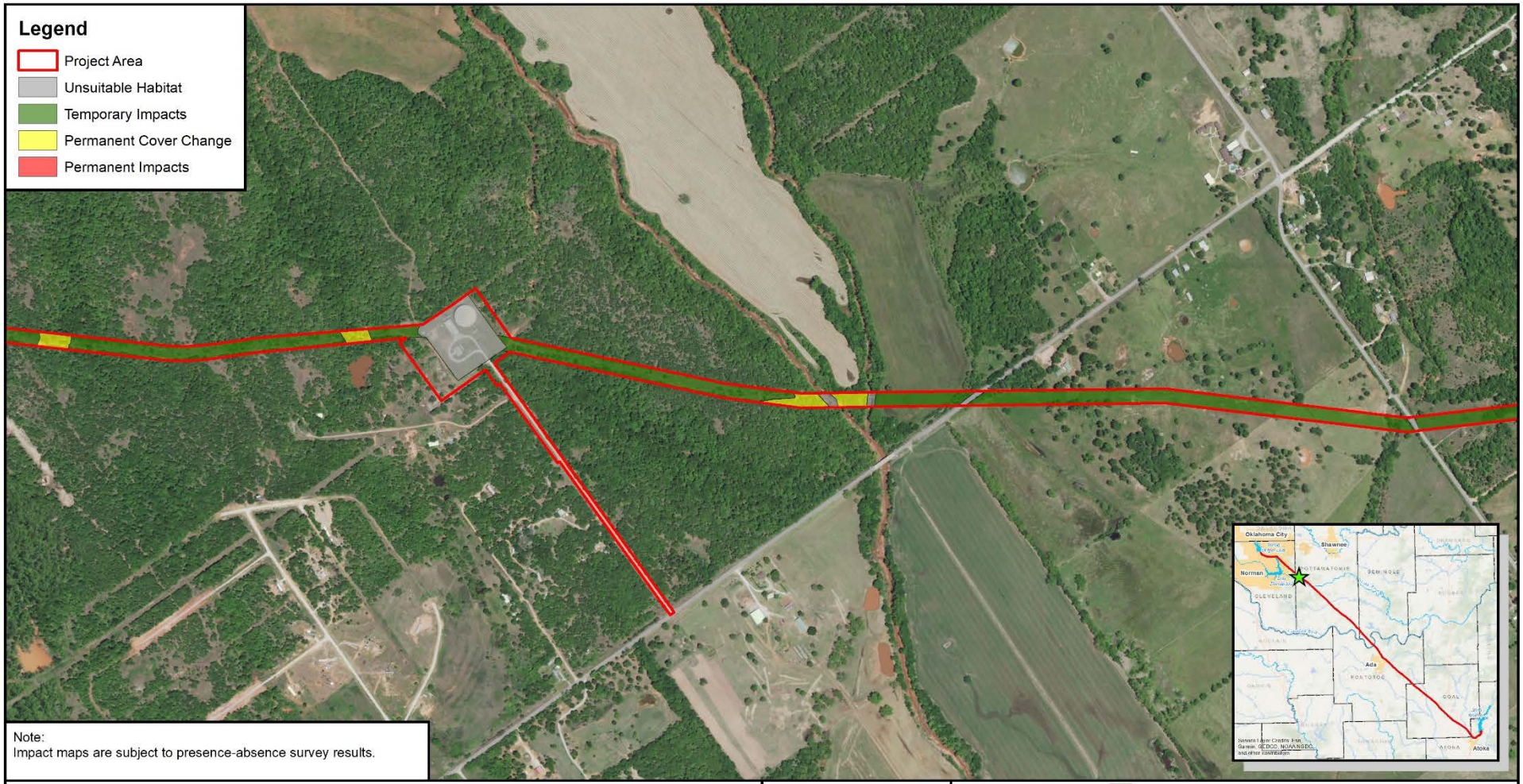
ENERCON

Figure 4.41: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

0 500 1,000 2,000 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 4 & 5, T8N R2E; Sections 32 & 31, T9N R2E
Pottawatomie County, Oklahoma

1:8,000

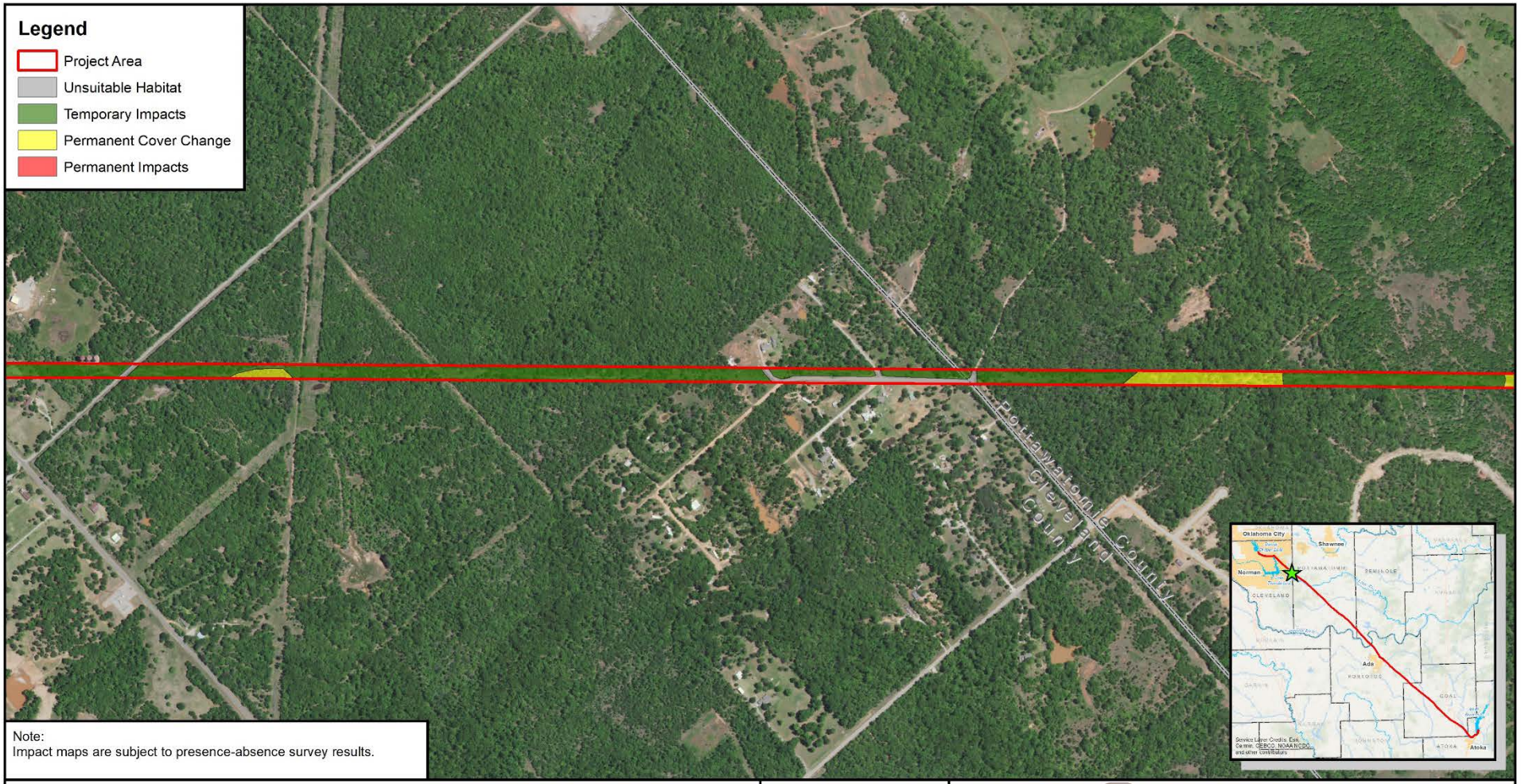
ENERCON

Figure 4.42: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 31 & 30, T9N R2E; Sections 25 & 24, T9N R1E
Pottawatomie and Cleveland Counties, Oklahoma

1:8,000

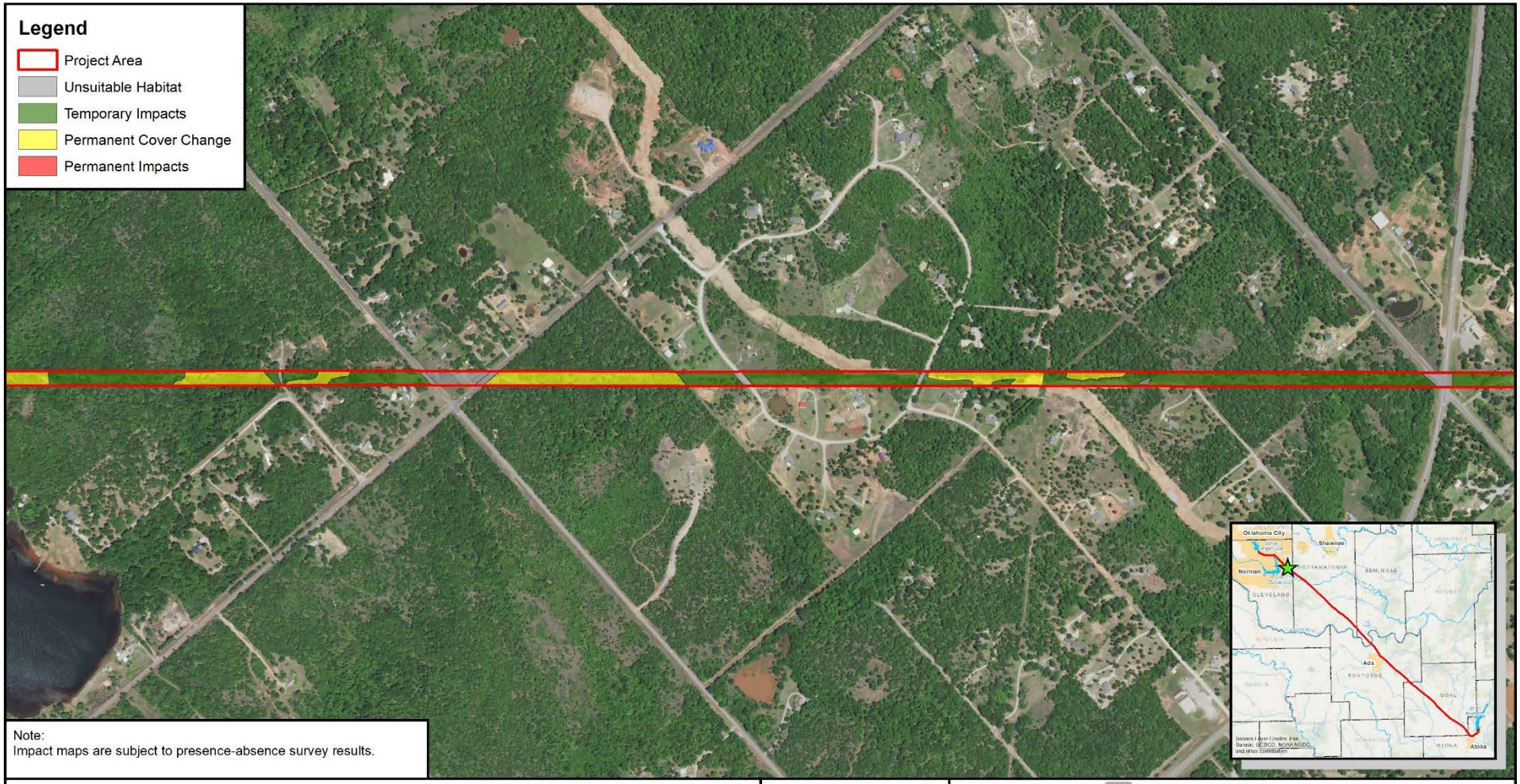
ENERCON

Figure 4.43: ABB Habitat Impacts

Source: 2017 USDA NAIP
Pottawatomie and Cleveland Counties, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 24, 23, 14 & 15, T9N R1E
Cleveland County, Oklahoma

1:8,000

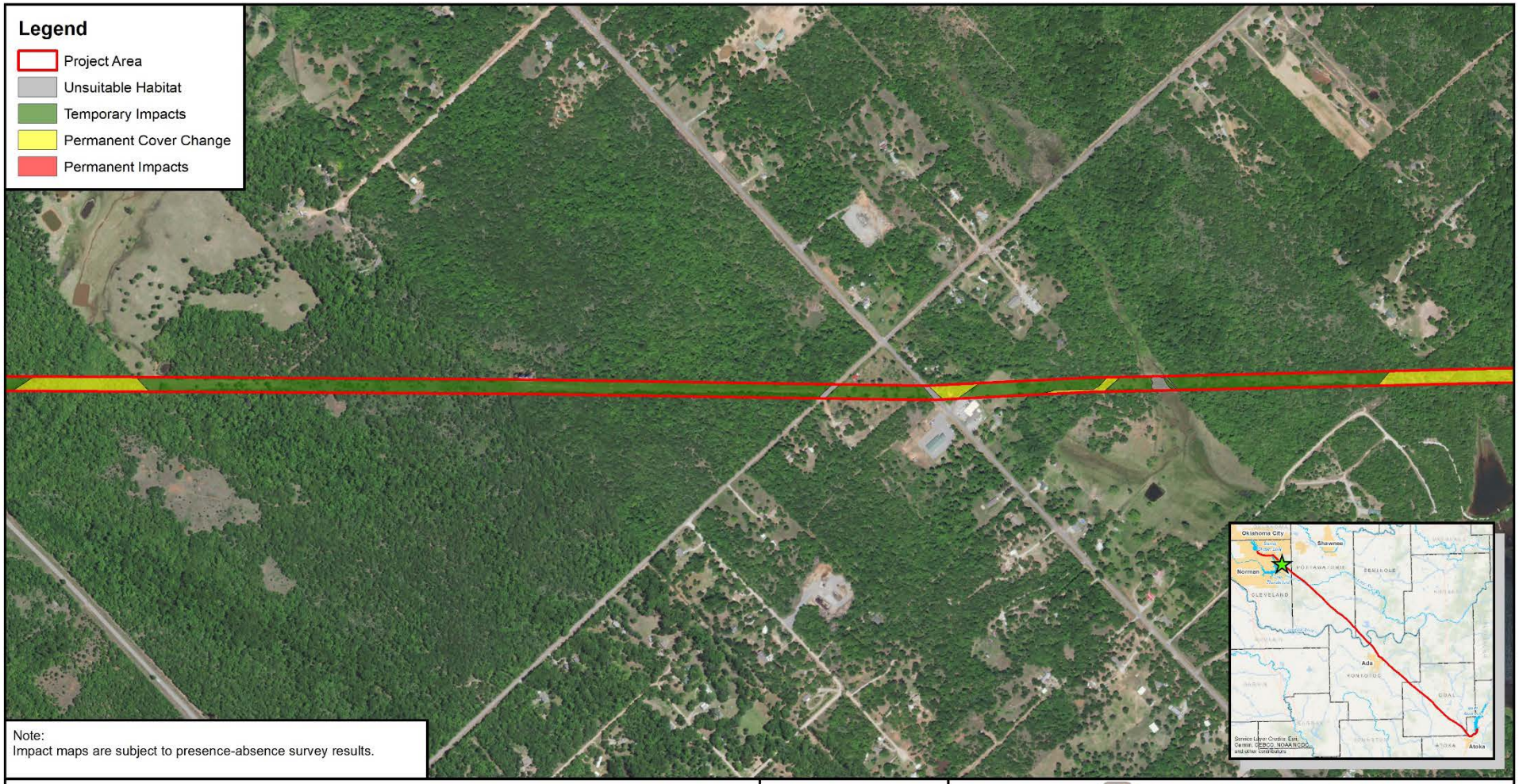
ENERCON

Figure 4.44: ABB Habitat Impacts

Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 15, 16 & 9, T9N R1E
Cleveland County, Oklahoma

1:8,000

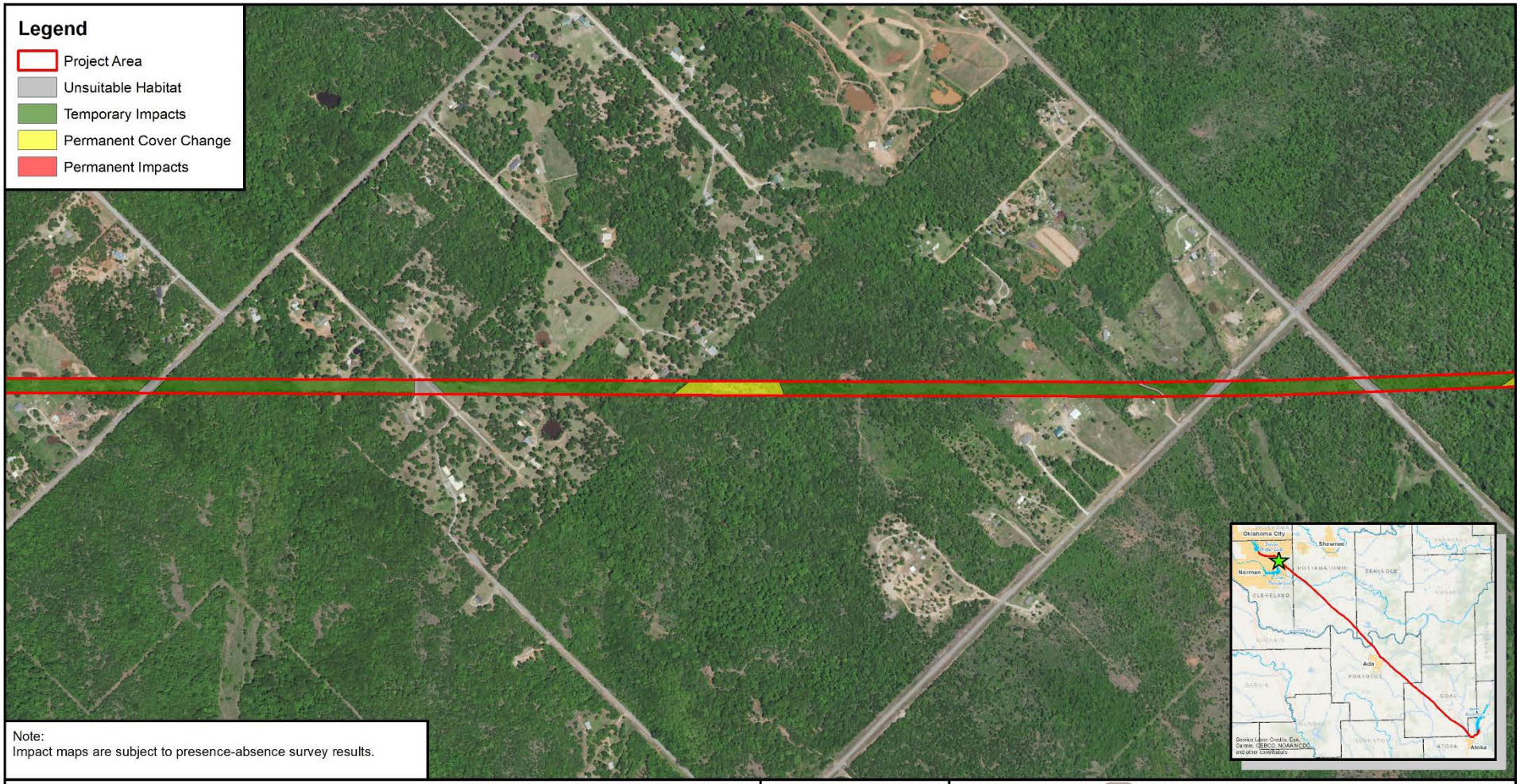
ENERCON

Figure 4.45: ABB Habitat Impacts

Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 9, 8, 5 & 6, T9N R1E; Section 31, T10N R1E
Cleveland County, Oklahoma

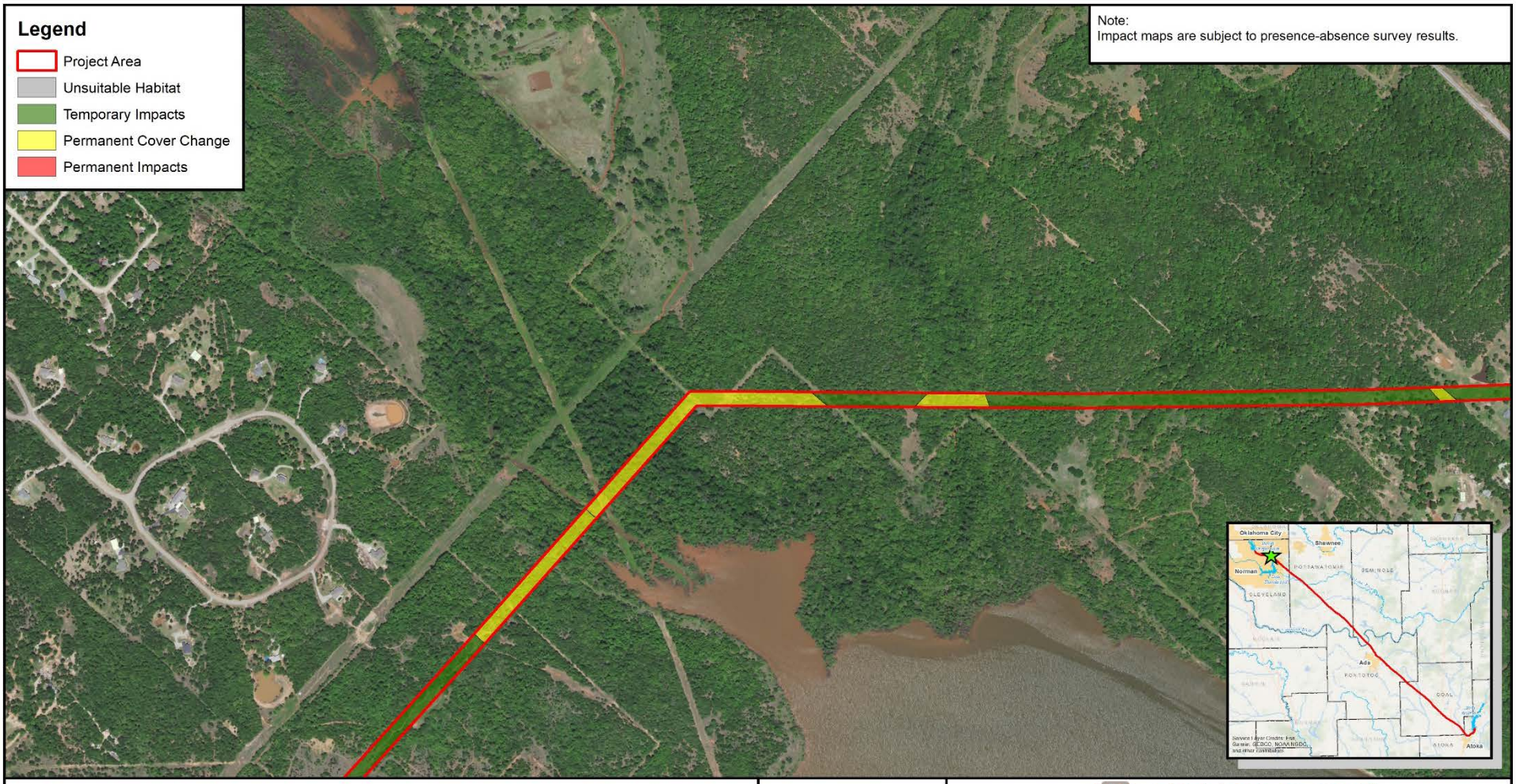
1:8,000

ENERCON

Figure 4.46: ABB Habitat Impacts
Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Section 31, T10N R1E; Section 36, T10N R1W
Cleveland County, Oklahoma

1:8,000

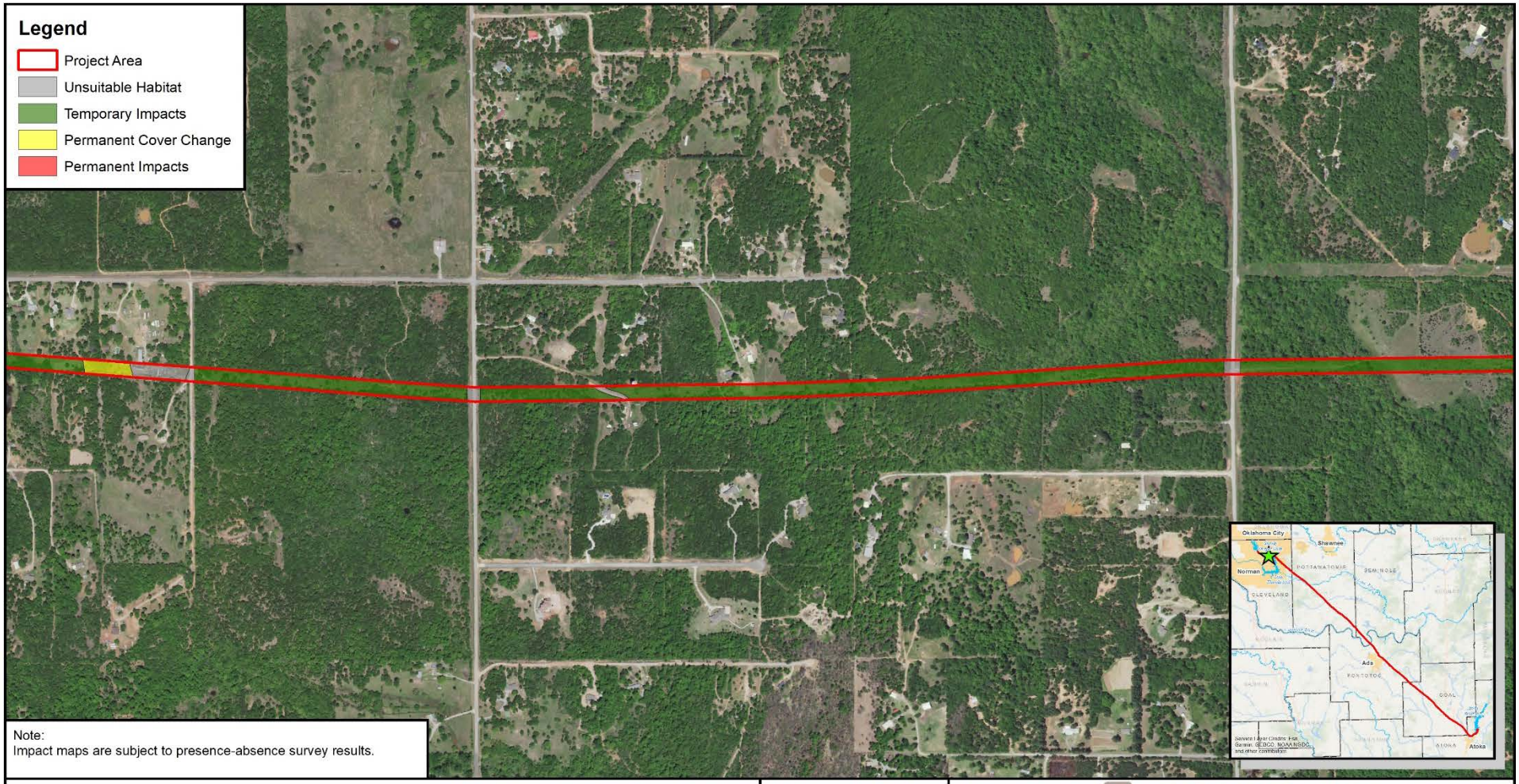
ENERCON

Figure 4.47: ABB Habitat Impacts

Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

0 500 1,000 2,000 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 36, 35 & 34, T10N R1W
Cleveland County, Oklahoma

1:8,000

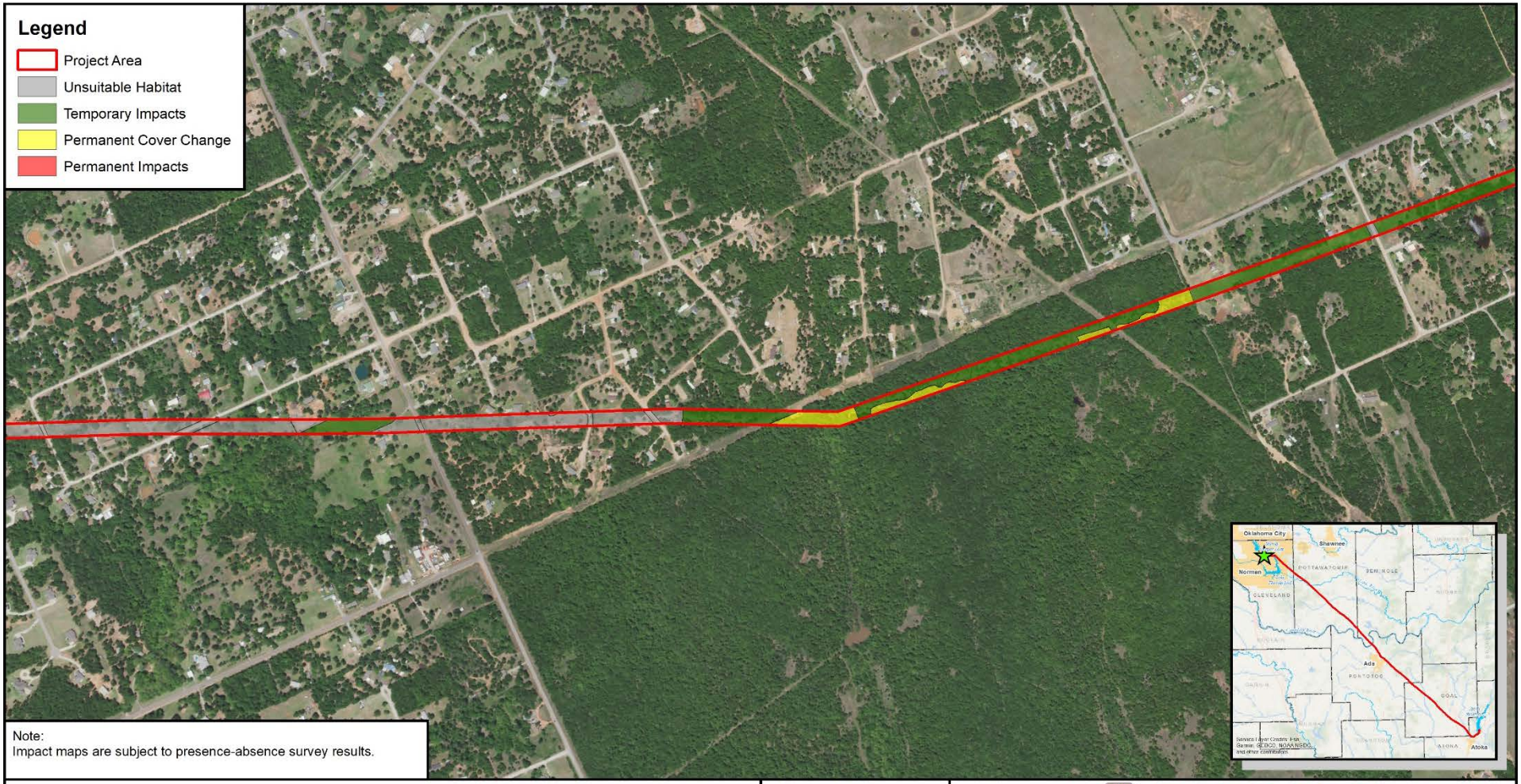
ENERCON

Figure 4.48: ABB Habitat Impacts

Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 34, 33, 28 & 29, T10N R1W
Cleveland County, Oklahoma

1:8,000

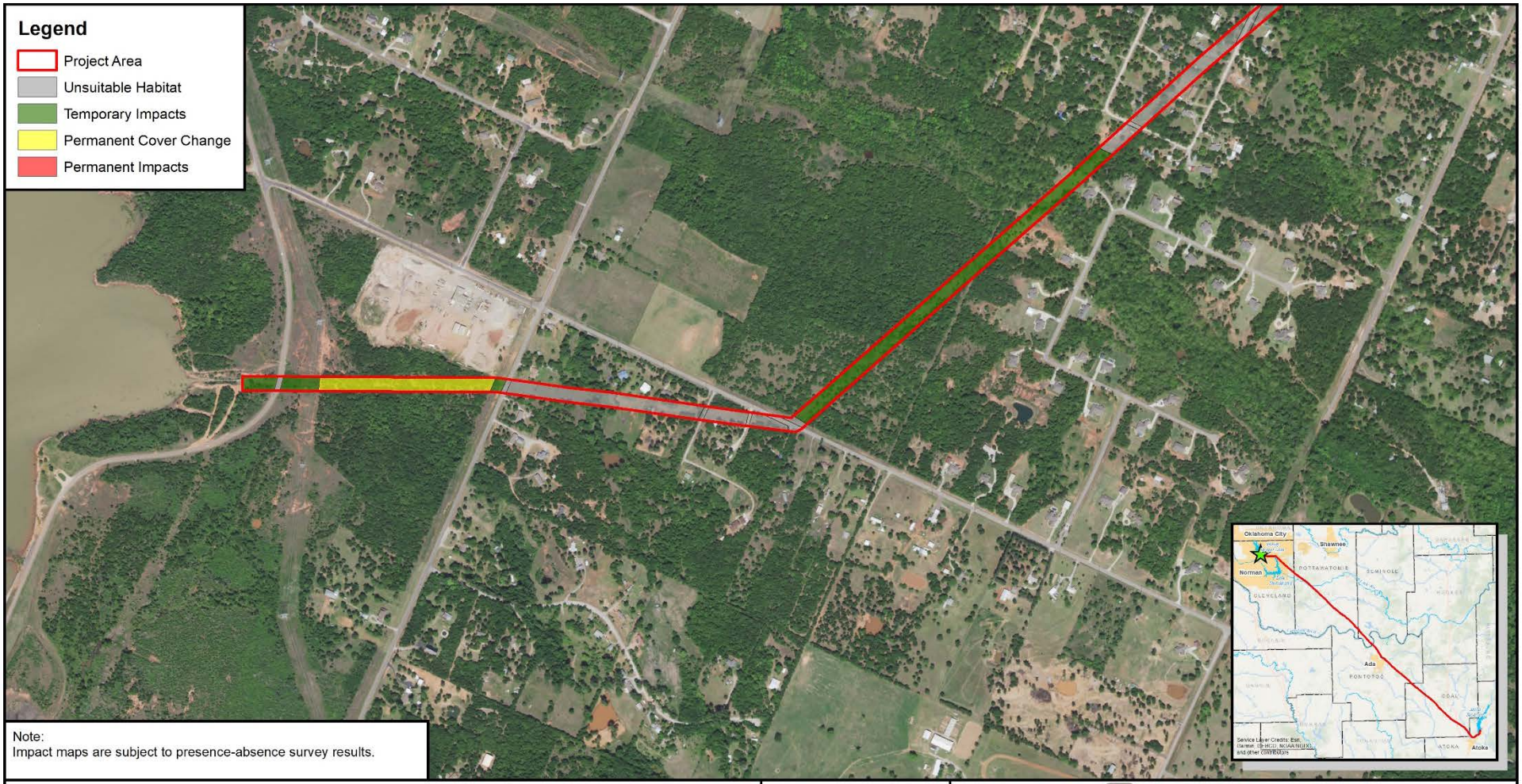
ENERCON

Figure 4.49: ABB Habitat Impacts

Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

Feet
0 500 1,000 2,000



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Pipeline Project
Sections 29, 30 & 19, T10N R1W
Cleveland County, Oklahoma

1:8,000

ENERCON

Figure 4.50: ABB Habitat Impacts
Source: 2017 USDA NAIP
Cleveland County, Oklahoma

Prepared by: B Wesbury; May 29, 2020

0 500 1,000 2,000 Feet