APPENDICES

Section 404 Delineation

Atoka Water Line

Appendix A	Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Appendix B	Atoka Water Line Section 2: Coalgate Pump Station and Stonewall Pump
Appendix C	Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Appendix D	Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Appendix E	Atoka Water Line Section 5: Konawa Pump Station to Stonewall Pump Station
Appendix F	Atoka Water Line Section 6: Macomb Pump Station to Lake Stanley Draper Pump Station
Appendix G	Cowardin Classification Chart
Appendix H	Nationwide Permit 12: Utility Line Activities

Appendix A - Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station

Figures (Vicinity Map, Topographic Map, Aerial Photography, Soil Survey Map, NWI Map, Flood Insurance Rate Map)

Table 1: Soils Series within the Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station in Atoka and Coal Counties, Oklahoma.

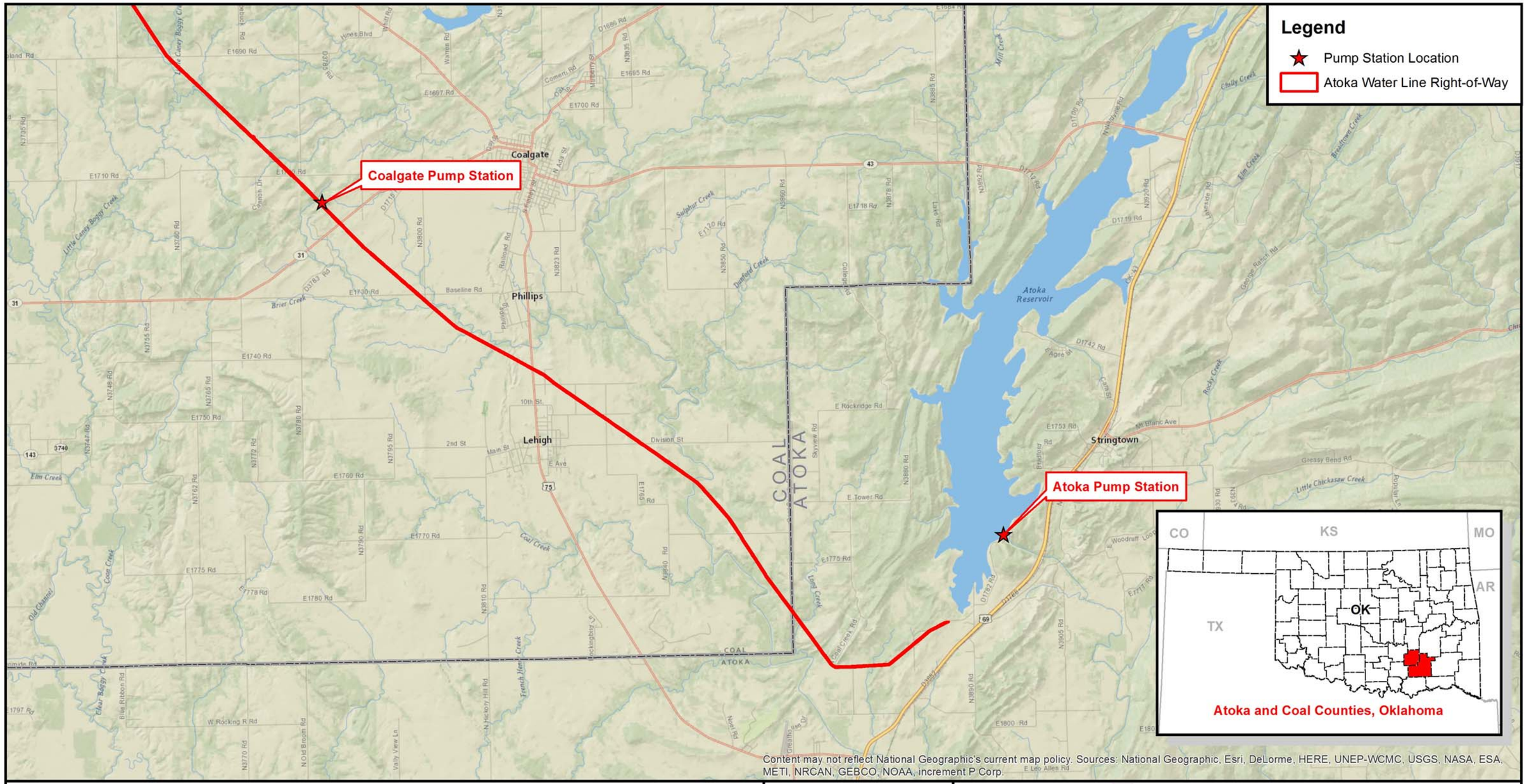
Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station in Atoka and Coal Counties, Oklahoma.

Table 3: Summary of streams and drainages in the Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station in Atoka and Coal Counties, Oklahoma.

Wetland Determination Data Forms

Site Photographs

Figures



Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 30 & 31, T1S R12E; Sections 36, 35, 34, 33, 28, 21, 20, 27 & 18, T1S R11E
Sections 2 & 3, T2S R11E; Sections 13, 12, 11, 2, 3 & 4, T1S R10E;
Sections 33, 32 & 29, T1N R10E
Atoka and Coal Counties, Oklahoma

N
W E
S

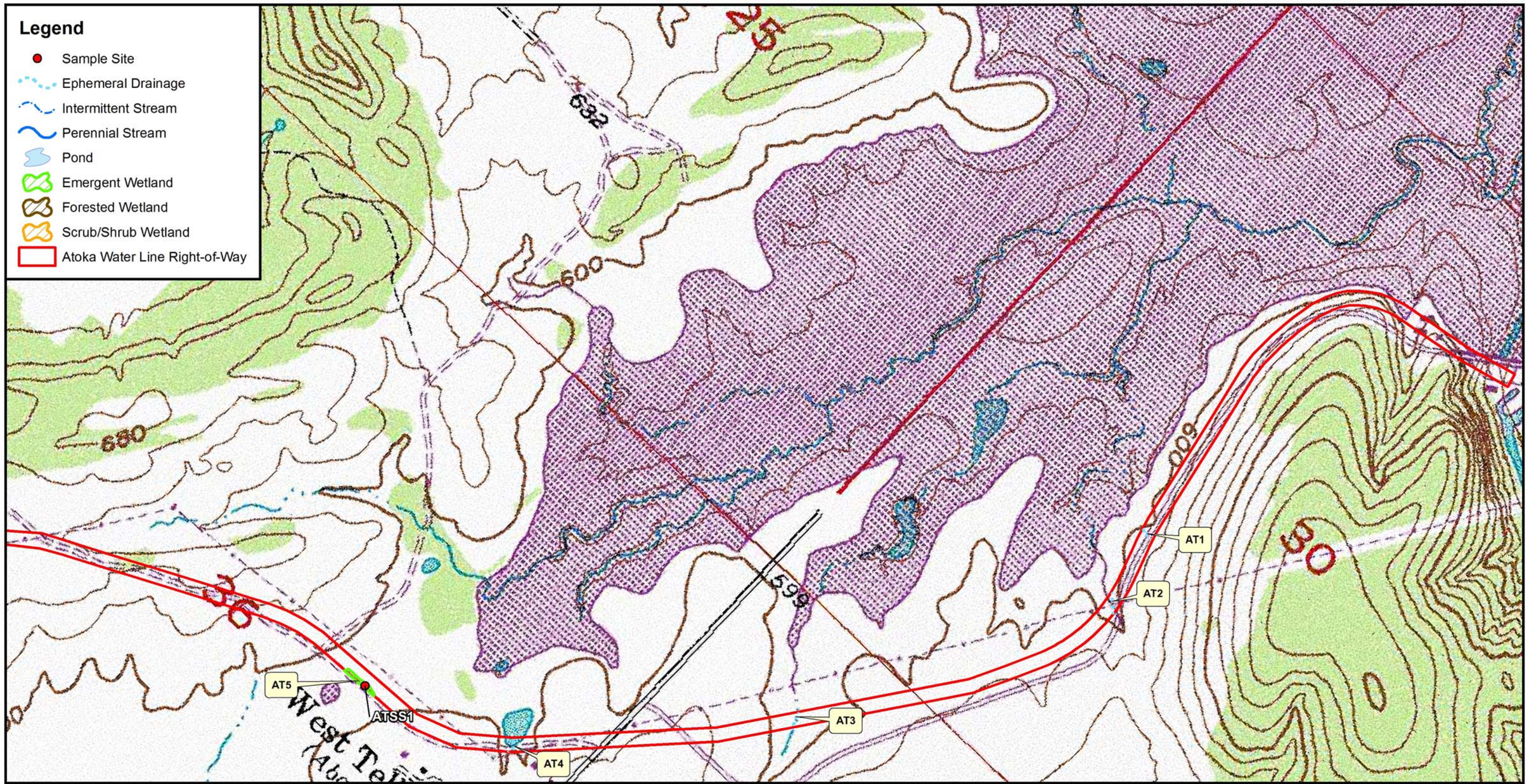
1:100,000

ENERCON

Figure 1: Vicinity Map
Source: ESRI National Geographic World Map
Basemap

Prepared by: A. Couch; July 13, 2016

0 1.25 2.5 5 Miles



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 30 & 31, T1S R12E; Section 36, T1S R11E
Atoka County, Oklahoma

1:8,000

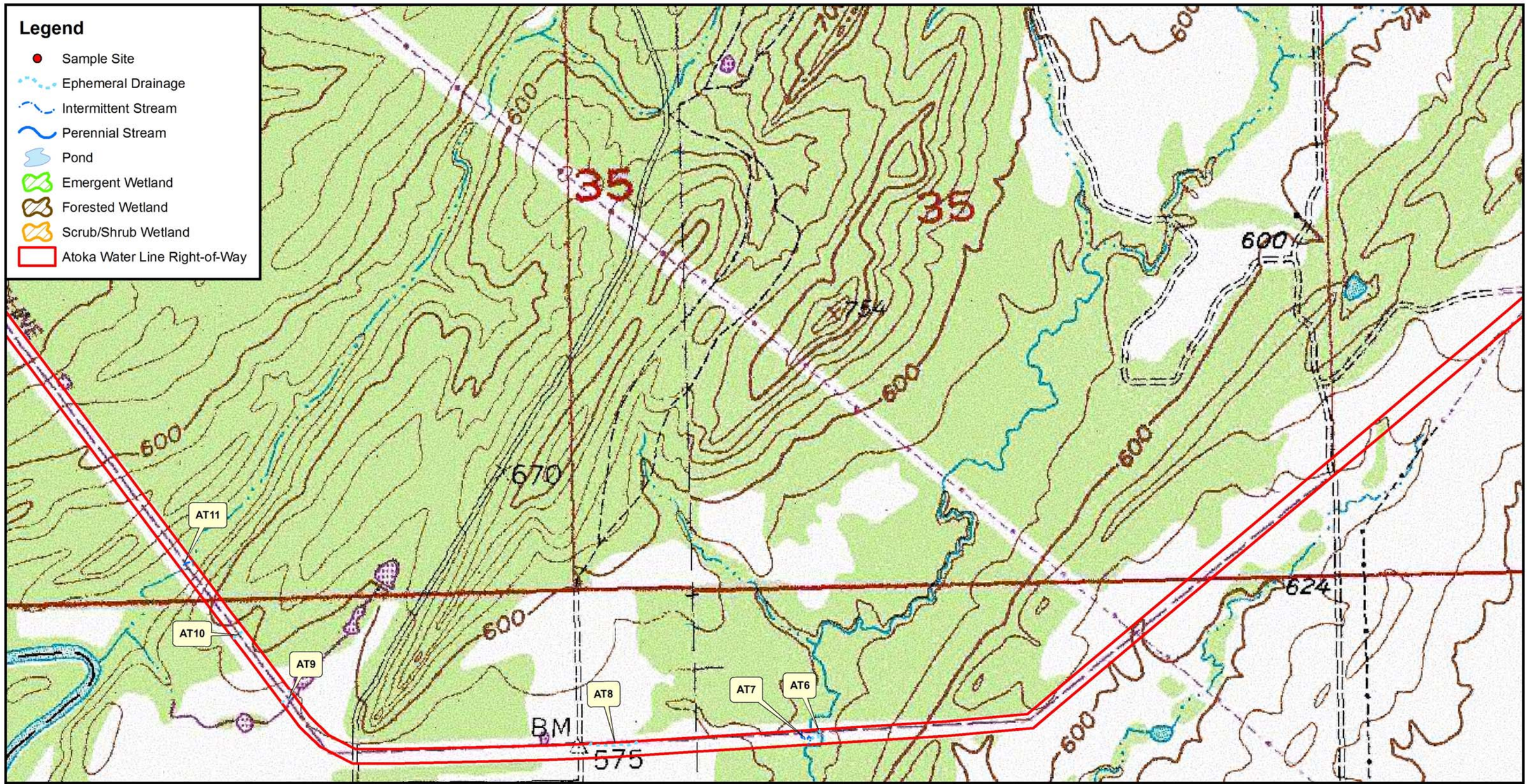
ENERCON

Figure 2.1: Topographic Map

Source: USGS 7.5 Minute Series
Stringtown, OK Quadrangle

Prepared by: A. Couch; July 22, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 36, 35 & 34, T1S R11E; Sections 2 & 3, T2S R11E
Atoka County, Oklahoma

N
W E
S

1:8,000

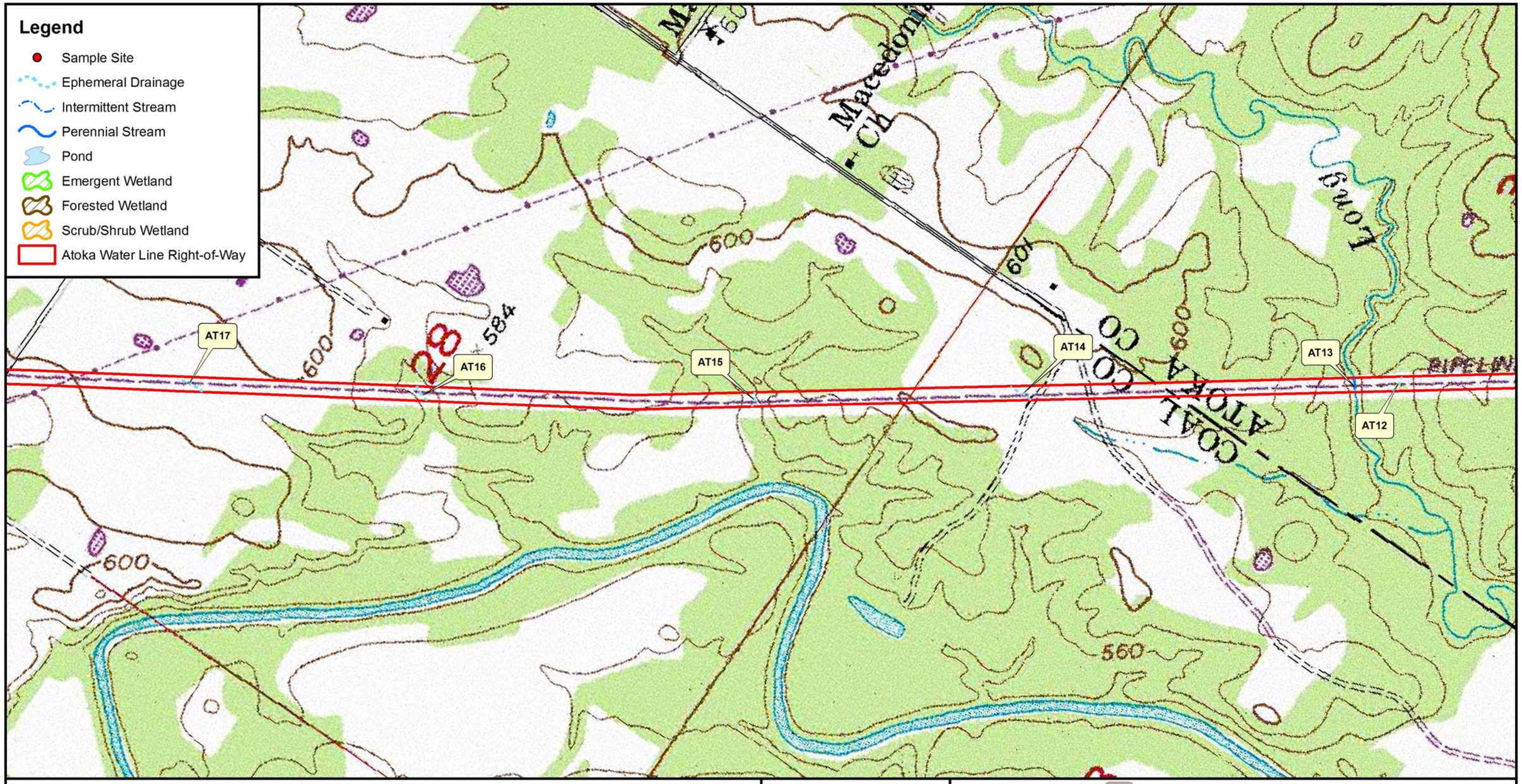
ENERCON

Figure 2.2: Topographic Map

Source: USGS 7.5 Minute Series
Stringtown and Lehigh, OK Quadrangles

Prepared by: A. Couch; July 22, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

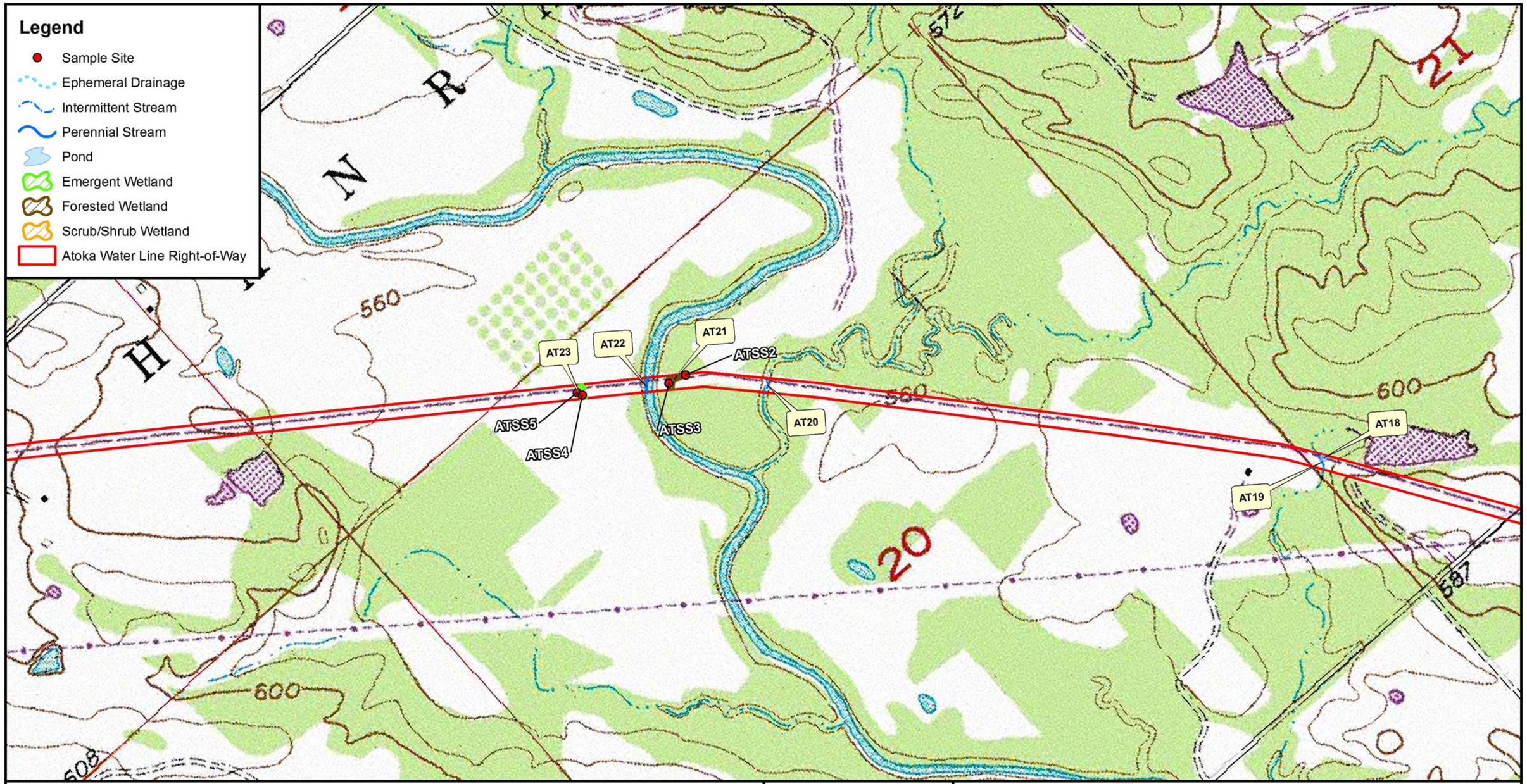
Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 34, 33 & 28, T1S R11E
Atoka and Coal Counties, Oklahoma

1:8,000

ENERCON

Figure 2.3: Topographic Map
Source: USGS 7.5 Minute Series
Lehigh, OK Quadrangle
Prepared by: A. Couch; November 17, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

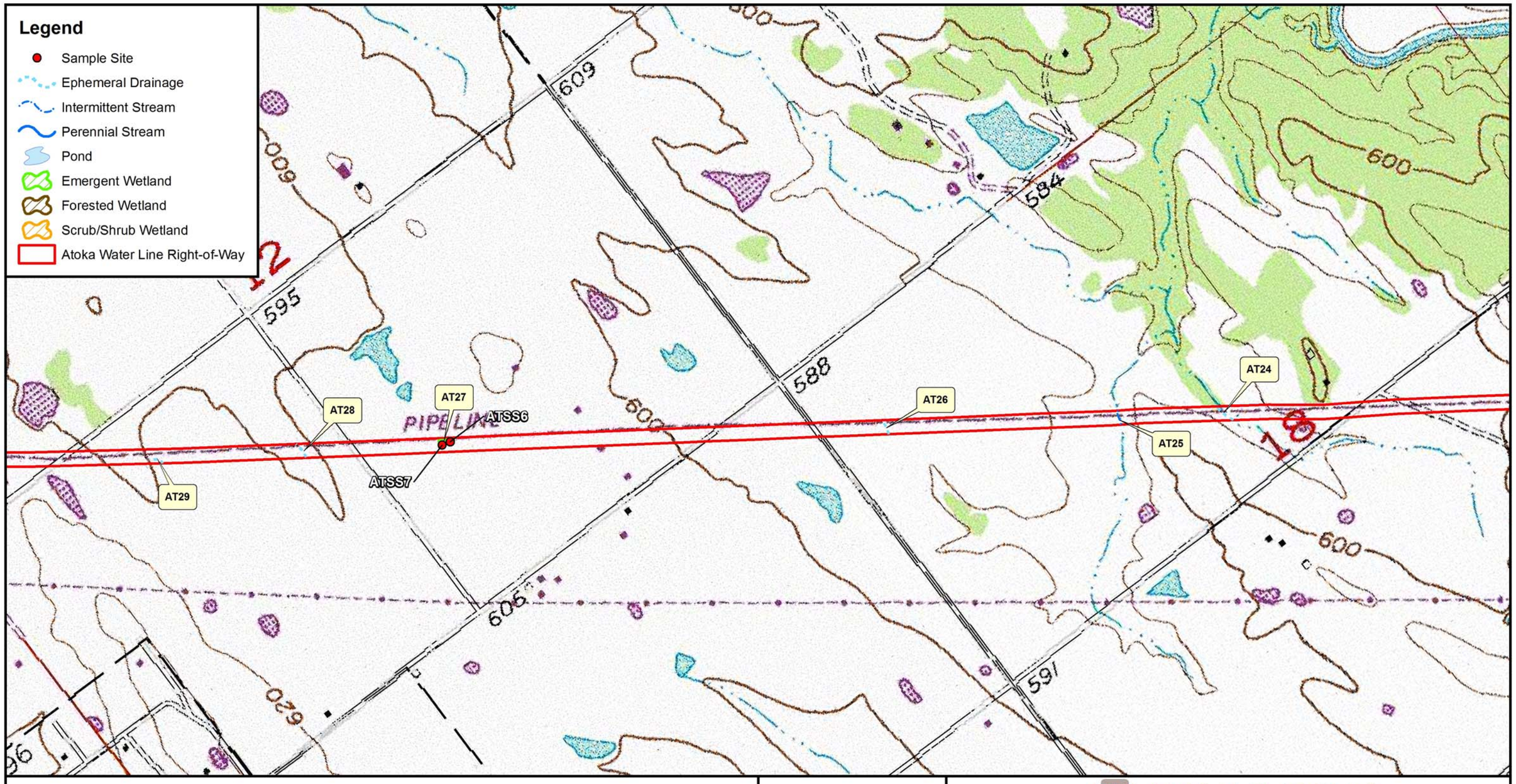
Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 28, 21, 20, 17 & 18, T1S R11E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 2.4: Topographic Map
Source: USGS 7.5 Minute Series
Lehigh, OK Quadrangle
Prepared by: A. Couch; July 22, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

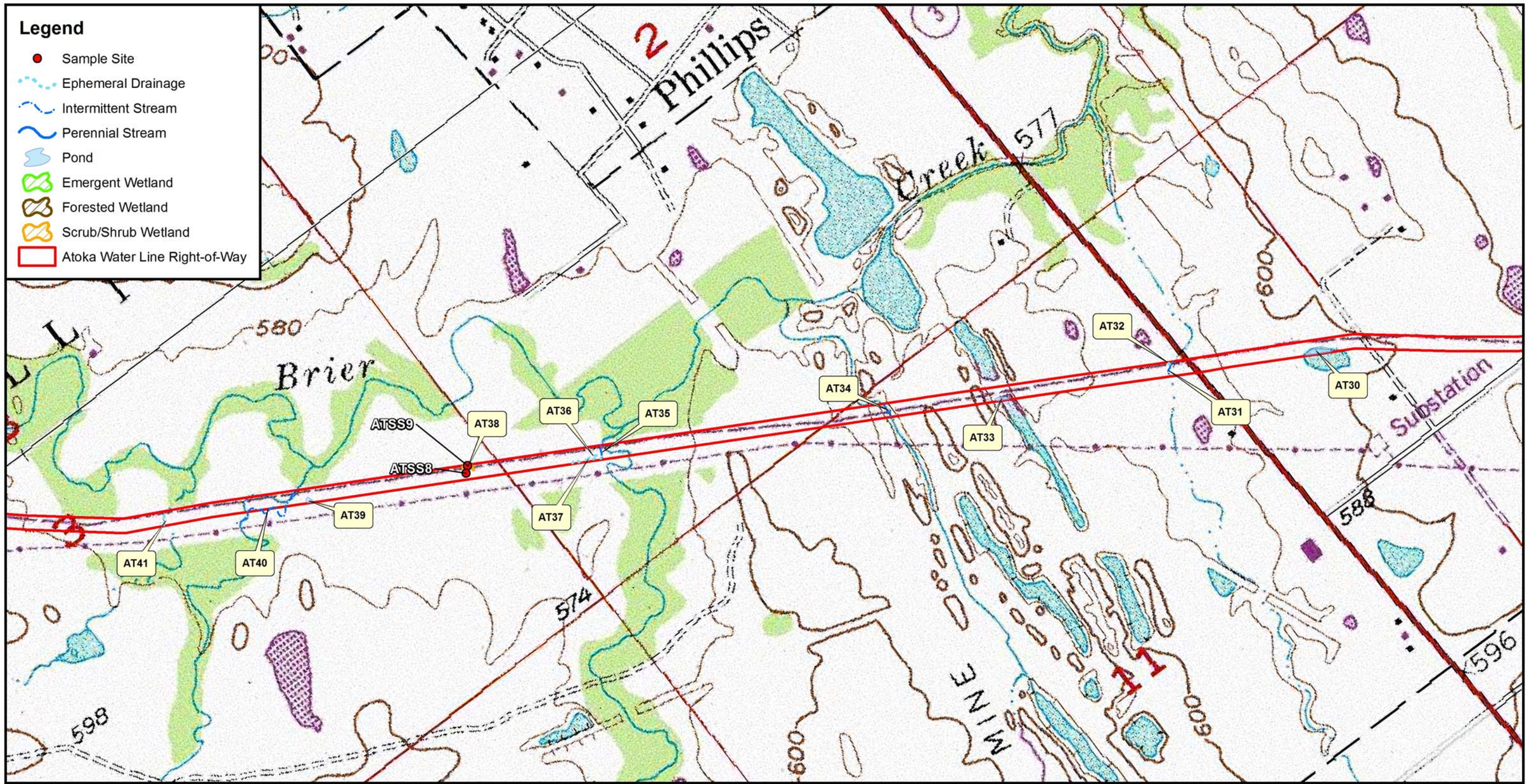
Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Section 18, T1S R11E; Sections 13 & 12, T1S R10E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 2.5: Topographic Map
Source: USGS 7.5 Minute Series
Lehigh, OK Quadrangle
Prepared by: A. Couch; July 22, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 12, 11, 2 & 3, T1S R10E
Coal County, Oklahoma

1:8,000

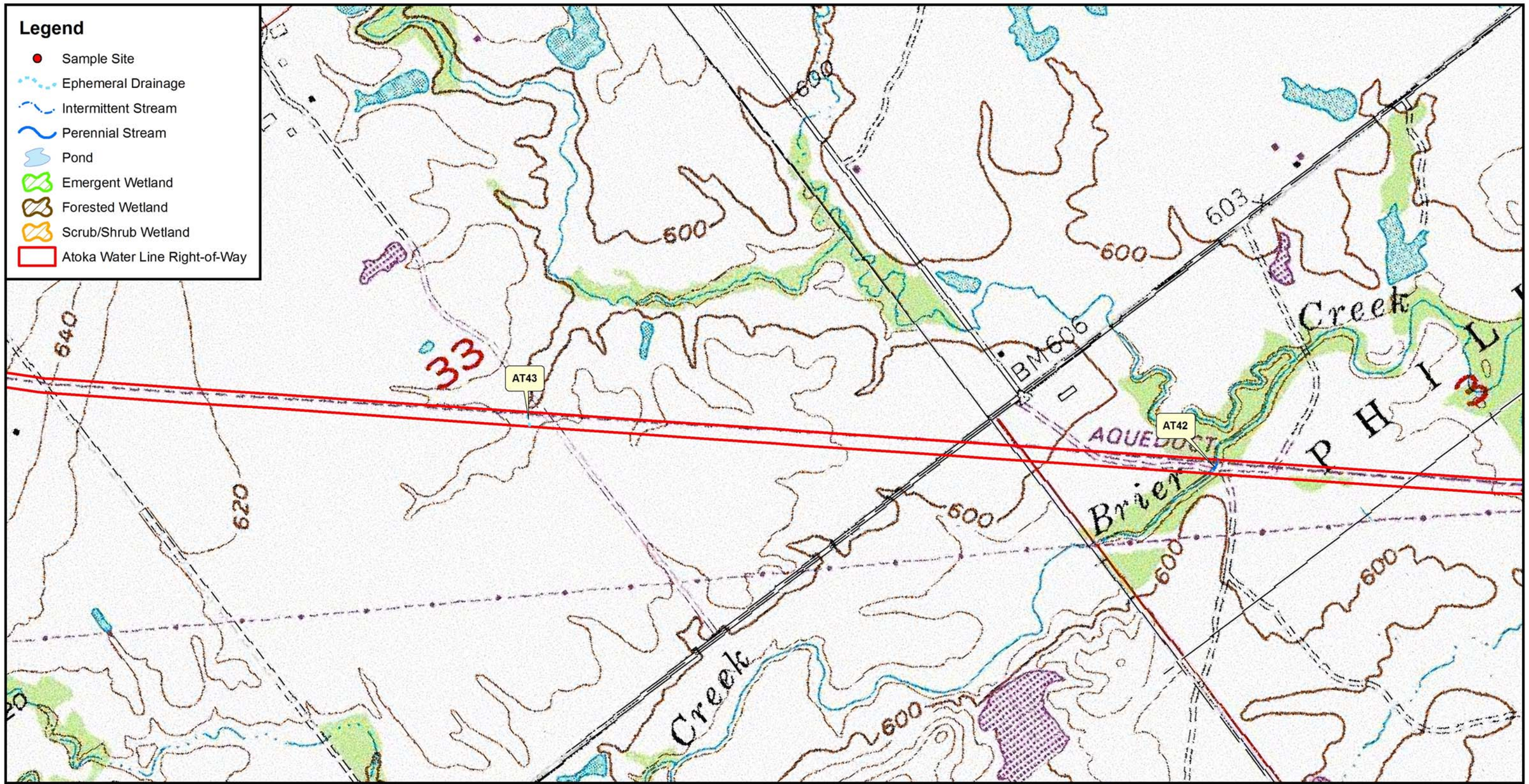
ENERCON

Figure 2.6: Topographic Map

Source: USGS 7.5 Minute Series
Lehigh, OK Quadrangle

Prepared by: A. Couch; July 22, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 3 & 4, T1S R10E; Sections 33 & 32, T1N R10E
Coal County, Oklahoma

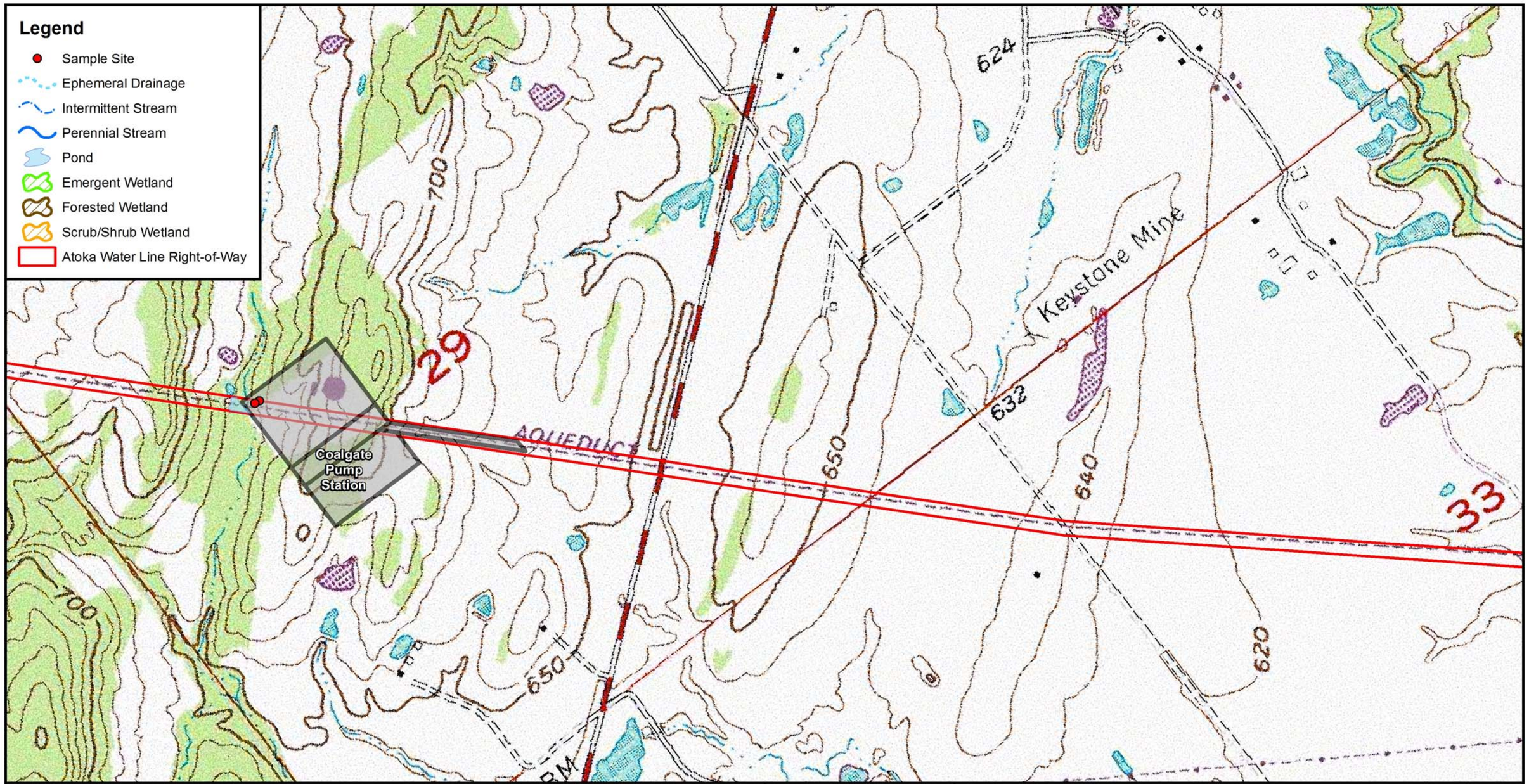
N E S W

1:8,000

ENERCON

Figure 2.7: Topographic Map
Source: USGS 7.5 Minute Series
Lehigh, Coalgate and Centrahoma, OK Quadrangles
Prepared by: A. Couch; July 22, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 33, 32 & 29, T1N R10E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 2.8: Topographic Map
Source: USGS 7.5 Minute Series
Centrahoma, OK Quadrangle
Prepared by: A. Couch; July 22, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 30 & 31, T1S R12E; Section 36, T1S R11E
Atoka County, Oklahoma

1:8,000

ENERCON

Figure 3.1: Aerial Photography

Source: 2015 USDA NAIP
Atoka County, Oklahoma

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 36, 35 & 34, T1S R11E; Sections 2 & 3, T2S R11E
Atoka County, Oklahoma

N
W E
S

1:8,000

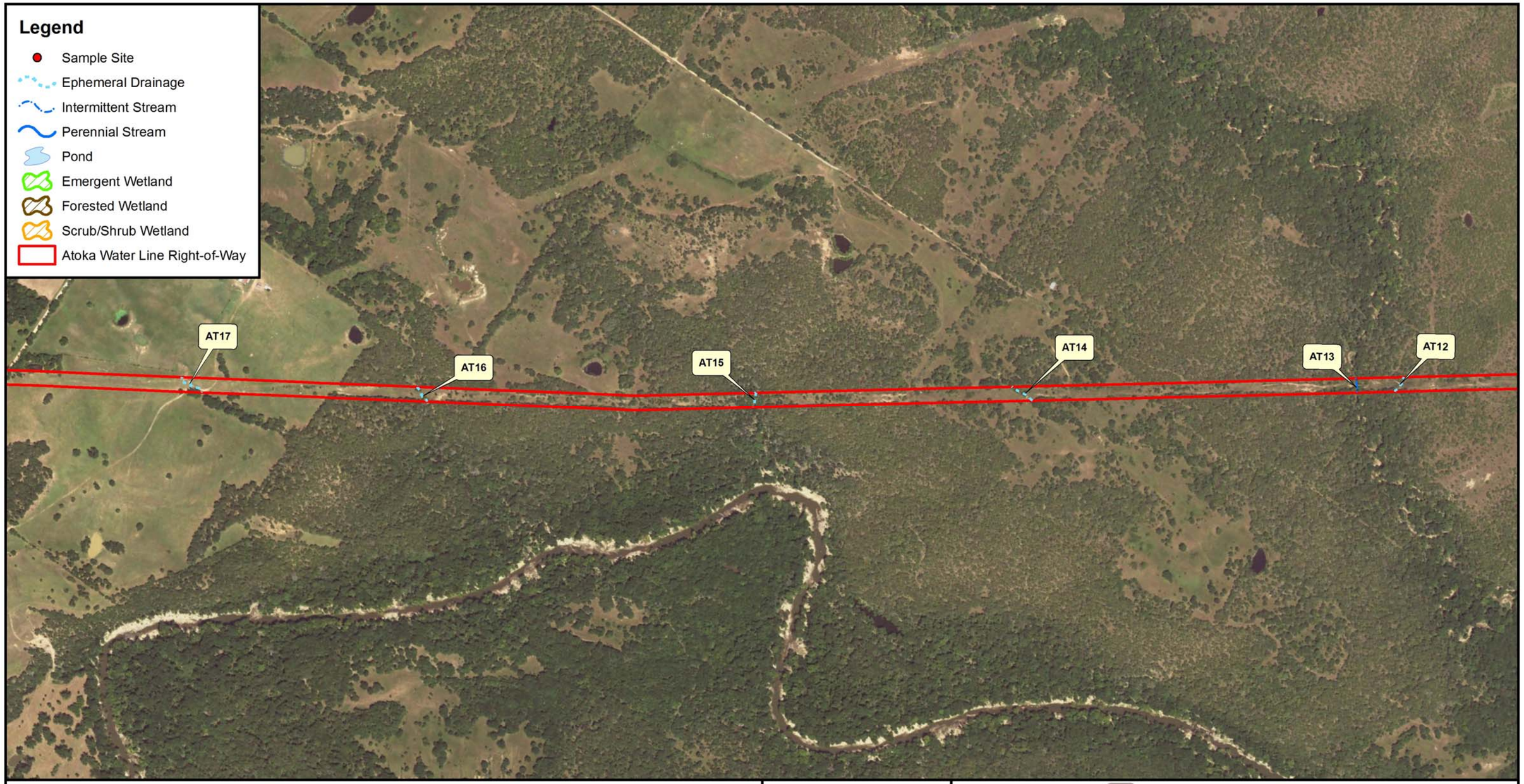
ENERCON

Figure 3.2: Aerial Photography

Source: 2015 USDA NAIP
Atoka County, Oklahoma

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 34, 33 & 28, T1S R11E
Atoka and Coal Counties, Oklahoma

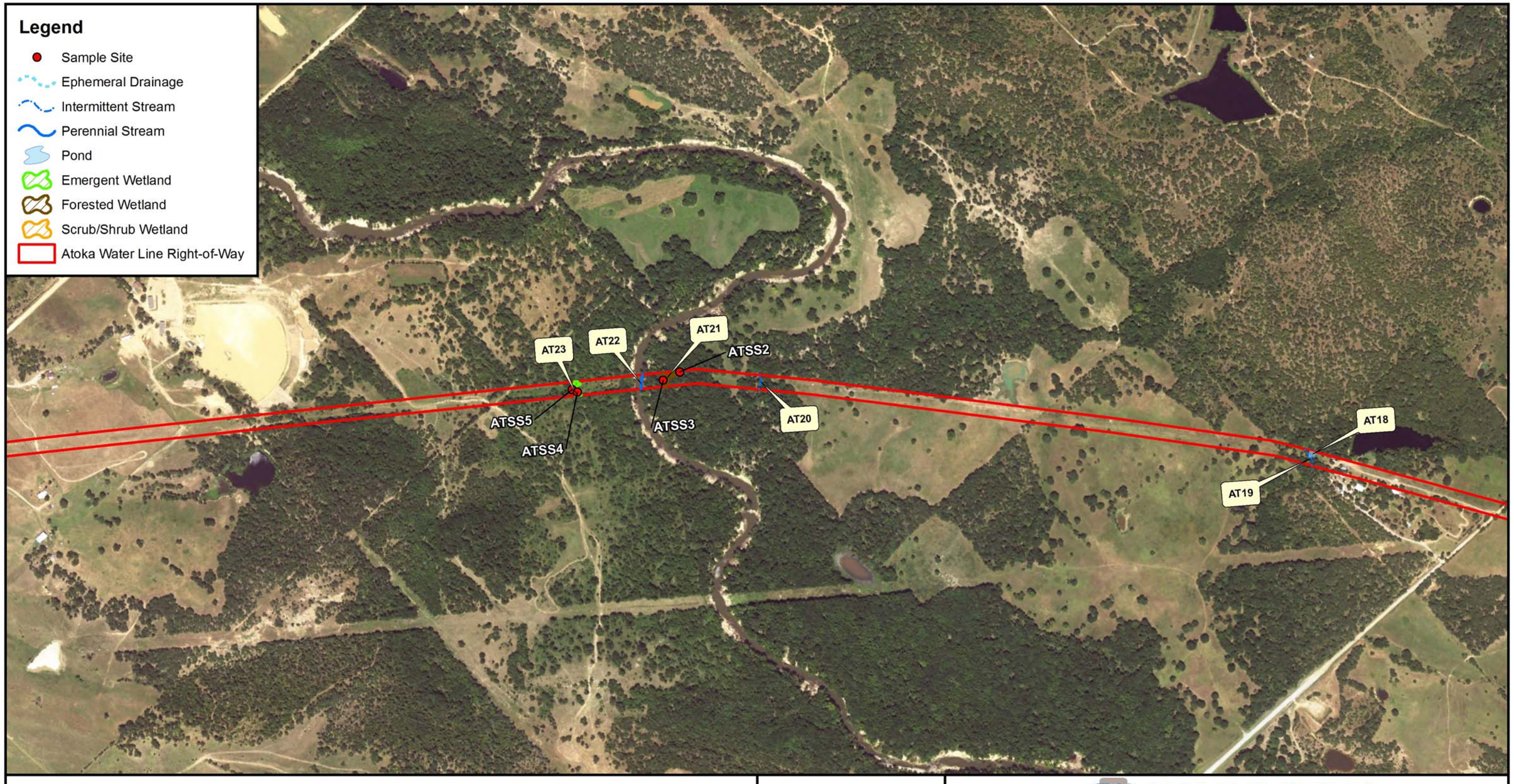
N E S W

1:8,000

ENERCON

Figure 3.3: Aerial Photography
Source: 2015 USDA NAIP
Atoka and Coal Counties, Oklahoma
Prepared by: A. Couch; November 17, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 28, 21, 20, 17 & 18, T1S R11E
Coal County, Oklahoma

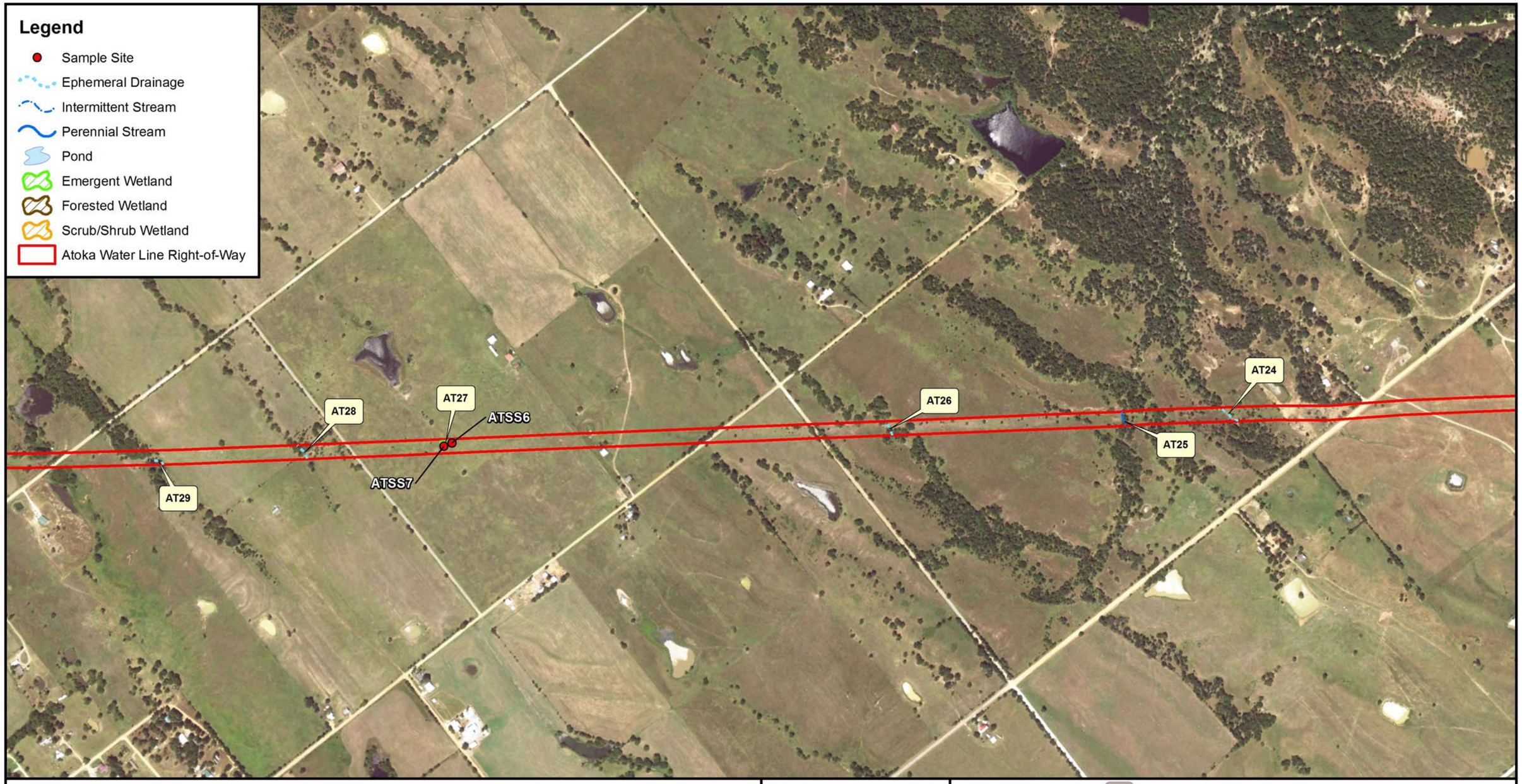
N E W S

1:8,000

ENERCON

Figure 3.4: Aerial Photography
Source: 2015 USDA NAIP
Coal County, Oklahoma
Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Section 18, T1S R11E; Sections 13 & 12, T1S R10E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 3.5: Aerial Photography
Source: 2015 USDA NAIP
Coal County, Oklahoma
Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 12, 11, 2 & 3, T1S R10E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 3.6: Aerial Photography
Source: 2015 USDA NAIP
Coal County, Oklahoma
Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 3 & 4, T1S R10E; Sections 33 & 32, T1N R10E
Coal County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 3.7: Aerial Photography
Source: 2015 USDA NAIP
Coal County, Oklahoma
Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 33, 32 & 29, T1N R10E
Coal County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 3.8: Aerial Photography
Source: 2015 USDA NAIP
Coal County, Oklahoma
Prepared by: A. Couch; July 21, 2016

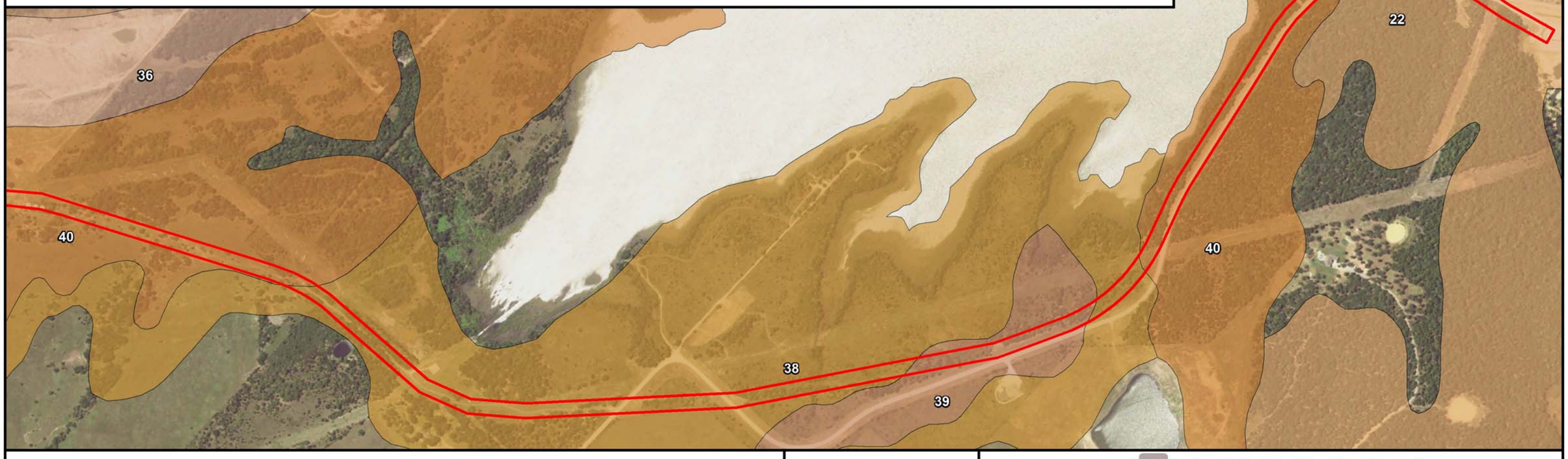
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 22 - Carnasaw-Clebit association
- 27 - Counts loam
- 34 - Endsaw-Hector complex, 3 to 5 percent slopes
- 35 - Endsaw-Hector complex, 5 to 8 percent slopes
- 36 - Endsaw-Hector complex, 8 to 30 percent slopes
- 38 - Eram clay loam, 3 to 5 percent slopes
- 39 - Eram clay loam, 5 to 8 percent slopes
- 40 - Eram-Talihina complex
- 43 - Hamden fine sandy loam
- 45/HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- 62 - Rexor-Dela complex
- 68 - Wrightsville silt loam
- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- Ca - Pharoah silt loam
- ChB - Choteau loam
- En - Rexor loam
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- Lt - Lightning-Healdton complex
- Mp - Kanima very gravelly silty clay loam
- PaA - Parsons silt loam, 0 to 1 percent slopes
- PaB - Parsons silt loam, 1 to 3 percent slopes
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex
- StB - Stidham loamy fine sand



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 30 & 31, T1S R12E; Section 36, T1S R11E
Atoka County, Oklahoma

N W E S

1:8,000

ENERCON

Figure 4.1: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Atoka County, Oklahoma; 2015 USDA NAIP
Prepared by: A. Couch; July 15, 2016

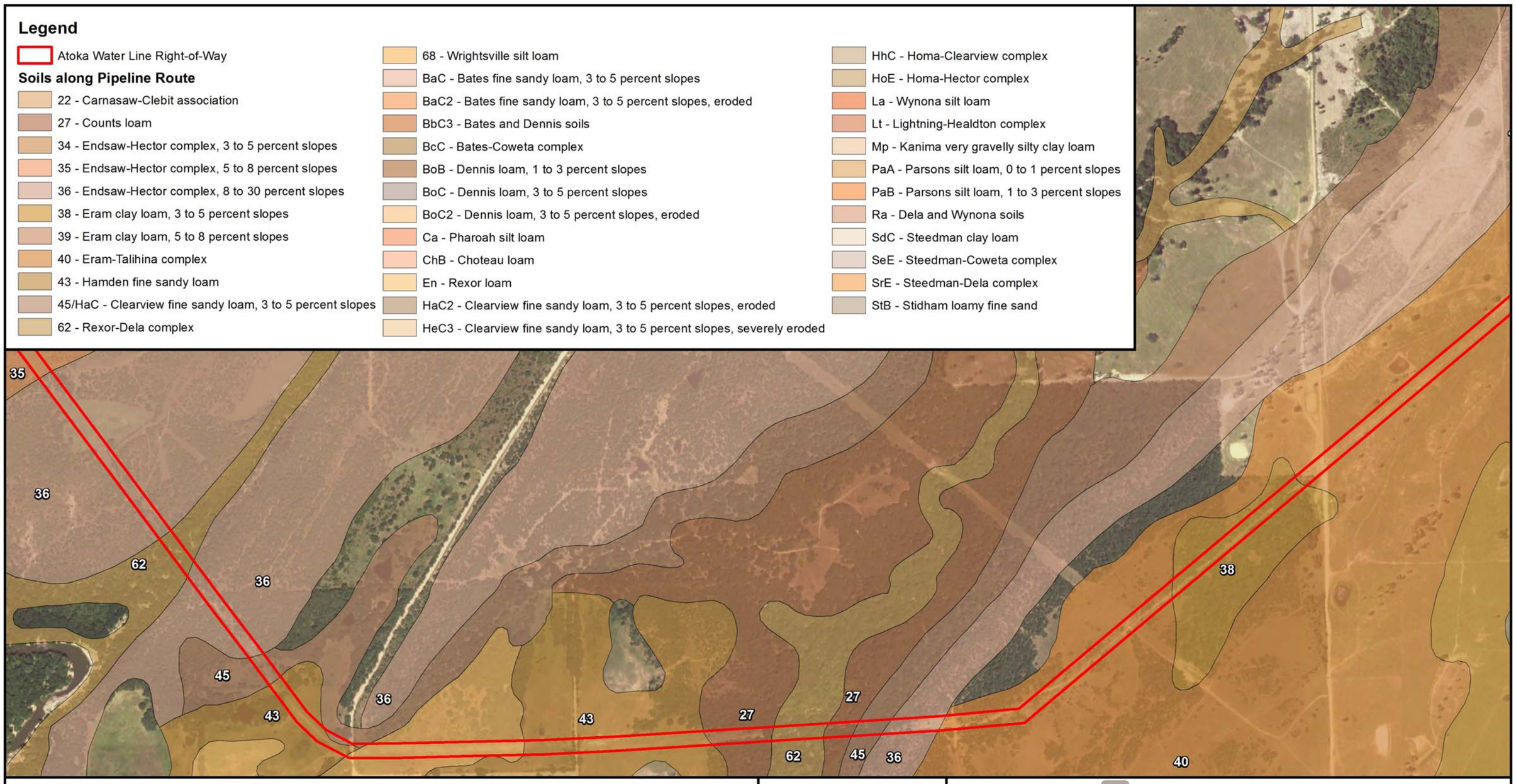
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 22 - Carnasaw-Clebit association
- 27 - Counts loam
- 34 - Endsaw-Hector complex, 3 to 5 percent slopes
- 35 - Endsaw-Hector complex, 5 to 8 percent slopes
- 36 - Endsaw-Hector complex, 8 to 30 percent slopes
- 38 - Eram clay loam, 3 to 5 percent slopes
- 39 - Eram clay loam, 5 to 8 percent slopes
- 40 - Eram-Talihina complex
- 43 - Hamden fine sandy loam
- 45/HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- 62 - Rexor-Dela complex
- 68 - Wrightsville silt loam
- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- Ca - Pharoah silt loam
- ChB - Choteau loam
- En - Rexor loam
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- Lt - Lightning-Healdton complex
- Mp - Kanima very gravelly silty clay loam
- PaA - Parsons silt loam, 0 to 1 percent slopes
- PaB - Parsons silt loam, 1 to 3 percent slopes
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex
- StB - Stidham loamy fine sand



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
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: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Atoka County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 15, 2016

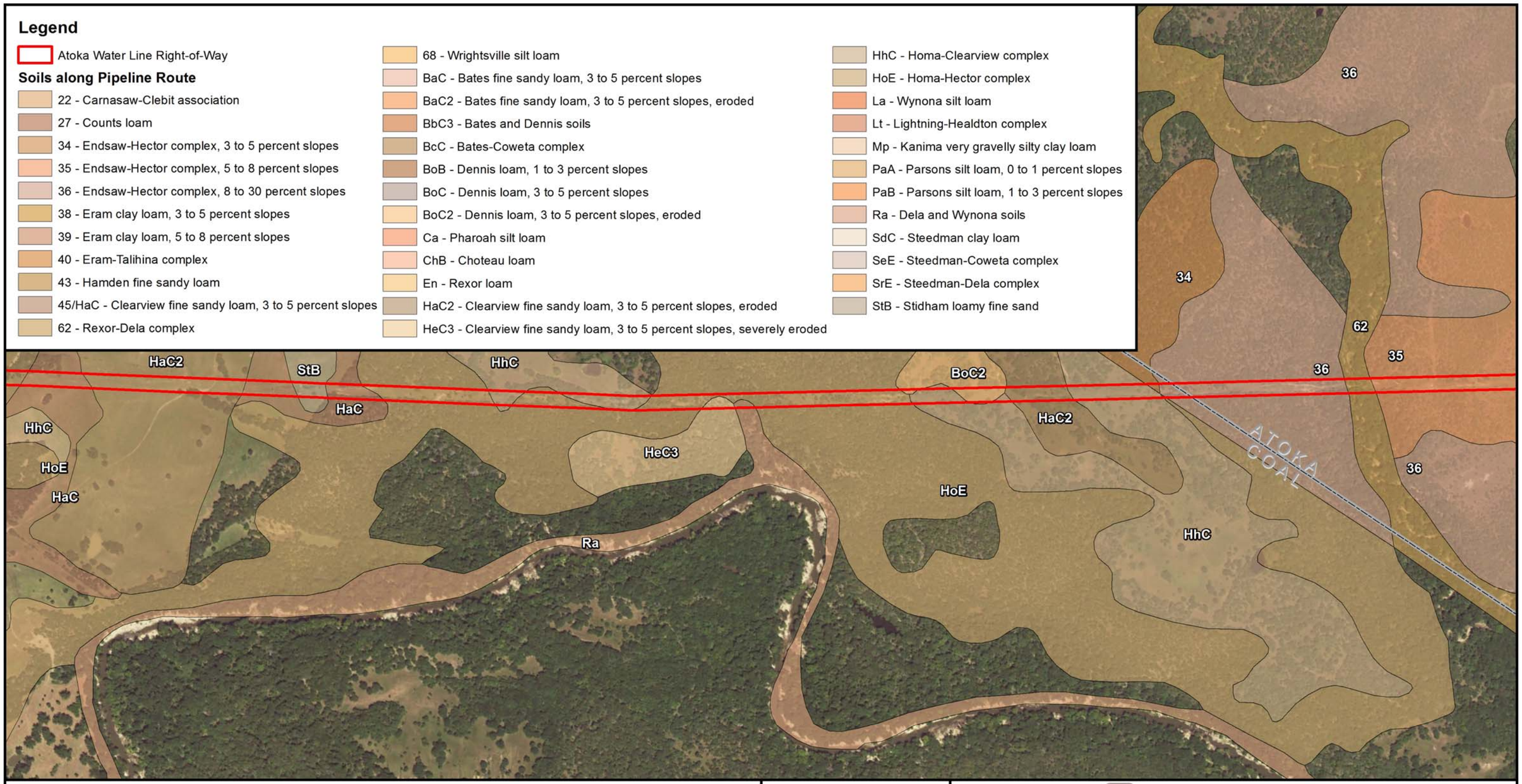
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 22 - Carnasaw-Clebit association
- 27 - Counts loam
- 34 - Endsaw-Hector complex, 3 to 5 percent slopes
- 35 - Endsaw-Hector complex, 5 to 8 percent slopes
- 36 - Endsaw-Hector complex, 8 to 30 percent slopes
- 38 - Eram clay loam, 3 to 5 percent slopes
- 39 - Eram clay loam, 5 to 8 percent slopes
- 40 - Eram-Talihina complex
- 43 - Hamden fine sandy loam
- 45/HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- 62 - Rexor-Dela complex
- 68 - Wrightsville silt loam
- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- Ca - Pharoah silt loam
- ChB - Choteau loam
- En - Rexor loam
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- Lt - Lightning-Healdton complex
- Mp - Kanima very gravelly silty clay loam
- PaA - Parsons silt loam, 0 to 1 percent slopes
- PaB - Parsons silt loam, 1 to 3 percent slopes
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex
- StB - Stidham loamy fine sand



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 34, 33 & 28, T1S R11E
Atoka and Coal Counties, Oklahoma

N E S W

1:8,000

ENERCON

Figure 4.3: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Atoka and Coal Counties, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 22, 2016

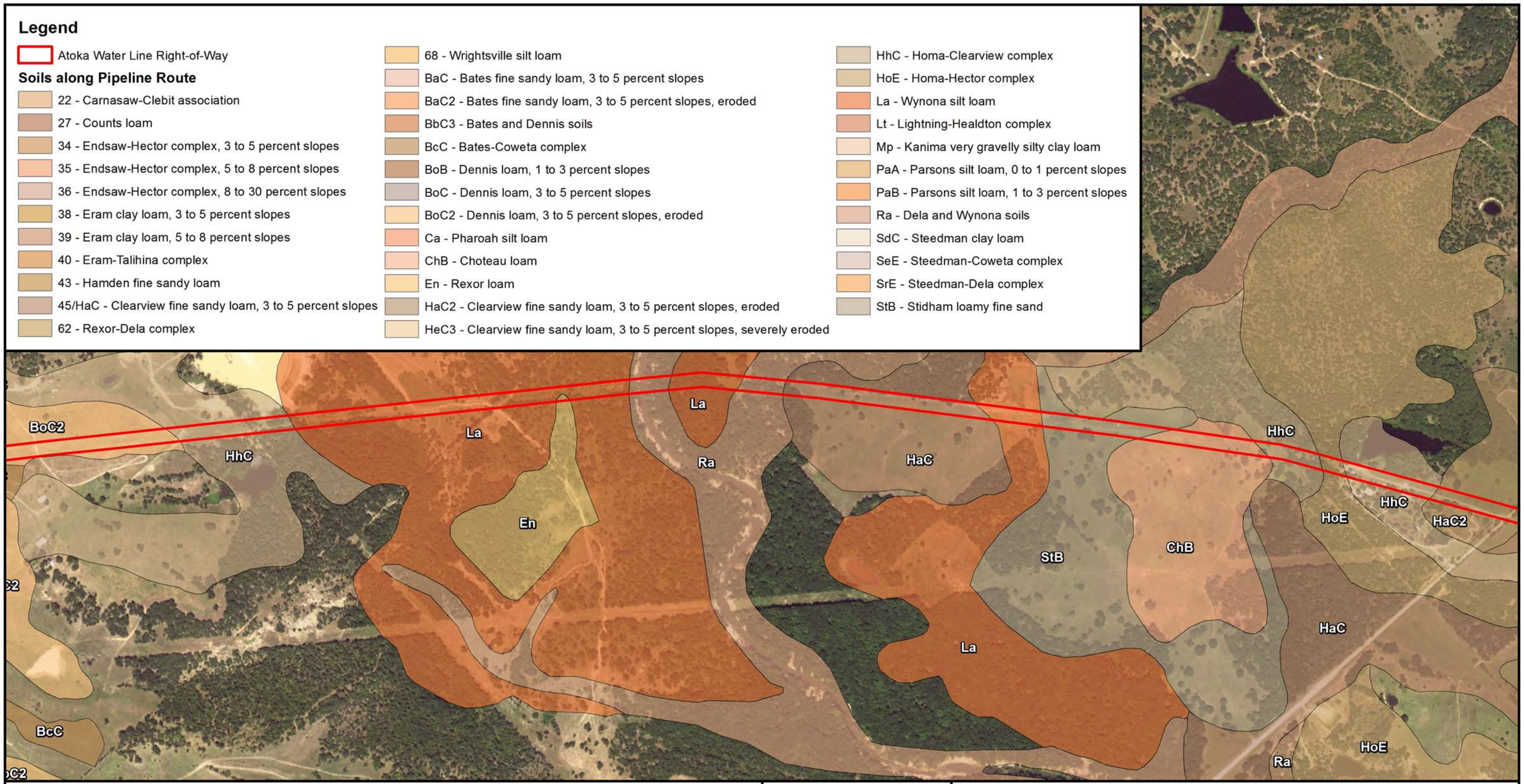
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 22 - Carnasaw-Clebit association
- 27 - Counts loam
- 34 - Endsaw-Hector complex, 3 to 5 percent slopes
- 35 - Endsaw-Hector complex, 5 to 8 percent slopes
- 36 - Endsaw-Hector complex, 8 to 30 percent slopes
- 38 - Eram clay loam, 3 to 5 percent slopes
- 39 - Eram clay loam, 5 to 8 percent slopes
- 40 - Eram-Talihina complex
- 43 - Hamden fine sandy loam
- 45/HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- 62 - Rexor-Dela complex
- 68 - Wrightsville silt loam
- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- Ca - Pharoah silt loam
- ChB - Choteau loam
- En - Rexor loam
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- Lt - Lightning-Healdton complex
- Mp - Kanima very gravelly silty clay loam
- PaA - Parsons silt loam, 0 to 1 percent slopes
- PaB - Parsons silt loam, 1 to 3 percent slopes
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex
- StB - Stidham loamy fine sand



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 28, 21, 20, 17 & 18, T1S R11E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 4.4: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Coal County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 15, 2016

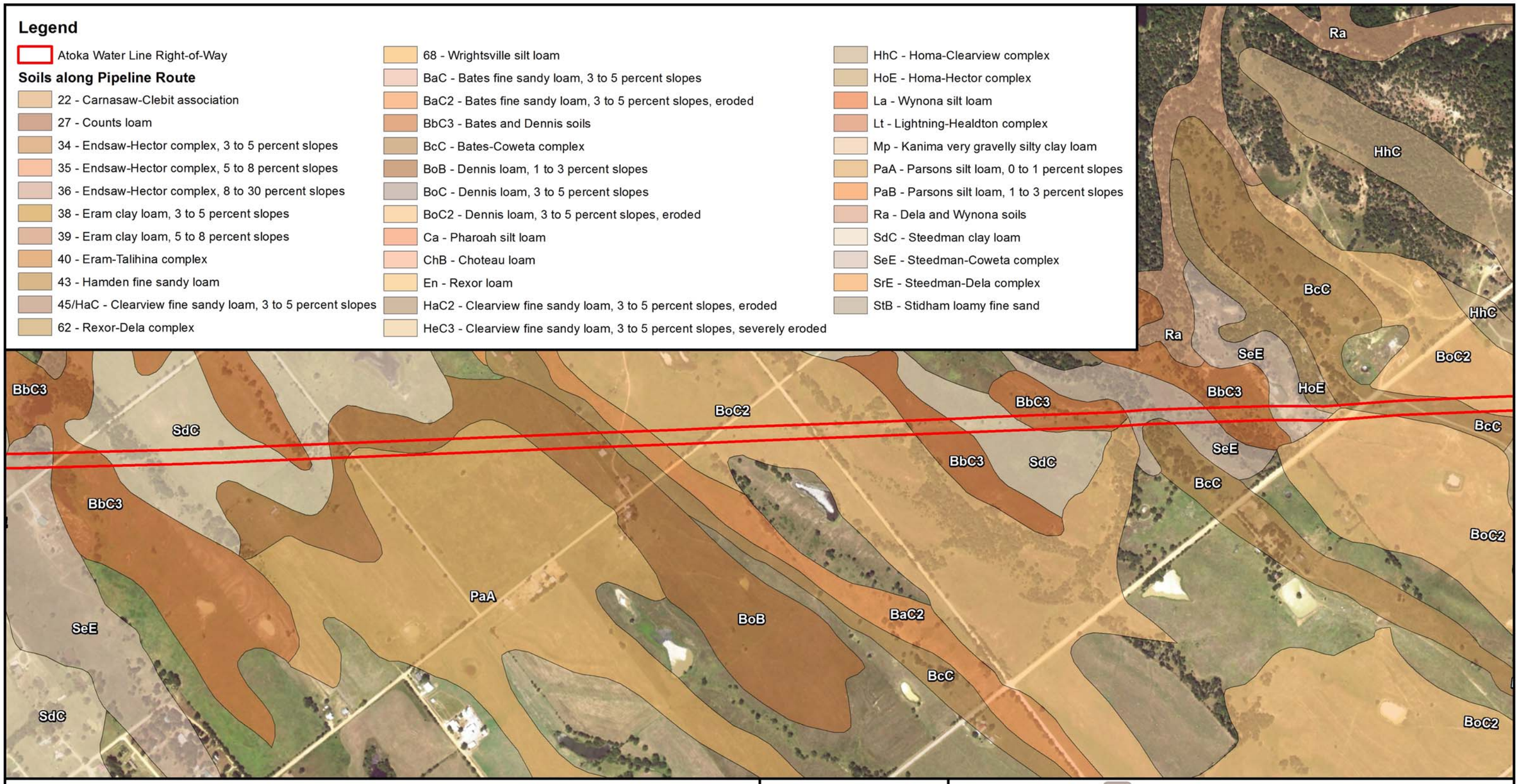
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 22 - Carnasaw-Clebit association
- 27 - Counts loam
- 34 - Endsaw-Hector complex, 3 to 5 percent slopes
- 35 - Endsaw-Hector complex, 5 to 8 percent slopes
- 36 - Endsaw-Hector complex, 8 to 30 percent slopes
- 38 - Eram clay loam, 3 to 5 percent slopes
- 39 - Eram clay loam, 5 to 8 percent slopes
- 40 - Eram-Talihina complex
- 43 - Hamden fine sandy loam
- 45/HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- 62 - Rexor-Dela complex
- 68 - Wrightsville silt loam
- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- Ca - Pharoah silt loam
- ChB - Choteau loam
- En - Rexor loam
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- Lt - Lightning-Healdton complex
- Mp - Kanima very gravelly silty clay loam
- PaA - Parsons silt loam, 0 to 1 percent slopes
- PaB - Parsons silt loam, 1 to 3 percent slopes
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex
- StB - Stidham loamy fine sand



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Section 18, T1S R11E; Sections 13 & 12, T1S R10E
Coal County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.5: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Coal County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 15, 2016

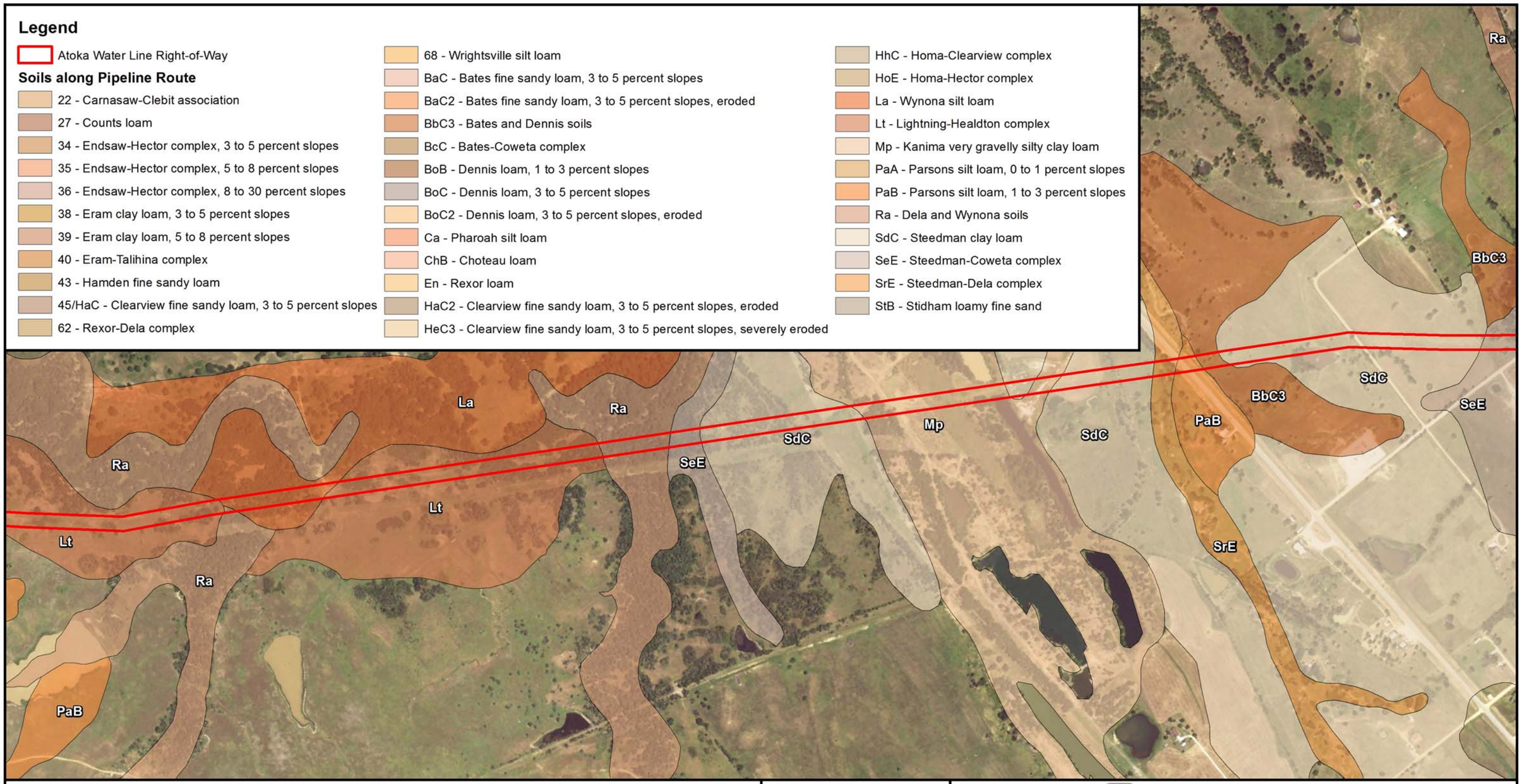
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 22 - Carnasaw-Clebit association
- 27 - Counts loam
- 34 - Endsaw-Hector complex, 3 to 5 percent slopes
- 35 - Endsaw-Hector complex, 5 to 8 percent slopes
- 36 - Endsaw-Hector complex, 8 to 30 percent slopes
- 38 - Eram clay loam, 3 to 5 percent slopes
- 39 - Eram clay loam, 5 to 8 percent slopes
- 40 - Eram-Talihina complex
- 43 - Hamden fine sandy loam
- 45/HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- 62 - Rexor-Dela complex
- 68 - Wrightsville silt loam
- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- Ca - Pharoah silt loam
- ChB - Choteau loam
- En - Rexor loam
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- Lt - Lightning-Healdton complex
- Mp - Kanima very gravelly silty clay loam
- PaA - Parsons silt loam, 0 to 1 percent slopes
- PaB - Parsons silt loam, 1 to 3 percent slopes
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex
- StB - Stidham loamy fine sand



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 12, 11, 2 & 3, T1S R10E
Coal County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 4.6: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Coal County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 15, 2016

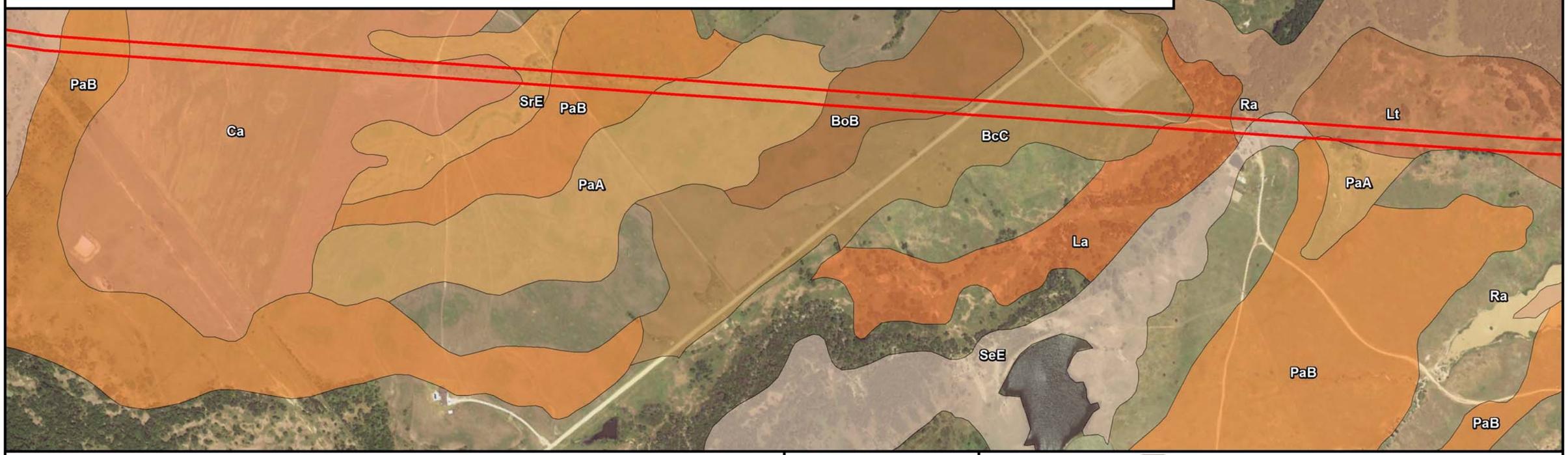
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 22 - Carnasaw-Clebit association
- 27 - Counts loam
- 34 - Endsaw-Hector complex, 3 to 5 percent slopes
- 35 - Endsaw-Hector complex, 5 to 8 percent slopes
- 36 - Endsaw-Hector complex, 8 to 30 percent slopes
- 38 - Eram clay loam, 3 to 5 percent slopes
- 39 - Eram clay loam, 5 to 8 percent slopes
- 40 - Eram-Talihina complex
- 43 - Hamden fine sandy loam
- 45/HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- 62 - Rexor-Dela complex
- 68 - Wrightsville silt loam
- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- Ca - Pharoah silt loam
- ChB - Choteau loam
- En - Rexor loam
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- Lt - Lightning-Healdton complex
- Mp - Kanima very gravelly silty clay loam
- PaA - Parsons silt loam, 0 to 1 percent slopes
- PaB - Parsons silt loam, 1 to 3 percent slopes
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex
- StB - Stidham loamy fine sand



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 3 & 4, T1S R10E; Sections 33 & 32, T1N R10E
Coal County, Oklahoma

N E W S

1:8,000

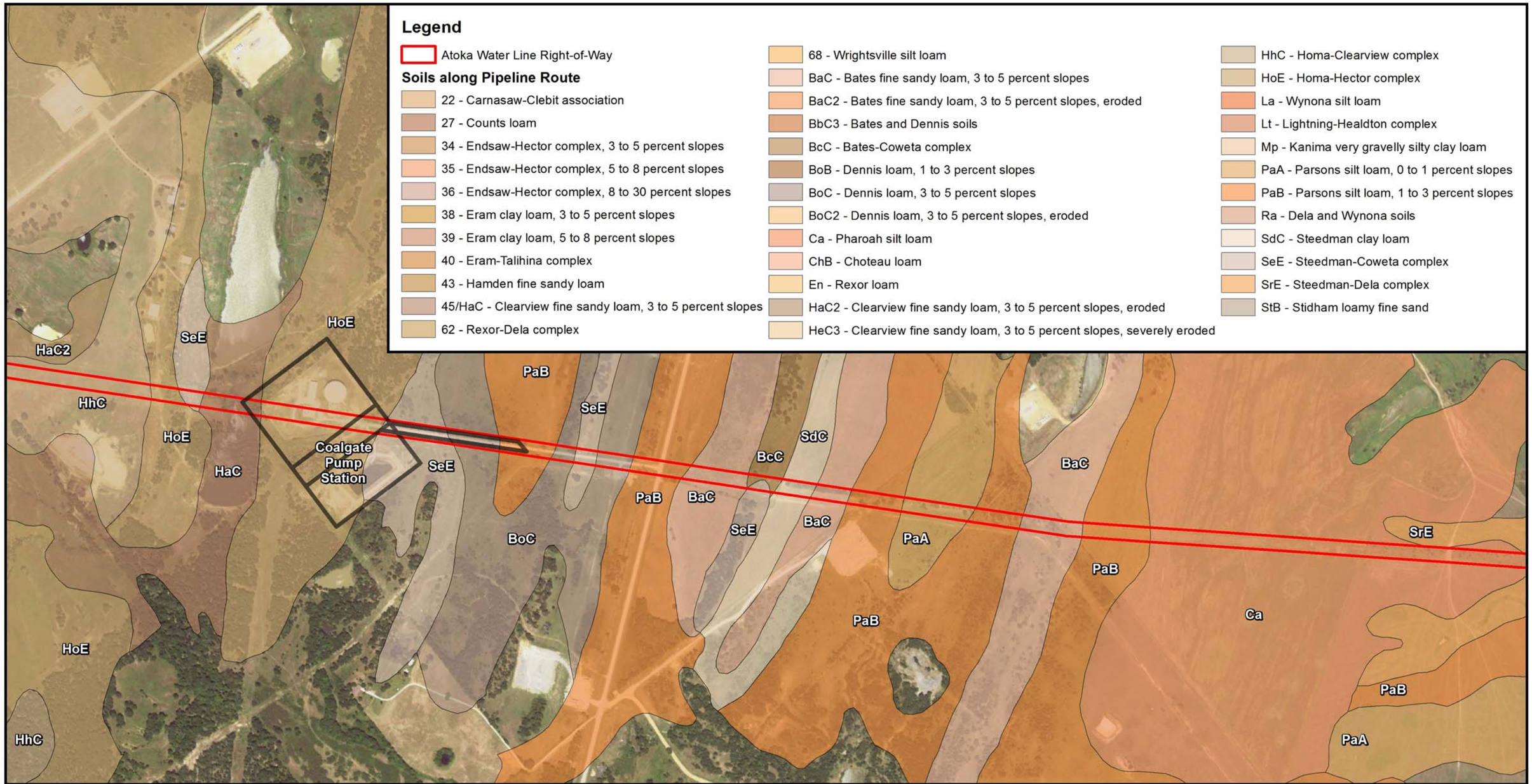
ENERCON

Figure 4.7: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Coal County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 33, 32 & 29, T1N R10E
Coal County, Oklahoma

N E W S

1:8,000

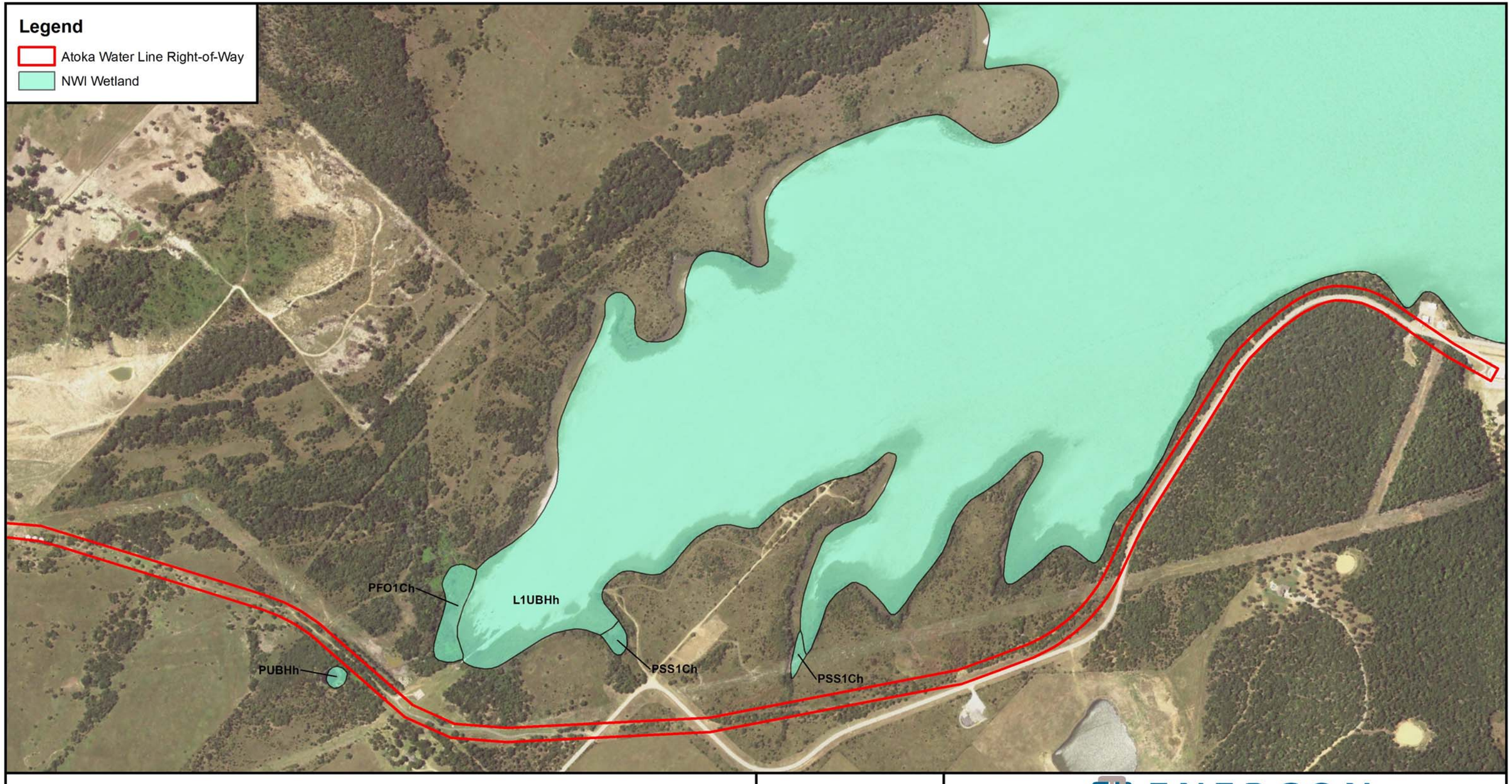
ENERCON

Figure 4.8: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Coal County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 30 & 31, T1S R12E; Section 36, T1S R11E
Atoka County, Oklahoma

1:8,000

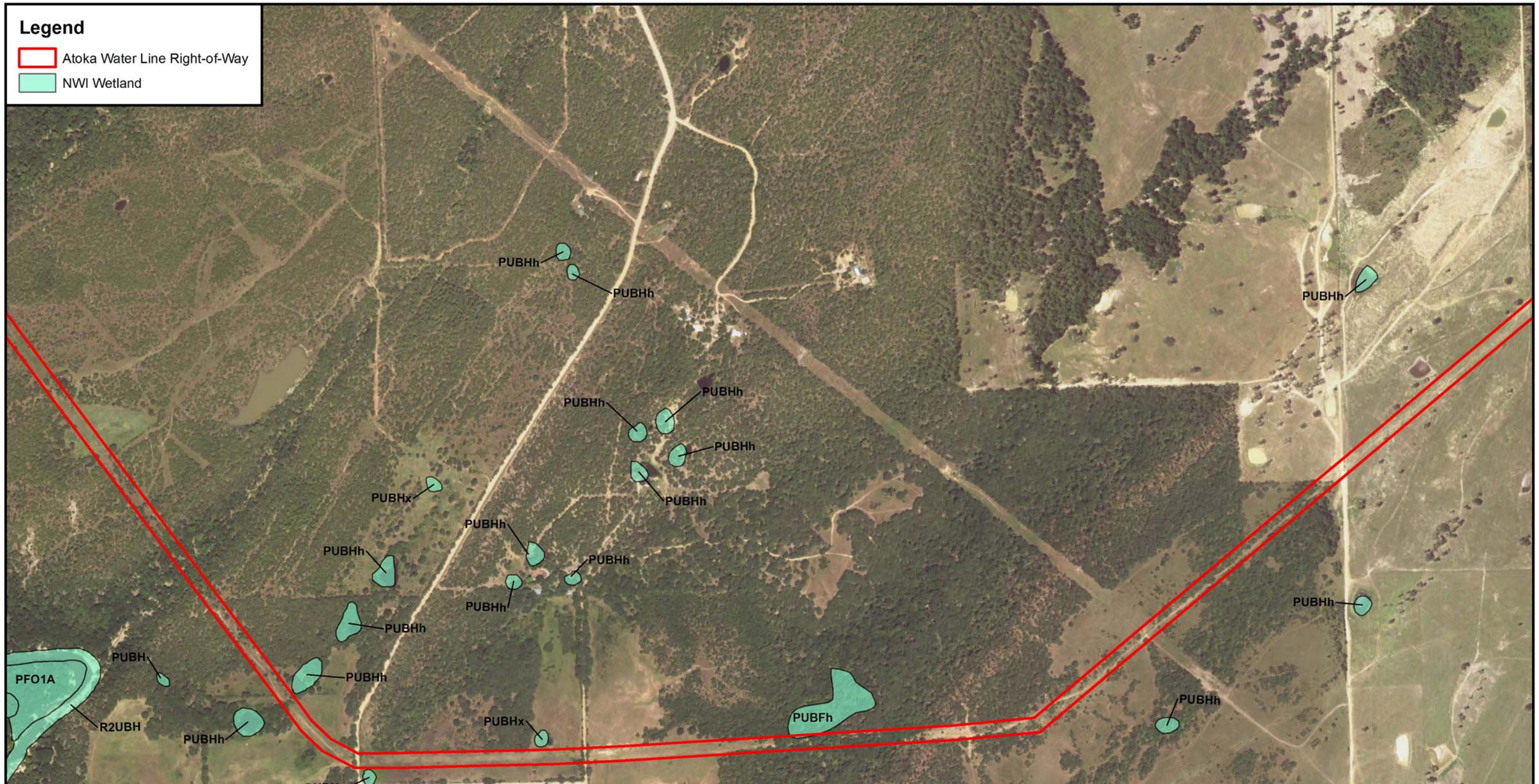
ENERCON

Figure 5.1: NWI Map

Source: US Fish and Wildlife Service - NWI Stringtown, OK Quadrangle
2015 USDA NAIP - Atoka County, Oklahoma

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 36, 35 & 34, T1S R11E; Sections 2 & 3, T2S R11E
Atoka County, Oklahoma

N
W E
S

1:8,000

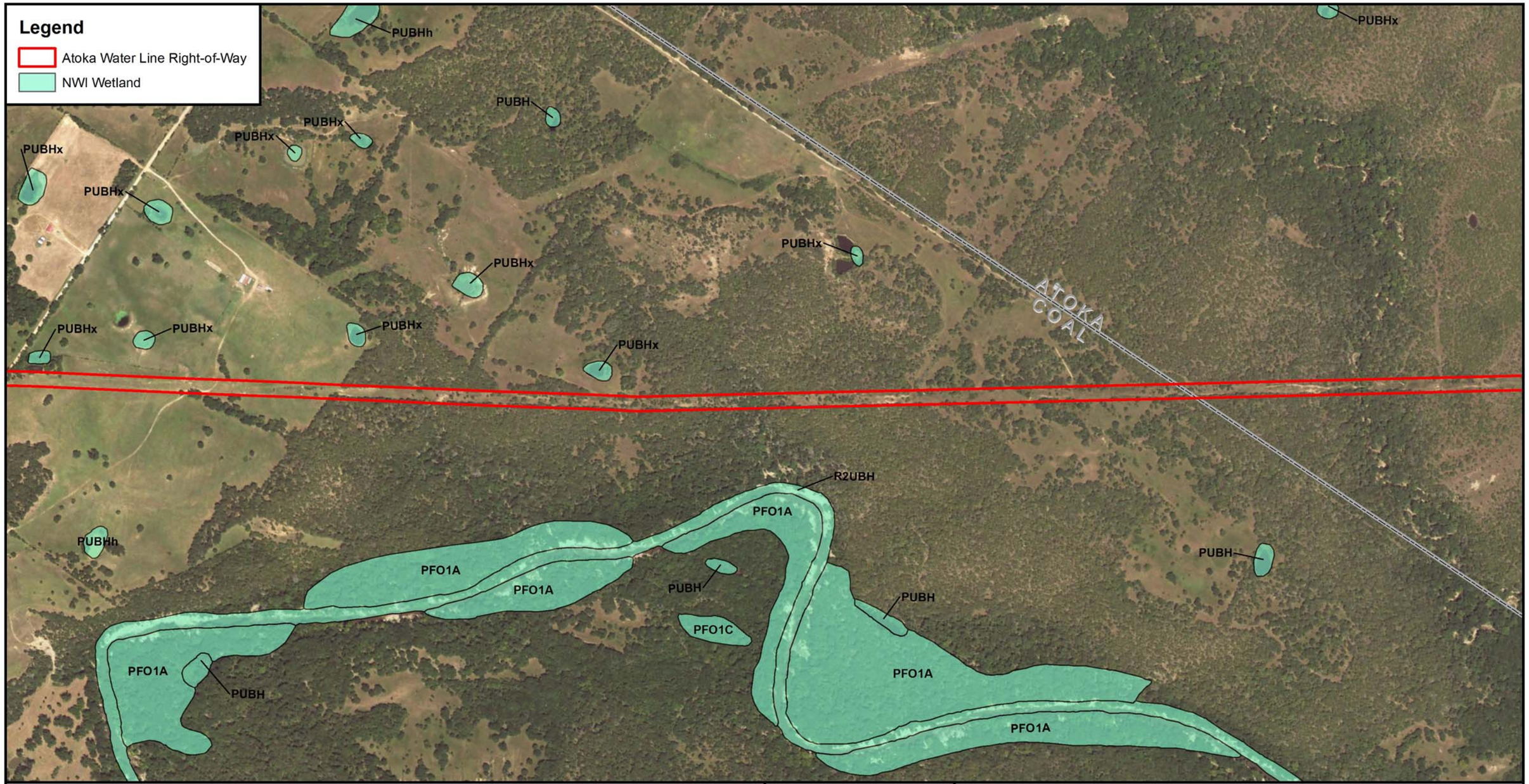
ENERCON

Figure 5.2: NWI Map

Source: US Fish and Wildlife Service - NWI Stringtown and Lehigh, OK Quadrangles
2015 USDA NAIP - Atoka County, Oklahoma

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 34, 33 & 28, T1S R11E
Atoka and Coal Counties, Oklahoma

1:8,000

ENERCON

Figure 5.3: NWI Map

Source: US Fish and Wildlife Service - NWI Lehigh, OK Quadrangle
2015 USDA NAIP - Atoka and Coal Counties, Oklahoma

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 28, 21, 20, 17 & 18, T1S R11E
Coal County, Oklahoma

1:8,000

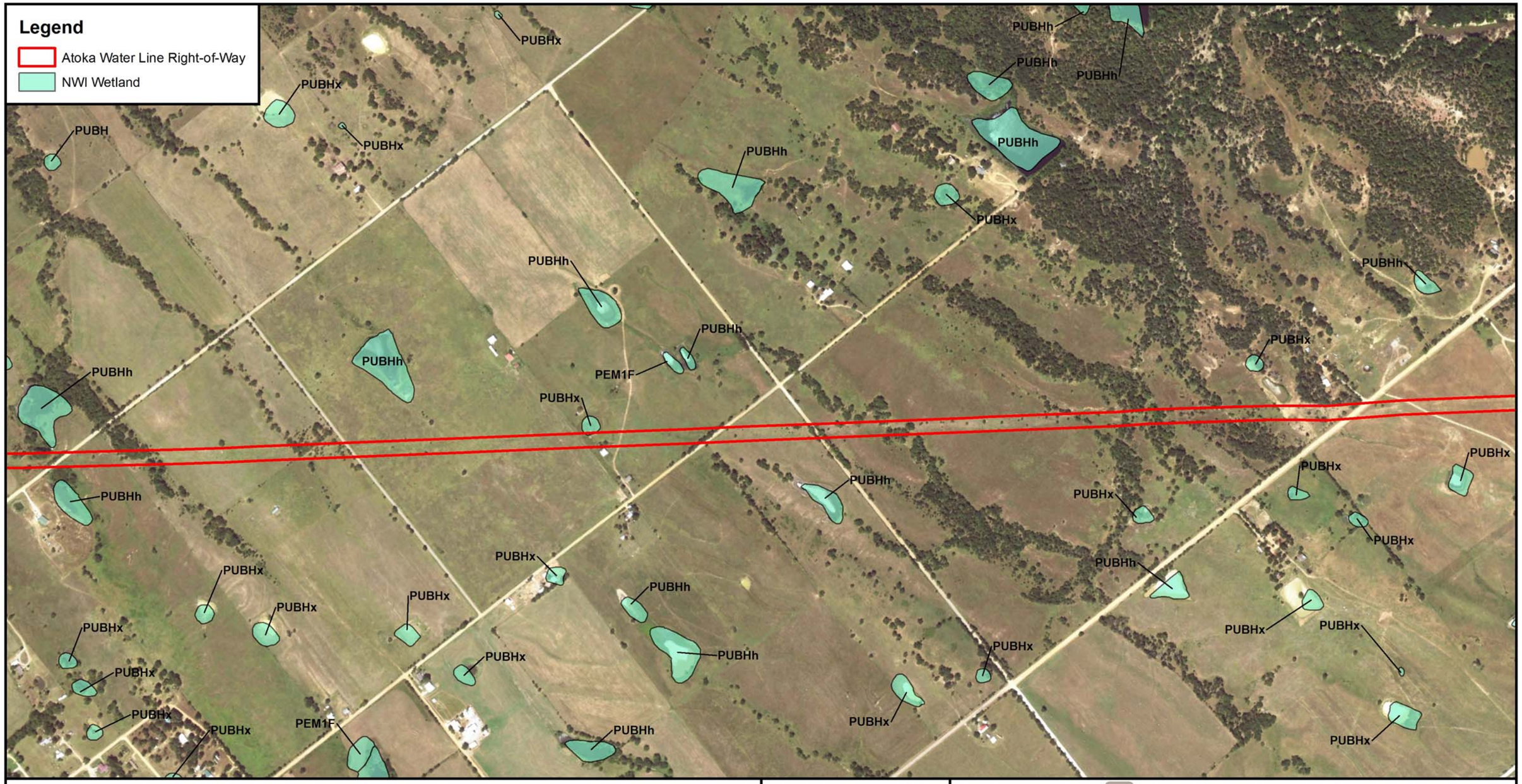
ENERCON

Figure 5.4: NWI Map

Source: US Fish and Wildlife Service - NWI Lehigh, OK Quadrangle
2015 USDA NAIP - Coal County, Oklahoma

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Section 18, T1S R11E; Sections 13 & 12, T1S R10E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 5.5: NWI Map
Source: US Fish and Wildlife Service - NWI Lehigh, OK Quadrangle
2015 USDA NAIP - Coal County, Oklahoma
Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 12, 11, 2 & 3, T1S R10E
Coal County, Oklahoma

N E S W

1:8,000

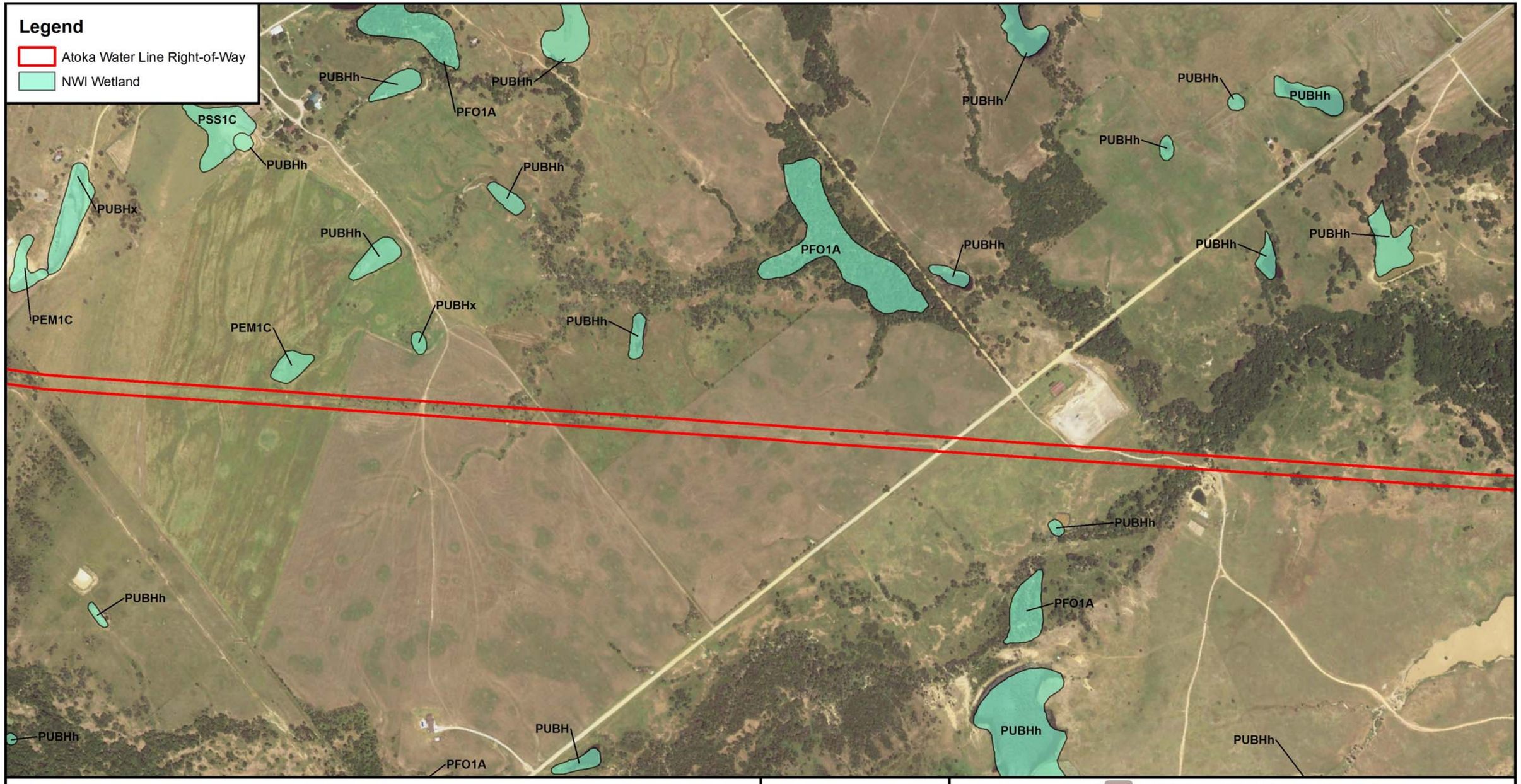
ENERCON

Figure 5.6: NWI Map

Source: US Fish and Wildlife Service - NWI Lehigh, OK Quadrangle
2015 USDA NAIP - Coal County, Oklahoma

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 3 & 4, T1S R10E; Sections 33 & 32, T1N R10E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 5.7: NWI Map

Source: US Fish and Wildlife Service - NWI Lehigh, Coalgate and Centrahoma, OK Quadrangles
2015 USDA NAIP - Coal County, Oklahoma

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 33, 32 & 29, T1N R10E
Coal County, Oklahoma

1:8,000

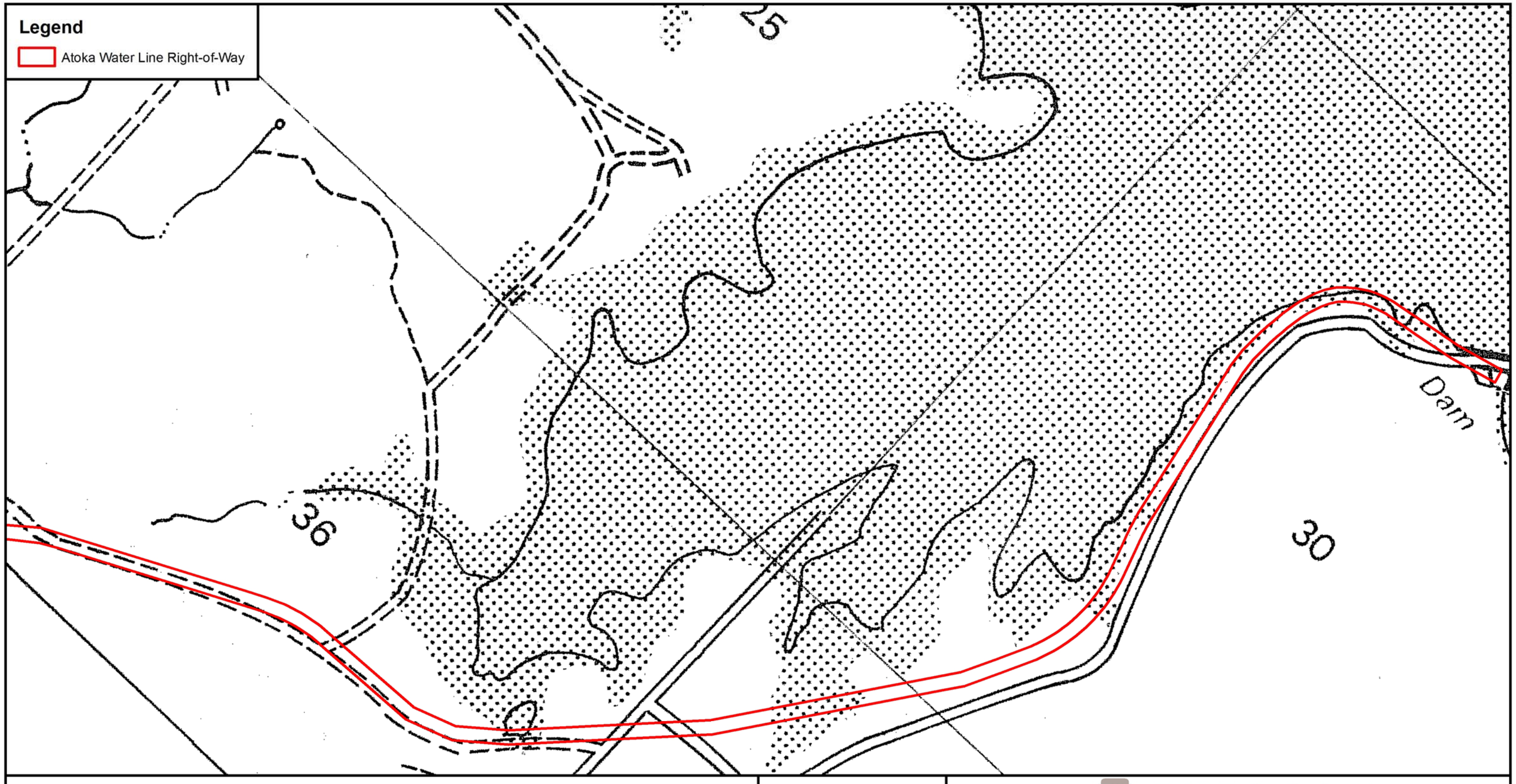
ENERCON

Figure 5.8: NWI Map

Source: US Fish and Wildlife Service - NWI Centrahoma, OK Quadrangle
2015 USDA NAIP - Coal County, Oklahoma

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

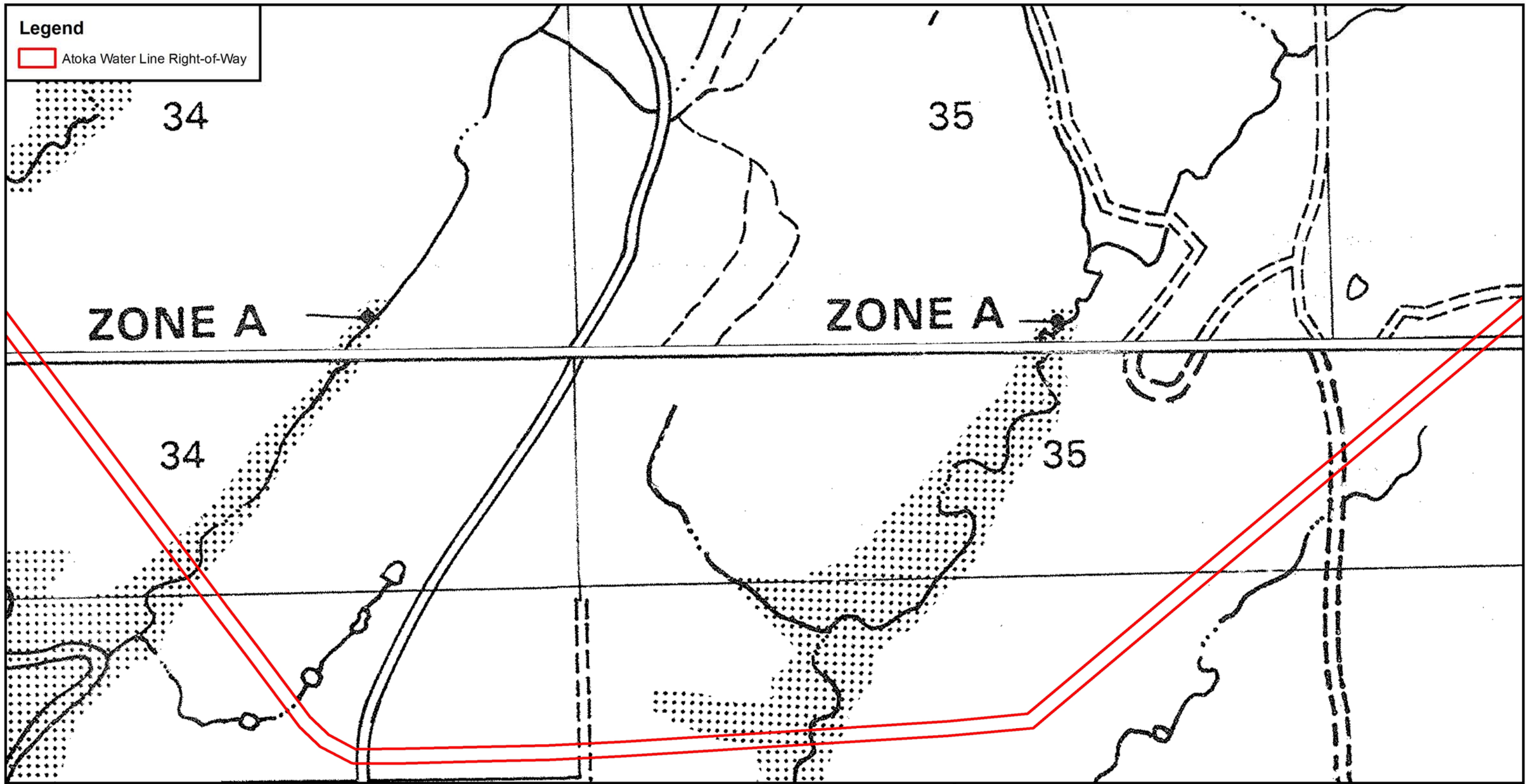
Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 30 & 31, T1S R12E; Section 36, T1S R11E
Atoka County, Oklahoma

1:8,000

ENERCON

Figure 6.1: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40050801008 - August 1, 2011
Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 36, 35 & 34, T1S R11E; Sections 2 & 3, T2S R11E
Atoka County, Oklahoma

N
W E
S

1:8,000

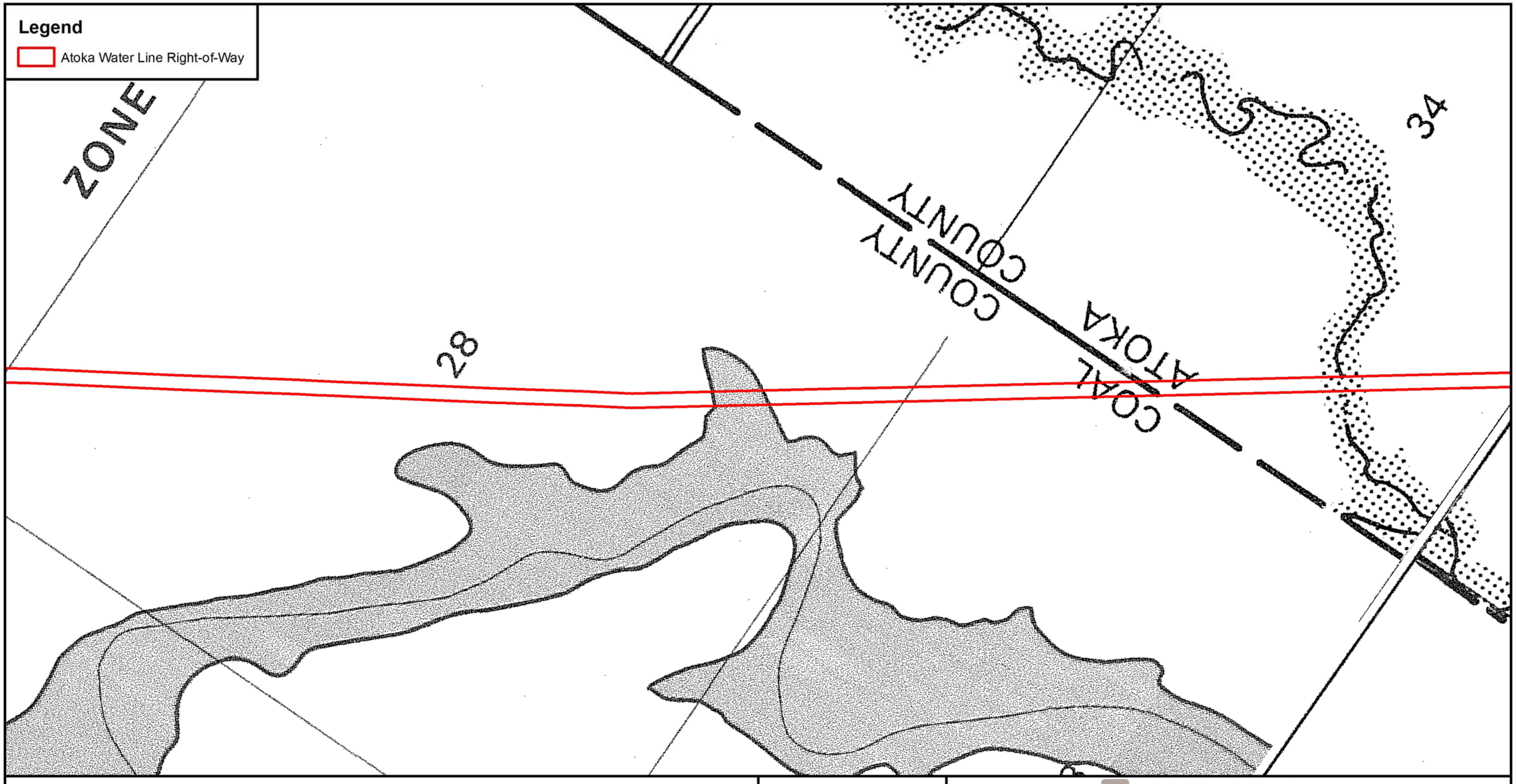
ENERCON

Figure 6.2: Flood Insurance Rate Map

Source: Federal Emergency Management Agency
Map #4005080100B & #4005080200B - August 1, 2011

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 34, 33 & 28, T1S R11E
Atoka and Coal Counties, Oklahoma

1:8,000

ENERCON

Figure 6.3: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #4005080100B - August 1, 2011; #4005100150B - January 18, 1989
Prepared by: A. Couch; July 15, 2016

Feet
0 600 1,200 2,400

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 28, 21, 20, 17 & 18, T1S R11E
Coal County, Oklahoma

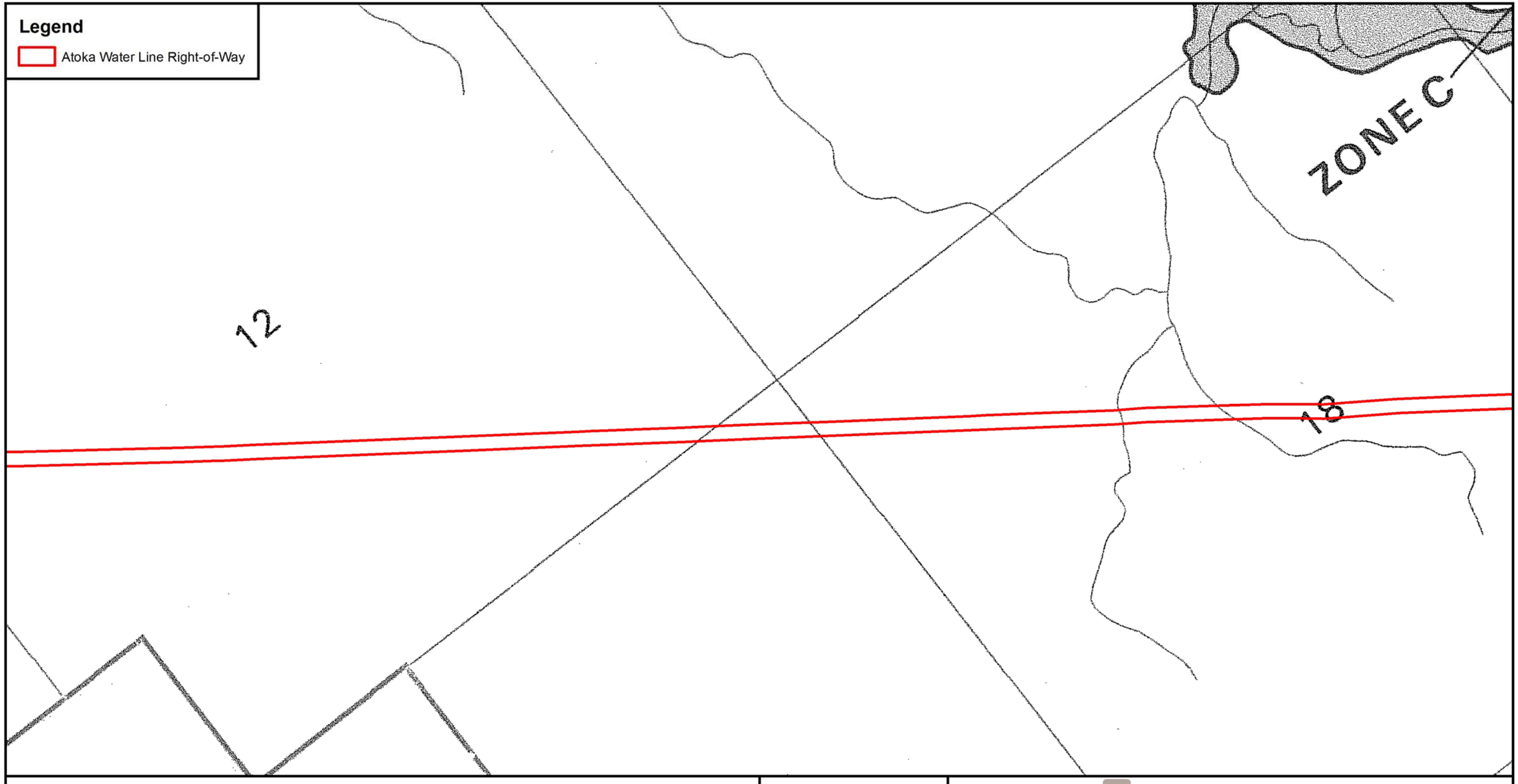
N E W S

1:8,000

ENERCON

Figure 6.4: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #4005100150B - January 18, 1989
Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

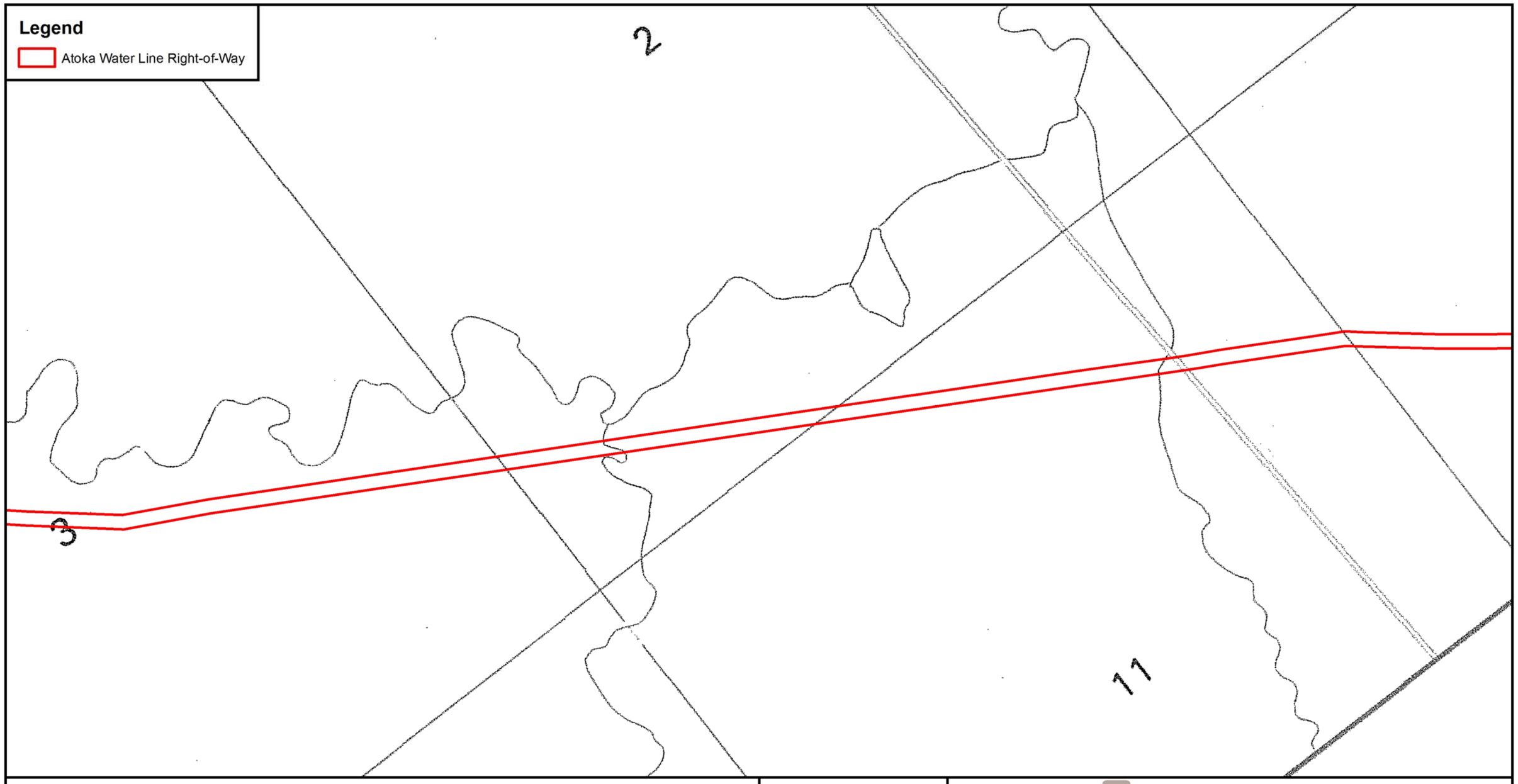
Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Section 18, T1S R11E; Sections 13 & 12, T1S R10E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 6.5: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #4005100150B - January 18, 1989
Prepared by: A. Couch; July 15, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 12, 11, 2 & 3, T1S R10E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 6.6: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #4005100150B - January 18, 1989
Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

33

T.1N.
T.1S.

Creek

Brier

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 3 & 4, T1S R10E; Sections 33 & 32, T1N R10E
Coal County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 6.7: Flood Insurance Rate Map

Source: Federal Emergency Management Agency
Map #4005100150B - January 18, 1989

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

29

33

Coalgate Pump Station

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station
Sections 33, 32 & 29, T1N R10E
Coal County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 6.8: Flood Insurance Rate Map

Source: Federal Emergency Management Agency
Map #4005100150B - January 18, 1989

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet

Table 1: Soils Series within the Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station in Atoka and Coal Counties, Oklahoma.

Table 1: Soils Series within the Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station in Atoka and Coal Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
ATOKA COUNTY					
Counts loam	27	0 to 1	Moderately well drained	Hydric	Paleoterraces, low to moderately low water capacity
Endsaw-Hector complex	34	3 to 5	Moderately well drained	Non-hydric	Gently sloping to steep forested uplands, low to moderately low water capacity
Endsaw-Hector complex	35	5 to 8	Moderately well drained	Non-hydric	Gently sloping to steep forested uplands, low to moderately low water capacity
Endsaw-Hector complex	36	8 to 30	Moderately well drained	Non-hydric	Gently sloping to steep forested uplands, low to moderately low water capacity
Eram Clay loam	38	3 to 5	Moderately well drained	Non-hydric	Ridges and side slopes of uplands, very low to moderately high water capacity
Eram-Talihina complex	40	5 to 20	Moderately well drained	Non-hydric	Ridges and side slopes of uplands, very low to moderately high water capacity
Hamden fine sandy loam	43	0 to 2	Moderately well drained	Non-hydric	Level to gently sloping, concave uplands, moderately high water capacity
Clearview fine sandy loam	45	3 to 5	Somewhat poorly drained	Non-hydric	Hills and uplands, moderately high to high water capacity
Rexor-Dela complex	62	0 to 1	Moderately well drained	Hydric	Level to gently sloping floodplains, moderately high to high water capacity
Wrightsville silt loam	68	0 to 1	Poorly drained	Hydric	Stream terraces, low to moderately low water capacity
COAL COUNTY					
Bates fine sandy loam	BaC	3 to 5	Well drained	Non-hydric	Interfluves and hillslopes, moderately high water capacity
Bates fine sandy loam, eroded	BaC2	3 to 5	Well drained	Non-hydric	Interfluves and hillslopes, moderately high water capacity

Table 1: Soils Series within the Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station in Atoka and Coal Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Bates and Dennis soils, severely eroded	BbC3	3 to 5	Well drained to somewhat poorly drained	Non-hydric	Interfluves and hillslopes, moderately low to moderately high water capacity
Bates-Coweta complex	BcC	1 to 5	Well drained	Non-hydric	Hillslopes and uplands, moderately high water capacity
Dennis loam	BoB	1 to 3	Somewhat poorly drained	Non-hydric	Interfluves and hillslopes, moderately low to moderately high water capacity
Dennis loam, eroded	BoC2	3 to 5	Somewhat poorly drained	Non-hydric	Interfluves and hillslopes, moderately low to moderately high water capacity
Pharoah silt loam	Ca	0 to 1	Somewhat poorly drained	Non-hydric	Uplands, low to moderately low water capacity
Choteau loam	ChB	1 to 3	Somewhat poorly drained	Non-hydric	High terraces or uplands, moderately low to moderately high water capacity
Rexor loam	En	0 to 1	Moderately well drained	Hydric	Floodplains, moderately high to high water capacity, occasionally flooded
Clearview fine sandy loam	HaB	1 to 3	Somewhat poorly drained	Non-hydric	Gently rolling hills and uplands, moderately high to high water capacity
Clearview fine sandy loam	HaC	3 to 5	Somewhat poorly drained	Non-hydric	Gently rolling hills and uplands, moderately high to high water capacity
Clearview fine sandy loam, eroded	HaC2	3 to 5	Somewhat poorly drained	Non-hydric	Gently rolling hills and uplands, moderately high to high water capacity
Clearview fine sandy loam, severely eroded	HeC3	3 to 5	Somewhat poorly drained	Non-hydric	Gently rolling hills and uplands, moderately high to high water capacity
Homa-Clearview complex	HhC	3 to 5	Somewhat poorly drained	Non-hydric	Crests and side slopes of dissected plateaus and mountains, low to moderately low water capacity
Homa-Hector complex	HoE	12 to 20	Moderately well drained	Non-hydric	Crests and side slopes of dissected plateaus and mountains, very low to moderately high water capacity

Table 1: Soils Series within the Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station in Atoka and Coal Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Wynona silt loam	La	0 to 1	Somewhat poorly drained	Hydric	Nearly level to slightly concave floodplains, moderately low to moderately high water capacity, occasionally flooded
Lightning-Healdton complex	Lt	0 to 1	Poorly drained	Hydric	Nearly level or slightly concave soils on floodplains, low to moderately low water capacity
Kanima very gravelly silty clay loam	Mp	1 to 45	Well drained	Non-hydric	On hills and ridges, moderately high to high water capacity
Parsons silt loam	PaA	0 to 1	Somewhat poorly drained	Hydric	Interfluves, divides, and paleoterraces, very low to moderately low water capacity
Parsons silt loam	PaB	1 to 3	Somewhat poorly drained	Non-hydric	Interfluves, divides, and paleoterraces, very low to moderately low water capacity
Dela and Wynona soils, frequently flooded	Ra	0 to 1	Moderately well drained	Hydric	Nearly level to gently sloping soils on floodplains, high water capacity
Steedman clay loam	SdC	3 to 5	Moderately well drained	Non-hydric	Ridge tops and slopes of uplands, very low to moderately high water capacity
Steedman-Coweta complex	SeE	2 to 20	Moderately well drained	Non-hydric	Ridge tops and slopes of uplands, very low to moderately high water capacity
Steedman-Dela complex	SrE	5 to 30	Moderately well drained	Hydric	Ridge tops, slopes of uplands, and floodplains; very low to moderately high water capacity
Stidham loamy fine sand	StB	1 to 3	Well drained	Non-hydric	Broad, nearly level to moderately sloping sand reworked terraces, moderately high to high water capacity

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station in Atoka and Coal Counties, Oklahoma.

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station in Atoka and Coal Counties, Oklahoma.

FEATURE NAME	GENERAL TYPE	COWARDIN CLASSIFICATION	PREDICTED JURISDICTIONAL STATUS*	AREA (ACRES) WITHIN PIPELINE ROW	PCN REQUIRED**
AT5	Emergent wetland	PEM1A	Yes	0.16	Yes
AT18	Pond	PUBH	Yes	0.05	No
AT21	Forested wetland	PFO1A	Yes	0.11	Yes
AT23	Emergent wetland	PEM1E	Yes	0.05	No
AT27	Emergent wetland	PEM1A	No	0.04	No
AT30	Pond	PUBHh	No	0.16	No
AT33	Pond	PUBHx	No	0.05	No
AT38	Scrub-shrub wetland	PSS1E	Yes	0.05	No
AT39	Pond	PUBHx	No	0.03	No
POTENTIALLY JURISDICTIONAL WETLANDS TOTAL: 0.41-ACRE					
POTENTIALLY JURISDICTIONAL POND TOTAL: 0.29-ACRE					

**Jurisdictional status is subject to Corps approval; ** PCNs are required only if the Corps determines the feature is jurisdictional.*

Table 3: Summary of streams and drainages in the Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station in Atoka and Coal Counties, Oklahoma.

Table 3: Summary of streams and drainages in the Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station in Atoka and Coal Counties, Oklahoma.

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
AT1	Ephemeral	No	No	2	63	No
AT2	Ephemeral	Yes	Yes	1	157	No
AT3	Ephemeral	Yes	Yes	2	130	No
AT4	Ephemeral	No	No	2	130	No
AT6	Ephemeral	No	No	1	135	No
AT7	Intermittent	Yes	Yes	6	216	Yes
AT8	Ephemeral	No	No	1	379	No
AT9	Ephemeral	No	No	1	125	No
AT10	Ephemeral	No	No	1	104	No
AT11	Intermittent	Yes	Yes	8	105	No
AT12	Ephemeral	No	No	1	126	No
AT13	Intermittent (Long Creek)	Yes	Yes	12	102	No
AT14	Ephemeral	No	No	1	173	No
AT15	Ephemeral	No	No	3	106	No
AT16	Ephemeral	No	No	4	129	No
AT17	Ephemeral	No	No	2	209	No
AT19	Intermittent	Yes	No	NA[1]	0	No
AT20	Intermittent	Yes	Yes	4	108	No
AT22	Perennial (Muddy Boggy)	Yes	Yes	80	102	No
AT24	Ephemeral	Yes	Yes	2	155	No
AT25	Intermittent	Yes	Yes	4	102	No
AT26	Ephemeral	No	No	2	110	No
AT28	Ephemeral	No	No	3	121	No

Table 3: Summary of streams and drainages in the Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station in Atoka and Coal Counties, Oklahoma.

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
AT29	Ephemeral	No	No	2	105	No
AT31	Intermittent	Yes	Yes	6	119	No
AT32	Ephemeral	No	No	0	32	No
AT34	Intermittent	Yes	Yes	3	109	No
AT35	Intermittent	Yes	Yes	5	120	No
AT36	Ephemeral	No	No	3	110	No
AT37	Ephemeral	No	No	3	236	No
AT40	Intermittent	Yes	Yes	4	662	Yes
AT41	Ephemeral	Yes	Yes	2	105	No
AT42	Intermittent (Brier Creek)	Yes	Yes	8	125	No
AT43	Ephemeral	No	No	0	103	No
POTENTIALLY JURISDICTIONAL STREAM TOTAL: 4,913 LINEAR FEET						

**Jurisdictional status is subject to Corps approval; ** PCNs are required only if the Corps determines the feature is jurisdictional; 1- Feature mapped on the USGS topographic map; however no bed and bank was observed within the proposed pipeline ROW.*

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Atoka County Sampling Date: 3/16/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: ATSS1

Investigator(s): B.W. Barnes and W.A. Ward Section, Township, Range: Section 36, Township 1S, Range 11E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat: 34.42565 Long: -96.09780 Datum: NAD83

Soil Map Unit Name: Eram clay, 3-5% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

Indicators for all three wetland criteria were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 8"

Water Table Present? Yes _____ No X Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): NA

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of hydrology were observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ATSS1

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: 15' Radius)			
1. *Salix nigra*	15	OBL	YES
2. *Fraxinus pennsylvanica*	5	FACW	YES
3.			
4.			
5.			
6.			
7.			
	20 = Total Cover		
Shrub Stratum (Plot size: 15' Radius)			
1. *Persicaria hydropiperoides*	80	OBL	YES
2. *Lemna minor*	5	OBL	NO
3.			
4.			
5.			
6.			
7.			
	85 = Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: ATSS1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/17/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: ATSS2

Investigator(s): B.W. Barnes and J.P. Schatte Section, Township, Range: Section 20, Township 1S, Range 11E

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR or MLRA): LRR N Lat: 34.46005 Long: -96.17202 Datum: NAD83

Soil Map Unit Name: Wynona silt loam, 0-1% Slopes, Occasionally Flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Indicators for only one of the three wetland criteria were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): NA
Water Table Present?	Yes _____	No X	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): NA

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ATSS2

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Carya illinoinensis*	30	YES	FACU
2. *Quercus nigra*	25	YES	FAC
3. *Maclura pomifera*	25	YES	UPL
4. *Fraxinus pennsylvanica*	20	YES	FACW
5.			
6.			
7.			
	100	= Total Cover	

Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Shrub Stratum (Plot size: 15' Radius)			
1. *Fraxinus pennsylvanica*	10	YES	FACW
2. *Quercus nigra*	10	YES	FAC
3.			
4.			
5.			
6.			
7.			
	20	= Total Cover	

Herb Stratum (Plot size: 5' Radius)			
1. *Carex cherokeensis*	40	YES	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	30	= Total Cover	

Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: ATSS2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Indicators of hydric soil were not observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/17/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: ATSS3

Investigator(s): B.W. Barnes and J.P. Schatte Section, Township, Range: Section 20, Township 1S, Range 11E

Landform (hillslope, terrace, etc.): Floodplain Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat: 34.460156 Long: -96.17246 Datum: NAD83

Soil Map Unit Name: Dela and Wynona soils, 0-1% Slopes, frequently flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

Indicators for all three wetland criteria were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): NA
Water Table Present?	Yes ____	No X	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): NA

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ATSS3

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	70	YES	FACW
2. *Ulmus americana*	20	YES	FACW
3.			
4.			
5.			
6.			
7.			
	90	= Total Cover	
Sapling Stratum (Plot size: 15' Radius)			
1. *Fraxinus pennsylvanica*	20	YES	FACW
2. *Ulmus americana*	15	YES	FACW
3. *Acer negundo*	5	NO	FAC
4.			
5.			
6.			
7.			
	40	= Total Cover	
Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Carex cherokeensis*	30	YES	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	30	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: ATSS3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/2	85	5YR 4/6	15	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

Indicators of hydric soil were observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/17/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: ATSS4

Investigator(s): B.W. Barnes and J.P. Schatte Section, Township, Range: Section 20, Township 1S, Range 11E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR N Lat: 34.46108 Long: -96.17411 Datum: NAD83

Soil Map Unit Name: Wynona silt loam, 0-1% Slopes, Occasionally Flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

Indicators for all three wetland criteria were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 5"

Water Table Present? Yes ____ No X Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): NA

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ATSS4

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15' Radius)			
1. *Fraxinus pennsylvanica*	10	YES	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10 = Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Juncus effusus*	25	YES	FACW
2. *Potamogeton crispus*	15	YES	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: ATSS4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/17/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: ATSS5

Investigator(s): B.W. Barnes and J.P. Schatte Section, Township, Range: Section 20, Township 1S, Range 11E

Landform (hillslope, terrace, etc.): Flat Terrain Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR or MLRA): LRR N Lat: 34.46119 Long: -96.17416 Datum: NAD83

Soil Map Unit Name: Wynona silt loam, 0-1% Slopes, Occasionally Flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Indicators were not observed for any of the three wetland criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): NA

Water Table Present? Yes _____ No X Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): NA

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ATSS5

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Carya illinoinensis*	20	YES	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	20	= Total Cover	
Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Schedonorus arundinaceus*	60	YES	FACU
2. *Carex cherokeensis*	35	YES	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	35	x 2 =	70
FAC species		x 3 =	
FACU species	80	x 4 =	320
UPL species		x 5 =	
Column Totals:	115 (A)		390 (B)

Prevalence Index = B/A = 3.39

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: ATSS5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/3	100					SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Indicators of hydric soil were not observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/21/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: ATSS6

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 12, Township 1S, Range 10E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat: 34.47953 Long: -96.20458 Datum: NAD83

Soil Map Unit Name: Parsons silt loam, 0-1% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

Indicators for all three wetland criteria were observed. The wetland appears to be caused by a leak in the water line.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 3"

Water Table Present? Yes _____ No X Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): NA

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ATSS6

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Juncus effusus*	70	YES	FACW
2. *Rumex crispus*	10	NO	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: ATSS6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/21/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: ATSS7

Investigator(s): B.W. Barnes and C. McCoy Section, Township, Range: Section 12, Township 1S, Range 10E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Convex Slope (%): 1-2

Subregion (LRR or MLRA): LRR N Lat: 34.47959 Long: -96.20484 Datum: NAD83

Soil Map Unit Name: Parsons silt loam, 0-1% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Indicators were not observed for any of the three wetland criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): NA
Water Table Present?	Yes _____	No X	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): NA

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ATSS7

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Cynodon dactylon*	65	YES	FACU
2. *Ambrosia artemisiifolia*	15	NO	FACU
3. *Schedonorus arundinaceus*	15	NO	FACU
4. *Rumex crispus*	5	NO	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	5	x 3 =	15
FACU species	95	x 4 =	380
UPL species		x 5 =	
Column Totals:	100 (A)		395 (B)

Prevalence Index = B/A = 3.95

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: ATSS7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/3	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Indicators of hydric soil were not observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/15/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: ATSS8

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 3, Township 1S, Range 10E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR or MLRA): LRR N Lat: 34.49457 Long: -96.23334 Datum: NAD83

Soil Map Unit Name: Lightning-Healdton complex, 0-1% Slopes, Occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Indicators were not observed for any of the three wetland criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): NA
Water Table Present?	Yes _____	No X	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): NA

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators for wetland hydrology were not observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ATSS8

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Maclura pomifera*	10	YES	UPL
2. *Ulmus alata*	5	YES	FACU
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Sapling Stratum (Plot size: 15' Radius)			
1. *Ulmus alata*	10	YES	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	
Shrub Stratum (Plot size: 15' Radius)			
1. *Ulmus alata*	10	YES	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Cynodon dactylon*	80	YES	FACU
2. *Schedonorus arundinaceus*	20	YES	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Smilax bona-nox*	10	YES	FACU
2.			
3.			
4.			
5.			
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species	135	x 4 =	540
UPL species	10	x 5 =	50
Column Totals:	125 (A)		590 (B)

Prevalence Index = B/A = 4.72

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Indicators for hydrophytic vegetation were not observed.

SOIL

Sampling Point: ATSS8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR, 4/3	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Indicators for hydric soils were not observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/15/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: ATSS9

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 3, Township 1S, Range 10E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR N Lat: 34.49467 Long: -96.23321 Datum: NAD83

Soil Map Unit Name: Lightning-Healdton complex, 0-1% Slopes, Occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

Indicators for all three wetland criteria were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 2-3

Water Table Present? Yes _____ No X Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): NA

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators for wetland hydrology were observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ATSS9

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	20	YES	FACW
2. *Diospyros virginiana*	15	YES	FAC
3.			
4.			
5.			
6.			
7.			
	35	= Total Cover	
Sapling Stratum (Plot size: 15' Radius)			
1. *Fraxinus pennsylvanica*	15	YES	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Shrub Stratum (Plot size: 15' Radius)			
1. *Fraxinus pennsylvanica*	10	YES	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Carex spp.*	5	YES	---
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	5	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

Indicators for hydrophytic vegetation were observed.

SOIL

Sampling Point: ATSS9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

Site Photographs

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 1: ATOKA PUMP STATION TO COALGATE PUMP STATION

Typical view of habitat types found within the proposed Atoka Water Line Section 1: Atoka Pump Station to Coalgate Pump Station

Photograph 1: Beginning of the proposed Atoka Water Line at the Atoka Pump Station in Atoka County, Oklahoma, facing northeast.

Photograph 2: Typical view of maintained residential/commercial lawn vegetative community, facing southwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 1: ATOKA PUMP STATION TO COALGATE PUMP STATION

Photograph 3: Typical view of heavily grazed mixed grass pasture habitat, facing southwest.

Photograph 4: Typical view of riparian forest habitat, facing northwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 1:
ATOKA PUMP STATION TO COALGATE PUMP STATION

Photograph 5: Typical view of mixed grass pasture/hayfield habitat, facing northwest.

Photograph 6: Typical view of native grass pasture, facing northwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 1: ATOKA PUMP STATION TO COALGATE PUMP STATION

Representative water features within the proposed Atoka Water Line Section 1: Atoka Pump Station to Colgate Pump Station.

Photograph 7: View of Water Feature AT3, a mapped intermittent stream functioning as an ephemeral drainage, facing east.

Photograph 8: View of Water Feature AT5, an emergent wetland, facing south. Approximately 0.16 acres of this feature is located within the proposed pipeline ROW.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 1: ATOKA PUMP STATION TO COALGATE PUMP STATION

Photograph 9: View of Water Feature AT13, a mapped perennial stream, facing northeast.

Photograph 10: View of Water Feature AT21, a forested wetland, facing southeast. Approximately 0.11 acres of this feature is located within the pipeline ROW.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 1: ATOKA PUMP STATION TO COALGATE PUMP STATION

Photograph 11: View of Water Feature AT22 (Muddy Boggy Creek), a mapped perennial stream, facing southwest.

Photograph 12: View of Water Feature AT30, an isolated pond, facing west.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 1: ATOKA PUMP STATION TO COALGATE PUMP STATION

Photograph 13: View of AT38, a scrub-shrub wetland, facing north

Photograph 14: View of AT42, a mapped perennial stream, facing northeast.

Appendix B - Atoka Water Line Section 2: Coalgate Pump Station and Stonewall Pump

Figures (Vicinity Map, Topographic Map, Aerial Photography, Soil Survey Map, NWI Map, Flood Insurance Rate Map)

Table 1: Soils Series within the Atoka Water Line Section 2: Coalgate Pump Station and Stonewall Pump Station in Coal County, Oklahoma.

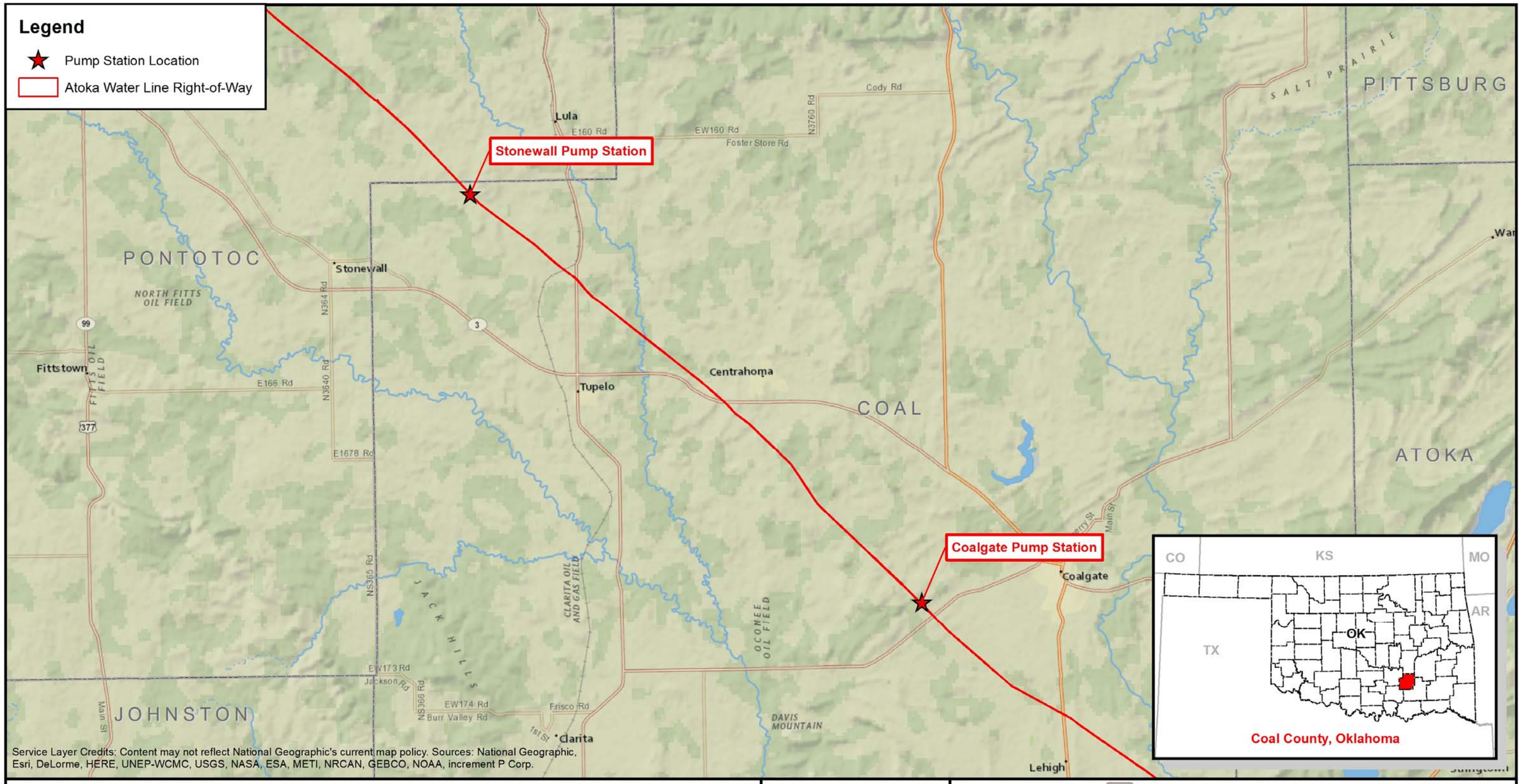
Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 2: Coalgate Pump Station and Stonewall Pump Station in Coal County, Oklahoma.

Table 3: Summary of streams and drainages in the Atoka Water Line Section 2: Coalgate Pump Station and Stonewall Pump Station in Coal County, Oklahoma.

Wetland Determination Data Forms

Site Photographs

Figures



Prepared for: Oklahoma City Water Utilities Trust

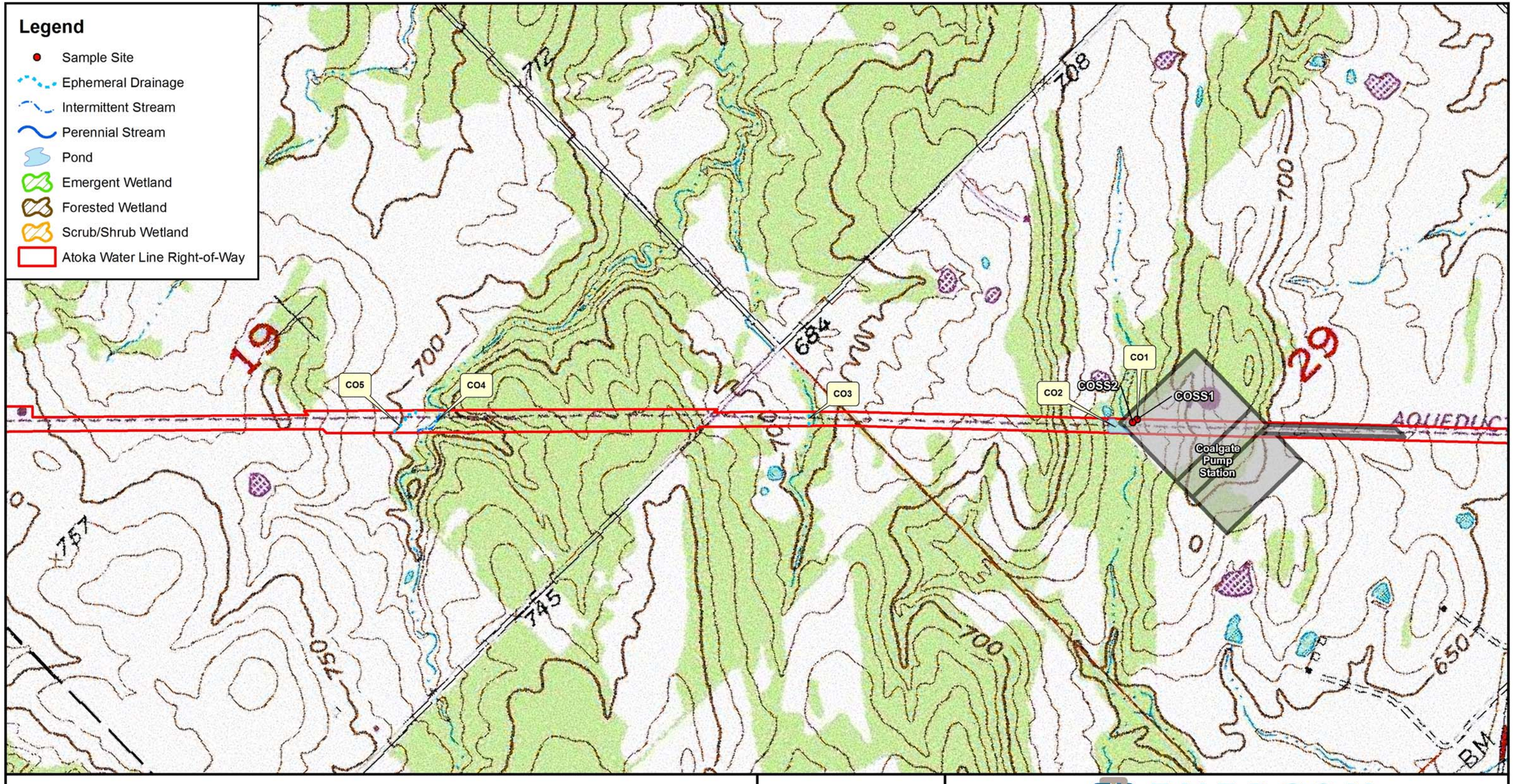
Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 29, 30 & 19, T1N R10E; Sections 24, 13, 14, 11, 2 & 3, T1N R9E;
Sections 34, 33, 28, 29, 30 & 19, T2N R9E; Sections 24, 13, 14, 11, 10, 3 & 4, T2N R8E
Coal County, Oklahoma

N
W E
S
1:148,000

ENERCON

Figure 1: Vicinity Map
Source: ESRI National Geographic World Map Basemap
Prepared by: F. Woolridge; July 14, 2016

0 2 4 8 Miles



Prepared for: Oklahoma City Water Utilities Trust

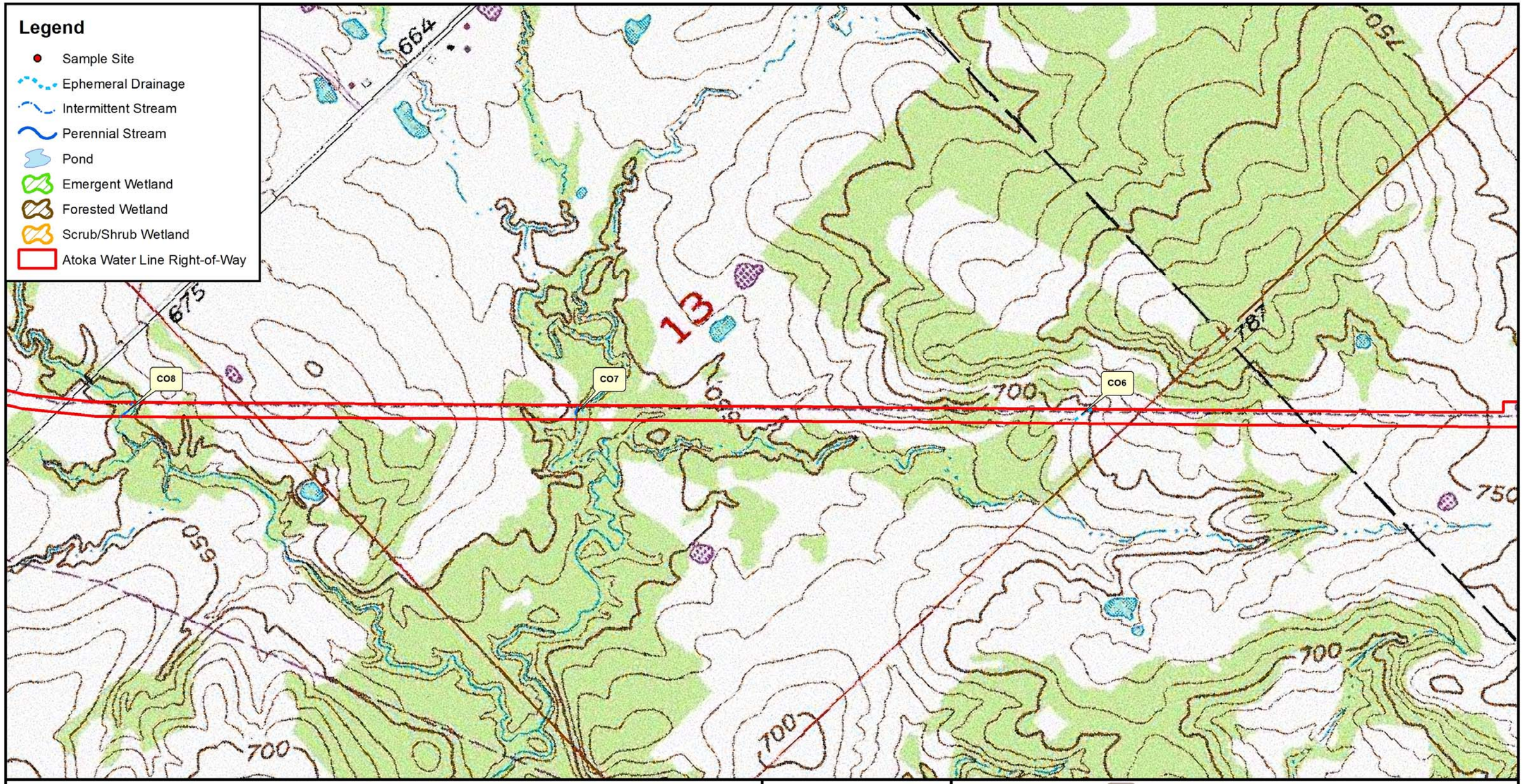
Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 29, 30 & 19, T1N R10E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 2.1: Topographic Map
Source: USGS 7.5 Minute Series
Centrahoma, OK Quadrangle
Prepared by: F. Woolridge; July 19, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 19, T1N R10E; Sections 24, 13, 14 & 11, T1N R9E
Coal County, Oklahoma

N E W S

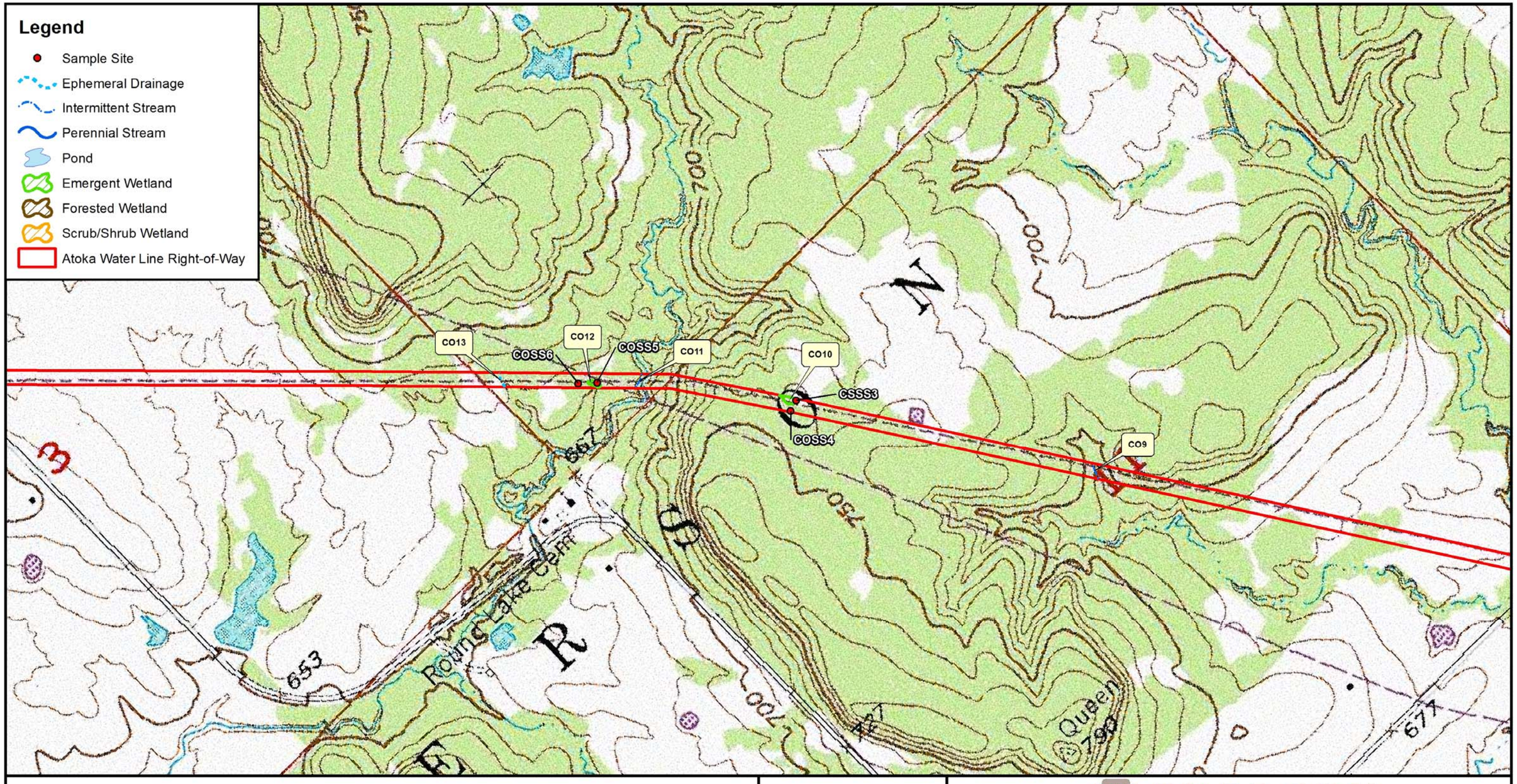
1:8,000

ENERCON

Figure 2.2: Topographic Map
Source: USGS 7.5 Minute Series
Centrahoma, OK Quadrangle

Prepared by: F. Woolridge; July 12, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 11, 2 & 3, T1N R9E
Coal County, Oklahoma

1:8,000

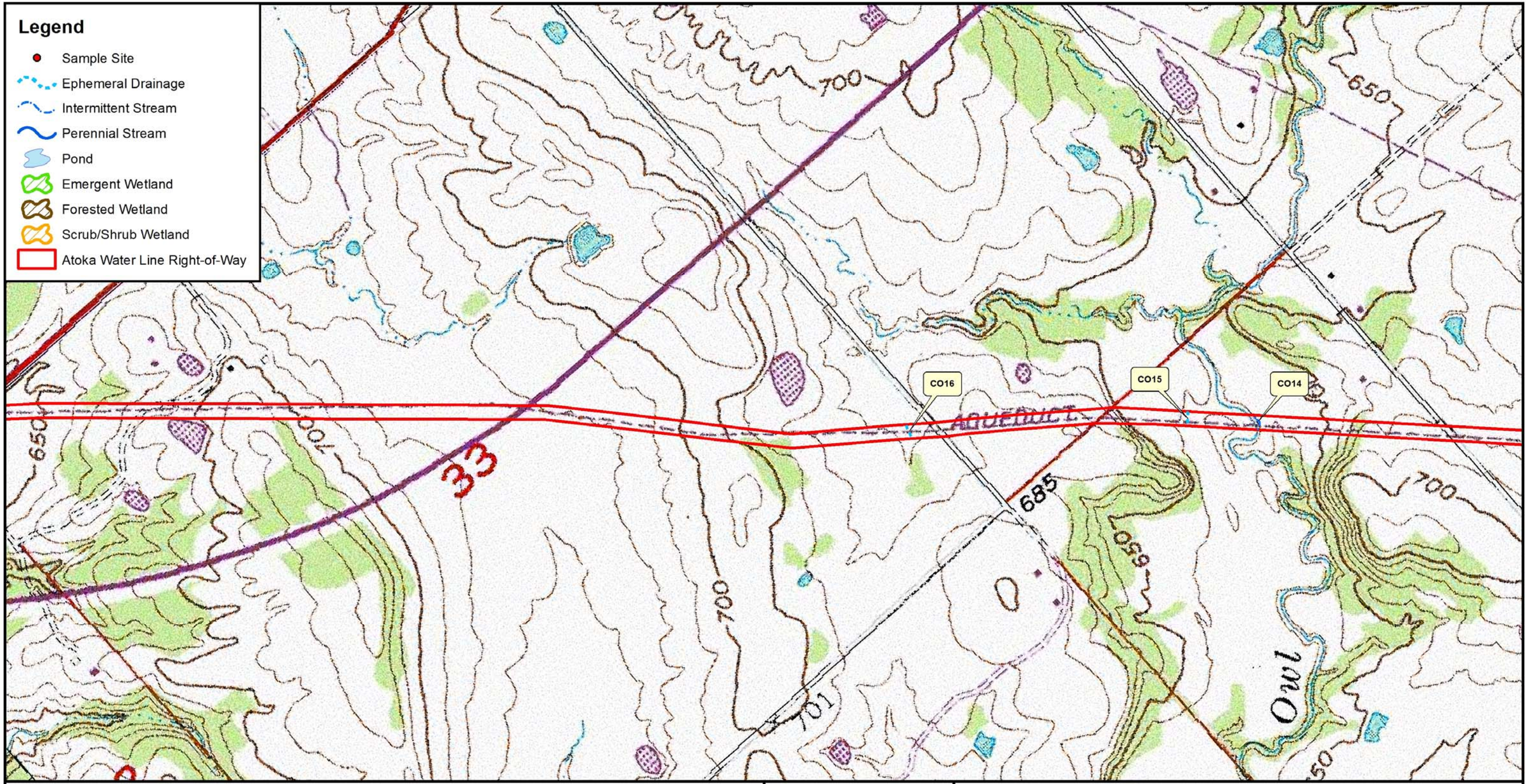
ENERCON

Figure 2.3: Topographic Map
Source: USGS 7.5 Minute Series
Centrahoma, OK Quadrangle
Prepared by: F. Woolridge; July 12, 2016

Feet
0 600 1,200 2,400

Legend

- Sample Site
- Ephemeral Drainage
- Intermittent Stream
- Perennial Stream
- Pond
- Emergent Wetland
- Forested Wetland
- Scrub/Shrub Wetland
- Atoka Water Line Right-of-Way



Prepared for: Oklahoma City Water Utilities Trust

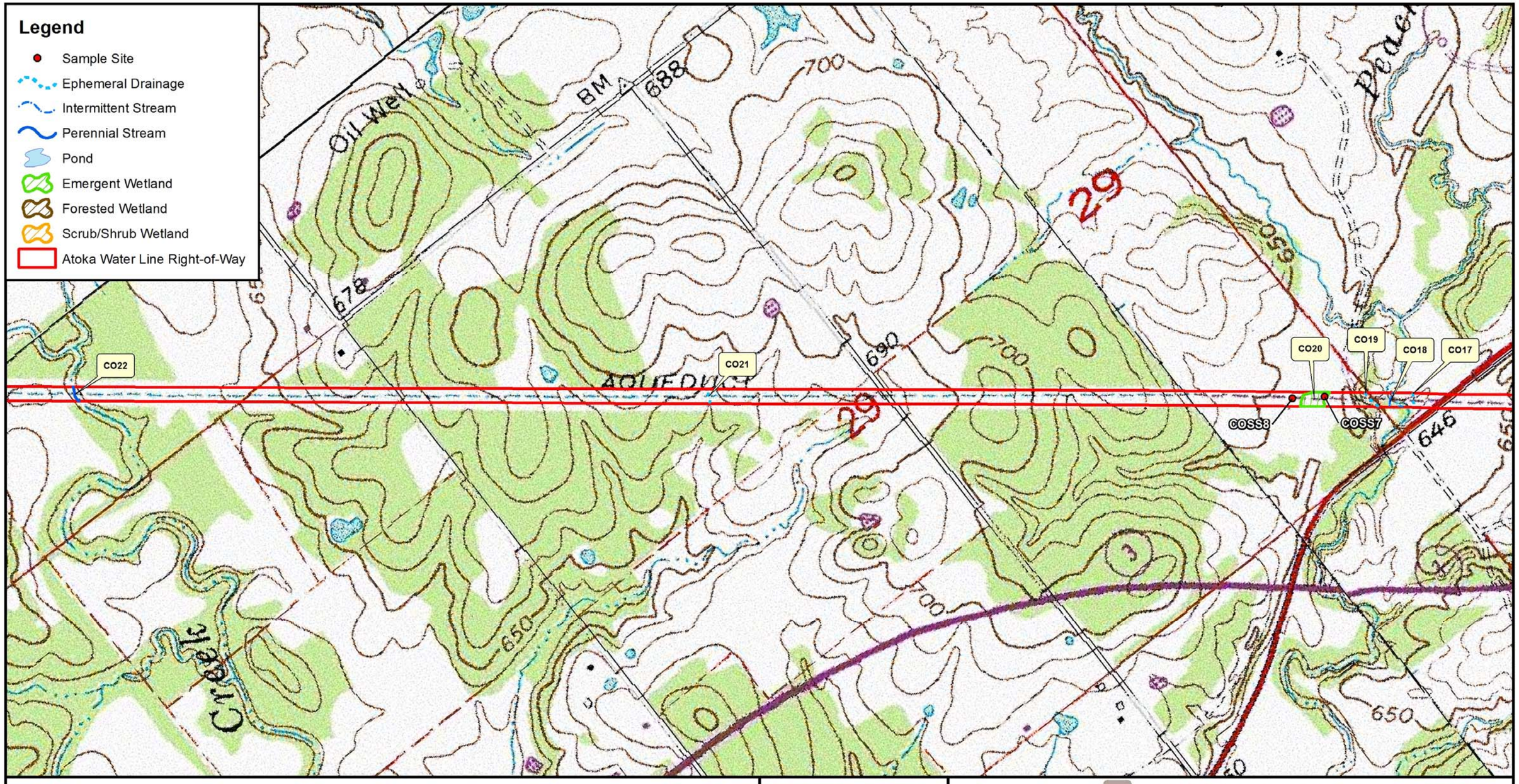
Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 3, T1N R9E; Sections 34 & 33, T2N R9E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 2.4: Topographic Map
Source: USGS 7.5 Minute Series
Centrahoma, OK Quadrangle
Prepared by: F. Woolridge; July 12, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

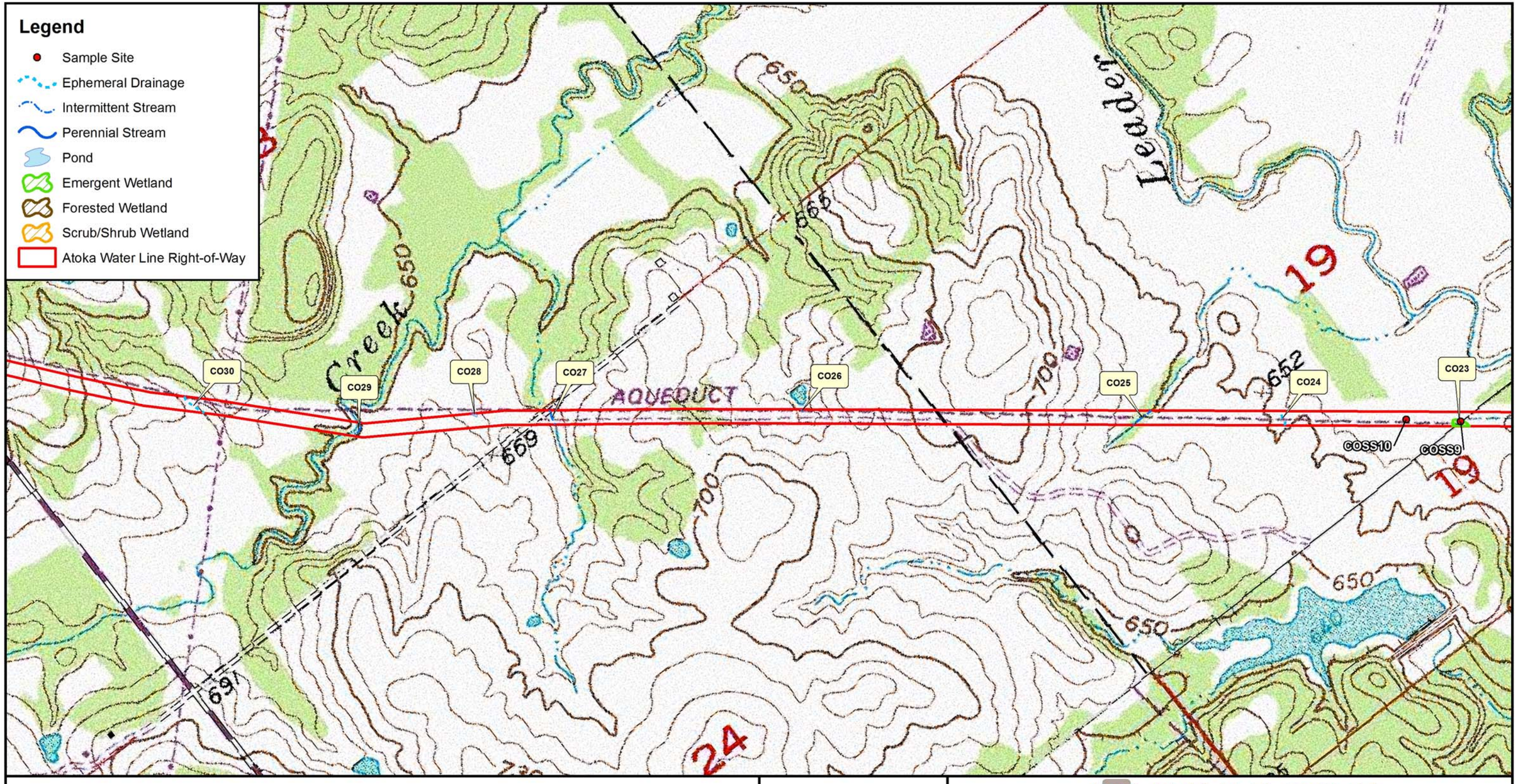
Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 33, 28, 29, 30 & 19, T2N R9E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 2.5: Topographic Map
Source: USGS 7.5 Minute Series
Centrahoma and Tupelo, OK Quadrangles
Prepared by: F. Woolridge; July 14, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

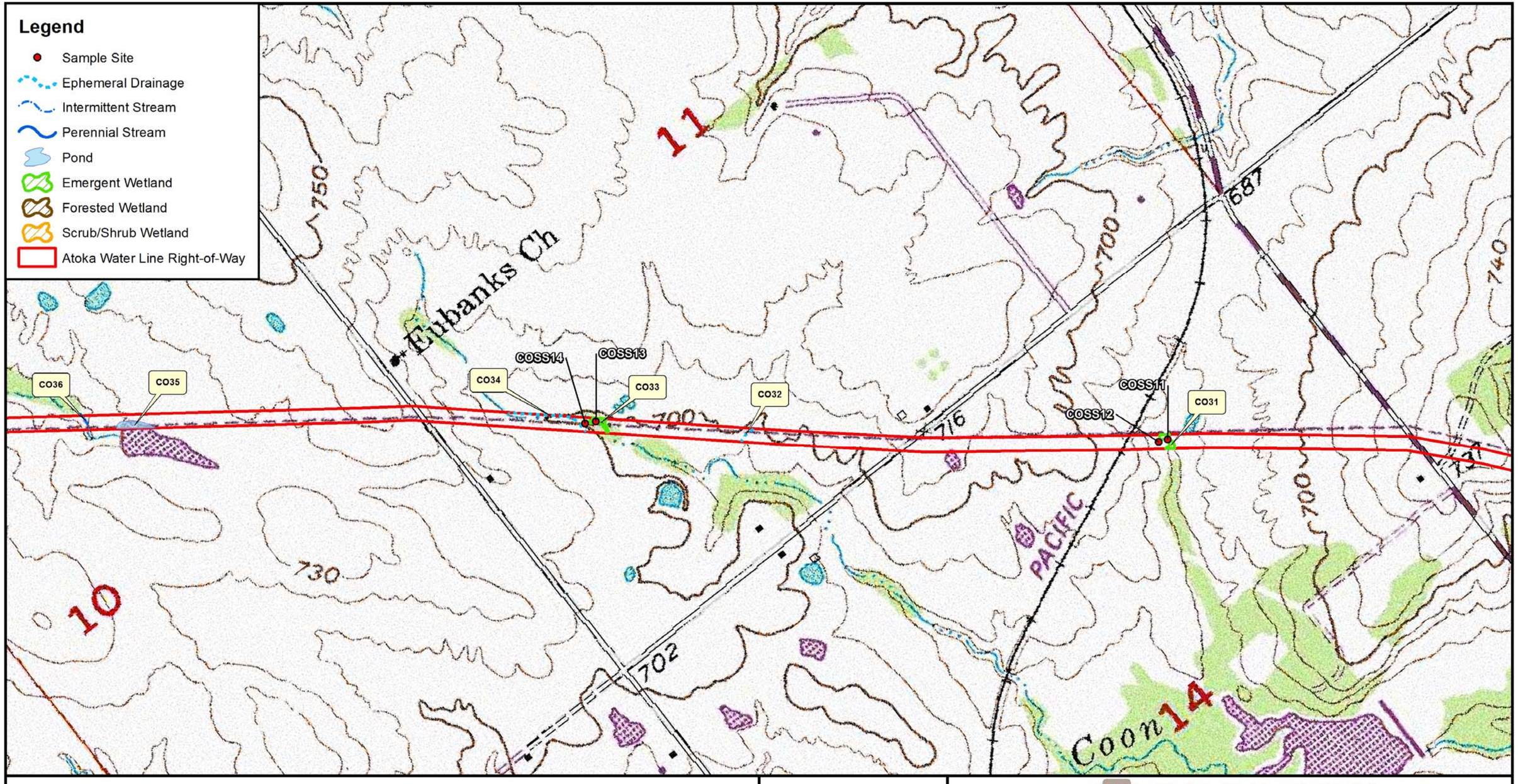
Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 19, T2N R9E; Sections 24 & 13, T2N R8E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 2.6: Topographic Map
Source: USGS 7.5 Minute Series
Tupelo and Lula, OK Quadrangles
Prepared by: F. Woolridge; November 17, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 13, 14, 11 & 10, T2N R8E
Coal County, Oklahoma

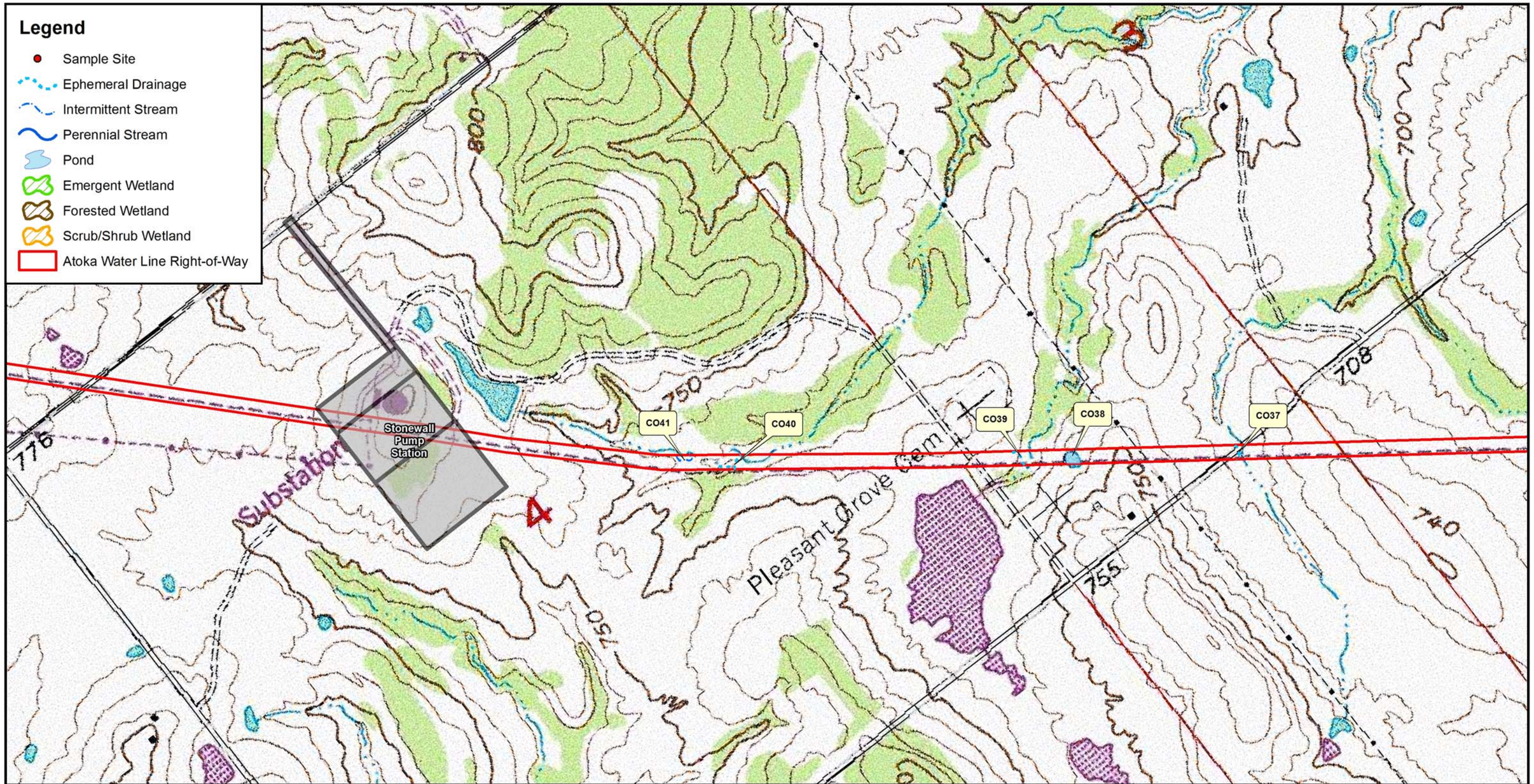
N E W S

1:8,000

ENERCON

Figure 2.7: Topographic Map
Source: USGS 7.5 Minute Series
Lula, OK Quadrangle
Prepared by: F. Woolridge; July 12, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 10, 3 & 4, T2N R8E
Coal County, Oklahoma

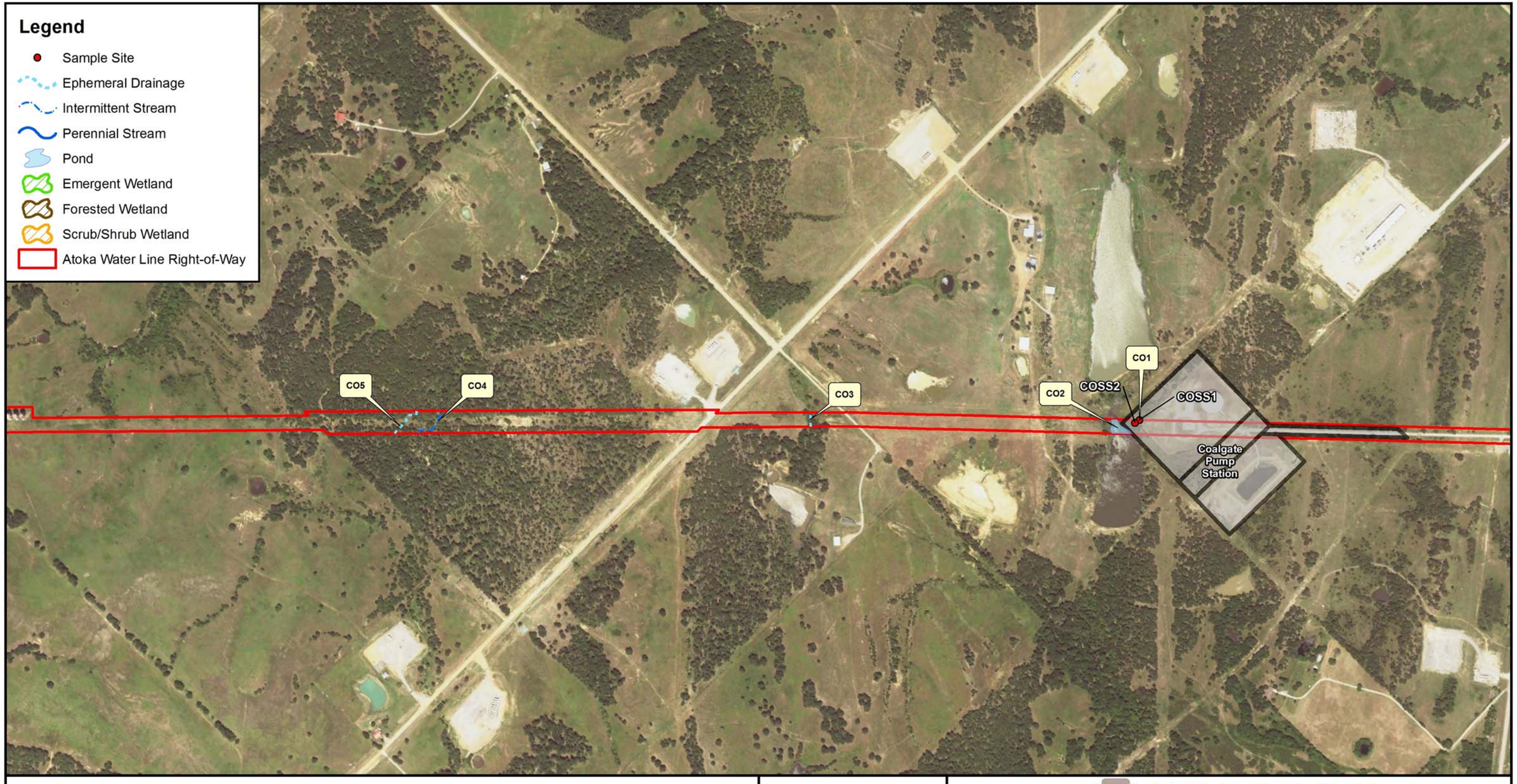
N E S W

1:8,000

ENERCON

Figure 2.8: Topographic Map
Source: USGS 7.5 Minute Series
Lula, OK Quadrangle
Prepared by: F. Woolridge; July 20, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 29, 30 & 19, T1N R10E
Coal County, Oklahoma

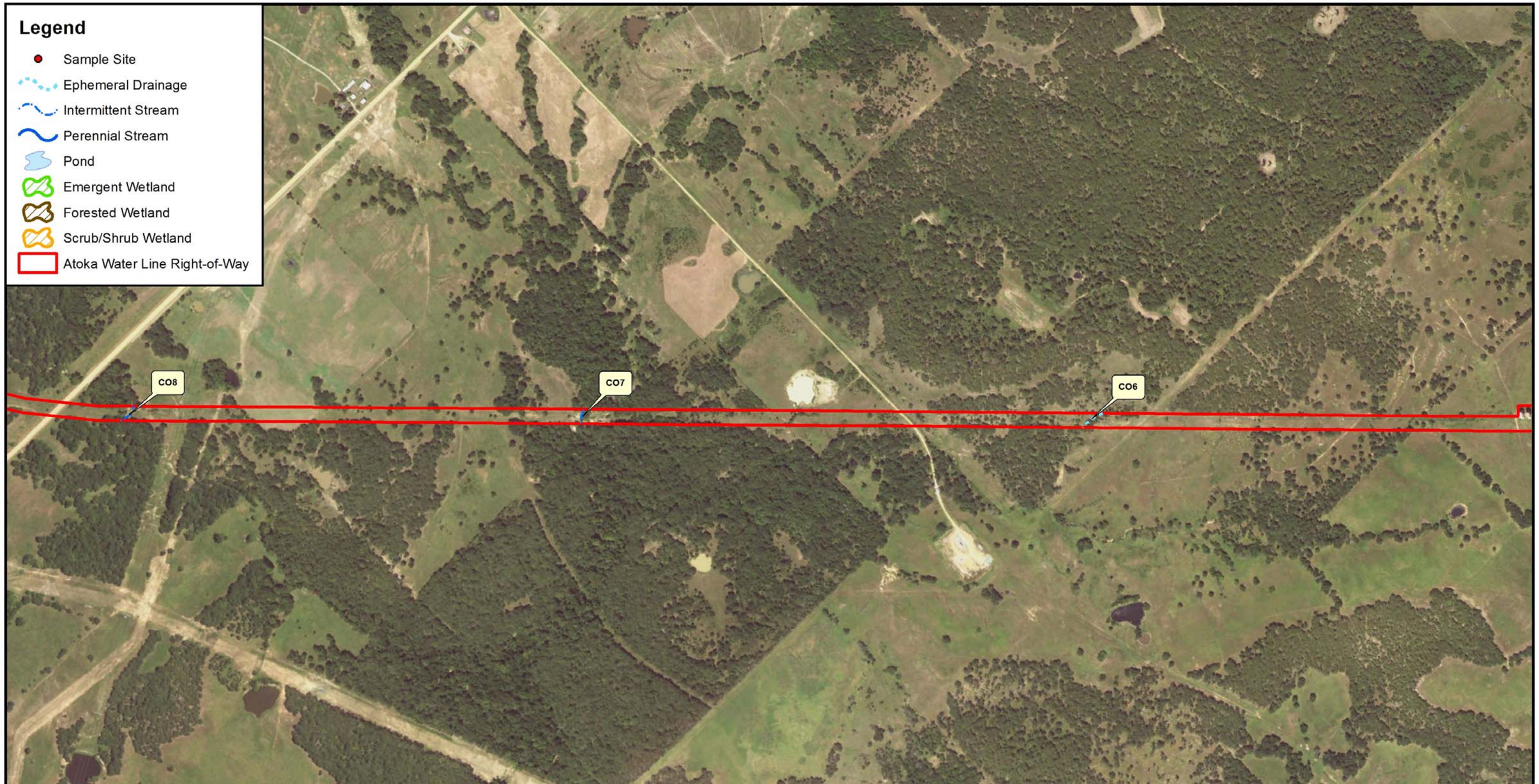
N E W S

1:8,000

ENERCON

Figure 3.1: Aerial Photography
Source: 2015 USDA NAIP
Coal County, Oklahoma
Prepared by: F. Woolridge; July 20, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 19, T1N R10E; Sections 24, 13, 14 & 11, T1N R9E
Coal County, Oklahoma

N E S W

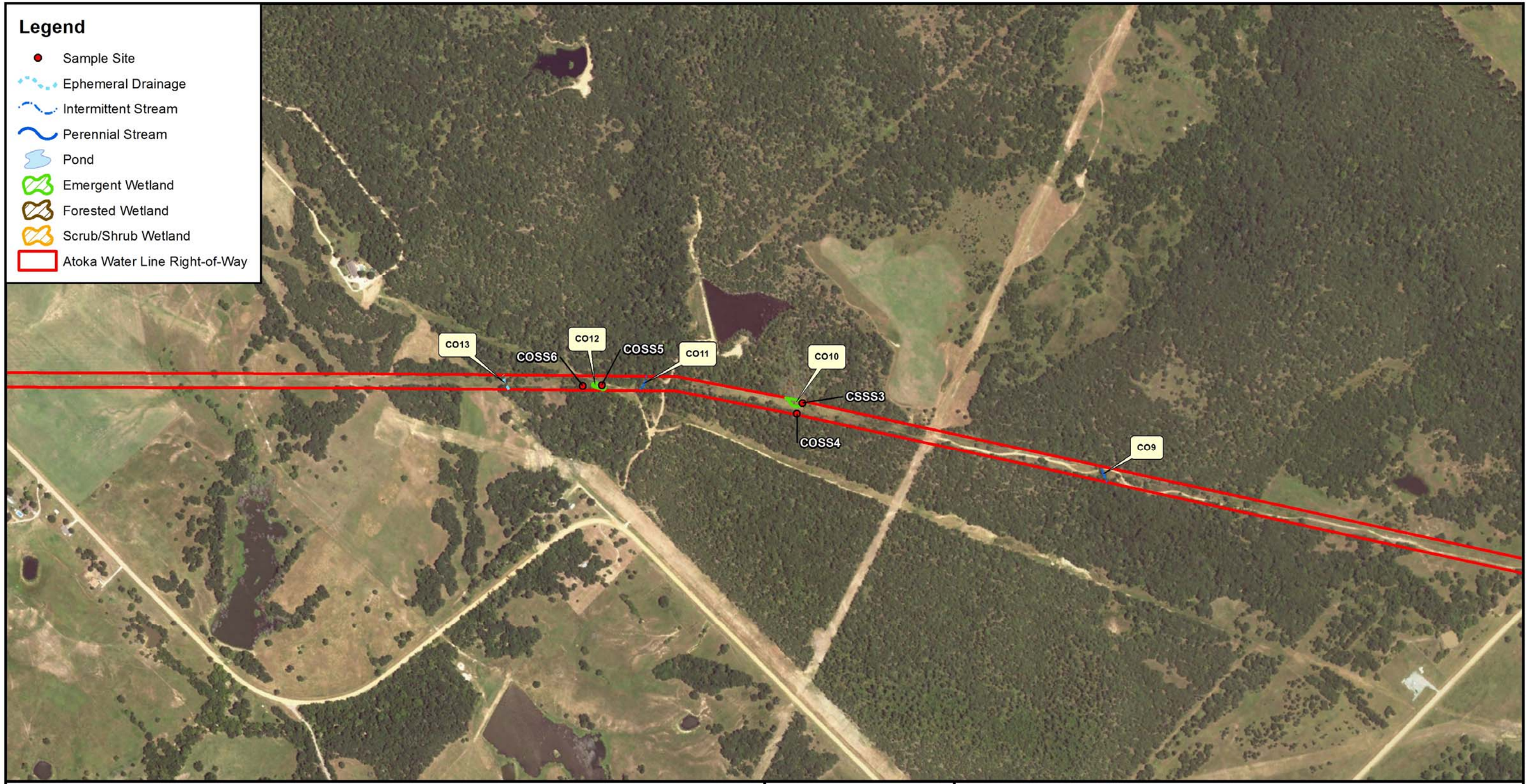
1:8,000

ENERCON

Figure 3.2: Aerial Photography
Source: 2015 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; July 12, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 11, 2 & 3, T1N R9E
Coal County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 3.3: Aerial Photography
Source: 2015 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; July 12, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 3, T1N R9E; Sections 34 & 33, T2N R9E
Coal County, Oklahoma

N E W S

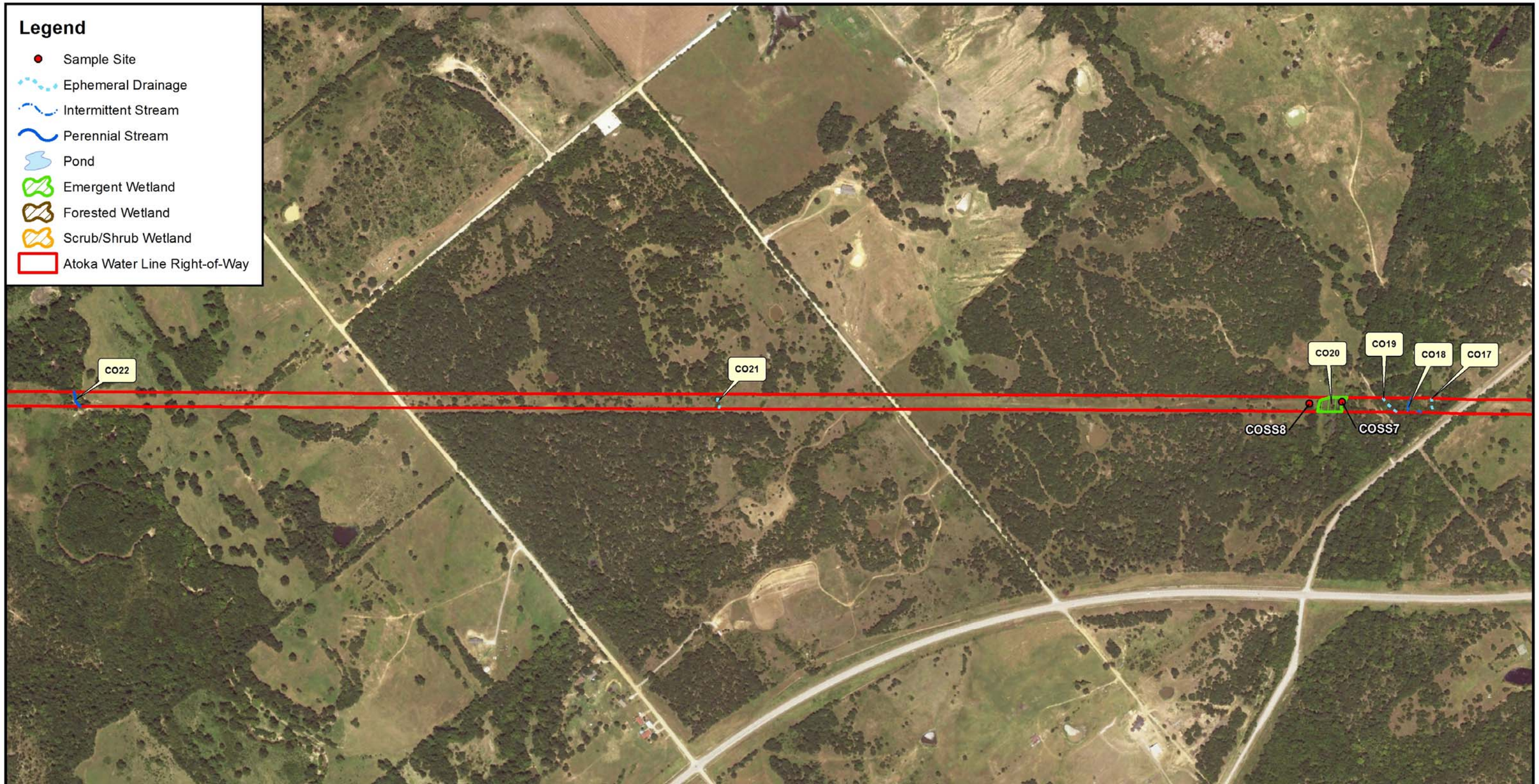
1:8,000

ENERCON

Figure 3.4: Aerial Photography
Source: 2015 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; July 12, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 33, 28, 29, 30 & 19, T2N R9E
Coal County, Oklahoma

N E W S

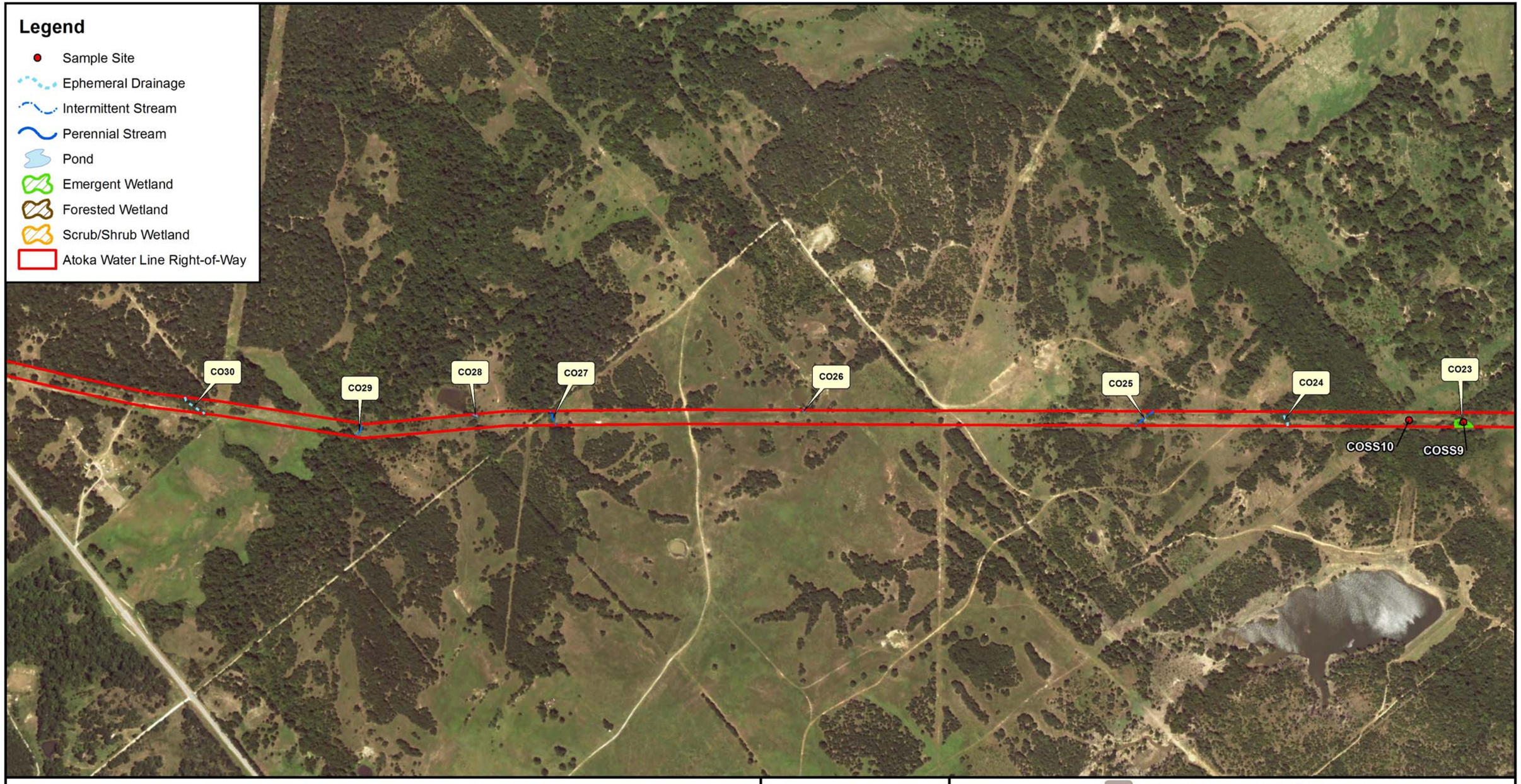
1:8,000

ENERCON

Figure 3.5: Aerial Photography
Source: 2015 USDA NAIP
Coal County, Oklahoma

Prepared by: F. Woolridge; July 14, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 19, T2N R9E; Sections 24 & 13, T2N R8E
Coal County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.6: Aerial Photography
Source: 2015 USDA NAIP
Coal County, Oklahoma
Prepared by: F. Woolridge; November 17, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 13, 14, 11 & 10, T2N R8E
Coal County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 3.7: Aerial Photography
Source: 2015 USDA NAIP
Coal County, Oklahoma
Prepared by: F. Woolridge; July 12, 2016

Feet
0 600 1,200 2,400

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 10, 3 & 4, T2N R8E
Coal County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.8: Aerial Photography
Source: 2015 USDA NAIP
Coal County, Oklahoma
Prepared by: F. Woolridge; July 20, 2016

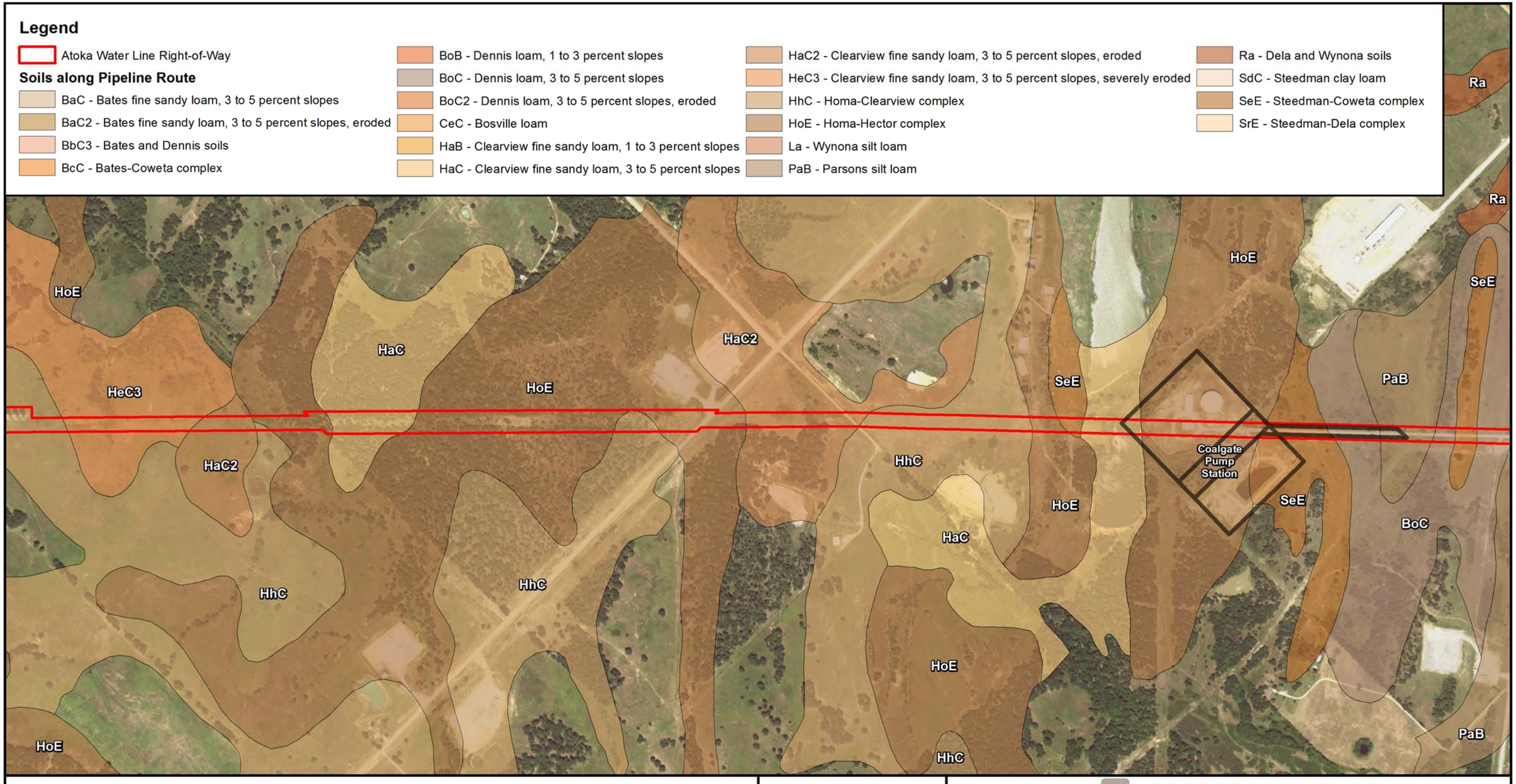
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- CeC - Bosville loam
- HaB - Clearview fine sandy loam, 1 to 3 percent slopes
- HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- PaB - Parsons silt loam
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 29, 30 & 19, T1N R10E
Coal County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.1: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Coal County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 20, 2016

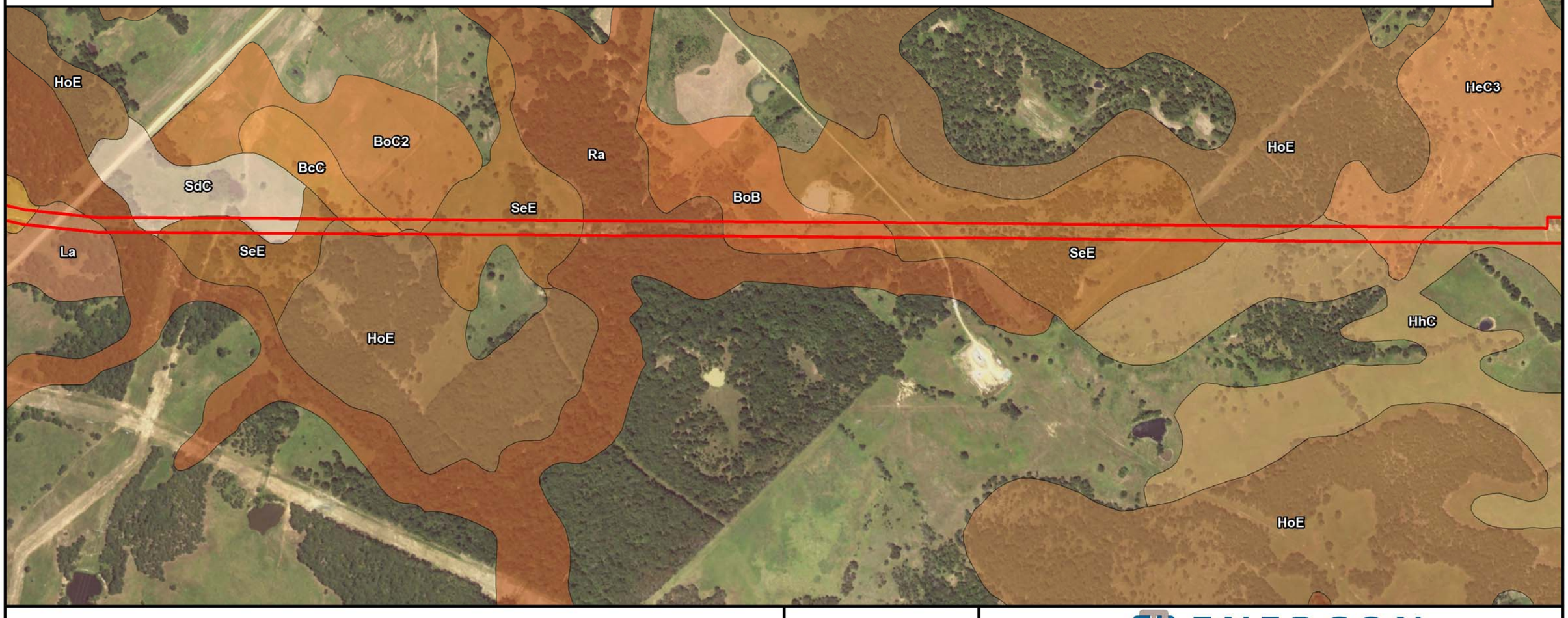
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- CeC - Bosville loam
- HaB - Clearview fine sandy loam, 1 to 3 percent slopes
- HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- PaB - Parsons silt loam
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 19, T1N R10E; Sections 24, 13, 14 & 11, T1N R9E
Coal County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.2: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Coal County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 14, 2016

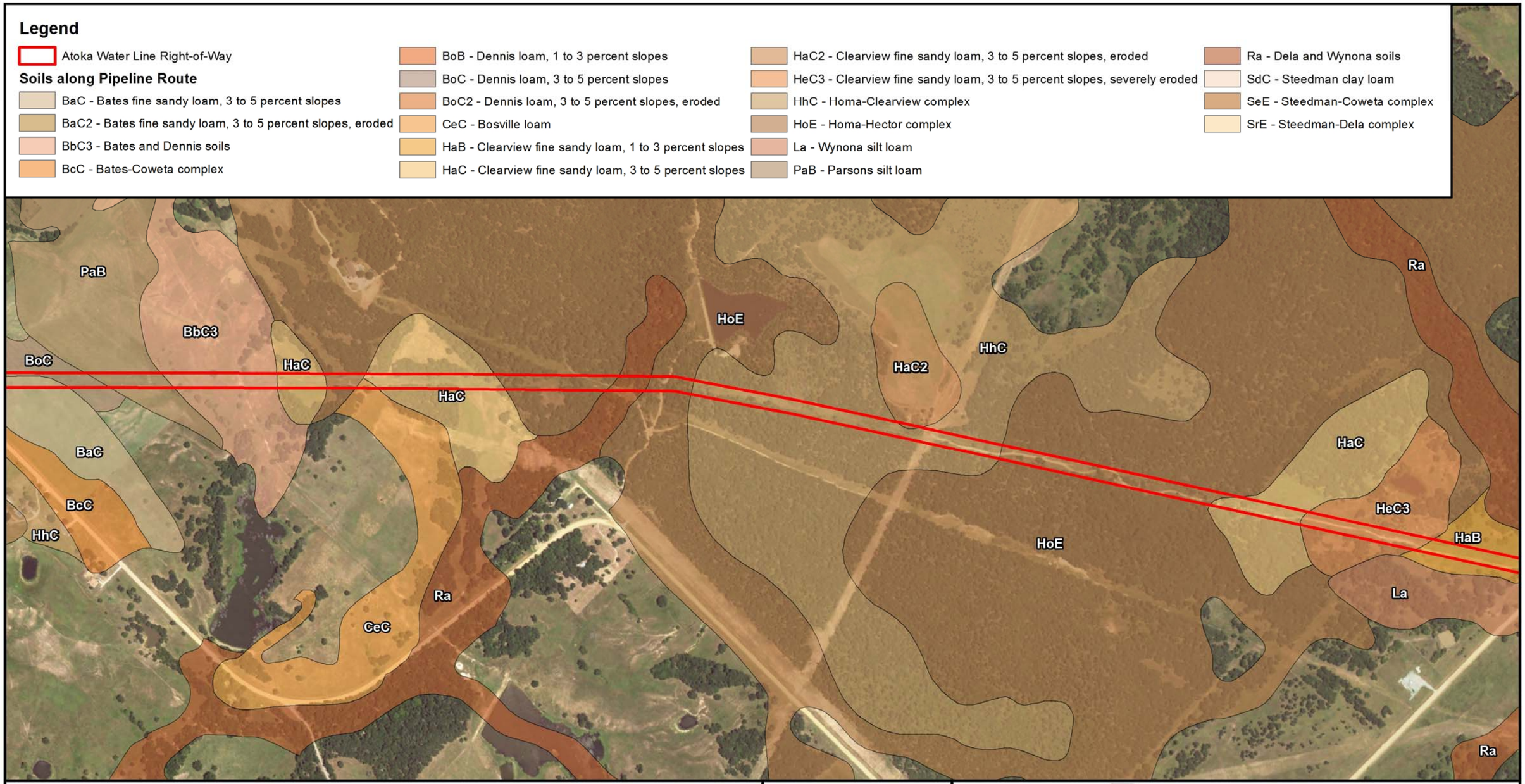
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- CeC - Bosville loam
- HaB - Clearview fine sandy loam, 1 to 3 percent slopes
- HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- PaB - Parsons silt loam
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 11, 2 & 3, T1N R9E
Coal County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.3: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Coal County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 14, 2016

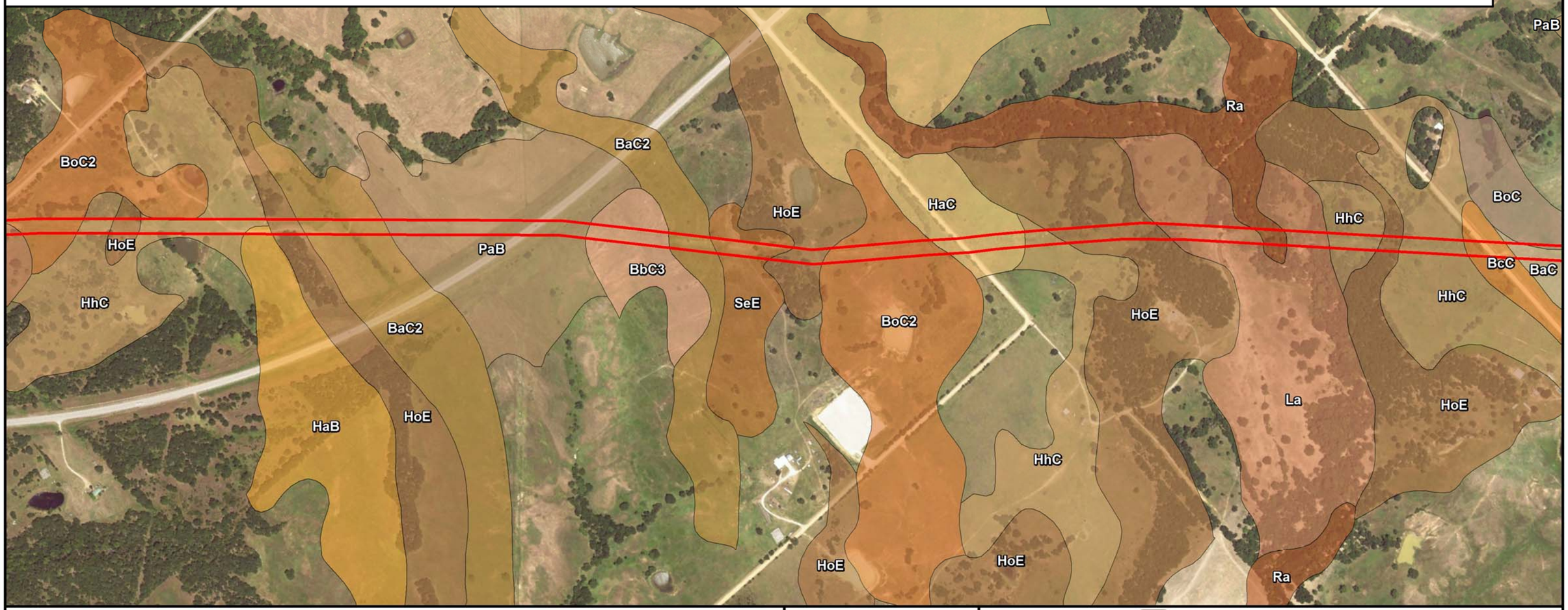
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- CeC - Bosville loam
- HaB - Clearview fine sandy loam, 1 to 3 percent slopes
- HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- PaB - Parsons silt loam
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 3, T1N R9E; Sections 34 & 33, T2N R9E
Coal County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.4: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Coal County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 20, 2016

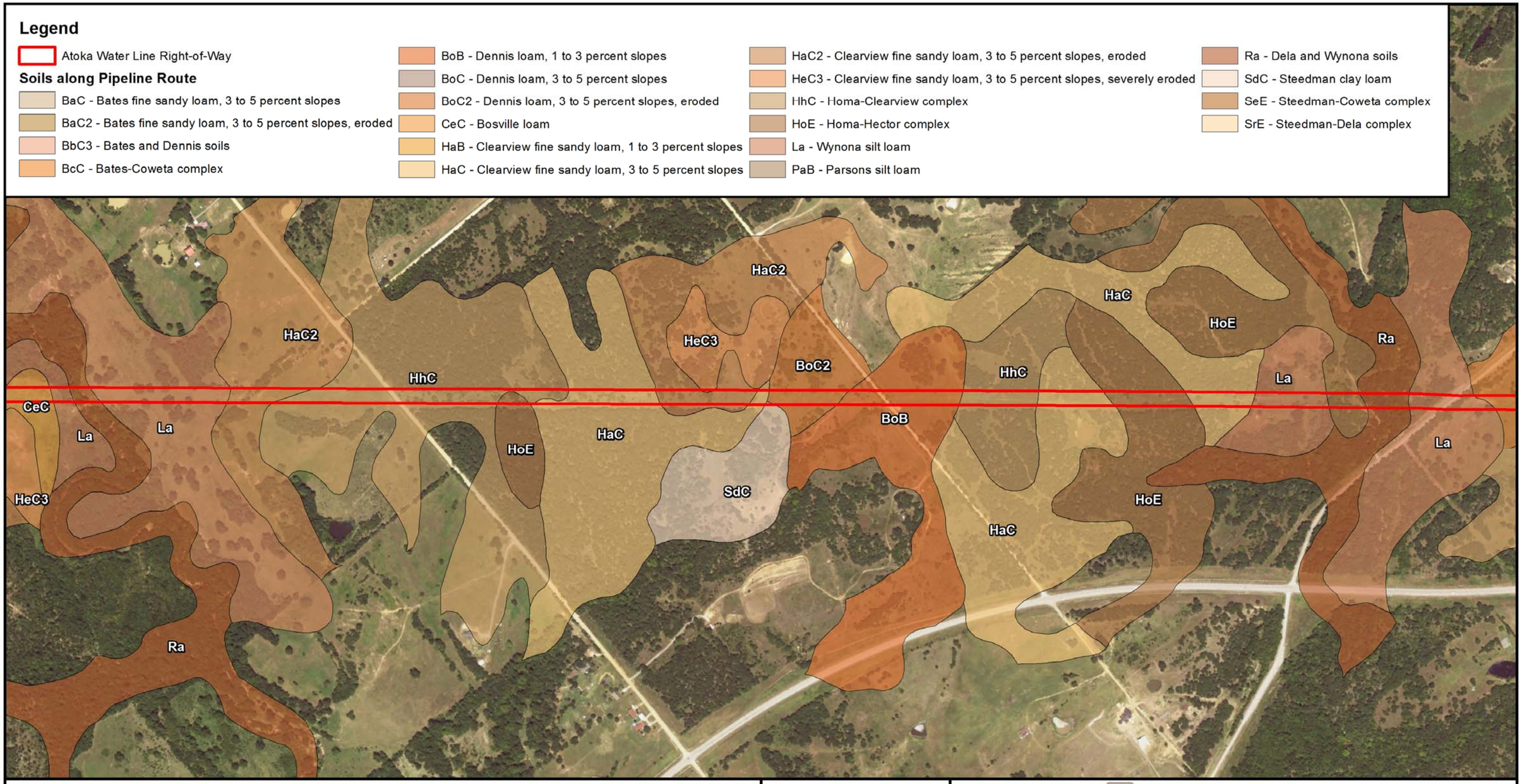
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- CeC - Bosville loam
- HaB - Clearview fine sandy loam, 1 to 3 percent slopes
- HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- PaB - Parsons silt loam
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 33, 28, 29, 30 & 19, T2N R9E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 4.5: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Coal County, Oklahoma; 2015 USDA NAIP
Prepared by: F. Woolridge; July 14, 2016

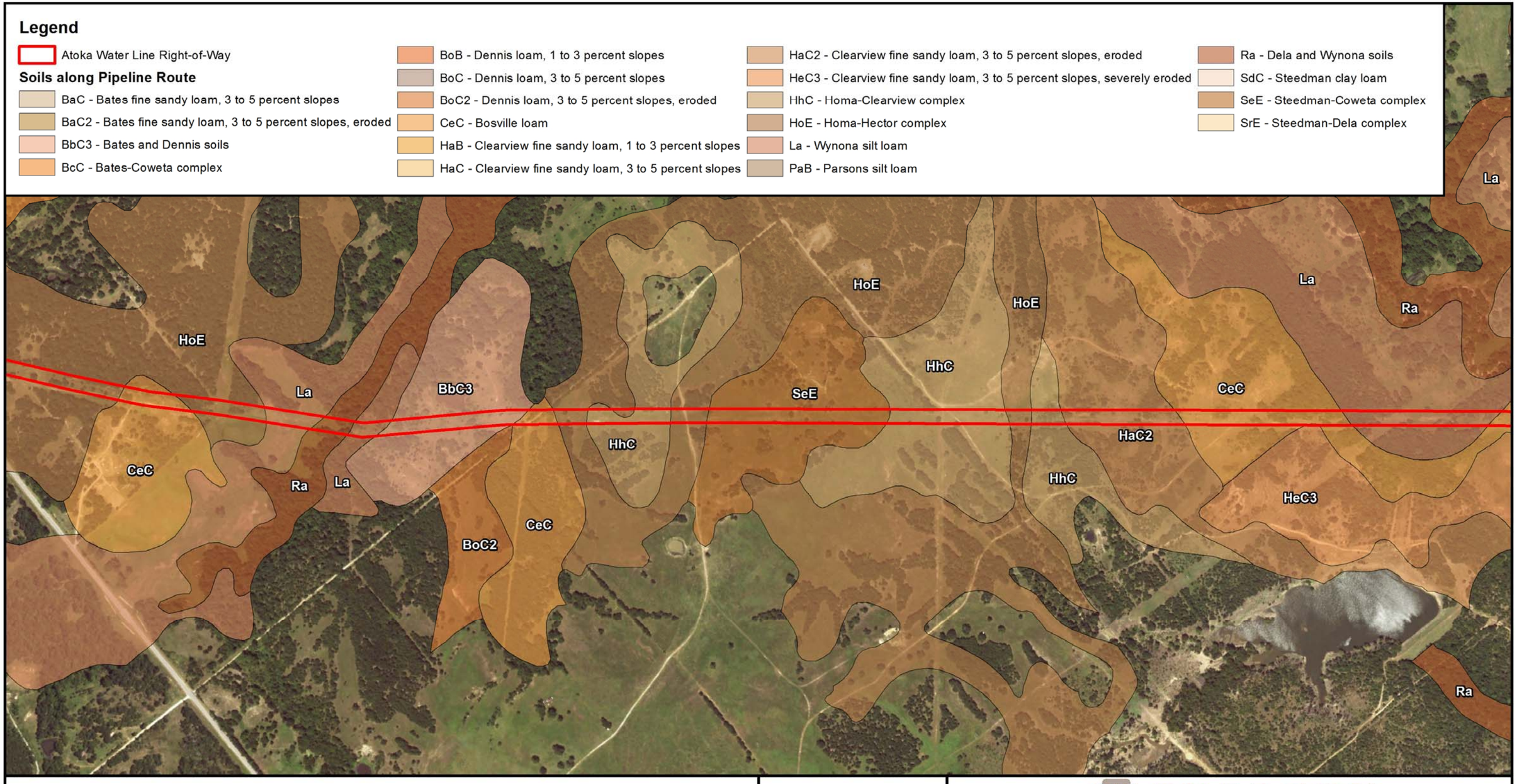
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- CeC - Bosville loam
- HaB - Clearview fine sandy loam, 1 to 3 percent slopes
- HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- PaB - Parsons silt loam
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 19, T2N R9E; Sections 24 & 13, T2N R8E
Coal County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 4.6: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Coal County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 14, 2016

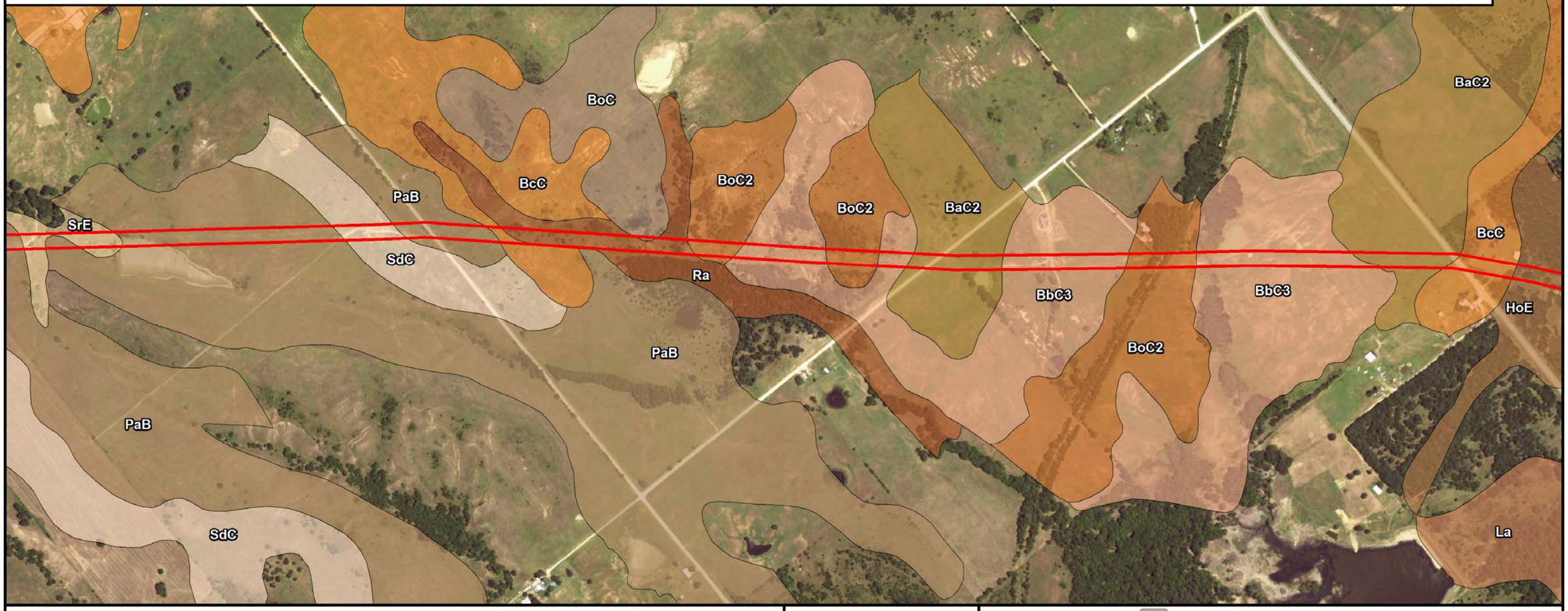
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- CeC - Bosville loam
- HaB - Clearview fine sandy loam, 1 to 3 percent slopes
- HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- PaB - Parsons silt loam
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 13, 14, 11 & 10, T2N R8E
Coal County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 4.7: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Coal County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 14, 2016

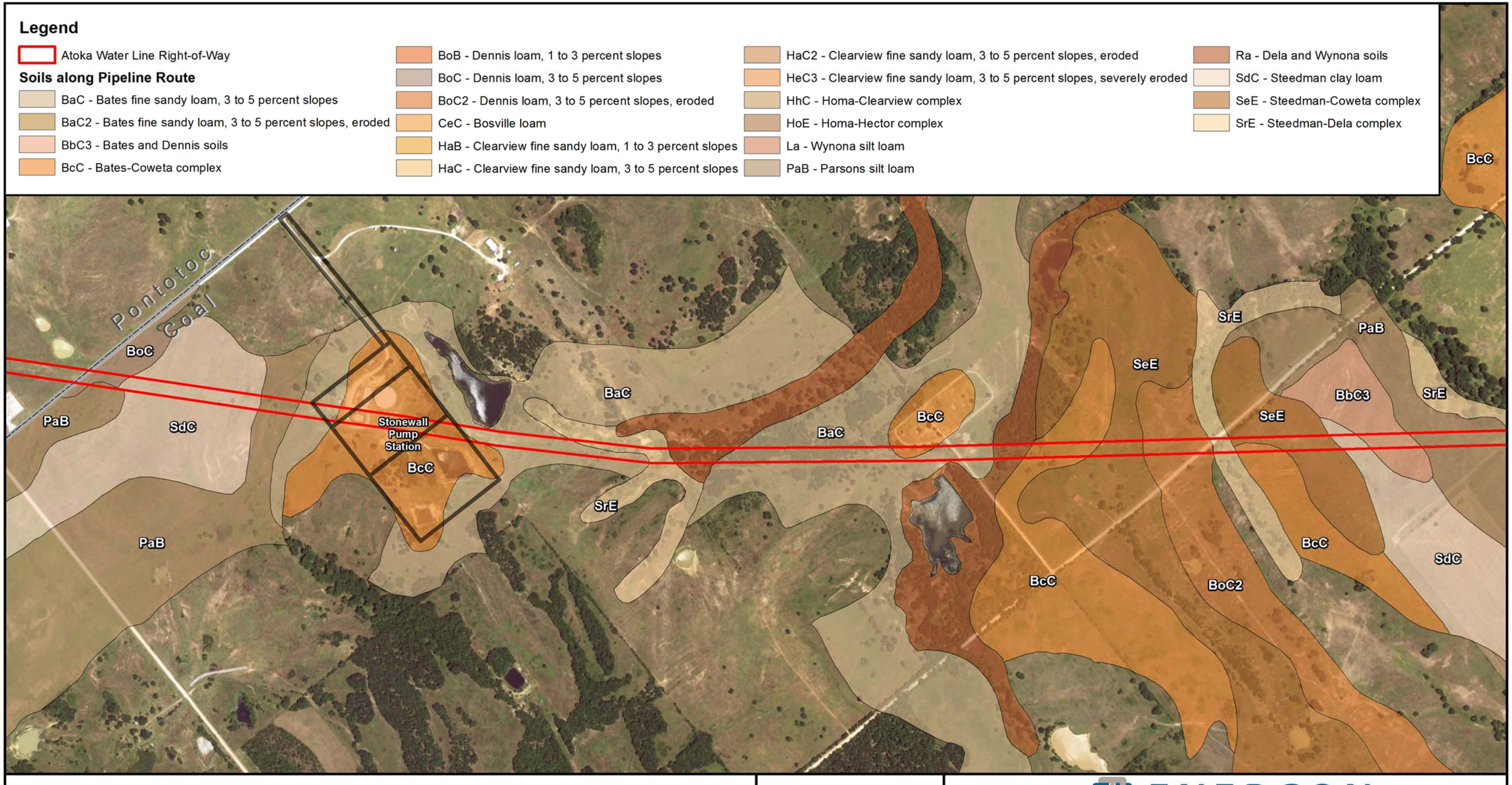
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BaC2 - Bates fine sandy loam, 3 to 5 percent slopes, eroded
- BbC3 - Bates and Dennis soils
- BcC - Bates-Coweta complex
- BoB - Dennis loam, 1 to 3 percent slopes
- BoC - Dennis loam, 3 to 5 percent slopes
- BoC2 - Dennis loam, 3 to 5 percent slopes, eroded
- CeC - Bosville loam
- HaB - Clearview fine sandy loam, 1 to 3 percent slopes
- HaC - Clearview fine sandy loam, 3 to 5 percent slopes
- HaC2 - Clearview fine sandy loam, 3 to 5 percent slopes, eroded
- HeC3 - Clearview fine sandy loam, 3 to 5 percent slopes, severely eroded
- HhC - Homa-Clearview complex
- HoE - Homa-Hector complex
- La - Wynona silt loam
- PaB - Parsons silt loam
- Ra - Dela and Wynona soils
- SdC - Steedman clay loam
- SeE - Steedman-Coweta complex
- SrE - Steedman-Dela complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 10, 3 & 4, T2N R8E
Coal County, Oklahoma

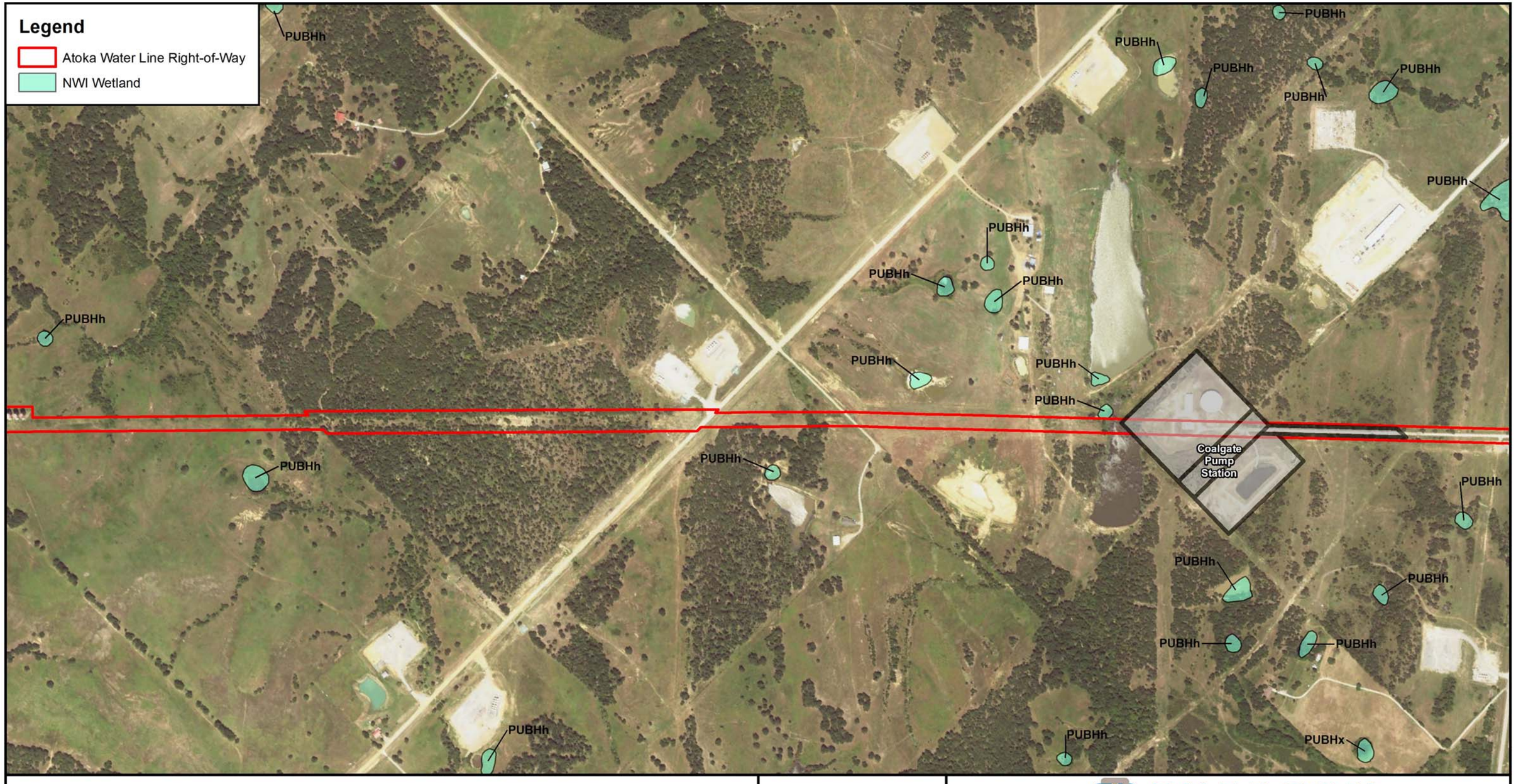
N E S W

1:8,000

ENERCON

Figure 4.8: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Coal County, Oklahoma; 2015 USDA NAIP
Prepared by: F. Woolridge; July 20, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

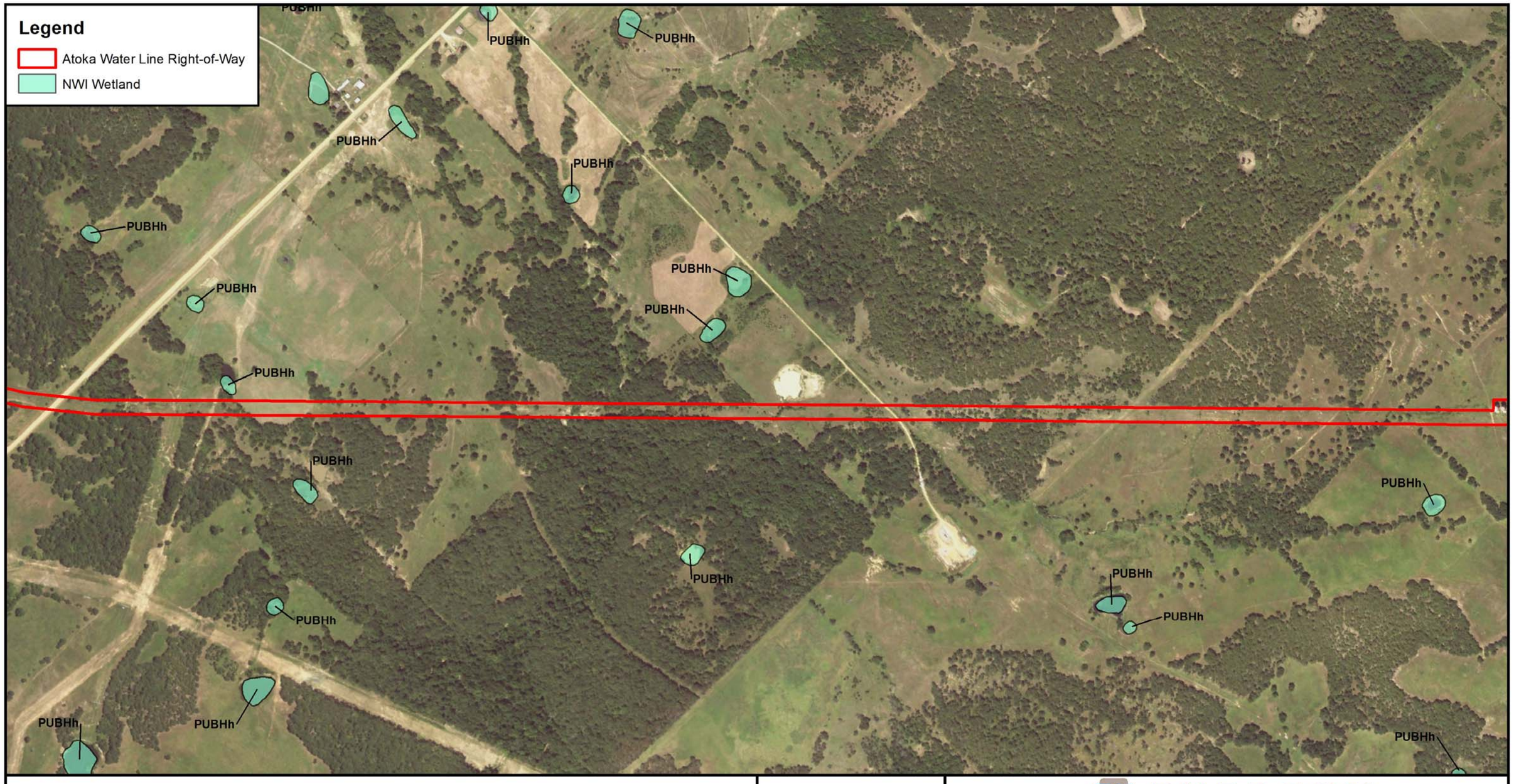
Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 29, 30 & 19, T1N R10E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 5.1: NWI Map
Source: US Fish and Wildlife Service - NWI Centrahoma, OK Quadrangle;
2015 USDA NAIP - Coal County, Oklahoma
Prepared by: F. Woolridge; July 20, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 19, T1N R10E; Sections 24, 13, 14 & 11, T1N R9E
Coal County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 5.2: NWI Map

Source: US Fish and Wildlife Service - NWI Centrahoma, OK Quadrangle;
2015 USDA NAIP - Coal County, Oklahoma

Prepared by: F. Woolridge; July 13, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 11, 2 & 3, T1N R9E
Coal County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 5.3: NWI Map

Source: US Fish and Wildlife Service - NWI Centrahoma, OK Quadrangle;
2015 USDA NAIP - Coal County, Oklahoma

Prepared by: F. Woolridge; July 13, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 3, T1N R9E; Sections 34 & 33, T2N R9E
Coal County, Oklahoma

N E W S

1:8,000

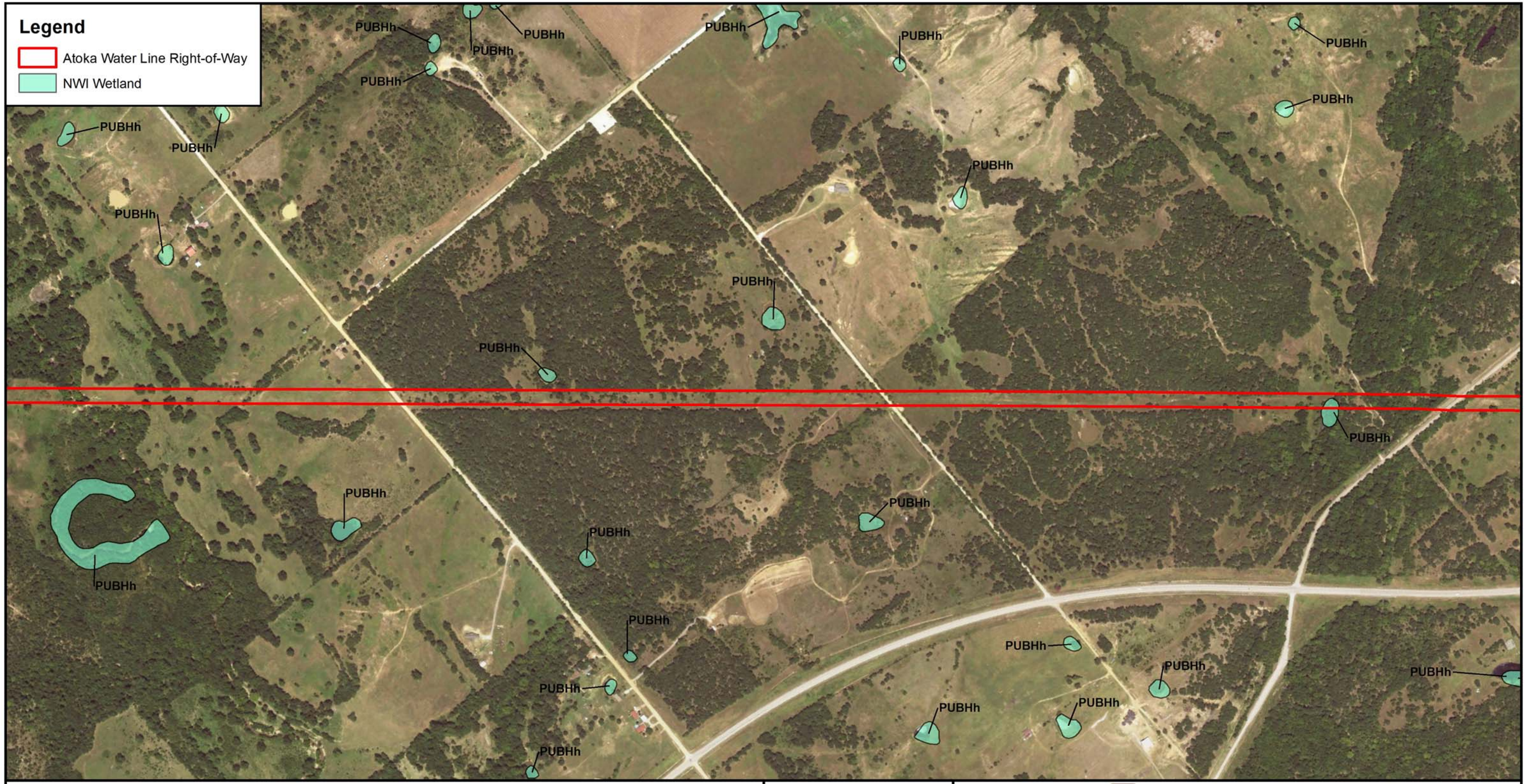
ENERCON

Figure 5.4: NWI Map

Source: US Fish and Wildlife Service - NWI Centrahoma, OK Quadrangle;
2015 USDA NAIP - Coal County, Oklahoma

Prepared by: F. Woolridge; July 14, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 33, 28, 29, 30 & 19, T2N R9E
Coal County, Oklahoma

N E W S

1:8,000

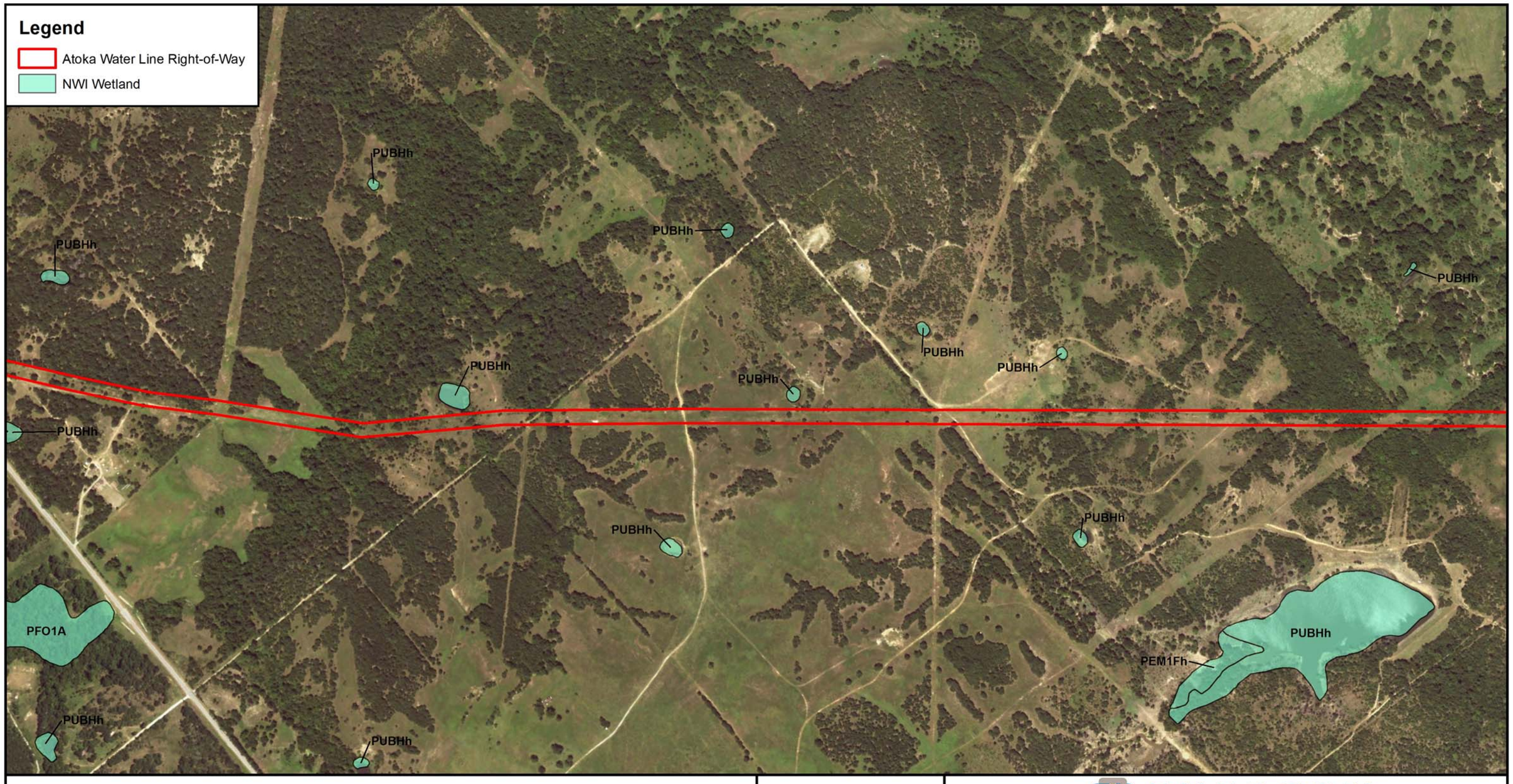
ENERCON

Figure 5.5: NWI Map

Source: US Fish and Wildlife Service - NWI Centrahoma and Tupelo, OK Quadrangles; 2015 USDA NAIP - Coal County, Oklahoma

Prepared by: F. Woolridge; July 20, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 19, T2N R9E; Sections 24 & 13, T2N R8E
Coal County, Oklahoma

N E W S

1:8,000

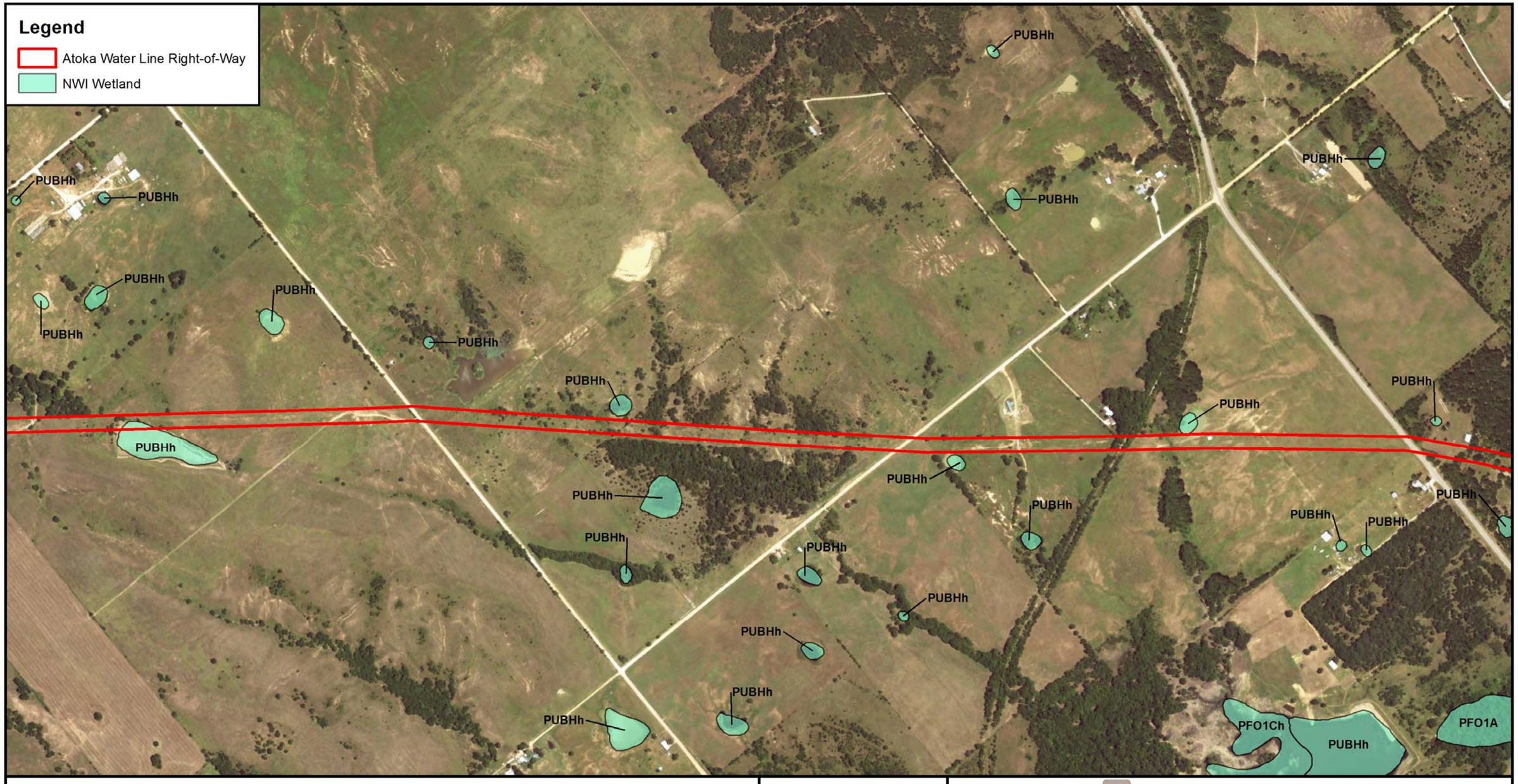
ENERCON

Figure 5.6: NWI Map

Source: US Fish and Wildlife Service - NWI Tupelo and Lula, OK Quadrangles;
2015 USDA NAIP - Coal County, Oklahoma

Prepared by: F. Woolridge; July 20, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 13, 14, 11 & 10, T2N R8E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 5.7: NWI Map

Source: US Fish and Wildlife Service - NWI Lula, OK Quadrangle;
2015 USDA NAIP - Coal County, Oklahoma

Prepared by: F. Woolridge; July 13, 2016

Feet
0 600 1,200 2,400

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 10, 3 & 4, T2N R8E
Coal County, Oklahoma

N E W S

1:8,000

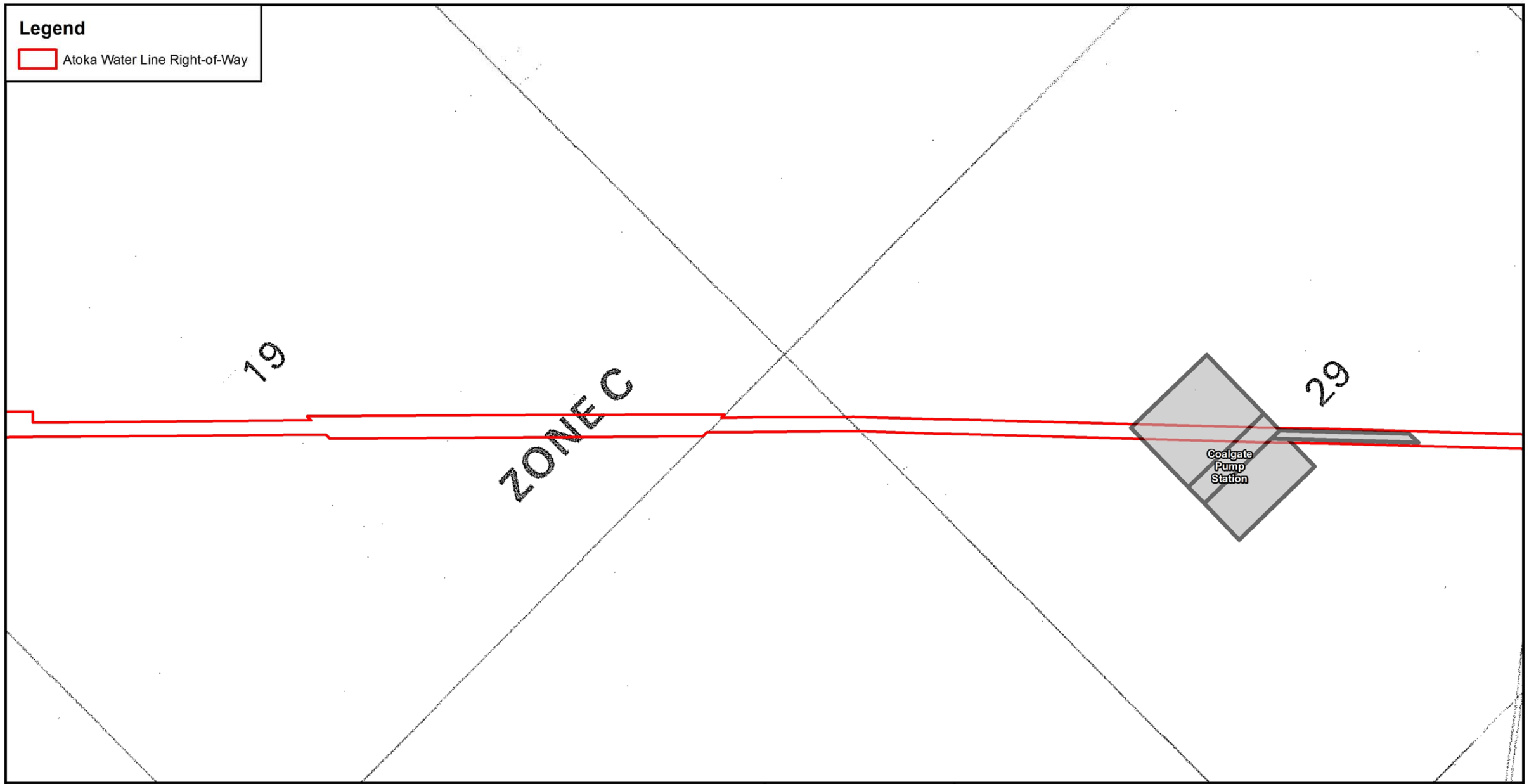
ENERCON

Figure 5.8: NWI Map

Source: US Fish and Wildlife Service - NWI Lula, OK Quadrangle;
2015 USDA NAIP - Coal County, Oklahoma

Prepared by: F. Woolridge; July 20, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

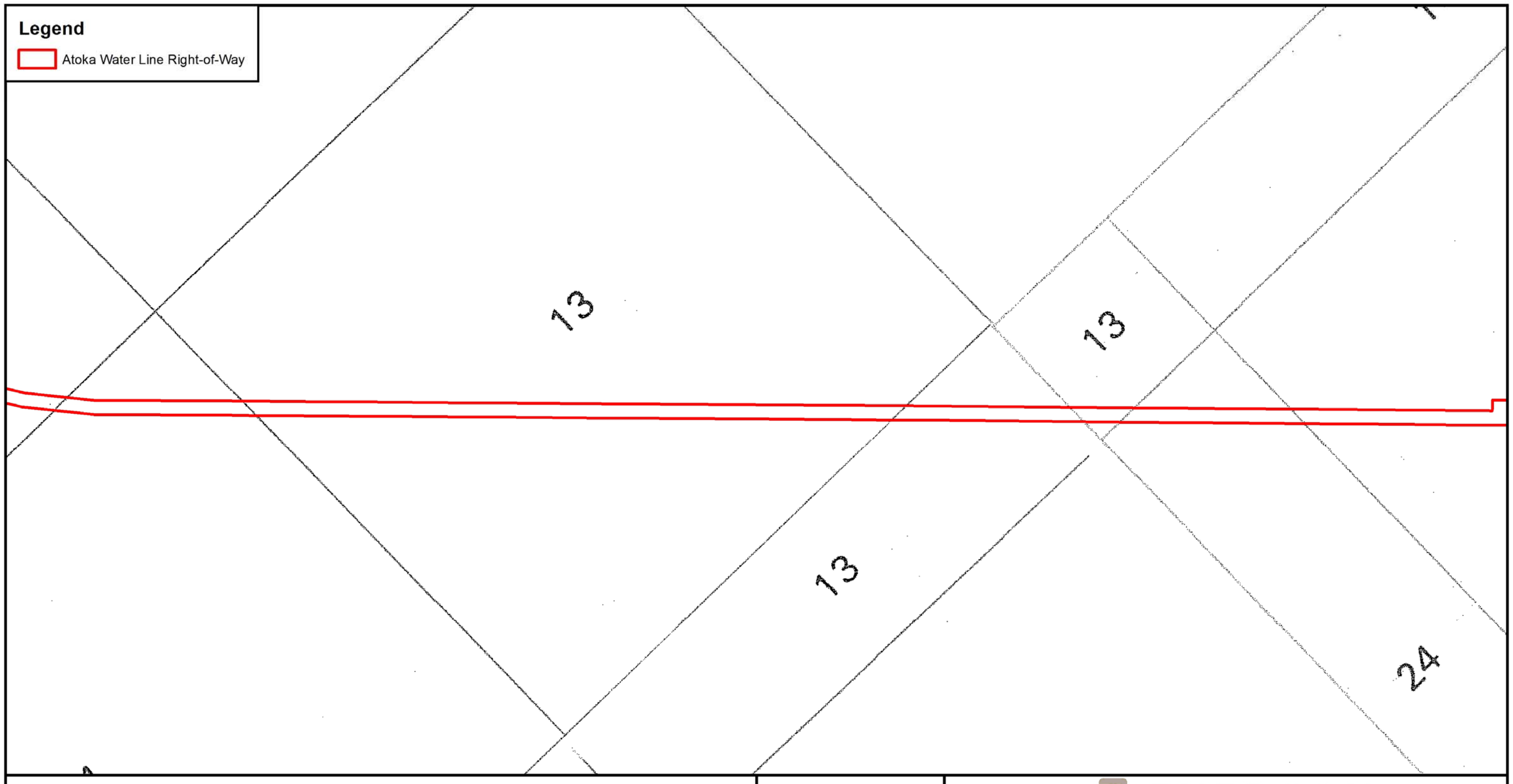
Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 29, 30 & 19, T1N R10E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 6.1: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #4005100150B - January 18, 1989
Prepared by: F. Woolridge; July 20, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 19, T1N R10E; Sections 24, 13, 14 & 11, T1N R9E
Coal County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 6.2: Flood Insurance Rate Map

Source: Federal Emergency Management Agency
Map #4005100150B, #4005100125B & #4005100075B - January 18, 1989

Prepared by: F. Woolridge; July 14, 2016

Feet
0 600 1,200 2,400

Legend

Atoka Water Line Right-of-Way

ZONE C

3

1

ZONE C

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 11, 2 & 3, T1N R9E
Coal County, Oklahoma

N E W S

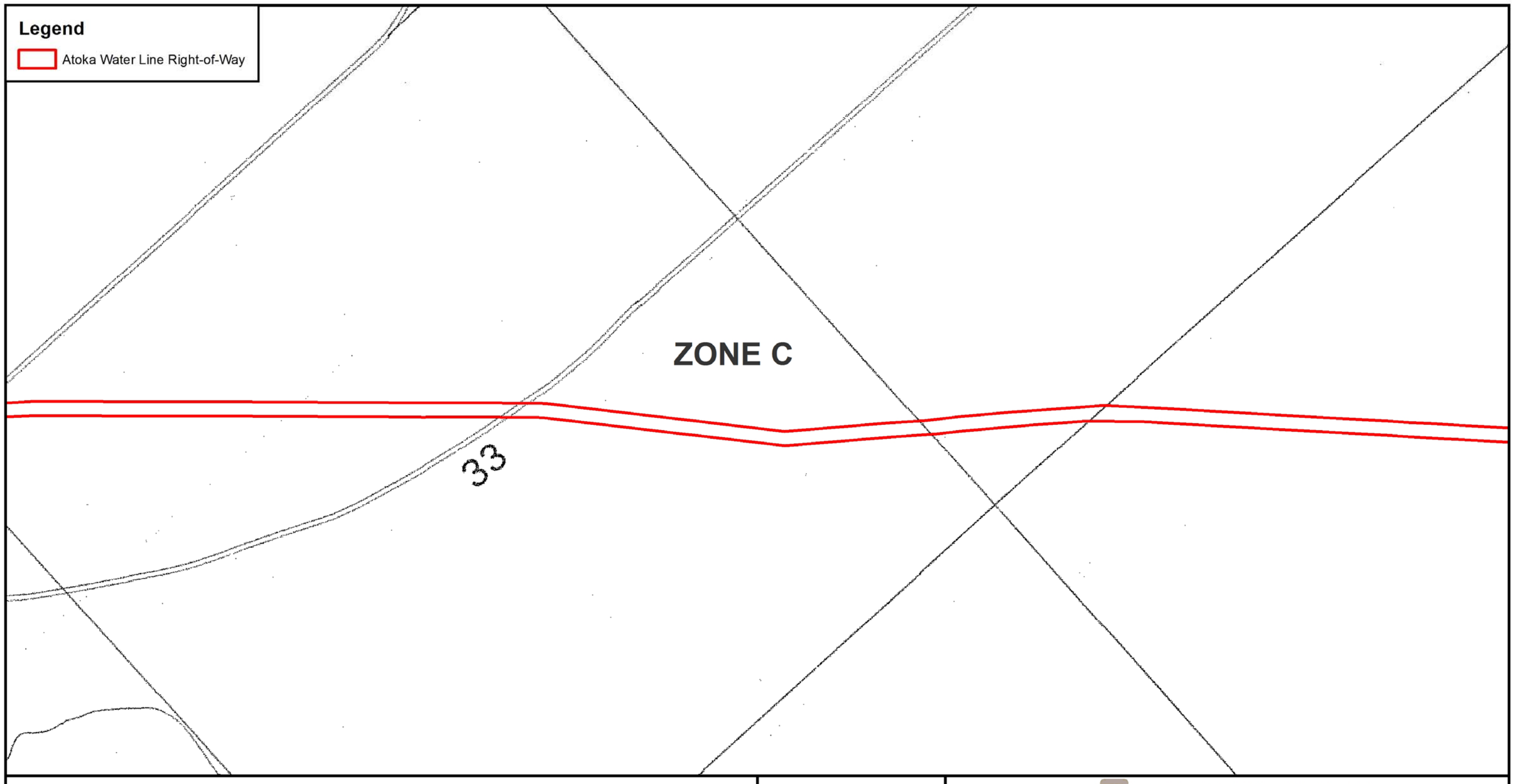
1:8,000

ENERCON

Figure 6.3: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #4005100075B - January 18, 1989

Prepared by: F. Woolridge; July 14, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

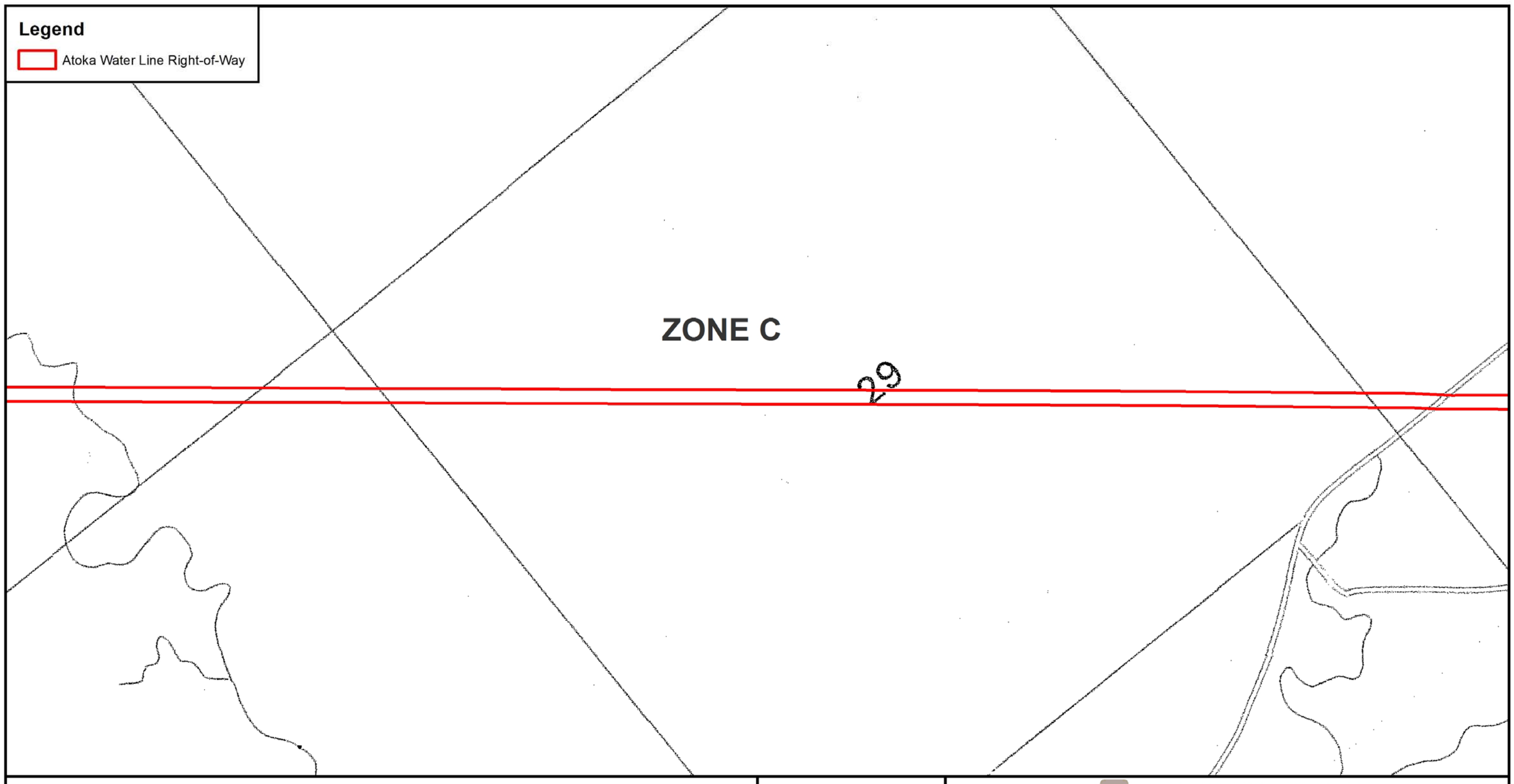
Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 3, T1N R9E; Sections 34 & 33, T2N R9E
Coal County, Oklahoma

1:8,000

ENERCON

Figure 6.4: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #4005100075B - January 18, 1989
Prepared by: F. Woolridge; July 14, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 33, 28, 29, 30 & 19, T2N R9E
Coal County, Oklahoma

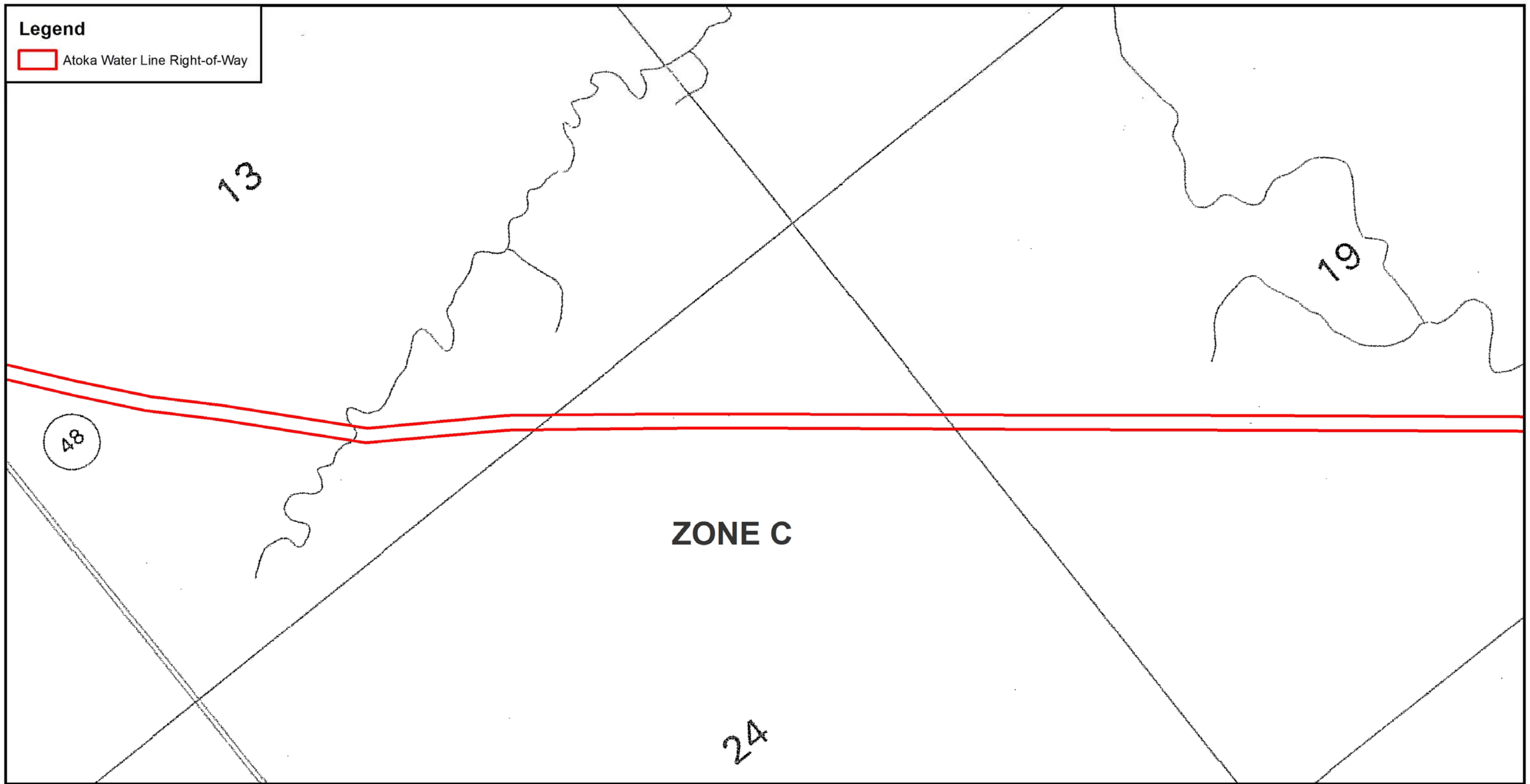
N E S W

1:8,000

ENERCON

Figure 6.5: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #4005100075B - January 18, 1989
Prepared by: F. Woolridge; July 14, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Section 19, T2N R9E; Sections 24 & 13, T2N R8E
Coal County, Oklahoma

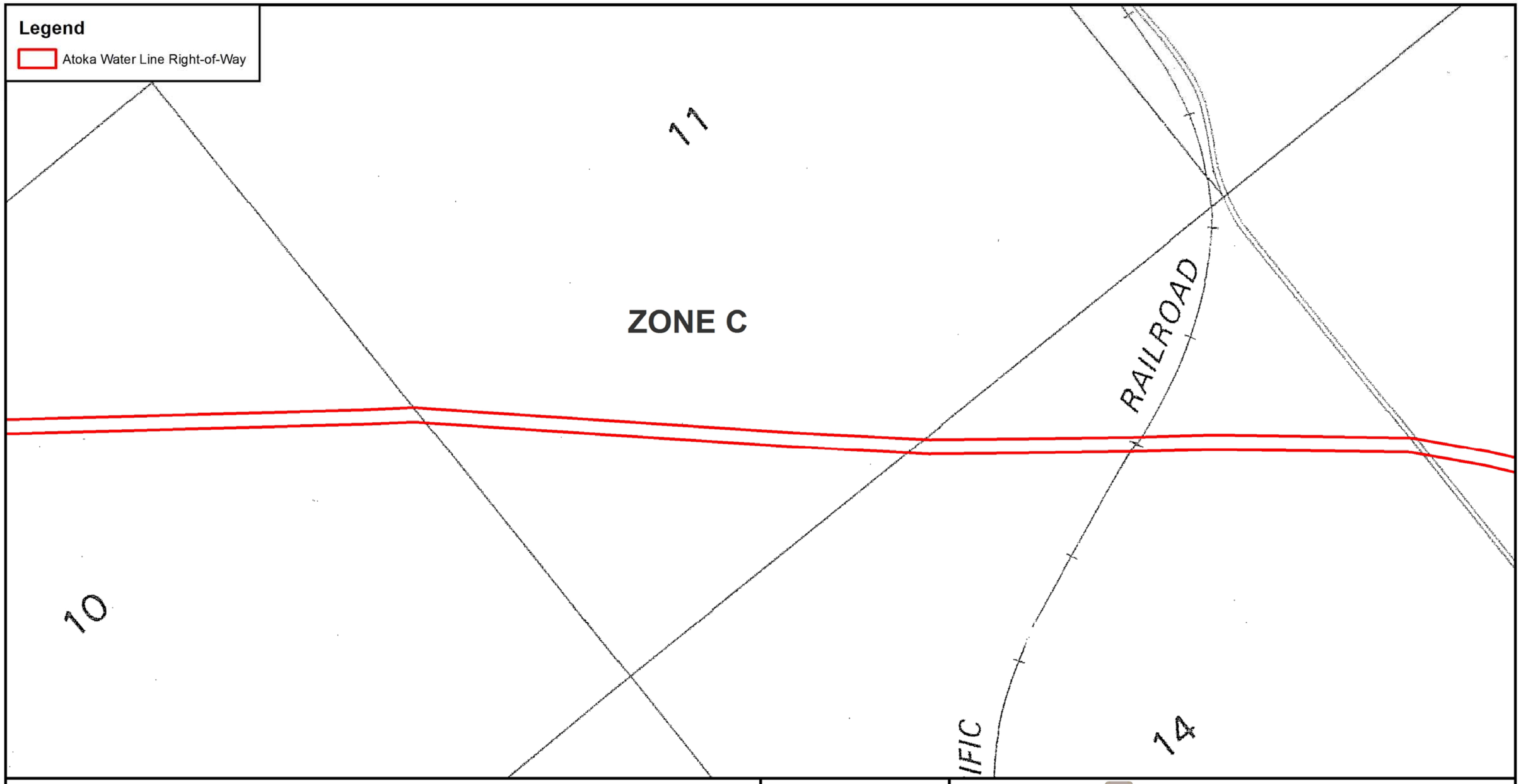
N E W S

1:8,000

ENERCON

Figure 6.6: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #4005100075B - January 18, 1989
Prepared by: F. Woolridge; July 14, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 13, 14, 11 & 10, T2N R8E
Coal County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 6.7: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #4005100075B - January 18, 1989
Prepared by: F. Woolridge; July 14, 2016

0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Pontotoc Coal

3

ZONE C

Stonewall Pump Station

4

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station
Sections 10, 3 & 4, T2N R8E
Coal County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 6.8: Flood Insurance Rate Map

Source: Federal Emergency Management Agency
Map #4005100075B - January 18, 1989

Prepared by: F. Woolridge; July 20, 2016

0 600 1,200 2,400 Feet

Table 1: Soils Series within the Atoka Water Line Section 2: Coalgate Pump Station and Stonewall Pump Station in Coal County, Oklahoma.

Table 1: Soils Series within the Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station in Coal County, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Bates fine sandy loam	BaC	3 to 5	Well drained	Non-hydric	Interfluves and hillslopes, moderately high water capacity
Bates fine sandy loam, eroded	BaC2	3 to 5	Well drained	Non-hydric	Interfluves and hillslopes, moderately high water capacity
Bates and Dennis soils, severely eroded	BbC3	3 to 5	Well drained to somewhat poorly drained	Non-hydric	Interfluves and hillslopes, moderately low to moderately high water capacity
Bates-Coweta complex	BcC	1 to 5	Well drained	Non-hydric	Hillslopes and uplands, moderately high water capacity
Dennis loam	BoB	1 to 3	Somewhat poorly drained	Non-hydric	Interfluves and hillslopes, moderately low to moderately high water capacity
Dennis loam, eroded	BoC2	3 to 5	Somewhat poorly drained	Non-hydric	Interfluves and hillslopes, moderately low to moderately high water capacity
Bosville loam	CeC	3 to 5	Moderately well drained	Non-hydric	Level to moderately steep smooth ridges and side slopes, low to moderately low water capacity
Clearview fine sandy loam	HaB	1 to 3	Somewhat poorly drained	Non-hydric	Gently rolling hills and uplands, moderately high to high water capacity
Clearview fine sandy loam	HaC	3 to 5	Somewhat poorly drained	Non-hydric	Gently rolling hills and uplands, moderately high to high water capacity
Clearview fine sandy loam, eroded	HaC2	3 to 5	Somewhat poorly drained	Non-hydric	Gently rolling hills and uplands, moderately high to high water capacity
Clearview fine sandy loam, severely eroded	HeC3	3 to 5	Somewhat poorly drained	Non-hydric	Gently rolling hills and uplands, moderately high to high water capacity
Homa-Clearview complex	HhC	3 to 5	Somewhat poorly drained	Non-hydric	Crests and side slopes of dissected plateaus and mountains, low to moderately low water capacity
Homa-Hector complex	HoE	12 to 20	Moderately well drained	Non-hydric	Crests and side slopes of dissected plateaus and mountains, very low to moderately high water capacity

Table 1: Soils Series within the Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station in Coal County, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Wynona silt loam	La	0 to 1	Somewhat poorly drained	Hydric	Nearly level to slightly concave floodplains, moderately low to moderately high water capacity,
Parsons silt loam	PaA	0 to 1	Somewhat poorly drained	Hydric	Interfluves, divides, and paleoterraces, very low to moderately low water capacity
Parsons silt loam	PaB	1 to 3	Somewhat poorly drained	Non-hydric	Interfluves, divides, and paleoterraces, very low to moderately low water capacity
Dela and Wynona soils, frequently	Ra	0 to 1	Moderately well drained	Hydric	Nearly level to gently sloping soils on floodplains, high water capacity
Steedman clay loam	SdC	3 to 5	Moderately well drained	Non-hydric	Ridge tops and slopes of uplands, very low to moderately high water capacity
Steedman-Coweta complex	SeE	2 to 20	Moderately well drained	Non-hydric	Ridge tops and slopes of uplands, very low to moderately high water capacity
Steedman-Dela complex	SrE	5 to 30	Moderately well drained	Hydric	Ridge tops, slopes of uplands, and floodplains; very low to moderately high water capacity

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 2: Coalgate Pump Station and Stonewall Pump Station in Coal County, Oklahoma.

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 2: Colgate Pump Station and Stonewall Pump Stations in Coal County, Oklahoma.

FEATURE NAME	GENERAL TYPE	COWARDIN CLASSIFICATION	PREDICTED JURISDICTIONAL STATUS*	AREA (ACRES) WITHIN PIPELINE ROW	PCN REQUIRED**
CO1	Emergent wetland	PEM1E	Yes	0.01	No
CO2	Pond	PUBHh	Yes	0.22	Yes
CO10	Emergent wetland	PEM1D	No	0.10	No
CO12	Emergent wetland	PEM1Ex	No	0.06	No
CO20	Emergent wetland	PEM1Ax	No	0.36	No
CO23	Emergent wetland	PEM1A	Yes	0.09	No
CO26	Pond	PUBHh	No	<0.01	No
CO28	Pond	PUBHh	No	0.01	No
CO31	Emergent wetland	PEM1D	Yes	0.11	Yes
CO33	Emergent wetland	PEM1E	Yes	0.11	Yes
CO35	Pond	PUBHh	Yes	0.26	Yes
CO38	Pond	NA[1]	No	0.00	No
POTENTIALLY JURISDICTIONAL WETLANDS TOTAL: 0.84-ACRE					
POTENTIALLY JURISDICTIONAL POND TOTAL: 0.49-ACRE					

**Jurisdictional status is subject to Corps approval; ** PCNs are required only if the Corps determines the feature is jurisdictional; 1- Feature is mapped on the USGS topographic map; however, no surface water feature was observed at the mapped location.*

Table 3: Summary of streams and drainages in the Atoka Water Line Section 2: Coalgate Pump Station and Stonewall Pump Station in Coal County, Oklahoma.

Table 3: Summary of streams and drainages in the Atoka Water Line Section 2: Colgate Pump Station and Stonewall Pump Station in Coal County, Oklahoma.

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
CO3	Ephemeral	Yes	Yes	0	103	No
CO4	Intermittent	Yes	Yes	6	260	Yes
CO5	Ephemeral	No	No	2	250	No
CO6	Ephemeral	No	No	0	173	No
CO7	Intermittent	Yes	Yes	7	104	No
CO8	Intermittent	Yes	Yes	6	140	No
CO9	Intermittent	No	Yes	3	123	No
CO11	Intermittent	Yes	Yes	3	111	No
CO13	Ephemeral	No	No	0	116	No
CO14	Intermittent (Owl Creek)	Yes	Yes	12	130	No
CO15	Ephemeral	No	No	0	103	No
CO16	Ephemeral	No	No	5	105	No
CO17	Ephemeral	No	No	8	103	No
CO18	Intermittent (Peach Creek)	Yes	Yes	8	153	Yes
CO19	Ephemeral	No	No	4	142	No
CO21	Ephemeral	No	No	2	105	No
CO22	Perennial (Leader Creek)	Yes	Yes	20	112	No
CO24	Ephemeral	No	No	2	107	No
CO25	Intermittent	Yes	No	NA[1]	0	No
CO27	Intermittent	Yes	Yes	4	110	No

Table 3: Summary of streams and drainages in the Atoka Water Line Section 2: Colgate Pump Station and Stonewall Pump Station in Coal County, Oklahoma.

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE	PCN REQUIRED**
CO29	Intermittent (Coon Creek)	Yes	Yes	6	119	No
CO30	Ephemeral	No	No	3	185	No
CO32	Ephemeral	No	No	2	127	No
CO34	Ephemeral	Yes	Yes	3	596	Yes
CO36	Intermittent	Yes	No	NA[1]	0	No
CO37	Ephemeral	Yes	Yes	4	112	No
CO39	Ephemeral	Yes	Yes	2	136	No
CO40	Ephemeral	No	No	2	230	No
CO41	Intermittent	Yes	Yes	5	191	Yes
POTENTIALLY JURISDICTIONAL STREAM TOTAL: 4,246 LINEAR FEET						

**Jurisdictional status is subject to Corps approval; ** PCNs are required only if the Corps determines the feature is jurisdictional; 1- Feature mapped on the USGS topographic map; however no bed and bank was observed within the proposed pipeline ROW.*

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/16/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS1

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 29, T1N, R10E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 2-3

Subregion (LRR or MLRA): LRR N Lat: 34.52891 Long: -96.27976 Datum: NAD83

Soil Map Unit Name: Homa-Hector complex, 12-20% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

Indicators for all three wetland criteria were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- X Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): NA

Water Table Present? Yes _____ No X Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 2"

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators for wetland hydrology were observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS1

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Typha latifolia*	95	YES	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Indicators for hydrophytic vegetation were observed.

SOIL

Sampling Point: COSS1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR, 5/1	80	5YR, 5/6	20	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

Indicators for hydric soils were observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/16/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS2

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 29, T1N, R10E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 1-2

Subregion (LRR or MLRA): LRR N Lat: 34.52887 Long: -96.27994 Datum: NAD83

Soil Map Unit Name: Clearview fine sandy loam, 3-5 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Indicators were not observed for any of the three wetland criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): NA
Water Table Present?	Yes _____	No X	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): NA

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators for wetland hydrology were not observed

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS2

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus serotina*	60	YES	FAC
2. *Juniperus virginiana*	15	NO	FUCU
3. *Celtis occidentalis*	10	NO	FACU
4.			
5.			
6.			
7.			
	85	= Total Cover	

Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Shrub Stratum (Plot size: 15' Radius)			
1. *Juniperus virginiana*	25	YES	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	25	= Total Cover	

Herb Stratum (Plot size: 5' Radius)			
1. *Dichanthelium oligosanthes*	20	YES	FACU
2. *Schedonorus arundinaceus*	15	YES	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	35	= Total Cover	

Woody Vine Stratum (Plot size: 30' Radius)			
1. *Smilax bona-nox*	10	YES	FACU
2.			
3.			
4.			
5.			
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	60	x 3 =	180
FACU species	95	x 4 =	380
UPL species		x 5 =	
Column Totals:	155 (A)		560 (B)

Prevalence Index = B/A = 3.61

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

Indicators for hydrophytic vegetation were not observed.

SOIL

Sampling Point: COSS2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR, 4/4	100					Sandy Lo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Indicators for hydric soils were not observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/21/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS3

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 11, Township 1N, Range 9E

Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): 1-2

Subregion (LRR or MLRA): LRR N Lat: 34.57617 Long: -96.33200 Datum: NAD83

Soil Map Unit Name: Homa-Clearview complex, 3-5% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation No, Soil Yes, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

Indicators for all three wetland criteria were observed. The wetland appears to have developed from a leak in the water line.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- X Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): NA
Water Table Present?	Yes _____	No X	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 2"

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators for wetland hydrology were observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS3

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15' Radius)			
1. *Salix nigra*	20	YES	OBL
2.			
3.			
4.			
5.			
6.			
7.			
	20 = Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Typha latifolia*	75	YES	OBL
2. *Carex spp.*	5	NO	---
3. *Juncus spp.*	5	NO	---
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Indicators for hydrophytic vegetation were observed.

SOIL

Sampling Point: COSS3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR, 5/4	85	5YR 5/6	15	C	M	Sandy Le	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

Indicators for problematic hydric soils were present at this sampling site. A leak from the Atoka water line has developed multiple wetland hydrology indicators and a prevalence of hydrophytic vegetation. Due to the recent development of this wetland, hydric soil indicators were not present.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/21/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS4

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 11, Township 1N, Range 9E

Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR or MLRA): LRR N Lat: 34.57610 Long: -96.33226 Datum: NAD83

Soil Map Unit Name: Homa-Clearview complex, 3-5% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Indicators were not observed for any of the three wetland criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): NA
Water Table Present?	Yes _____	No X	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): NA

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators for wetland hydrology were not observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS4

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus stellata*	40	YES	UPL
2. *Carya texana*	20	YES	NL
3. *Ulmus alata*	10	NO	FACU
4.			
5.			
6.			
7.			
	70	= Total Cover	
Sapling Stratum (Plot size: 15' Radius)			
1. *Carya texana*	15	YES	NL
2. *Ulmus alata*	10	YES	FACU
3.			
4.			
5.			
6.			
7.			
	25	= Total Cover	
Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Schizachyrium scoparium*	15	YES	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	15	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species	35	x 4 =	140
UPL species	40	x 5 =	200
Column Totals:	75 (A)		340 (B)

Prevalence Index = B/A = 4.53

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Indicators for hydrophytic vegetation were not observed.

SOIL

Sampling Point: COSS4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR, 5/6	100					Sandy Lo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Indicators for hydric soils were not observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/21/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS5

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 2, Township 1N, Range 9E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat: 34.57915 Long: -96.33504 Datum: NAD83

Soil Map Unit Name: Homa-Hector complex, 12 to 20% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

Indicators for all three wetland criteria were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 3"

Water Table Present? Yes _____ No X Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): NA

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators for wetland hydrology were observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS5

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Persicaria pensylvanica*	75	YES	FACW
2. *Typha latifolia*	5	NO	OBL
3. *Carex spp.*	5	NO	---
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Indicators for hydrophytic vegetation were observed.

SOIL

Sampling Point: COSS5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/21/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS6

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 2, Township 1N, Range 9E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR or MLRA): LRR N Lat: 34.57935 Long: -96.33531 Datum: NAD83

Soil Map Unit Name: Homa-Hector complex, 12 to 20% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

Indicators were not observed for any of the three wetland criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): NA
Water Table Present?	Yes ____	No X	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): NA

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators for wetland hydrology were not observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS6

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus stellata*	60	YES	UPL
2. *Carya texana*	20	YES	NL
3.			
4.			
5.			
6.			
7.			
	80	= Total Cover	

Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Shrub Stratum (Plot size: 15' Radius)			
1. *Symphoricarpos orbiculatus*	45	YES	FACU
2. *Juniperus virginiana*	20	YES	FACU
3. *Rubus oklahomus*	10	NO	FAC
4.			
5.			
6.			
7.			
	75	= Total Cover	

Herb Stratum (Plot size: 5' Radius)			
1. *Schizachyrium scoparium*	30	YES	FACU
2. *Lespedeza cuneata*	20	YES	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	50	= Total Cover	

Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	10	x 3 =	30
FACU species	115	x 4 =	460
UPL species	60	x 5 =	300
Column Totals:	185 (A)		790 (B)

Prevalence Index = B/A = 4.27

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Indicators for hydrophytic vegetation were not observed.

SOIL

Sampling Point: COSS6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR, 5/6	100					Sandy Lo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Indicators for hydric soils were not observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Pipeline City/County: Coal County Sampling Date: 3/22/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS7

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 29, Township 2N, Range 9E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat: 34.60867 Long: -96.37293 Datum: NAD 83

Soil Map Unit Name: Wynona silt loam, 0 to 1% Slopes, Occasionally flooded NWI classification: PUBHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

Indicators for all three wetland criteria were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 3"
Water Table Present?	Yes ____	No X	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): NA

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators for wetland hydrology were observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS7

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Carex crus-corvi*	30	YES	OBL
2. *Ranunculus spp.*	20	YES	---
3. *Rumex crispus*	5	NO	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

Indicators for hydrophytic vegetation were observed.

SOIL

Sampling Point: COSS7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG						Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/22/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS8

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 29, Township 2N, Range 9E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat: 34.60905 Long: -96.37339 Datum: NAD83

Soil Map Unit Name: Wynona silt loam, 0-1% Slopes, Occasionally Flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

Indicators were not observed for any of the three wetland criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): NA
Water Table Present?	Yes ____	No X	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): NA

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS8

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: 5' Radius)			
1. *Cynodon dactylon*	50	YES	FACU
2. *Schizachyrium scoparium*	25	YES	FACU
3. *Trifolium repens*	15	NO	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		

Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species	90	x 4 =	360
UPL species		x 5 =	
Column Totals:	90 (A)		360 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: COSS8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	7.TYR 4/6	100					SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Indicators of hydric soil were not observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/22/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS9

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 19, Township 2N, Range 9E

Landform (hillslope, terrace, etc.): Depression in Floodplain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat: 34.62511 Long: -96.39735 Datum: NAD83

Soil Map Unit Name: Wynona silt loam, 0-1% Slopes, Occasionally Flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

Indicators for all three wetland criteria were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 3"

Water Table Present? Yes ____ No X Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): NA

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS9

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	15	YES	FACW
2. *Carya illinoinensis*	5	YES	FACU
3.			
4.			
5.			
6.			
7.			
	20	= Total Cover	
Sapling Stratum (Plot size: 15' Radius)			
1. *Fraxinus pennsylvanica*	10	YES	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	
Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Carex crus-corvi*	25	YES	OBL
2. *Persicaria pensylvanica*	25	YES	FACW
3. *Rumex crispus*	10	NO	FAC
4. *Juncus spp.*	5	NO	---
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: COSS9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR 4/1	90	5YR 5/8	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

Indicators of hydric soil were observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/22/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS10

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 19, Township 2N, Range 9E

Landform (hillslope, terrace, etc.): Flat Land Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat: 34.62579 Long: -96.39831 Datum: NAD83

Soil Map Unit Name: Wynona silt loam, 0-1% Slopes, Occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

Indicators for only one of the three wetland criteria were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): NA
Water Table Present?	Yes _____	No X	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): NA

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS10

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Gleditsia triacanthos*	10	YES	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	
Sapling Stratum (Plot size: 15' Radius)			
1. *Gleditsia triacanthos*	10	YES	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	
Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Cynodon dactylon*	80	YES	FACU
2. *Schedonorus arundinaceus*	10	NO	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: COSS10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	7.5YR 3/4	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Indicators of hydric soil were not observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/22/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS11

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 14, Township 2N, Range 8E

Landform (hillslope, terrace, etc.): Linear Depression Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR N Lat: 34.64785 Long: -96.42864 Datum: NAD83

Soil Map Unit Name: Bates and Dennis soils, 3-5% Slopes, Severely eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

Indicators for all three wetland criteria were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 3"

Water Table Present? Yes _____ No X Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): NA

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS11

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: 15' Radius)			
1. *Salix nigra*	5	YES	OBL
2.			
3.			
4.			
5.			
6.			
7.			
	5 = Total Cover		
Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Eleocharis tenuis*	70	YES	FACW
2. *Persicaria pensylvanica*	10	NO	FACW
3. *Potamogeton spp.*	5	NO	---
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: COSS11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/22/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS12

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 14, Township 2N, Range 8E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Nonce Slope (%): 1-2

Subregion (LRR or MLRA): LRR N Lat: 34.64792 Long: -96.42884 Datum: NAD83

Soil Map Unit Name: Bates and Dennis soils, 3-5% Slopes, Severely eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Indicators were not observed for any of the three wetland criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): NA
Water Table Present?	Yes _____	No X	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): NA

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS12

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Cynodon dactylon*	98	YES	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	98 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species	98	x 4 =	392
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: COSS12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/4	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Indicators of hydric soil were not observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/22/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS13

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 11, Township 2N, Range 8E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR N Lat: 34.65502 Long: -96.43872 Datum: NAD83

Soil Map Unit Name: Dela and Wynona soils, 0-1% Slopes, Frequently flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

Indicators for all three wetland criteria were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): NA

Water Table Present? Yes _____ No X Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 4"

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS13

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	10	YES	OBL
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	

Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Herb Stratum (Plot size: 5' Radius)			
1. *Ranunculus spp.*	40	YES	---
2. *Carex crus-corvi*	30	YES	OBL
3. *Eleocharis obtusa*	25	YES	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95	= Total Cover	

Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: COSS13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR 3/1	70	5YR 5/6	30	C	M	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

Indicators of hydric soil were observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Atoka Water Line City/County: Coal County Sampling Date: 3/22/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: COSS14

Investigator(s): J.P. Schatte and E. Ellis Section, Township, Range: Section 11, Township 2N, Range 8E

Landform (hillslope, terrace, etc.): Low lying area Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR or MLRA): LRR N Lat: 34.65551 Long: -96.43895 Datum: NAD83

Soil Map Unit Name: Dela and Wynona soils, 0-1% Slopes, Frequently flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Indicators were not observed for any of the three wetland criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: COSS14

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15' Radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Cynodon dactylon*	60	YES	FACU
2. *Trifolium repens*	15	NO	FACU
3. *Vicia sativa*	15	NO	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species 90	x 4 = 360
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: COSS14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	10YR 4/3	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Indicators of hydric soil were not observed.

Site Photographs

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 2:
COALGATE PUMP STATION TO STONEWALL PUMP STATION

Typical view of habitat types found within the proposed Atoka Water Line Section 2: Coalgate Pump Station to Stonewall Pump Station.

Photograph 1: Typical view of mixed grass pasture habitat, facing southeast.

Photograph 2: Typical view of heavily grazed mixed grass pasture habitat, facing southeast.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 2:
COALGATE PUMP STATION TO STONEWALL PUMP STATION

Photograph 3: Typical view of upland forest, facing northwest.

Photograph 4: Typical view of existing pipeline ROW planted with native grasses and upland forest habitats, facing northwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 2:
COALGATE PUMP STATION TO STONEWALL PUMP STATION

Photograph 5: Typical view of mixed grass pasture/hayfield habitat, facing northwest.

Photograph 6: Typical view of native grass pasture habitat, facing southeast.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 2: COALGATE PUMP STATION TO STONEWALL PUMP STATION

Representative Water Features within the Atoka Water Line Section 2: Colgate Pump Station to Stonewall Pump Station

Photograph 7: View of CO2, an impoundment of a mapped intermittent stream, facing northwest.

Photograph 8: View of CO4, a mapped intermittent stream, facing southwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 2: COALGATE PUMP STATION TO STONEWALL PUMP STATION

Photograph 9: View of CO9, an unmapped intermittent stream, facing southwest.

Photograph 10: View of CO18, a mapped intermittent stream (Peach Creek), facing southeast.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 2:
COALGATE PUMP STATION TO STONEWALL PUMP STATION

Photograph 11: View of CO20, an emergent wetland, facing northwest.

Photograph 12: View of CO22, a mapped intermittent stream (Leader Creek), facing northeast.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 2: COALGATE PUMP STATION TO STONEWALL PUMP STATION

Photograph 13: View of CO31, an emergent wetland, facing northeast.

Photograph 14: View of CO34, a mapped intermittent stream, facing northwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 2:
COALGATE PUMP STATION TO STONEWALL PUMP STATION

Photograph 15: View of CO35, a pond formed by the impoundment of a mapped intermittent stream, facing southeast.

Photograph 16: View of CO41, a mapped intermittent stream, facing southeast.

Appendix C - Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station

Figures (Vicinity Map, Topographic Map, Aerial Photography, Soil Survey Map, NWI Map, Flood Insurance Rate Map)

Table 1: Soils Series within the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station in Coal and Pontotoc Counties, Oklahoma.

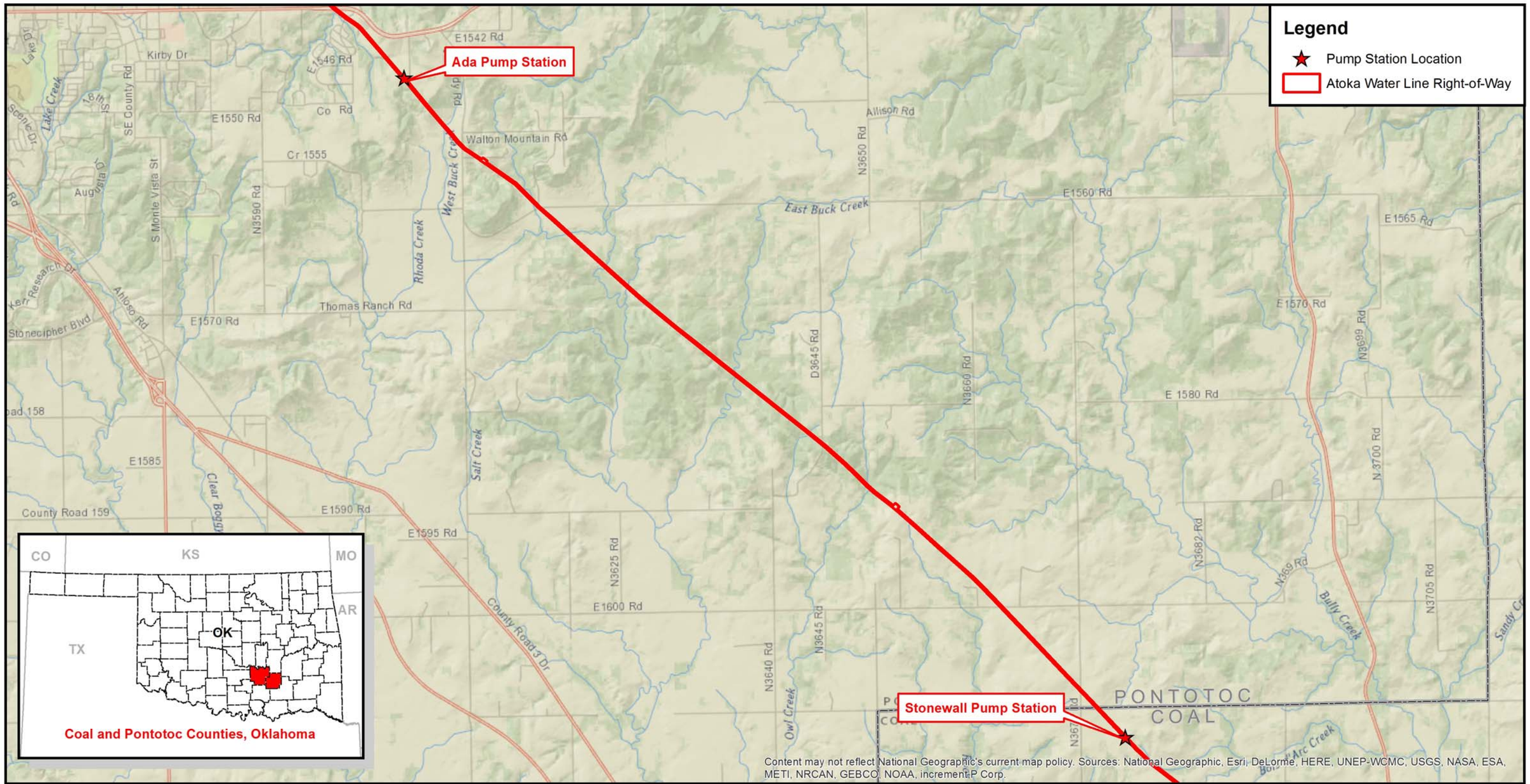
Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station in Coal and Pontotoc Counties, Oklahoma.

Table 3: Summary of streams and drainages in the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station in Coal and Pontotoc Counties, Oklahoma.

Wetland Determination Data Forms

Site Photographs

Figures



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Section 4, T2N R8E; Sections 33, 32, 29, 30 & 19, T3N R8E
Sections 24, 13, 14, 15, 10, 9, 4 & 5, T3N R7E
Section 32, T4N R7E
Coal and Pontotoc Counties, Oklahoma

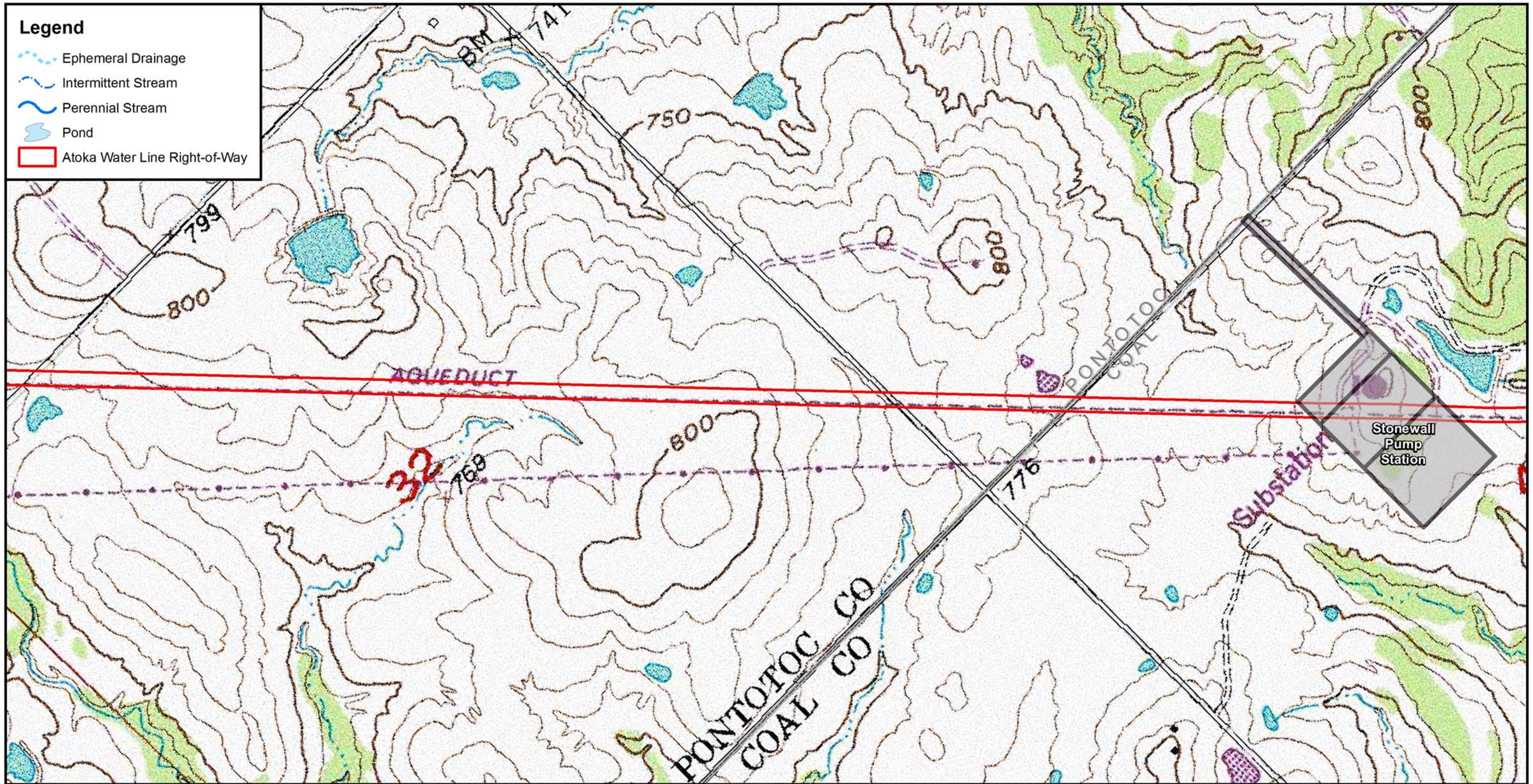
N
W E
S

1:60,000

ENERCON

Figure 1: Vicinity Map
Source: ESRI National Geographic World Map Basemap
Prepared by: A. Couch; July 14, 2016

0 0.75 1.5 3 Miles



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Section 4, T2N R8E; Sections 33, 32 & 29, T3N R8E
Coal and Pontotoc Counties, Oklahoma

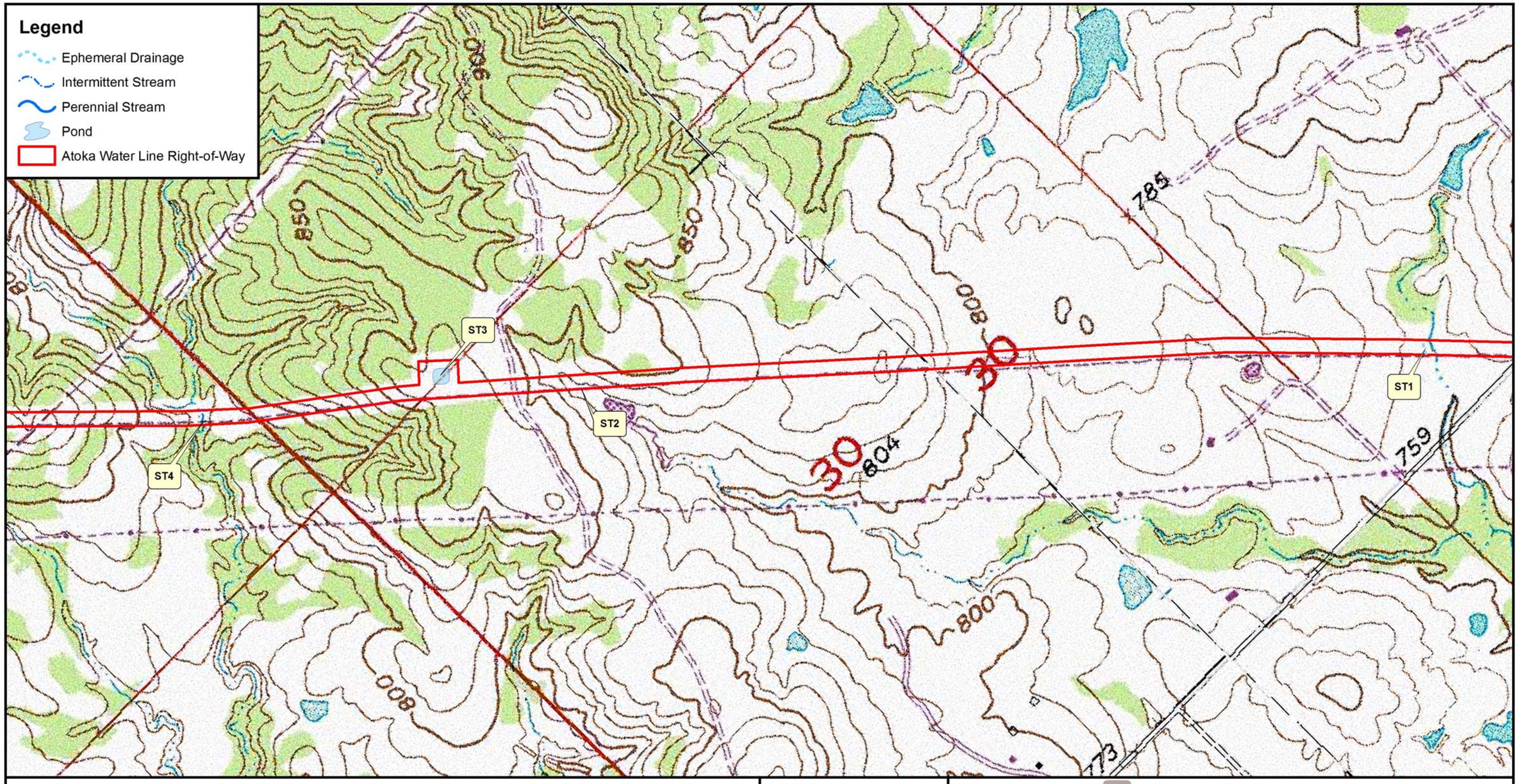
N E S W

1:8,000

ENERCON

Figure 2.1: Topographic Map
Source: USGS 7.5 Minute Series
Lula, OK Quadrangle
Prepared by: A. Couch; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

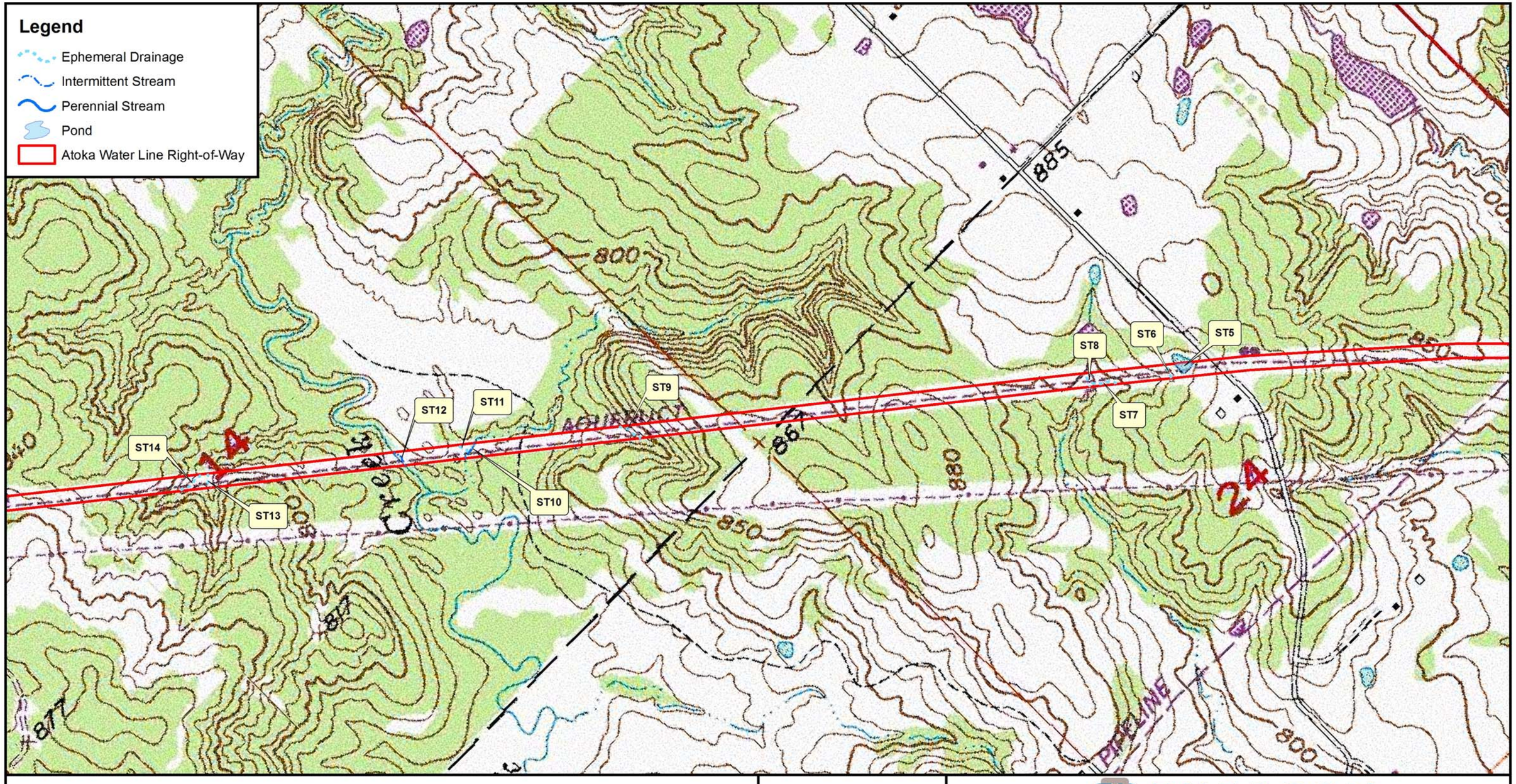
Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 29, 30 & 19, T3N R8E; Section 24, T3N R7E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 2.2: Topographic Map
Source: USGS 7.5 Minute Series
Lula and Stonewall OK, Quadrangles
Prepared by: A. Couch; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

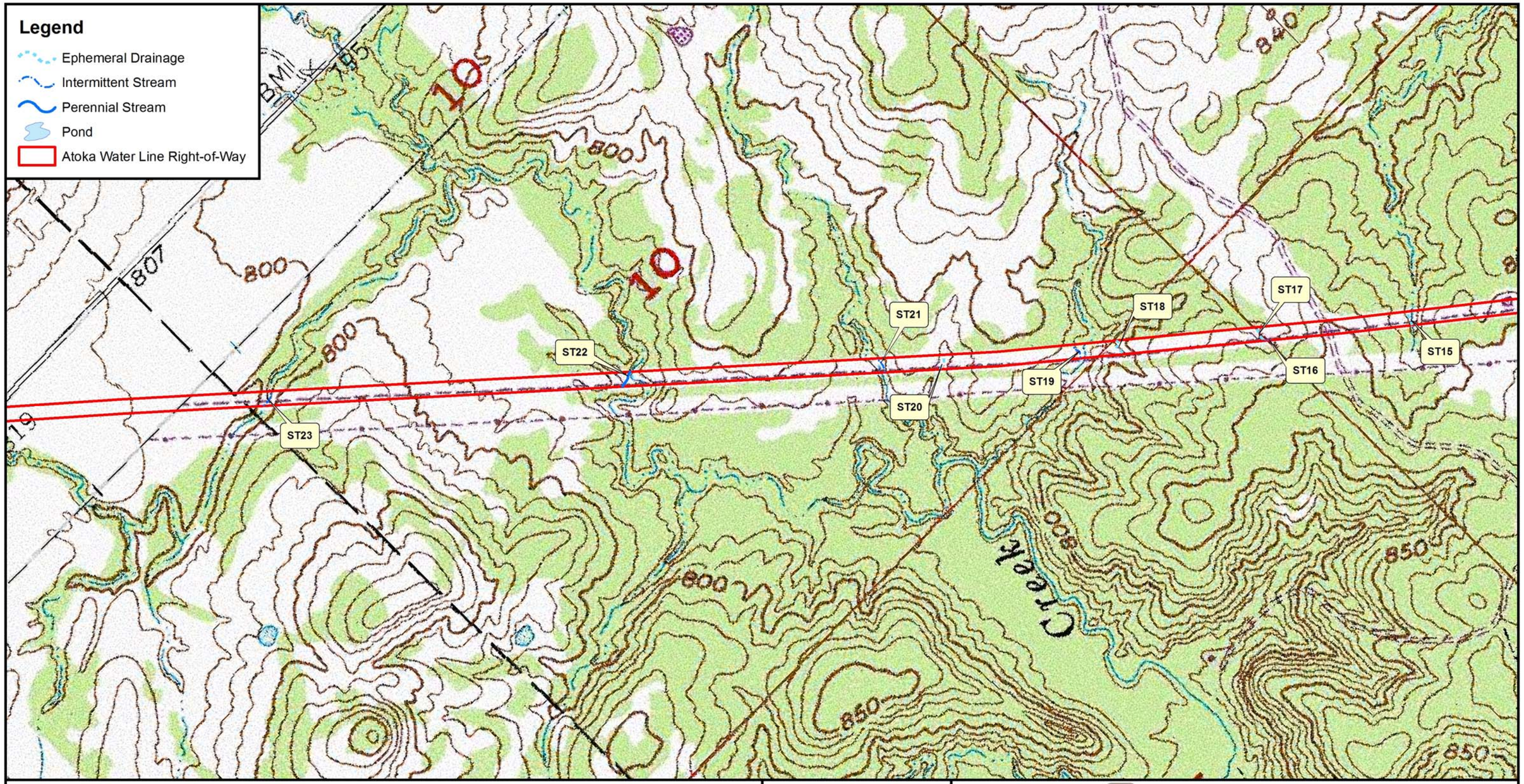
Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 24, 13 & 14, T3N R7E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 2.3: Topographic Map
Source: USGS 7.5 Minute Series
Stonewall OK, Quadrangle
Prepared by: A. Couch; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

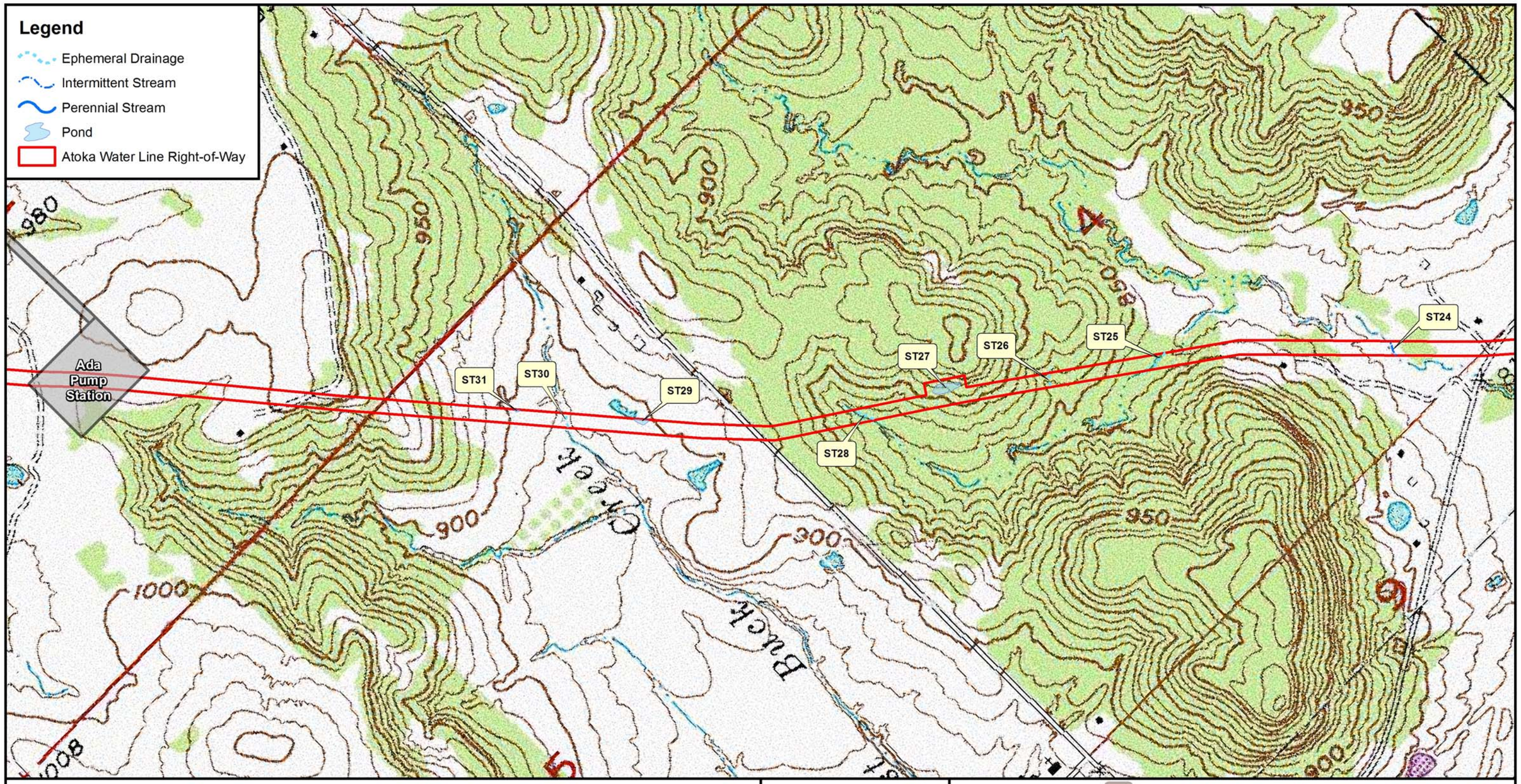
Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 14, 15, 10 & 9, T3N R7E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 2.4: Topographic Map
Source: USGS 7.5 Minute Series
Stonewall and Francis, OK Quadrangles
Prepared by: A. Couch; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 9, 4 & 5, T3N R7E; Section 32, T4N R7E
Pontotoc County, Oklahoma

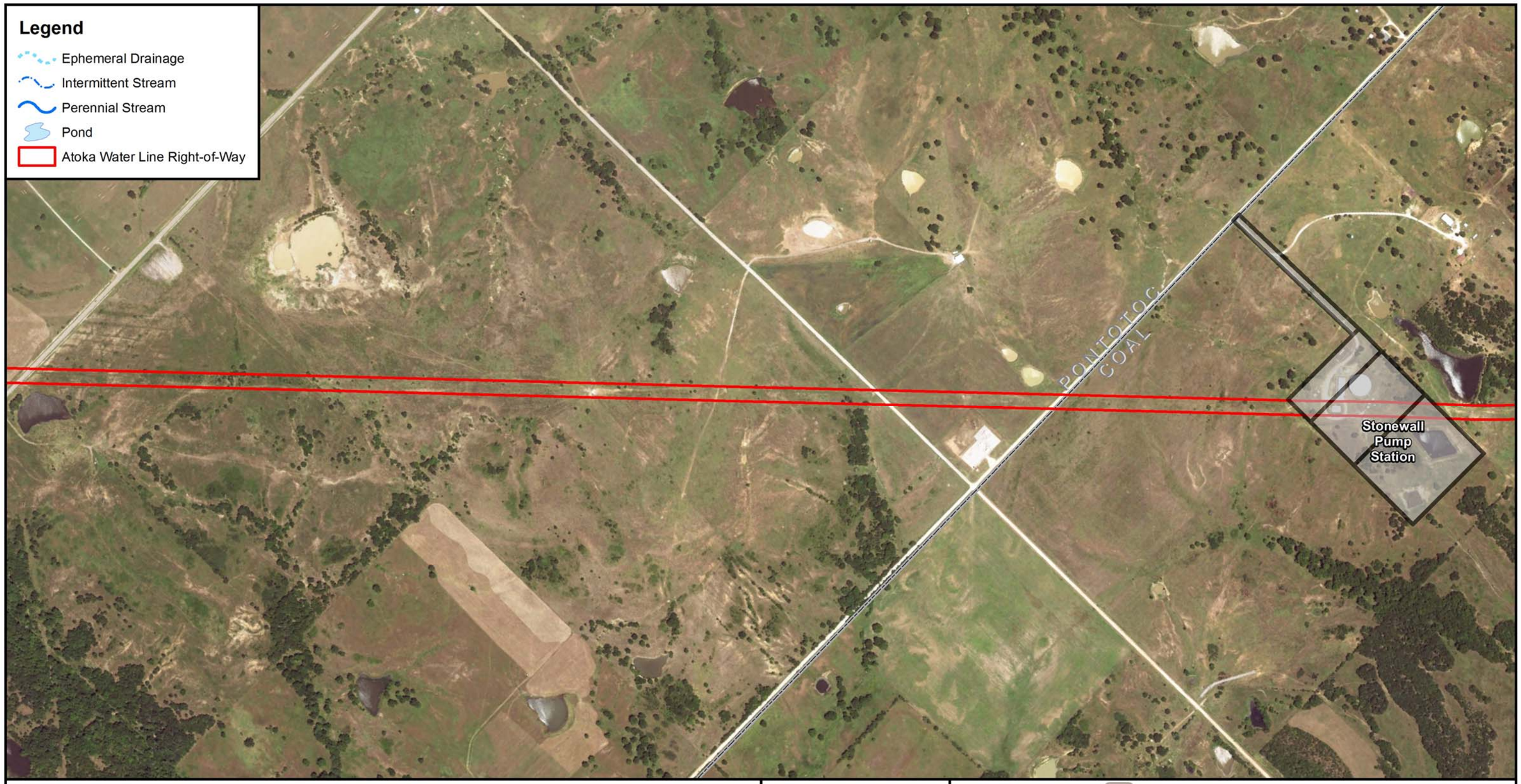
N E W S

1:8,000

ENERCON

Figure 2.5: Topographic Map
Source: USGS 7.5 Minute Series
Francis, OK Quadrangle
Prepared by: A. Couch; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Section 4, T2N R8E; Sections 33, 32 & 29, T3N R8E
Coal and Pontotoc Counties, Oklahoma

N E S W

1:8,000

ENERCON

Figure 3.1: Aerial Photography
Source: 2015 USDA NAIP
Coal and Pontotoc Counties, Oklahoma
Prepared by: A. Couch; July 21, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

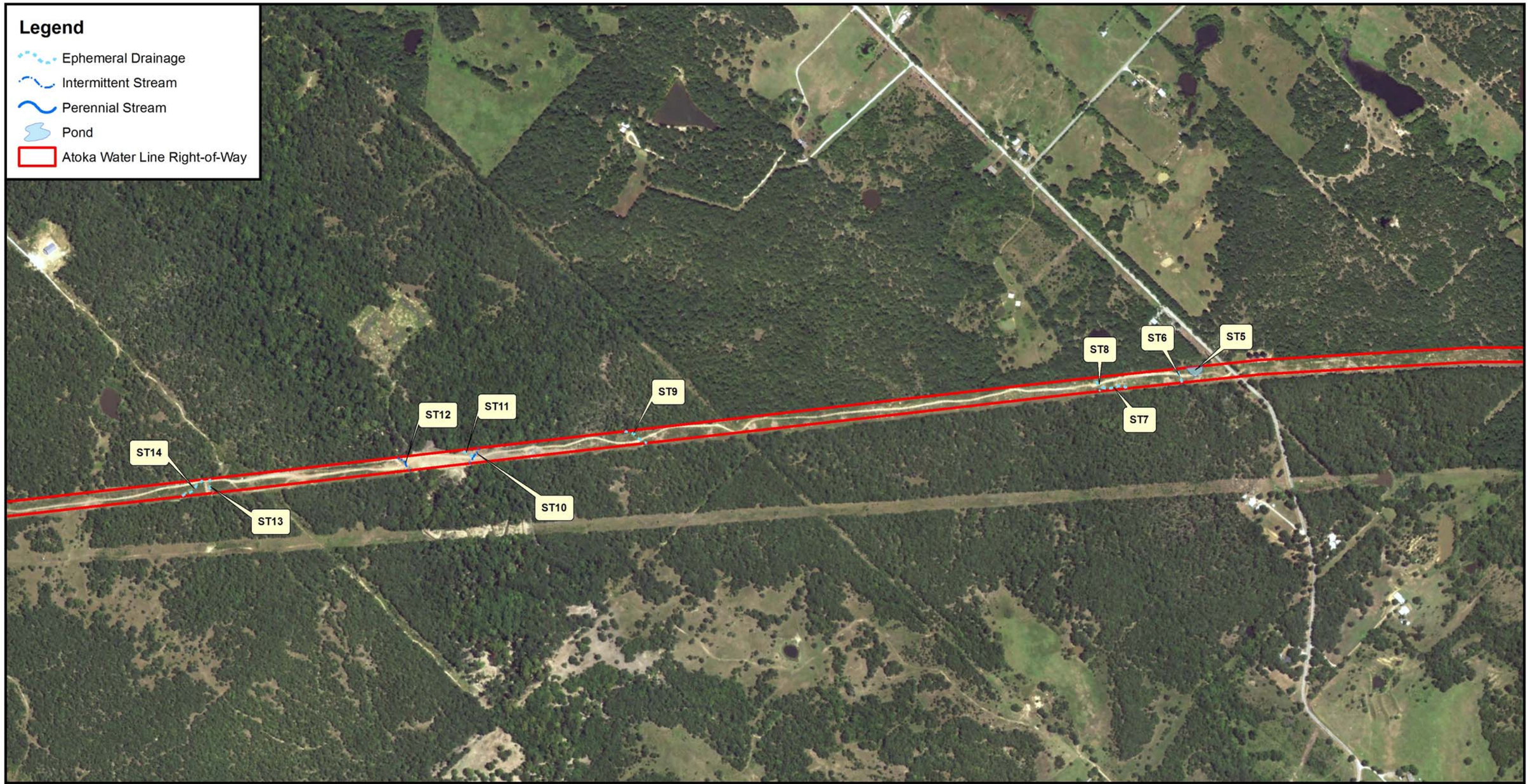
Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 29, 30 & 19, T3N R8E; Section 24, T3N R7E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 3.2: Aerial Photography
Source: 2015 USDA NAIP
Pontotoc County, Oklahoma
Prepared by: A. Couch; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 24, 13 & 14, T3N R7E
Pontotoc County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.3: Aerial Photography
Source: 2015 USDA NAIP
Pontotoc County, Oklahoma
Prepared by: A. Couch; July 21, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 14, 15, 10 & 9, T3N R7E
Pontotoc County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.4: Aerial Photography
Source: 2015 USDA NAIP
Pontotoc County, Oklahoma
Prepared by: A. Couch; July 21, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 9, 4 & 5, T3N R7E; Section 32, T4N R7E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 3.5: Aerial Photography
Source: 2015 USDA NAIP
Pontotoc County, Oklahoma
Prepared by: A. Couch; July 21, 2016

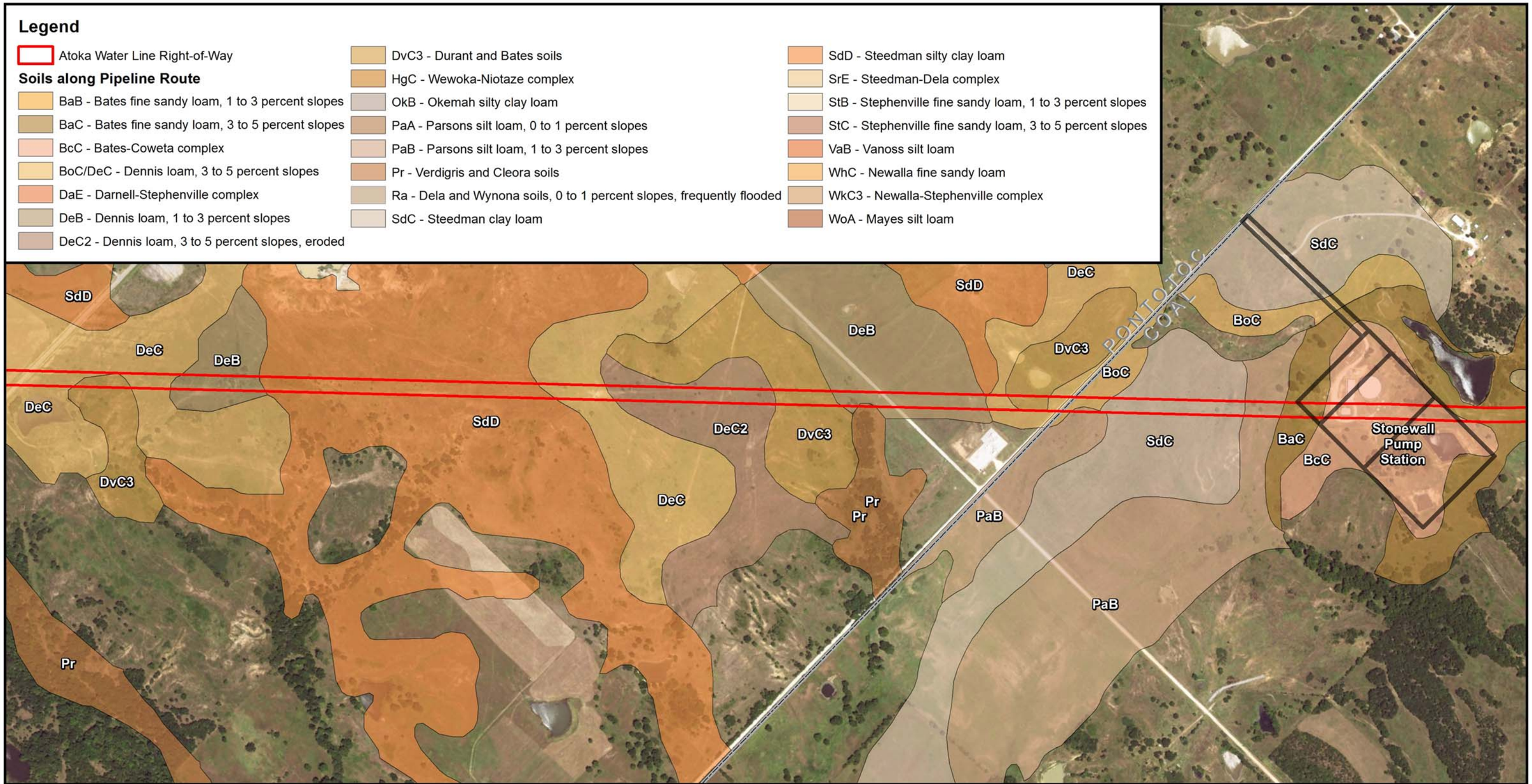
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- BaB - Bates fine sandy loam, 1 to 3 percent slopes
- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BcC - Bates-Coweta complex
- BoC/DeC - Dennis loam, 3 to 5 percent slopes
- DaE - Darnell-Stephenville complex
- DeB - Dennis loam, 1 to 3 percent slopes
- DeC2 - Dennis loam, 3 to 5 percent slopes, eroded
- DvC3 - Durant and Bates soils
- HgC - Wewoka-Niotaze complex
- OkB - Okemah silty clay loam
- PaA - Parsons silt loam, 0 to 1 percent slopes
- PaB - Parsons silt loam, 1 to 3 percent slopes
- Pr - Verdigris and Cleora soils
- Ra - Dela and Wynona soils, 0 to 1 percent slopes, frequently flooded
- SdC - Steedman clay loam
- SdD - Steedman silty clay loam
- SrE - Steedman-Dela complex
- StB - Stephenville fine sandy loam, 1 to 3 percent slopes
- StC - Stephenville fine sandy loam, 3 to 5 percent slopes
- VaB - Vanoss silt loam
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex
- WoA - Mayes silt loam



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Section 4, T2N R8E; Sections 33, 32 & 29, T3N R8E
Coal and Pontotoc Counties, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.1: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Coal and Pontotoc Counties, Oklahoma; 2015 USDA NAIP
Prepared by: A. Couch; July 21, 2016

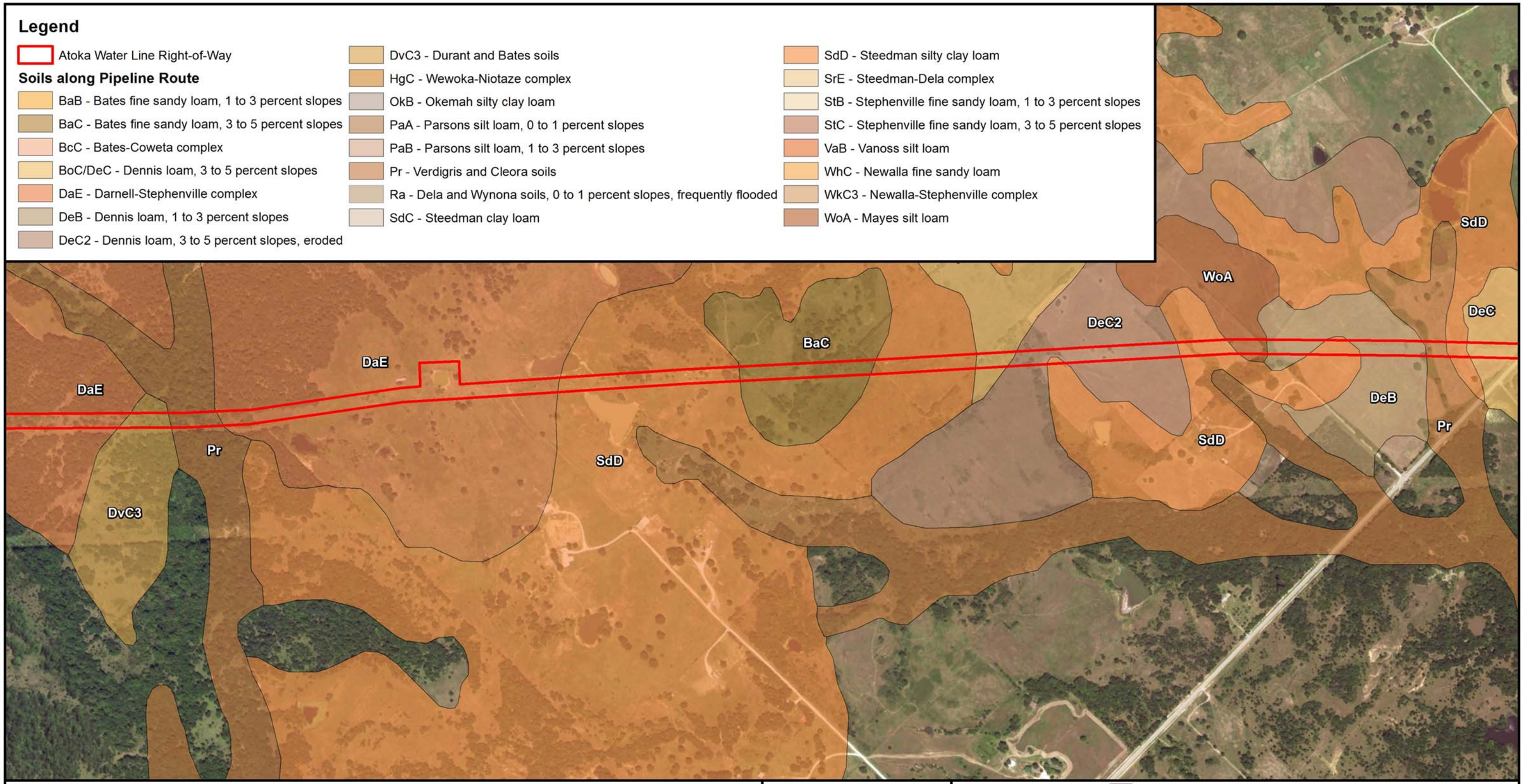
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- BaB - Bates fine sandy loam, 1 to 3 percent slopes
- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BcC - Bates-Coweta complex
- BoC/DeC - Dennis loam, 3 to 5 percent slopes
- DaE - Darnell-Stephenville complex
- DeB - Dennis loam, 1 to 3 percent slopes
- DeC2 - Dennis loam, 3 to 5 percent slopes, eroded
- DvC3 - Durant and Bates soils
- HgC - Wewoka-Niotaze complex
- OkB - Okemah silty clay loam
- PaA - Parsons silt loam, 0 to 1 percent slopes
- PaB - Parsons silt loam, 1 to 3 percent slopes
- Pr - Verdigris and Cleora soils
- Ra - Dela and Wynona soils, 0 to 1 percent slopes, frequently flooded
- SdC - Steedman clay loam
- SdD - Steedman silty clay loam
- SrE - Steedman-Dela complex
- StB - Stephenville fine sandy loam, 1 to 3 percent slopes
- StC - Stephenville fine sandy loam, 3 to 5 percent slopes
- VaB - Vanoss silt loam
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex
- WoA - Mayes silt loam



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 29, 30 & 19, T3N R8E; Section 24, T3N R7E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 4.2: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Pontotoc County, Oklahoma; 2015 USDA NAIP
Prepared by: A. Couch; July 21, 2016

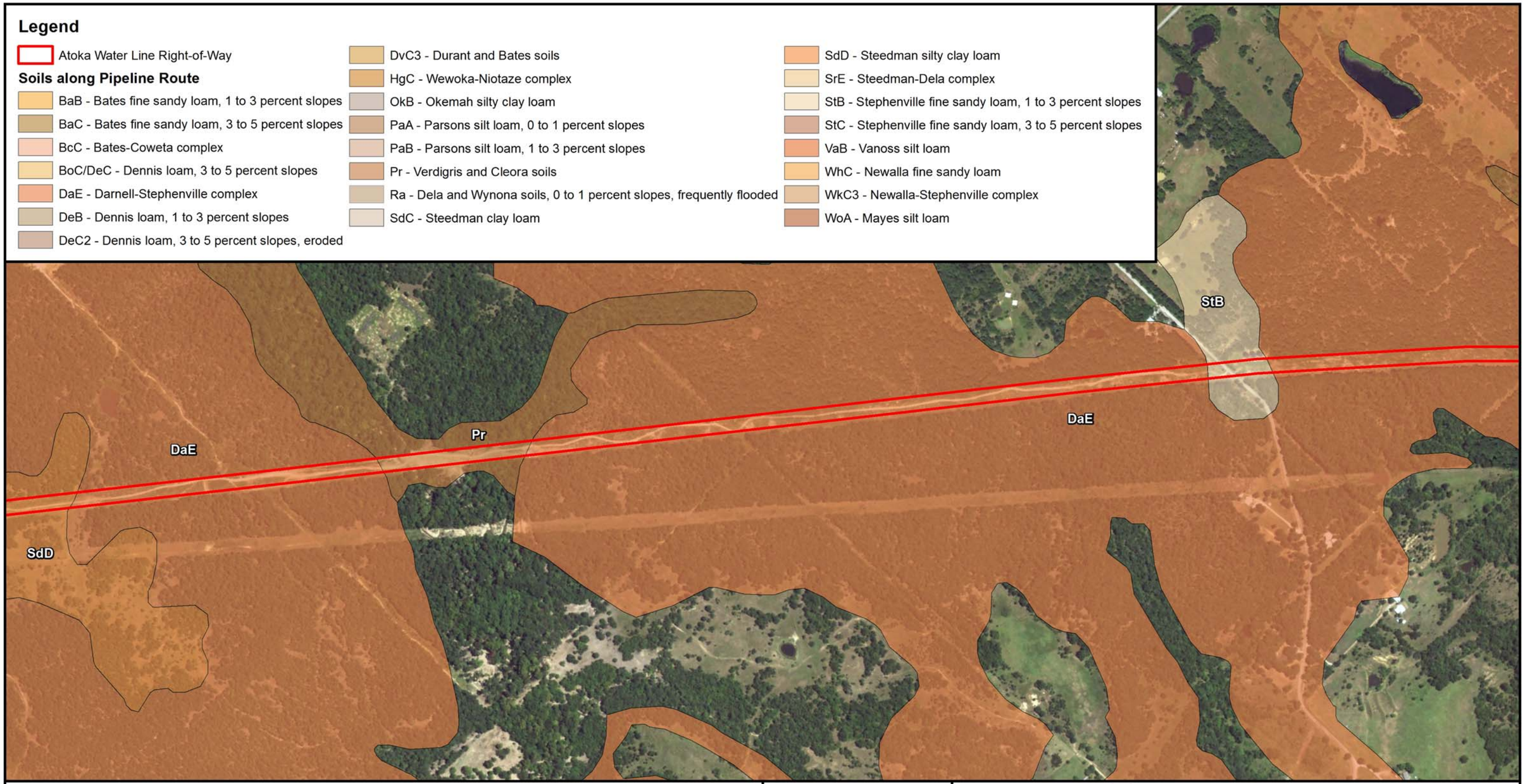
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- BaB - Bates fine sandy loam, 1 to 3 percent slopes
- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BcC - Bates-Coweta complex
- BoC/DeC - Dennis loam, 3 to 5 percent slopes
- DaE - Darnell-Stephenville complex
- DeB - Dennis loam, 1 to 3 percent slopes
- DeC2 - Dennis loam, 3 to 5 percent slopes, eroded
- DvC3 - Durant and Bates soils
- HgC - Wewoka-Niotaze complex
- OkB - Okemah silty clay loam
- PaA - Parsons silt loam, 0 to 1 percent slopes
- PaB - Parsons silt loam, 1 to 3 percent slopes
- Pr - Verdigris and Cleora soils
- Ra - Dela and Wynona soils, 0 to 1 percent slopes, frequently flooded
- SdC - Steedman clay loam
- SdD - Steedman silty clay loam
- SrE - Steedman-Dela complex
- StB - Stephenville fine sandy loam, 1 to 3 percent slopes
- StC - Stephenville fine sandy loam, 3 to 5 percent slopes
- VaB - Vanoss silt loam
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex
- WoA - Mayes silt loam



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 24, 13 & 14, T3N R7E
Pontotoc County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.3: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Pontotoc County, Oklahoma; 2015 USDA NAIP
Prepared by: A. Couch; July 21, 2016

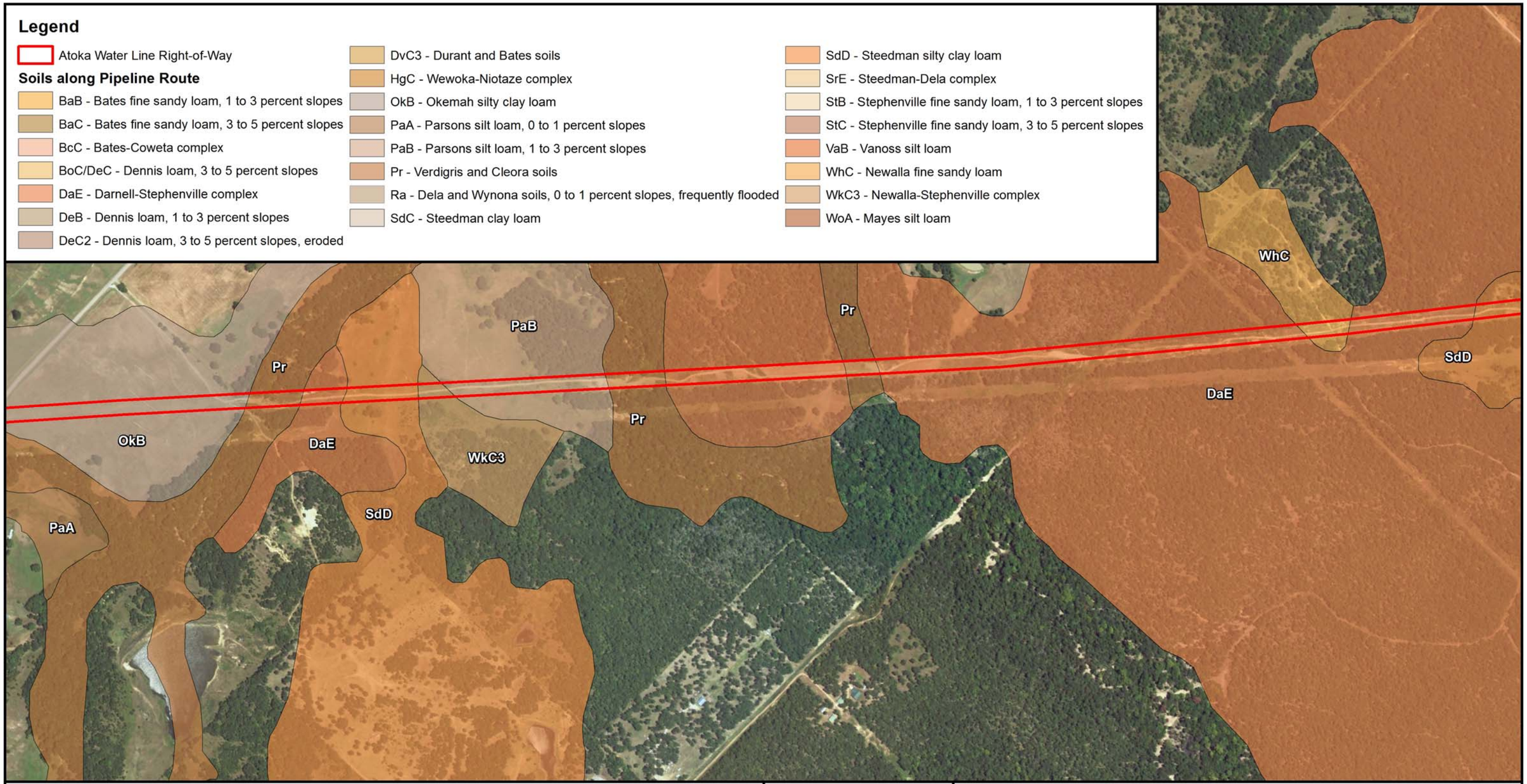
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- BaB - Bates fine sandy loam, 1 to 3 percent slopes
- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BcC - Bates-Coweta complex
- BoC/DeC - Dennis loam, 3 to 5 percent slopes
- DaE - Darnell-Stephenville complex
- DeB - Dennis loam, 1 to 3 percent slopes
- DeC2 - Dennis loam, 3 to 5 percent slopes, eroded
- DvC3 - Durant and Bates soils
- HgC - Wewoka-Niotaze complex
- OkB - Okemah silty clay loam
- PaA - Parsons silt loam, 0 to 1 percent slopes
- PaB - Parsons silt loam, 1 to 3 percent slopes
- Pr - Verdigris and Cleora soils
- Ra - Dela and Wynona soils, 0 to 1 percent slopes, frequently flooded
- SdC - Steedman clay loam
- SdD - Steedman silty clay loam
- SrE - Steedman-Dela complex
- StB - Stephenville fine sandy loam, 1 to 3 percent slopes
- StC - Stephenville fine sandy loam, 3 to 5 percent slopes
- VaB - Vanoss silt loam
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex
- WoA - Mayes silt loam



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 14, 15, 10 & 9, T3N R7E
Pontotoc County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 4.4: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Pontotoc County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 21, 2016

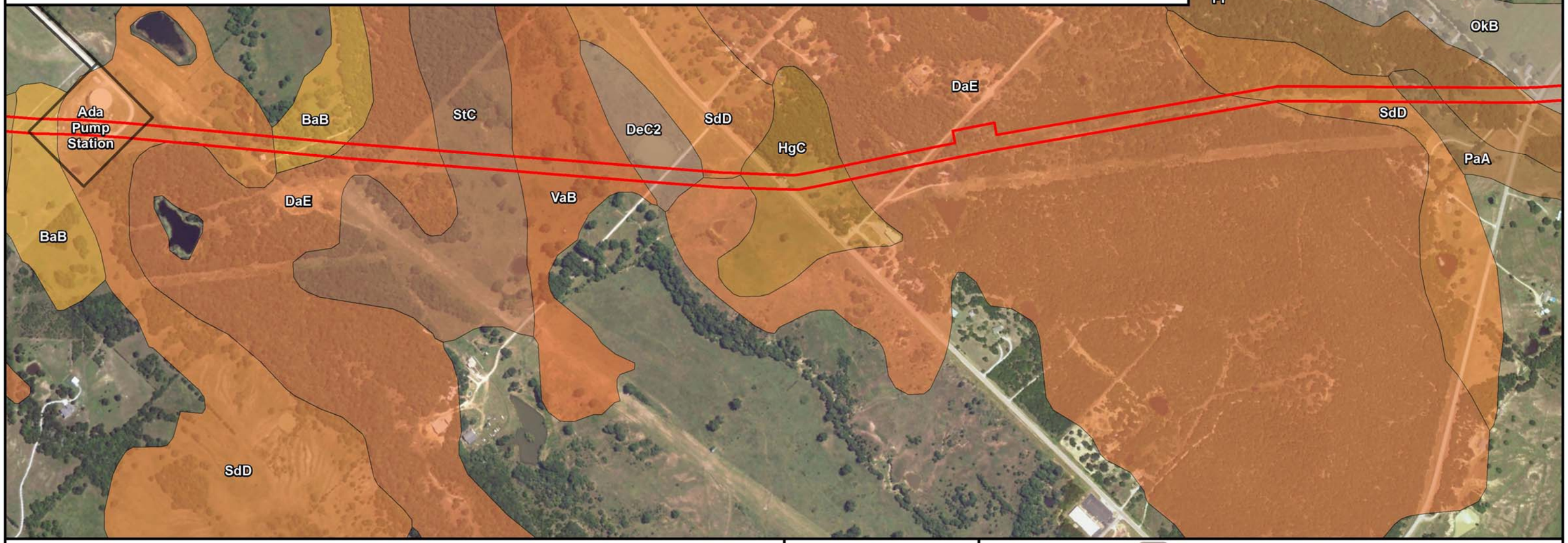
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- BaB - Bates fine sandy loam, 1 to 3 percent slopes
- BaC - Bates fine sandy loam, 3 to 5 percent slopes
- BcC - Bates-Coweta complex
- BoC/DeC - Dennis loam, 3 to 5 percent slopes
- DaE - Darnell-Stephenville complex
- DeB - Dennis loam, 1 to 3 percent slopes
- DeC2 - Dennis loam, 3 to 5 percent slopes, eroded
- DvC3 - Durant and Bates soils
- HgC - Wewoka-Niotaze complex
- OkB - Okemah silty clay loam
- PaA - Parsons silt loam, 0 to 1 percent slopes
- PaB - Parsons silt loam, 1 to 3 percent slopes
- Pr - Verdigris and Cleora soils
- Ra - Dela and Wynona soils, 0 to 1 percent slopes, frequently flooded
- SdC - Steedman clay loam
- SdD - Steedman silty clay loam
- SrE - Steedman-Dela complex
- StB - Stephenville fine sandy loam, 1 to 3 percent slopes
- StC - Stephenville fine sandy loam, 3 to 5 percent slopes
- VaB - Vanoss silt loam
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex
- WoA - Mayes silt loam



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 9, 4 & 5, T3N R7E; Section 32, T4N R7E
Pontotoc County, Oklahoma

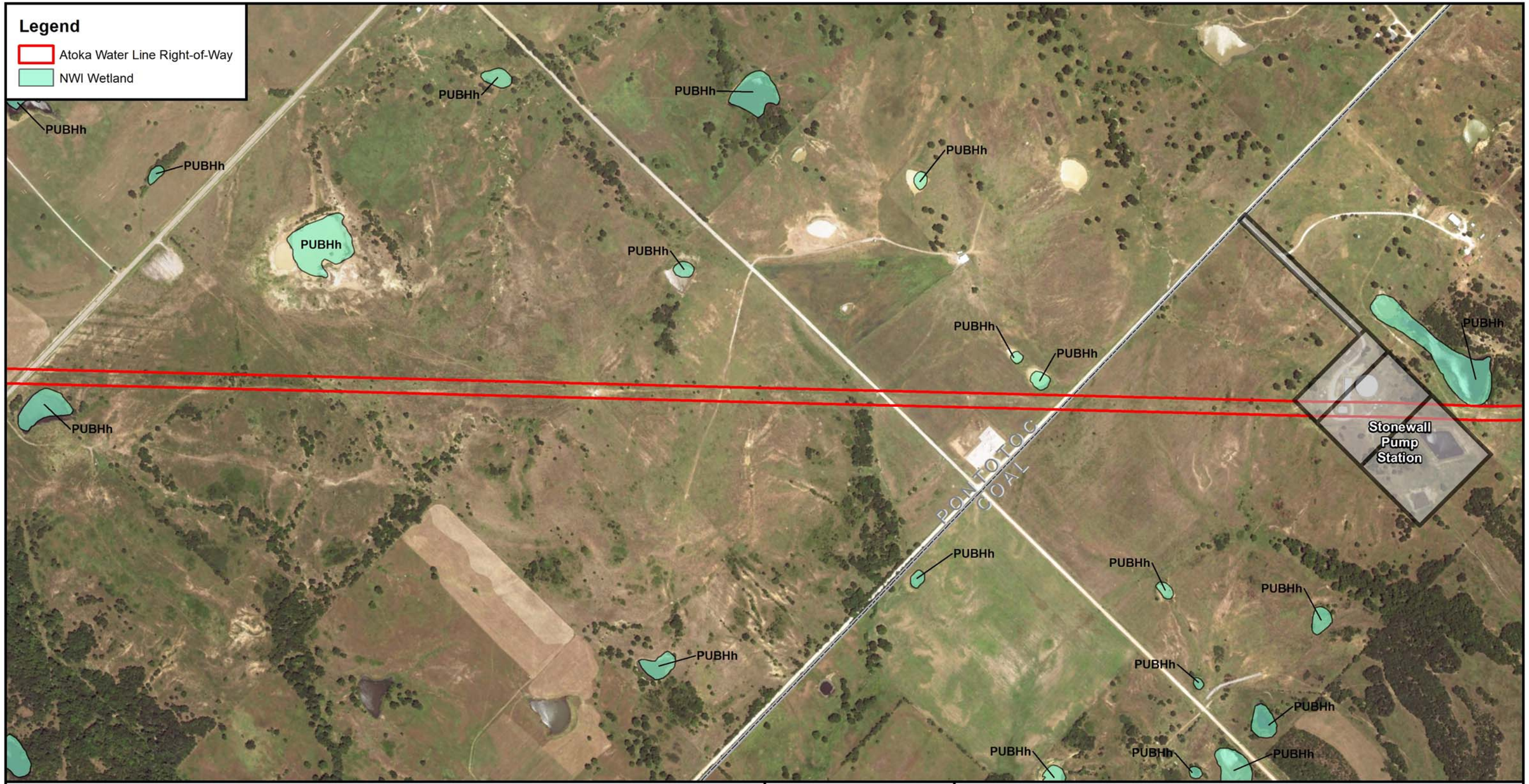
N E W S

1:8,000

ENERCON

Figure 4.5: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Pontotoc County, Oklahoma; 2015 USDA NAIP
Prepared by: A. Couch; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Section 4, T2N R8E; Sections 33, 32 & 29, T3N R8E
Coal and Pontotoc Counties, Oklahoma

1:8,000

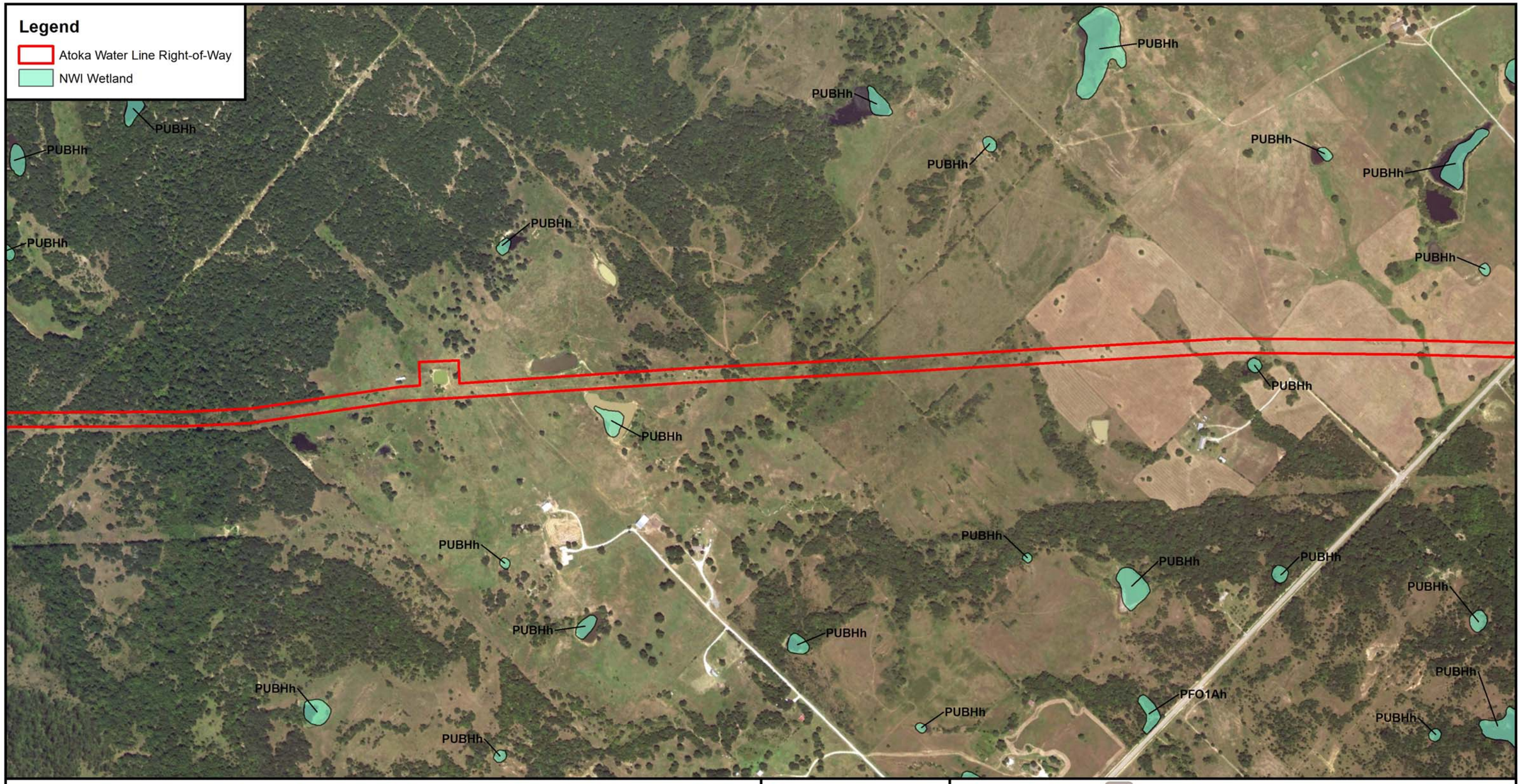
ENERCON

Figure 5.1: NWI Map

Source: US Fish and Wildlife Service - NWI Lula, OK Quadrangle
2015 USDA NAIP - Coal and Pontotoc Counties, Oklahoma

Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

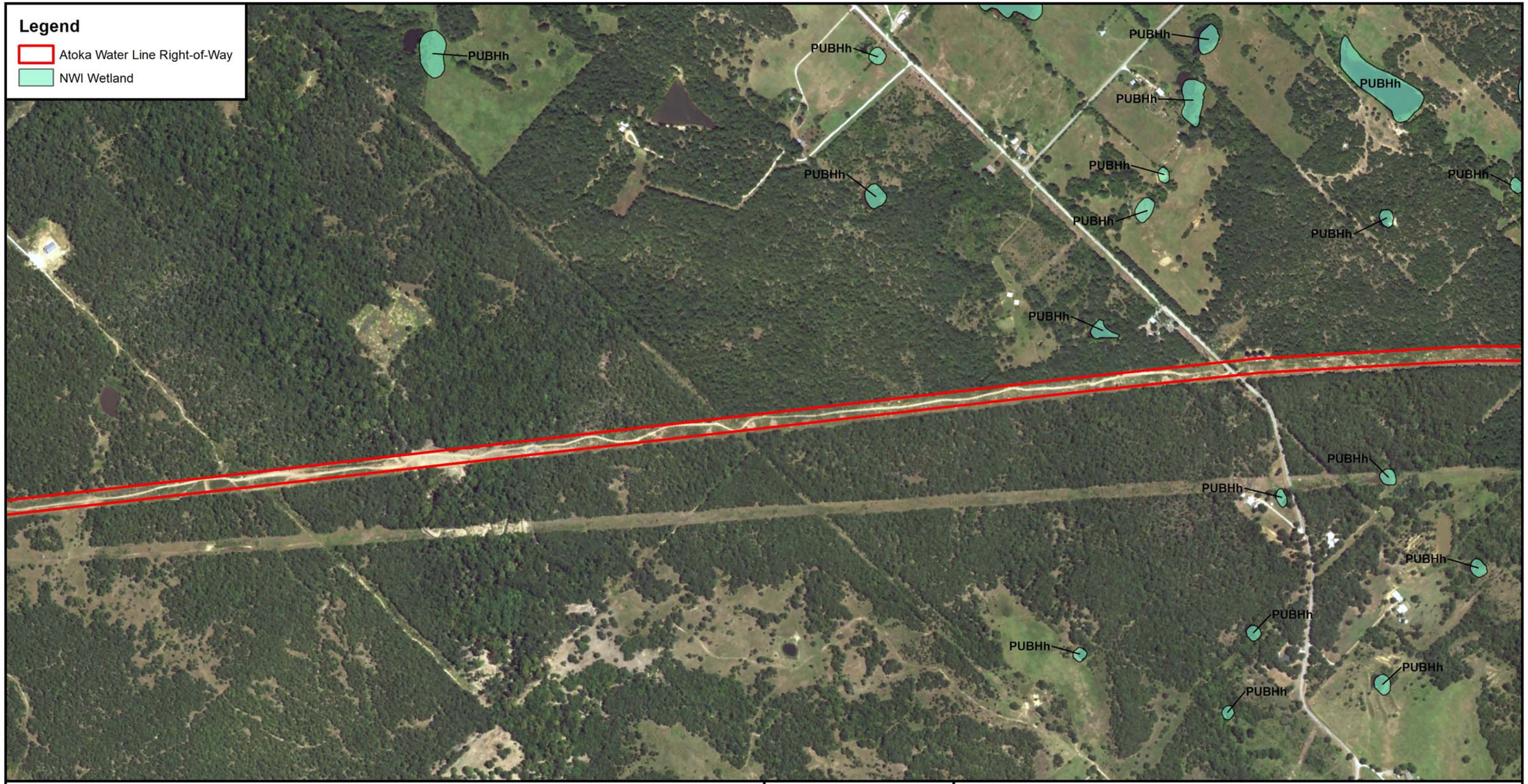
Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 29, 30 & 19, T3N R8E; Section 24, T3N R7E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 5.2: NWI Map
Source: US Fish and Wildlife Service - NWI Lula and Stonewall OK, Quadrangles
2015 USDA NAIP - Pontotoc County, Oklahoma
Prepared by: A. Couch; July 14, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 24, 13 & 14, T3N R7E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 5.3: NWI Map
Source: US Fish and Wildlife Service - NWI Stonewall OK, Quadrangle
2015 USDA NAIP - Pontotoc County, Oklahoma
Prepared by: A. Couch; July 14, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 14, 15, 10 & 9, T3N R7E
Pontotoc County, Oklahoma

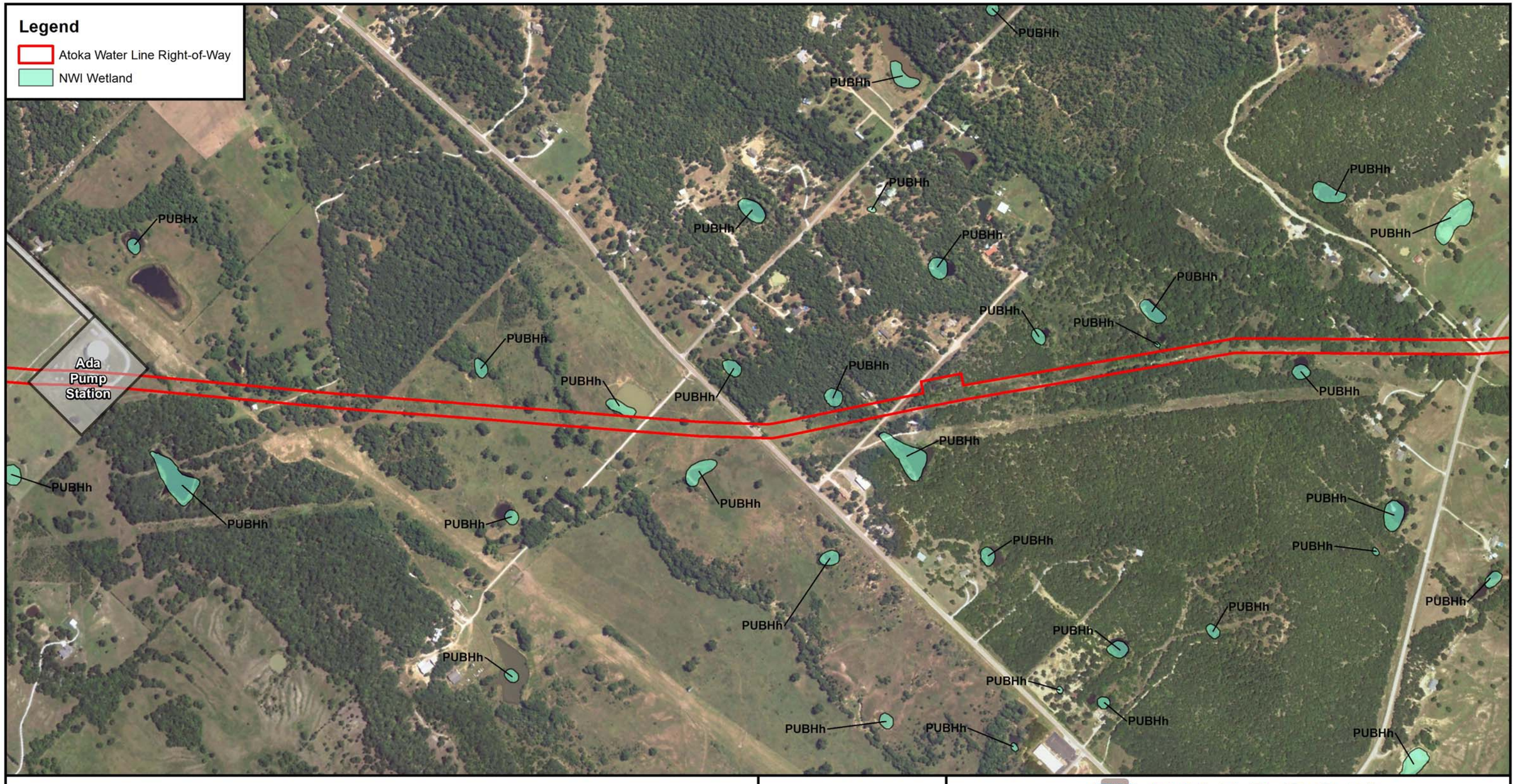
N E W S

1:8,000

ENERCON

Figure 5.4: NWI Map
Source: US Fish and Wildlife Service - NWI Stonewall and Francis, OK Quadrangles
2015 USDA NAIP - Pontotoc County, Oklahoma
Prepared by: A. Couch; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

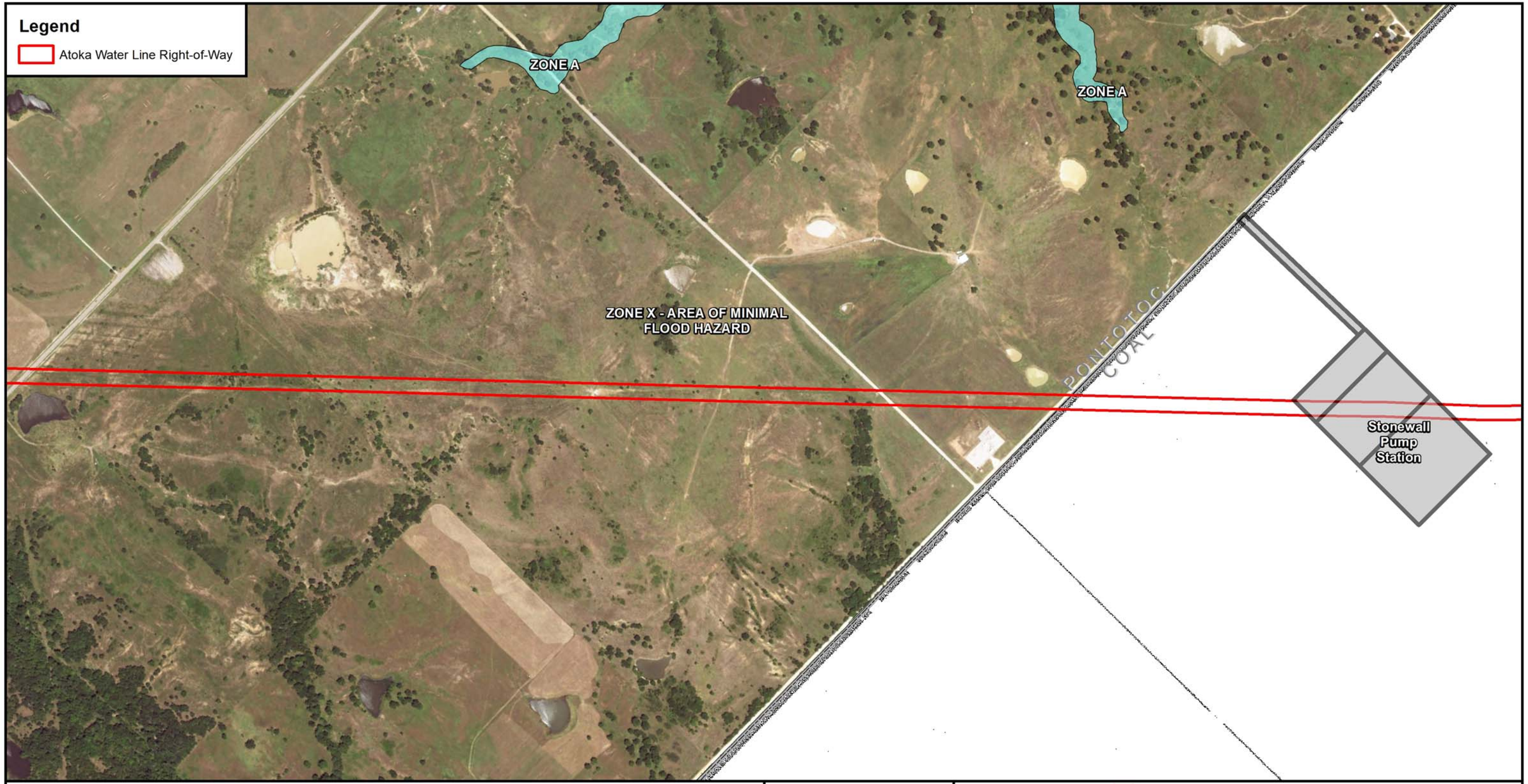
Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 9, 4 & 5, T3N R7E; Section 32, T4N R7E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 5.5: NWI Map
Source: US Fish and Wildlife Service - NWI Francis, OK Quadrangle
2015 USDA NAIP - Pontotoc County, Oklahoma
Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Section 4, T2N R8E; Sections 33, 32 & 29, T3N R8E
Coal and Pontotoc Counties, Oklahoma

N E S W

1:8,000

ENERCON

Figure 6.1: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #4005100075B - January 18, 1989; Map #40123C0375D - July 17, 2012
2015 USDA NAIP - Coal and Pontotoc Counties, Oklahoma
Prepared by: A. Couch; July 22, 2016

Feet
0 600 1,200 2,400

Prepared for: Oklahoma City Water Utilities Trust

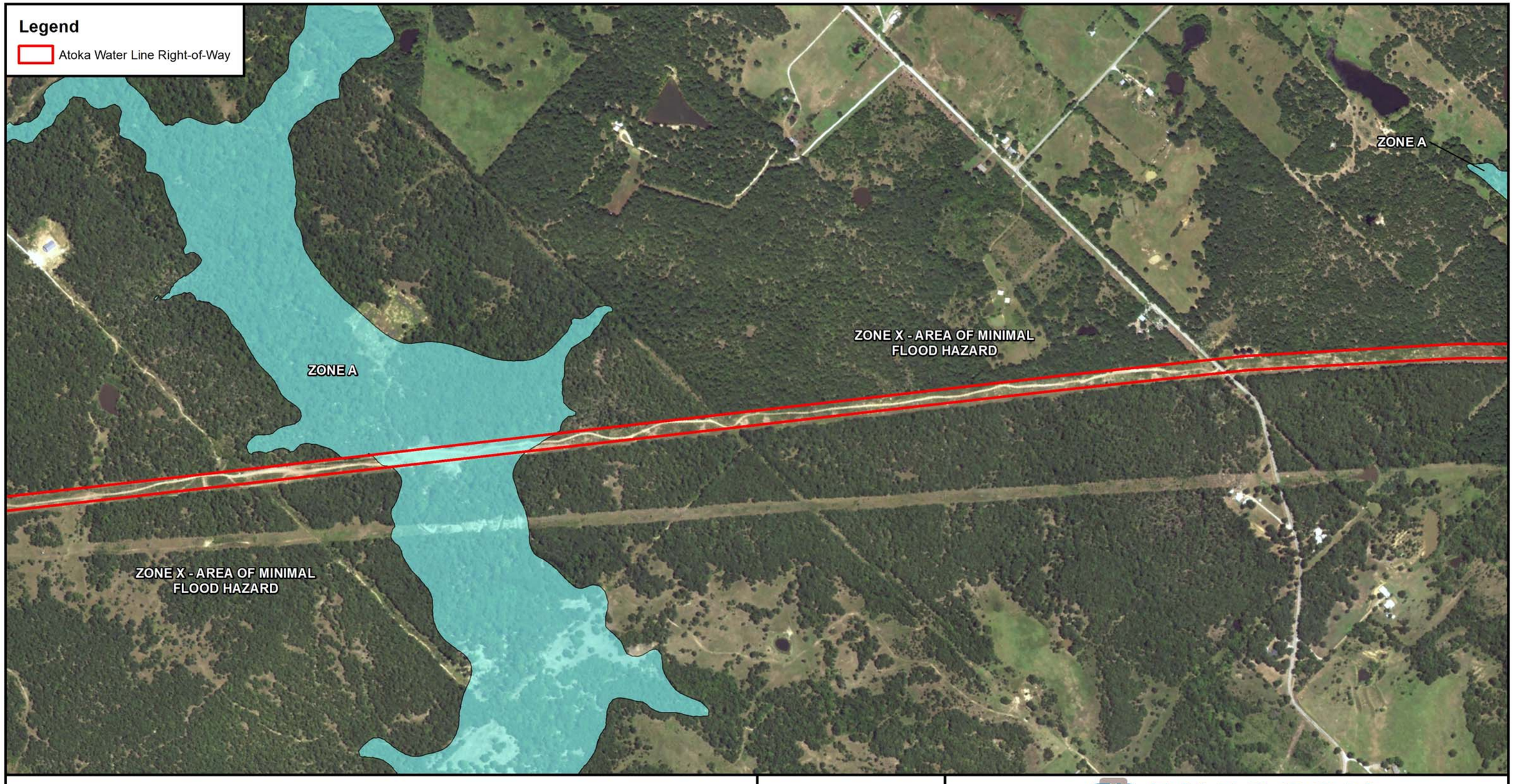
Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 29, 30 & 19, T3N R8E; Section 24, T3N R7E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 6.2: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40123C0375D & #40123C0350D - July 17, 2012
2015 USDA NAIP - Pontotoc County, Oklahoma
Prepared by: A. Couch; July 14, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 24, 13 & 14, T3N R7E
Pontotoc County, Oklahoma

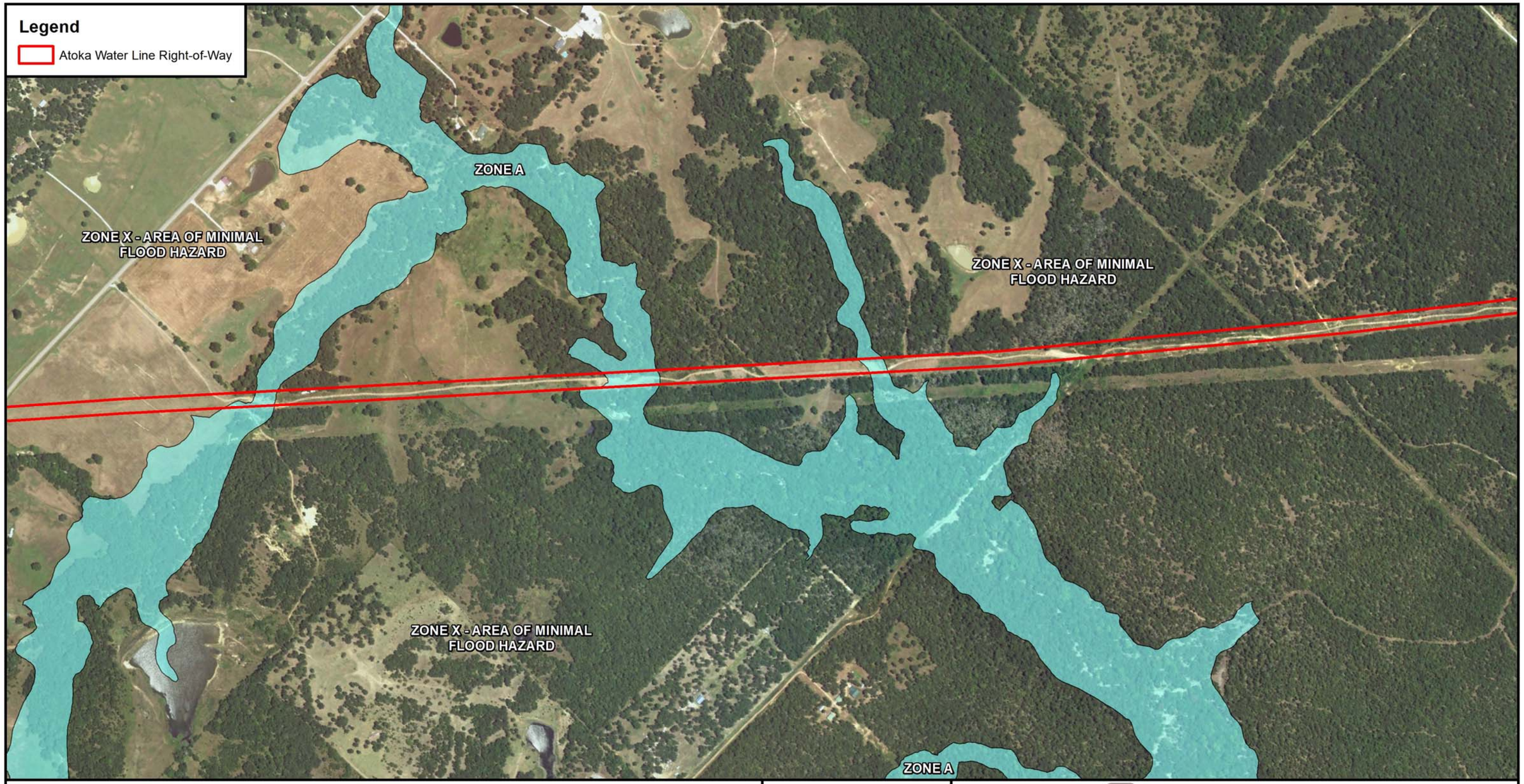
N E W S

1:8,000

ENERCON

Figure 6.3: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40123C0350D - July 17, 2012
2015 USDA NAIP - Pontotoc County, Oklahoma
Prepared by: A. Couch; July 14, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 14, 15, 10 & 9, T3N R7E
Pontotoc County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 6.4: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40123C0350D & #40123C0225D - July 17, 2012
2015 USDA NAIP - Pontotoc County, Oklahoma
Prepared by: A. Couch; July 14, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station
Sections 9, 4 & 5, T3N R7E; Section 32, T4N R7E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 6.5: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40123C0225D - July 17, 2012
2015 USDA NAIP - Pontotoc County, Oklahoma
Prepared by: A. Couch; July 15, 2016

0 600 1,200 2,400 Feet

Table 1: Soils Series within the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station in Coal and Pontotoc Counties, Oklahoma.

Table 1: Soils Series within the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station in Coal and Pontotoc Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
COAL COUNTY					
Bates fine sandy loam	BaC	3 to 5	Well drained	Non-hydric	Interfluves and hillslopes, moderately high water capacity
Dennis loam, eroded	BoC	3 to 5	Somewhat poorly drained	Non-hydric	Interfluves and hillslopes, moderately low to moderately high water capacity
Parsons silt loam	PaB	1 to 3	Somewhat poorly drained	Non-hydric	Interfluves, divides, and paleoterraces, very low to moderately low water capacity
Steedman clay loam	SdC	3 to 5	Moderately well drained	Non-hydric	Ridge tops and slopes of uplands, very low to moderately high water capacity
PONTOTOC COUNTY					
Bates fine sandy loam	BaB	1 to 3	Well drained	Non-hydric	Interfluves and hillslopes, moderately high water capacity
Bates fine sandy loam	BaC	3 to 5	Well drained	Non-hydric	Interfluves and hillslopes, moderately high water capacity
Darnell-Stephenville complex	DaE	5 to 20	Well drained	Non-hydric	Summits and shoulders of low hills, very low to moderately high water capacity
Dennis loam	DeB	1 to 3	Somewhat poorly drained	Non-hydric	Interfluves and hillslopes, moderately low to moderately high water capacity
Dennis loam	DeC	3 to 5	Somewhat poorly drained	Non-hydric	Interfluves and hillslopes, moderately low to moderately high water capacity
Dennis loam, eroded	DeC2	3 to 5	Somewhat poorly drained	Non-hydric	Interfluves and hillslopes, moderately low to moderately high water capacity
Durant and Bates soils, severely eroded	DvC3	3 to 5	Moderately well drained	Non-hydric	Nearly level to sloping soils on upland flats and slightly convex broad ridges, low to moderately low water capacity

Table 1: Soils Series within the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station in Coal and Pontotoc Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Wewoka-Niotaze complex	HgC	1 to 5	Excessively well drained	Non-hydric	Gently sloping to moderately steep soils on uplands and hill slopes, moderately high to high water capacity
Okemah silty clay loam	OkB	1 to 3	Somewhat poorly drained	Non-hydric	Broad smooth high terraces or on the lower slopes of uplands, moderately low to moderately high water capacity
Parsons silt loam	PaA	0 to 1	Somewhat poorly drained	Hydric	Interfluves, divides, and paleoterraces, very low to moderately low water capacity
Parsons silt loam	PaB	1 to 3	Somewhat poorly drained	Non-hydric	Interfluves, divides, and paleoterraces, very low to moderately low water capacity
Verdigris and Cleora soils, frequently flooded	Pr	0 to 3	Well drained	Hydric	Very deep, well drained soils on floodplains
Steedman silty clay loam	SdD	3 to 8	Moderately well drained	Non-hydric	Ridge tops and slopes of uplands, very low to moderately high water capacity
Stephenville fine sandy loam	StB	1 to 3	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately high to high water capacity
Stephenville fine sandy loam	StC	3 to 5	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately high to high water capacity
Vanoss silt loam	VaB	1 to 3	Well drained	Non-hydric	Treads of stream terraces, moderately high to high water capacity
Verdigris silt loam, occasionally flooded	Vg	0 to 1	Well drained	Hydric	Very deep, well drained soils on floodplains, moderately high to high water capacity

Table 1: Soils Series within the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station in Coal and Pontotoc Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Newalla-Stephenville complex, severely eroded	WkC3	3 to 8	Moderately well drained	Non-hydric	Very gently sloping to steep summits and back slopes of uplands, very low to moderately low water capacity

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station in Coal and Pontotoc Counties, Oklahoma.

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Stations in Coal and Pontotoc Counties, Oklahoma.

FEATURE NAME	GENERAL TYPE	COWARDIN CLASSIFICATION	PREDICTED JURISDICTIONAL STATUS*	AREA (ACRES) WITHIN PIPELINE ROW	PCN REQUIRED**
ST2	Pond	PUBHh	Yes	<0.01	No
ST3	Pond	PUBHx	No	0.27	No
ST5	Pond	NA[1]	No	0.00	No
ST16	Pond	PUBA	No	0.01	No
ST27	Pond	PUBA	No	0.24	No
ST29	Pond	PUBHx	No	0.06	No
ST31	Pond	PUBA	No	0.01	No
POTENTIALLY JURISDICTIONAL WETLANDS TOTAL: 0.00-ACRE					
POTENTIALLY JURISDICTIONAL POND TOTAL: 0.59-ACRE					

**Jurisdictional status is subject to Corps approval; ** PCNs are required only if the Corps determines the feature is jurisdictional; 1- Feature is mapped on the USGS topographic map; however, no surface water feature was observed at the mapped location.*

Table 3: Summary of streams and drainages in the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station in Coal and Pontotoc Counties, Oklahoma.

Table 3: Summary of streams and drainages in the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station in Coal and Pontotoc Counties, Oklahoma.

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
ST1	Ephemeral	Yes	Yes	3	106	No
ST4	Intermittent	Yes	Yes	8	106	No
ST6	Ephemeral	No	No	1	114	No
ST7	Ephemeral	No	No	1	220	No
ST8	Ephemeral	Yes	Yes	1	92	No
ST9	Ephemeral	No	No	2	178	No
ST10	Intermittent	Yes	Yes	4	134	No
ST11	Ephemeral	No	No	2	96	No
ST12	Intermittent (Buck Creek)	Yes	Yes	10	133	No
ST13	Ephemeral	No	No	1	106	No
ST14	Ephemeral	No	No	1	191	No
ST15	Ephemeral	Yes	Yes	2	105	No
ST17	Ephemeral	No	No	1	102	No
ST18	Ephemeral	No	No	1	151	No
ST19	Intermittent	Yes	Yes	6	125	No
ST20	Ephemeral	No	No	1	110	No
ST21	Intermittent	Yes	Yes	5	128	No
ST22	Perennial	Yes	Yes	12	119	No
ST23	Intermittent	Yes	Yes	7	122	No
ST24	Intermittent	Yes	Yes	8	116	No
ST25	Ephemeral	Yes	Yes	2	149	No
ST26	Ephemeral	No	No	1	106	No
ST28	Ephemeral	Yes	Yes	0	178	No

Table 3: Summary of streams and drainages in the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station in Coal and Pontotoc Counties, Oklahoma.

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
ST30	Ephemeral (Buck Creek)	Yes	Yes	2	108	No
POTENTIALLY JURISDICTIONAL STREAM TOTAL: 3,095 LINEAR FEET						

**Jurisdictional status is subject to Corps approval; ** PCNs are required only if the Corps determines the feature is jurisdictional; 1- Feature mapped on the USGS topographic map; however no bed and bank was observed within the proposed pipeline ROW.*

Wetland Determination Data Forms

No Section 404 wetlands were delineated within the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station in Coal and Pontotoc Counties, Oklahoma.

Site Photographs

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 3: STONEWALL PUMP STATION TO ADA PUMP STATION

Typical view of habitat types found within the proposed Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station

Photograph 1: Typical view of upland forest habitat (early successional), facing northwest.

Photograph 2: Typical view of agricultural field habitat, facing northwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 3:
STONEWALL PUMP STATION TO ADA PUMP STATION

Photograph 3: Typical view of improved grass pasture/hayfield habitat, facing northwest.

Photograph 4: Typical view of improved grass pasture habitat, facing southeast.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 3: STONEWALL PUMP STATION TO ADA PUMP STATION

Photograph 5: Typical view of mowed pipeline ROW planted with mixed grass, facing northwest.

Photograph 6: View of Ada Pump Station, facing northwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 3: STONEWALL PUMP STATION TO ADA PUMP STATION

Representative water features within the Atoka Water Line Section 3: Stonewall Pump Station to Ada Pump Station

Photograph 7: View of ST3, an isolated pond excavated within an upland, facing north.

Photograph 8: View of ST12, a mapped perennial stream (Buck Creek), facing north.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 3: STONEWALL PUMP STATION TO ADA PUMP STATION

Photograph 9: View of ST28, a mapped intermittent stream, facing south.

Appendix D - Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station

Figures (Vicinity Map, Topographic Map, Aerial Photography, Soil Survey Map, NWI Map, Flood Insurance Rate Map)

Table 1: Soils Series within the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc, Seminole, and Pottawatomie Counties, Oklahoma.

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc, Seminole, and Pottawatomie Counties, Oklahoma.

Table 3: Summary of streams and drainages in the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc, Seminole, and Pottawatomie Counties, Oklahoma.

Wetland Determination Data Forms

Site Photographs

Figures

Service Layer Credits: Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 32, 31 & 30, T4N R7E; Sections 25, 24, 23, 14, 15, 10, 3 & 4, T4N R6E;
Sections 33, 32, 29, 30 & 19, T5N R6E; Sections 24, 13, 14, 11, 10 & 3, T5N R5E;
Sections 34, 33, 28, 29, 20 & 19, T6N R5E
Pontotoc, Seminole and Pottawatomie Counties, Oklahoma

N
W E
S

1:148,000

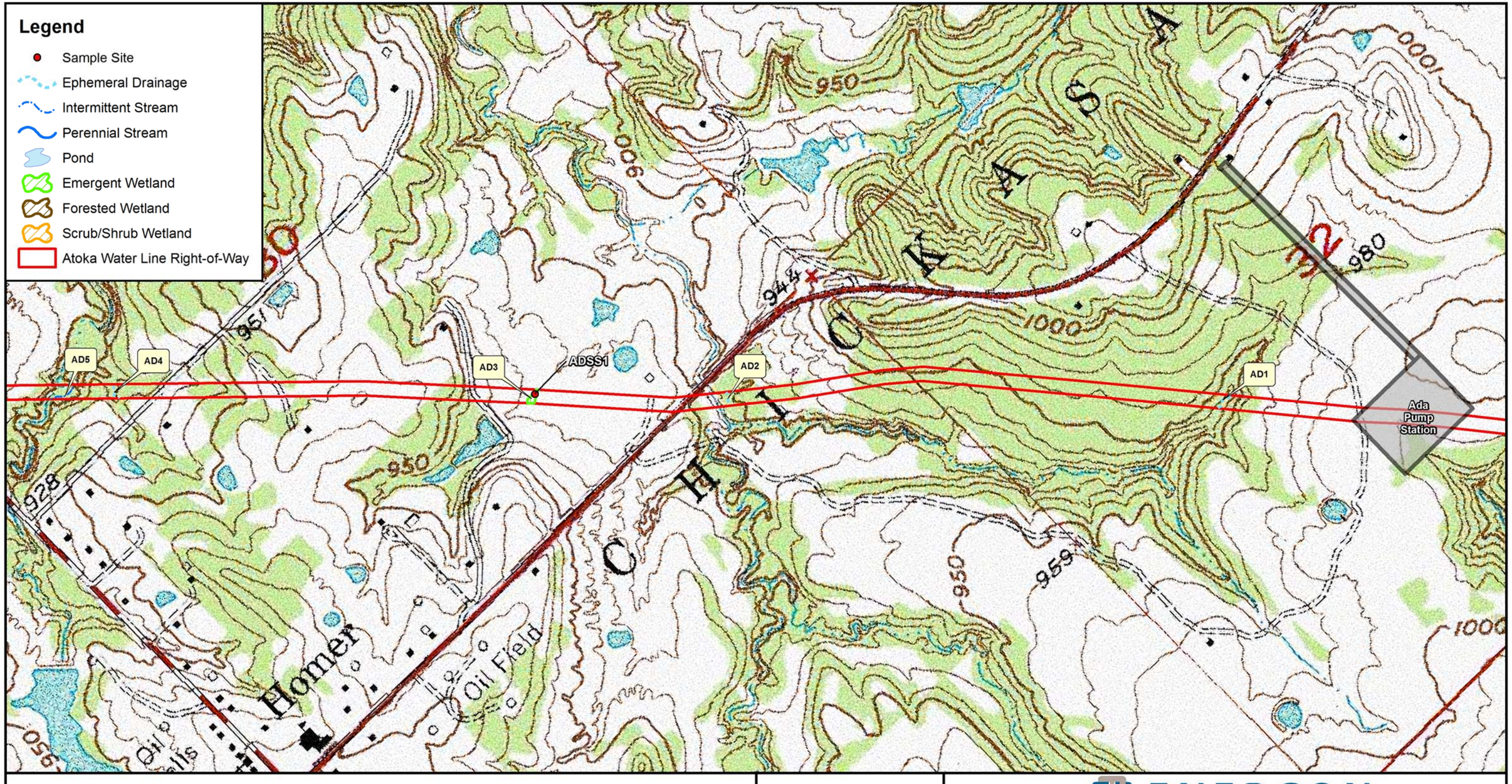
ENERCON

Figure 1: Vicinity Map

Source: ESRI National Geographic World Map Basemap

Prepared by: F. Woolridge; July 14, 2016

0 2 4 8 Miles



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 32, 31 & 30, T4N R7E
Pontotoc County, Oklahoma

1:8,000

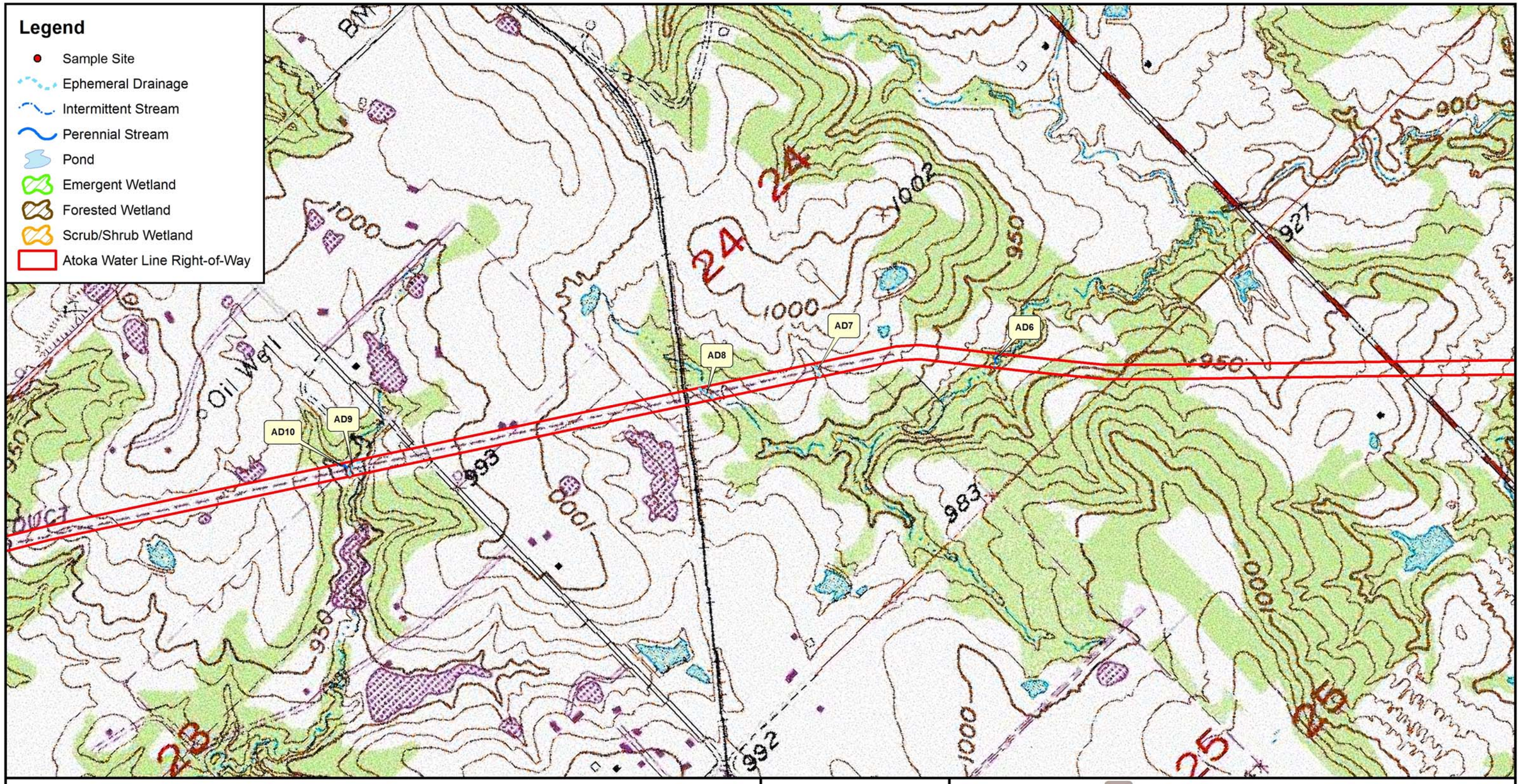
ENERCON

Figure 2.1: Topographic Map
Source: USGS 7.5 Minute Series
Francis, OK Quadrangle
Prepared by: F. Woolridge; August 24, 2016

Feet
0 600 1,200 2,400

Legend

- Sample Site
- Ephemeral Drainage
- Intermittent Stream
- Perennial Stream
- Pond
- Emergent Wetland
- Forested Wetland
- Scrub/Shrub Wetland
- Atoka Water Line Right-of-Way



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Section 30, T4N R7E; Sections 25, 24 & 23, T4N R6E
Pontotoc County, Oklahoma

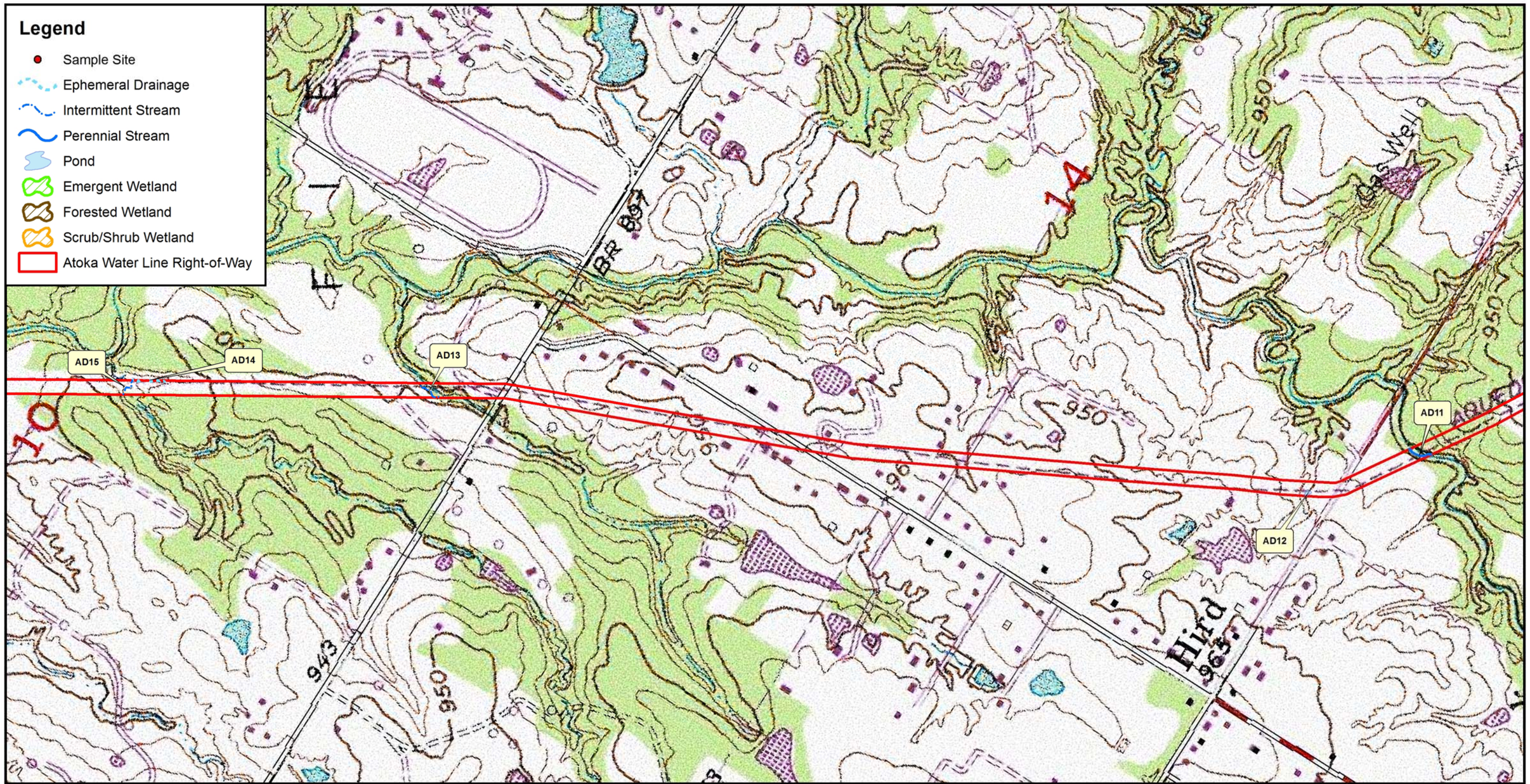
N E W S

1:8,000

ENERCON

Figure 2.2: Topographic Map
Source: USGS 7.5 Minute Series
Francis and Ada, OK Quadrangles
Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

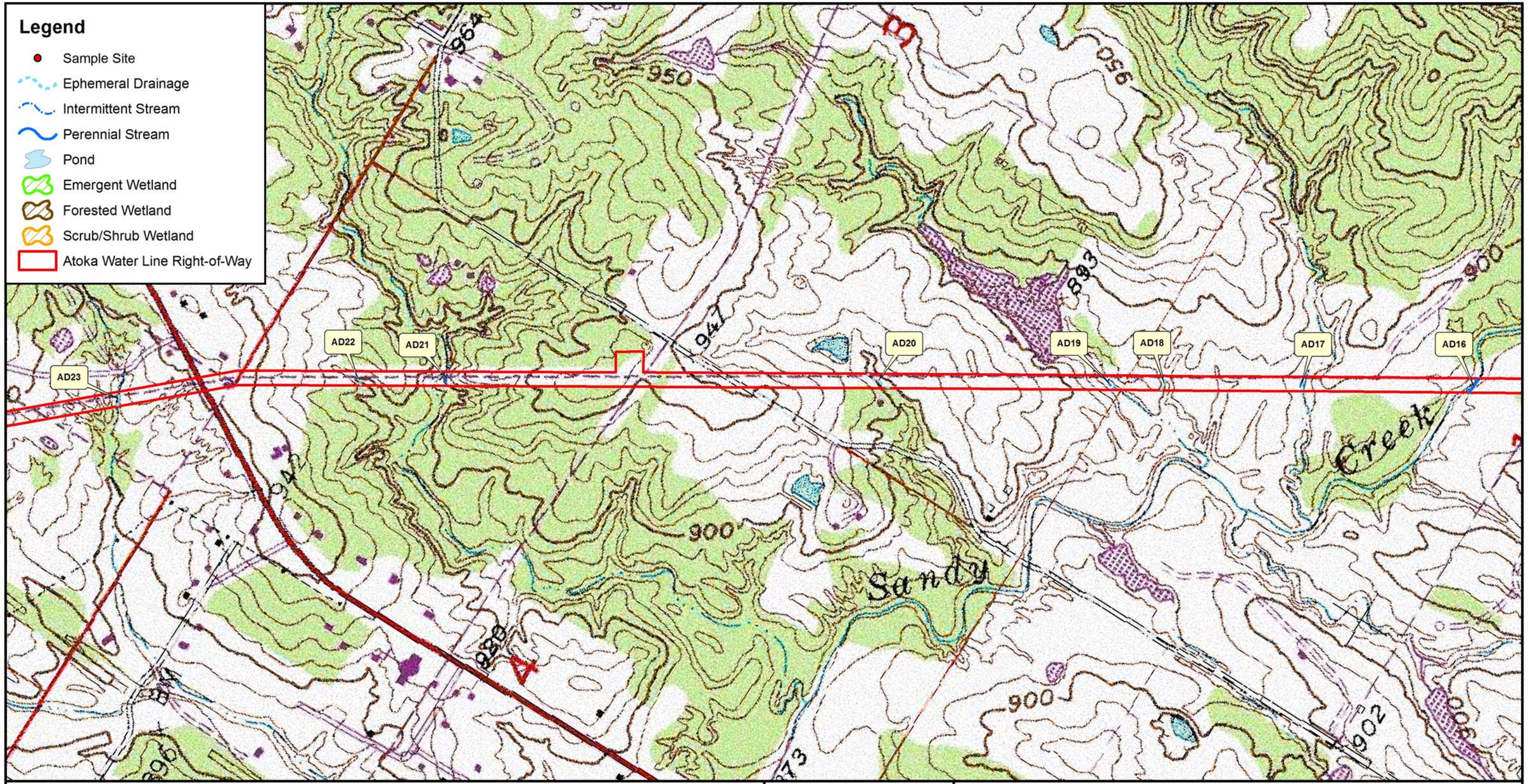
Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 23, 14, 15 & 10, T4N R6E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 2.3: Topographic Map
Source: USGS 7.5 Minute Series
Ada, OK Quadrangle
Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 10, 3 & 4, T4N R6E; Section 33, T5N R6E
Pontotoc County, Oklahoma

1:8,000

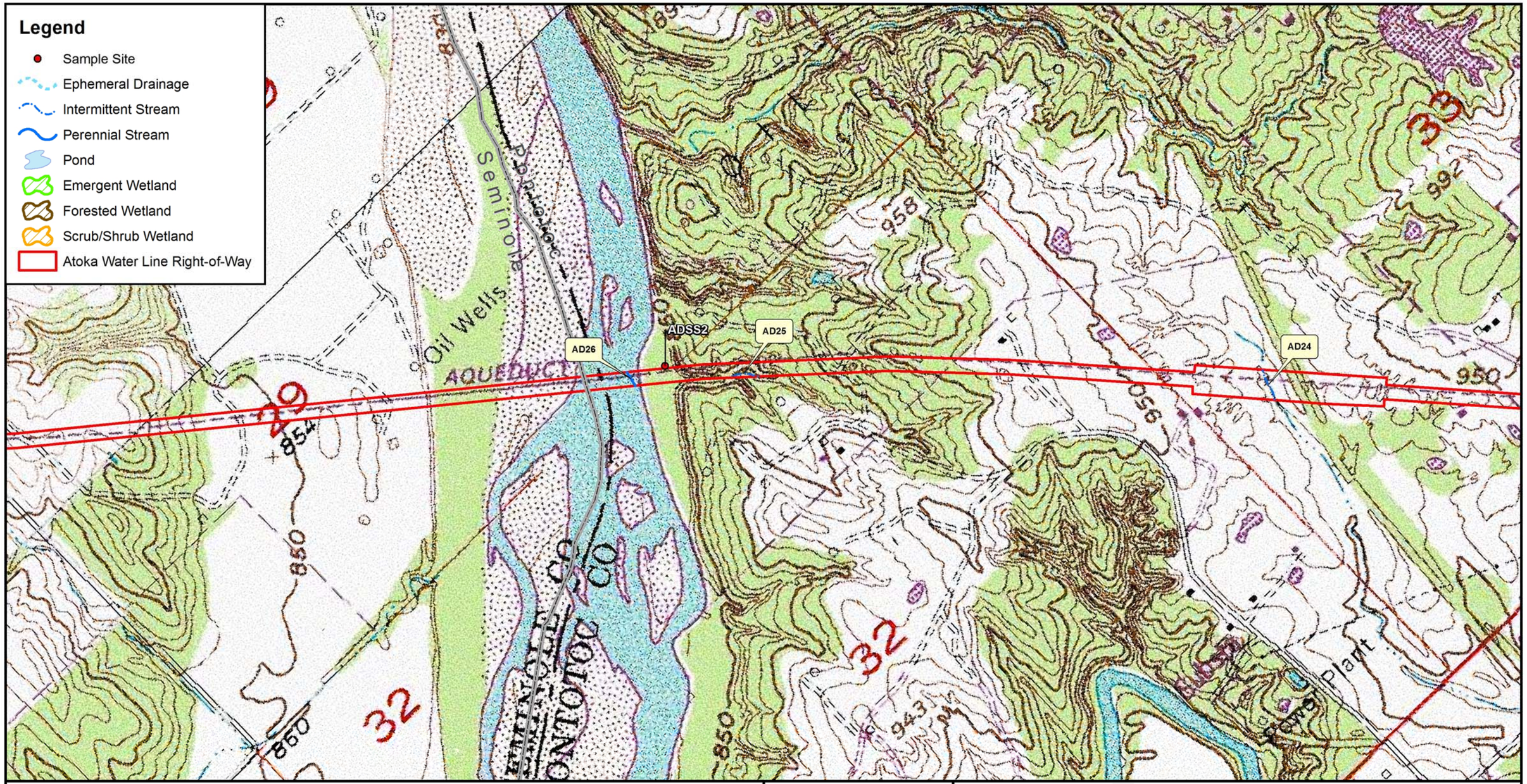
ENERCON

Figure 2.4: Topographic Map

Source: USGS 7.5 Minute Series
Ada, OK Quadrangle

Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 33, 32 & 29, T5N R6E
Pontotoc and Seminole Counties, Oklahoma

1:8,000

ENERCON

Figure 2.5: Topographic Map
Source: USGS 7.5 Minute Series
Ada and Vamoosa, OK Quadrangles
Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet

Legend

- Sample Site
- Ephemeral Drainage
- Intermittent Stream
- Perennial Stream
- Pond
- Emergent Wetland
- Forested Wetland
- Scrub/Shrub Wetland
- Atoka Water Line Right-of-Way

AD31 AD30 AD29 AD28 AD27

19 24

900 950 974 1000 982 907

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 29, 30 & 19, T5N R6E; Sections 24 & 13, T5N R5E
Seminole County, Oklahoma

N E W S

1:8,000

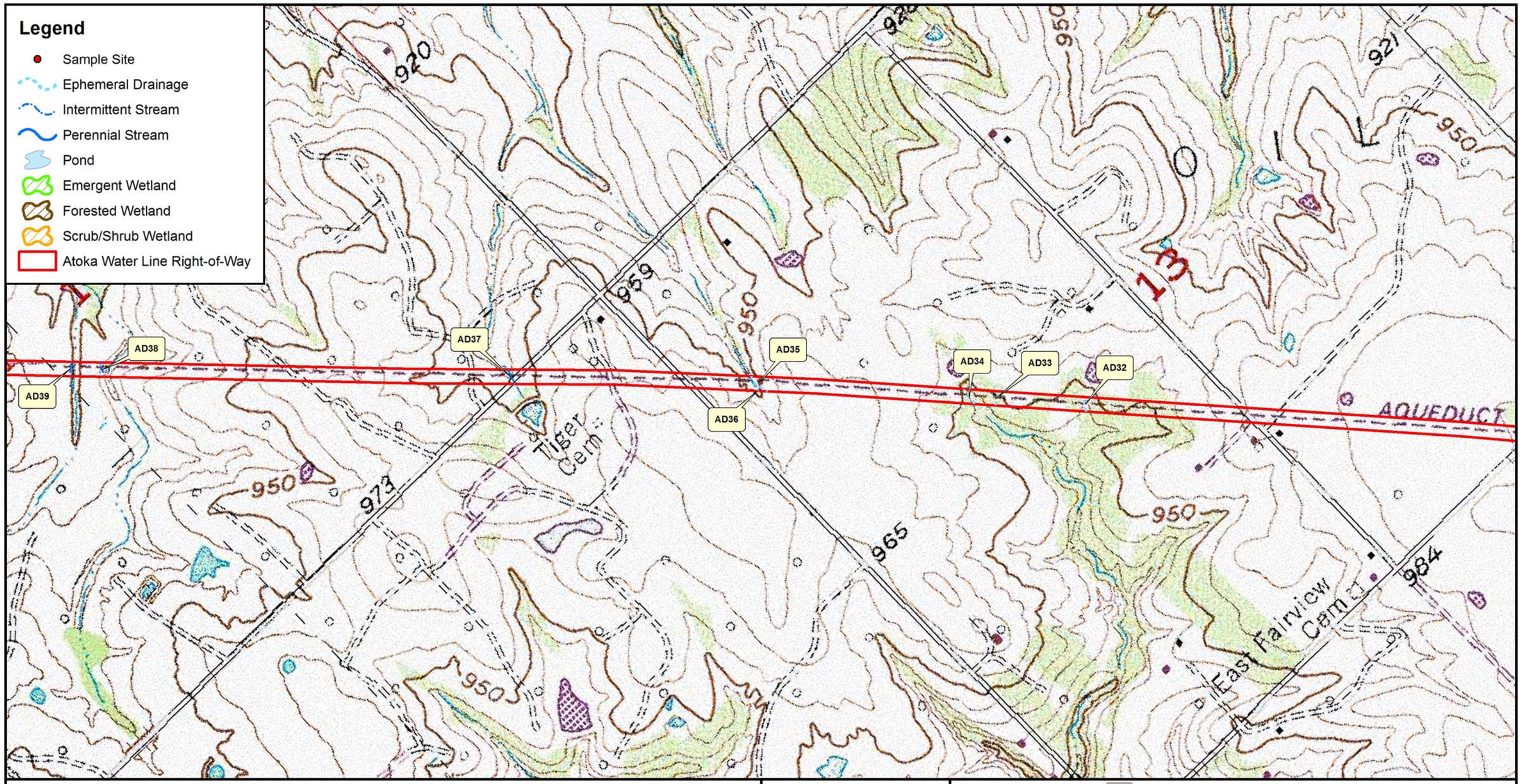
ENERCON

Figure 2.6: Topographic Map

Source: USGS 7.5 Minute Series
Vamoosa, OK Quadrangle

Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

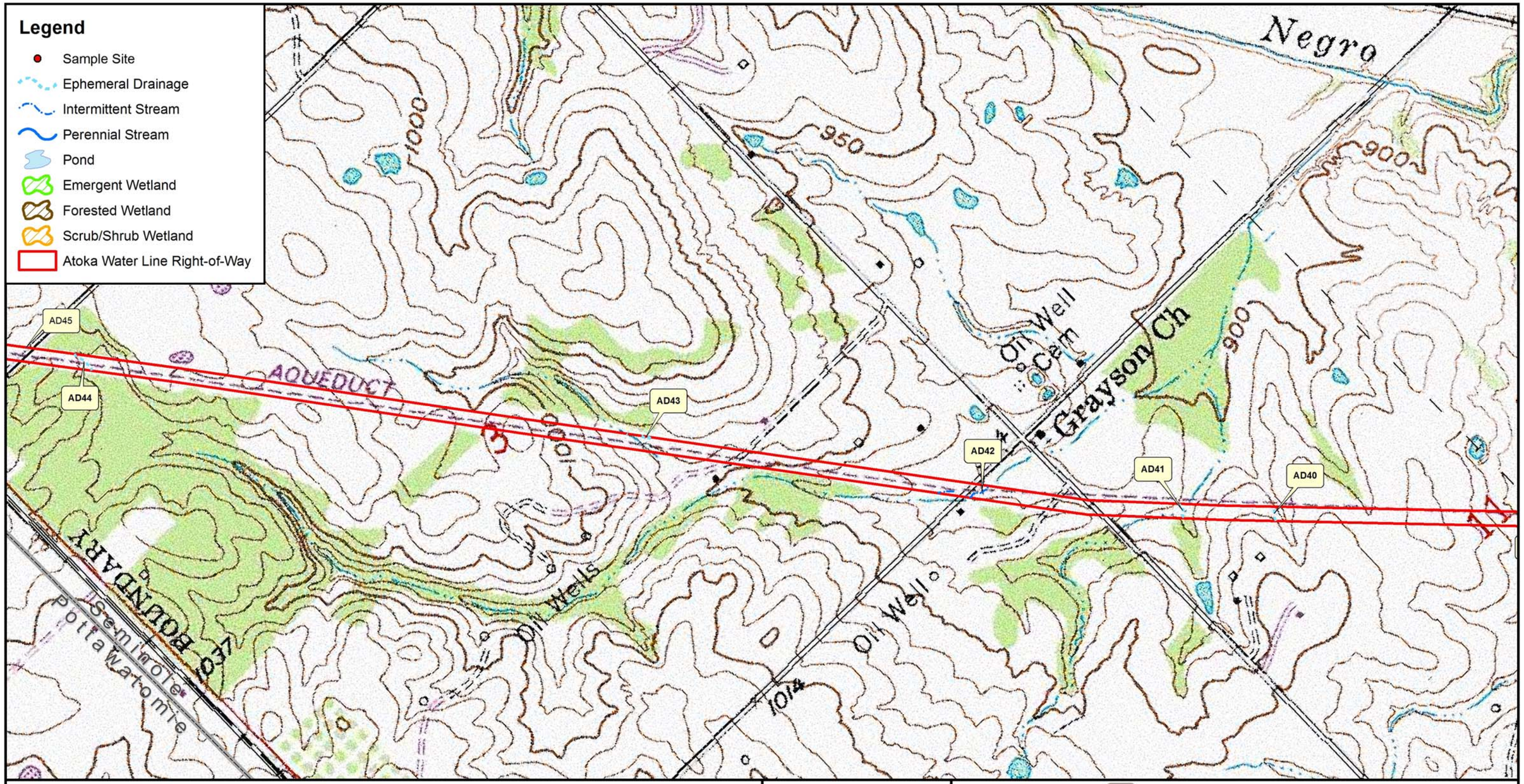
Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 13, 14 & 11, T5N R5E
Seminole County, Oklahoma

1:8,000

ENERCON

Figure 2.7: Topographic Map
Source: USGS 7.5 Minute Series
Vamoosa and Konawa, OK Quadrangles
Prepared by: F. Woolridge; August 24, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 11, 10 & 3, T5N R5E; Section 34, T6N R5E
Seminole County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 2.8: Topographic Map

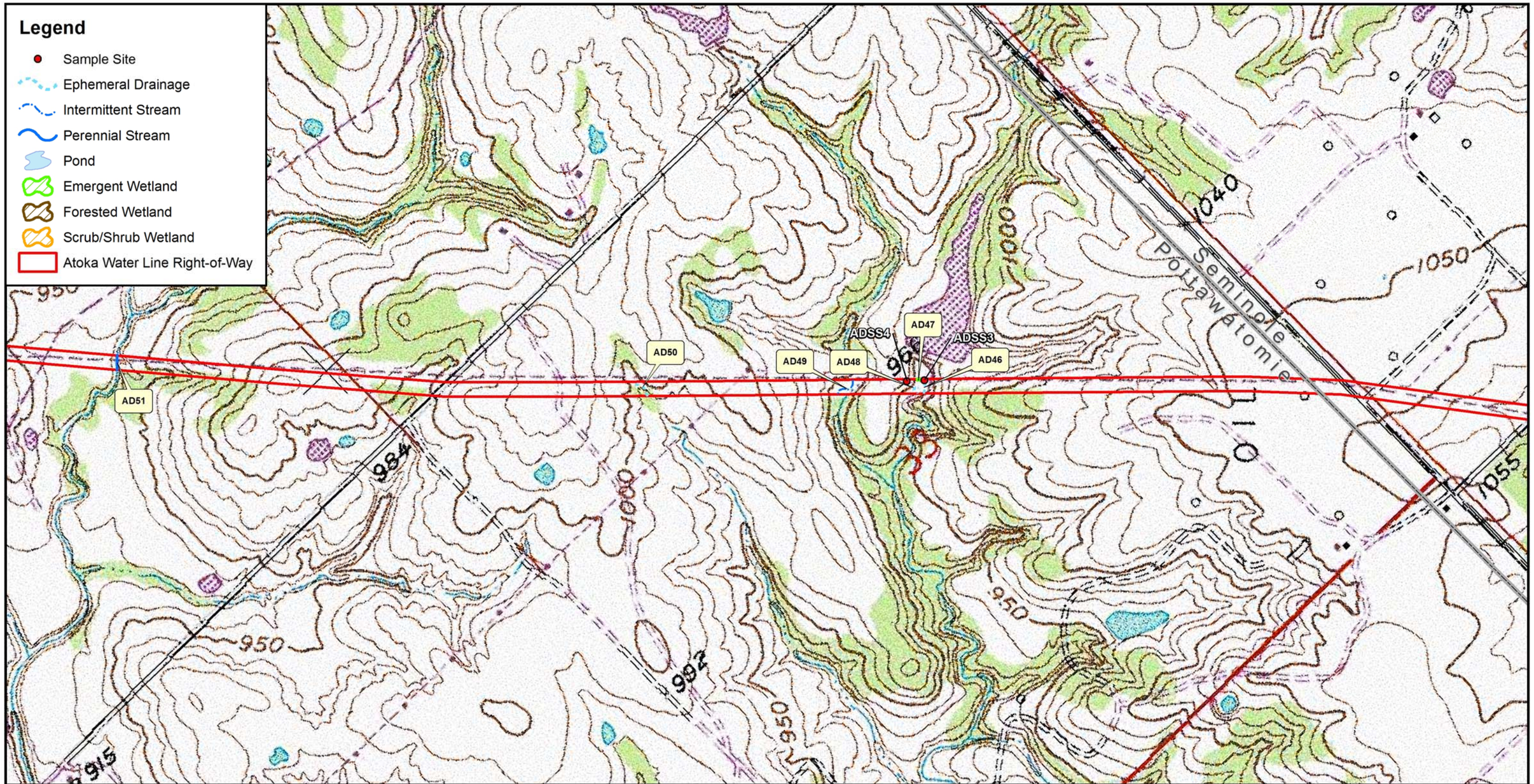
Source: USGS 7.5 Minute Series
Konawa, OK Quadrangle

Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet

Legend

- Sample Site
- Ephemeral Drainage
- Intermittent Stream
- Perennial Stream
- Pond
- Emergent Wetland
- Forested Wetland
- Scrub/Shrub Wetland
- Atoka Water Line Right-of-Way



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 34, 33, 28 & 29, T6N R5E
Seminole and Pottawatomie Counties, Oklahoma

N E S W

1:8,000

ENERCON

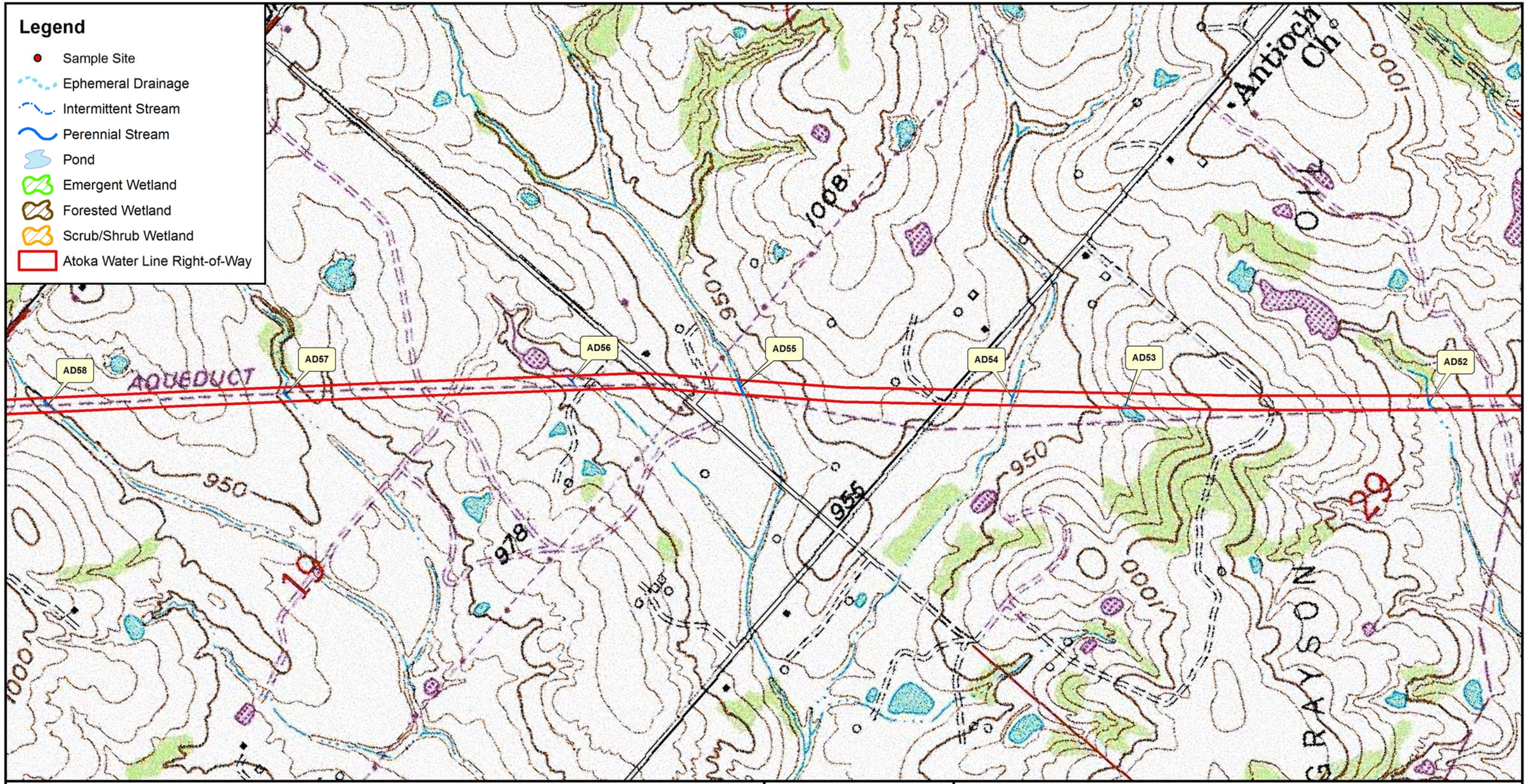
Figure 2.9: Topographic Map
Source: USGS 7.5 Minute Series
Konawa, OK Quadrangle

Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet

Legend

- Sample Site
- Ephemeral Drainage
- Intermittent Stream
- Perennial Stream
- Pond
- Emergent Wetland
- Forested Wetland
- Scrub/Shrub Wetland
- Atoka Water Line Right-of-Way



Prepared for: Oklahoma City Water Utilities Trust

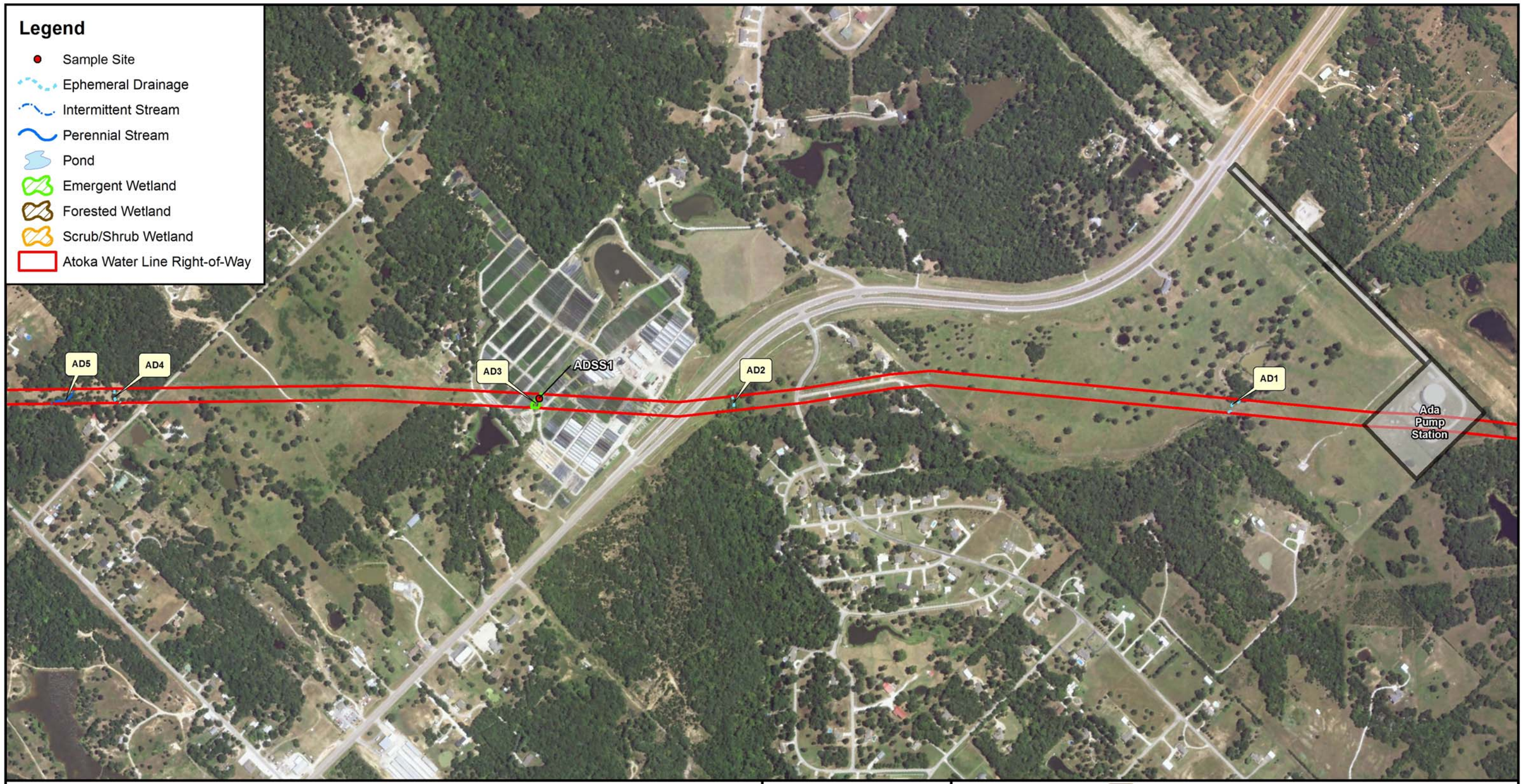
Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 29, 20 & 19, T6N R5E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 2.10: Topographic Map
Source: USGS 7.5 Minute Series
Konawa, OK Quadrangle
Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 32, 31 & 30, T4N R7E
Pontotoc County, Oklahoma

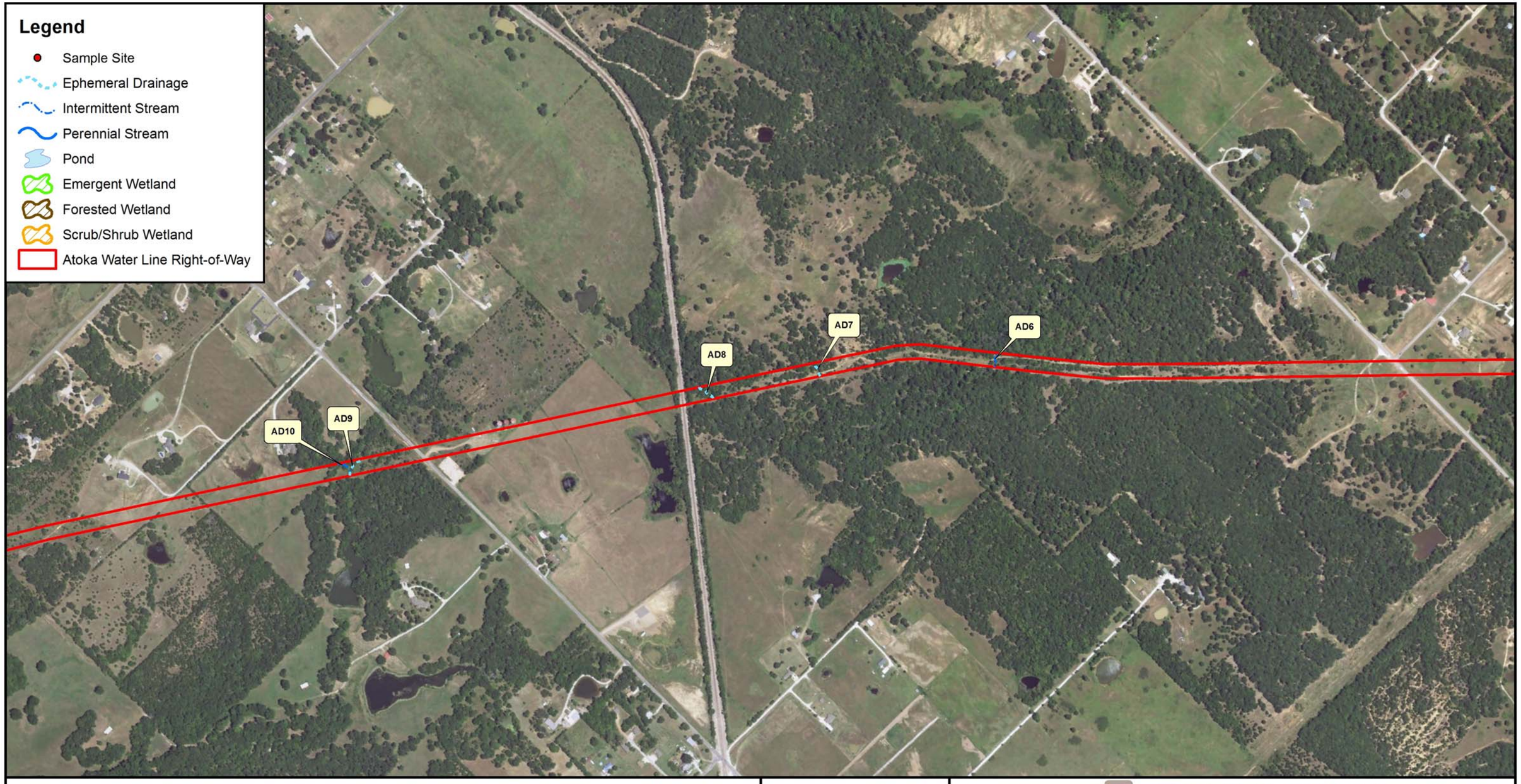
N E W S

1:8,000

ENERCON

Figure 3.1: Aerial Photography
Source: 2015 USDA NAIP
Pontotoc County, Oklahoma
Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Section 30, T4N R7E; Sections 25, 24 & 23, T4N R6E
Pontotoc County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.2: Aerial Photography
Source: 2015 USDA NAIP
Pontotoc County, Oklahoma
Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 23, 14, 15 & 10, T4N R6E
Pontotoc County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 3.3: Aerial Photography
Source: 2015 USDA NAIP
Pontotoc County, Oklahoma
Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 10, 3 & 4, T4N R6E; Section 33, T5N R6E
Pontotoc County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 3.4: Aerial Photography
Source: 2015 USDA NAIP
Pontotoc County, Oklahoma
Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 33, 32 & 29, T5N R6E
Pontotoc and Seminole Counties, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.5: Aerial Photography
Source: 2015 USDA NAIP
Pontotoc and Seminole Counties, Oklahoma
Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 29, 30 & 19, T5N R6E; Sections 24 & 13, T5N R5E
Seminole County, Oklahoma

N E S W

1:8,000

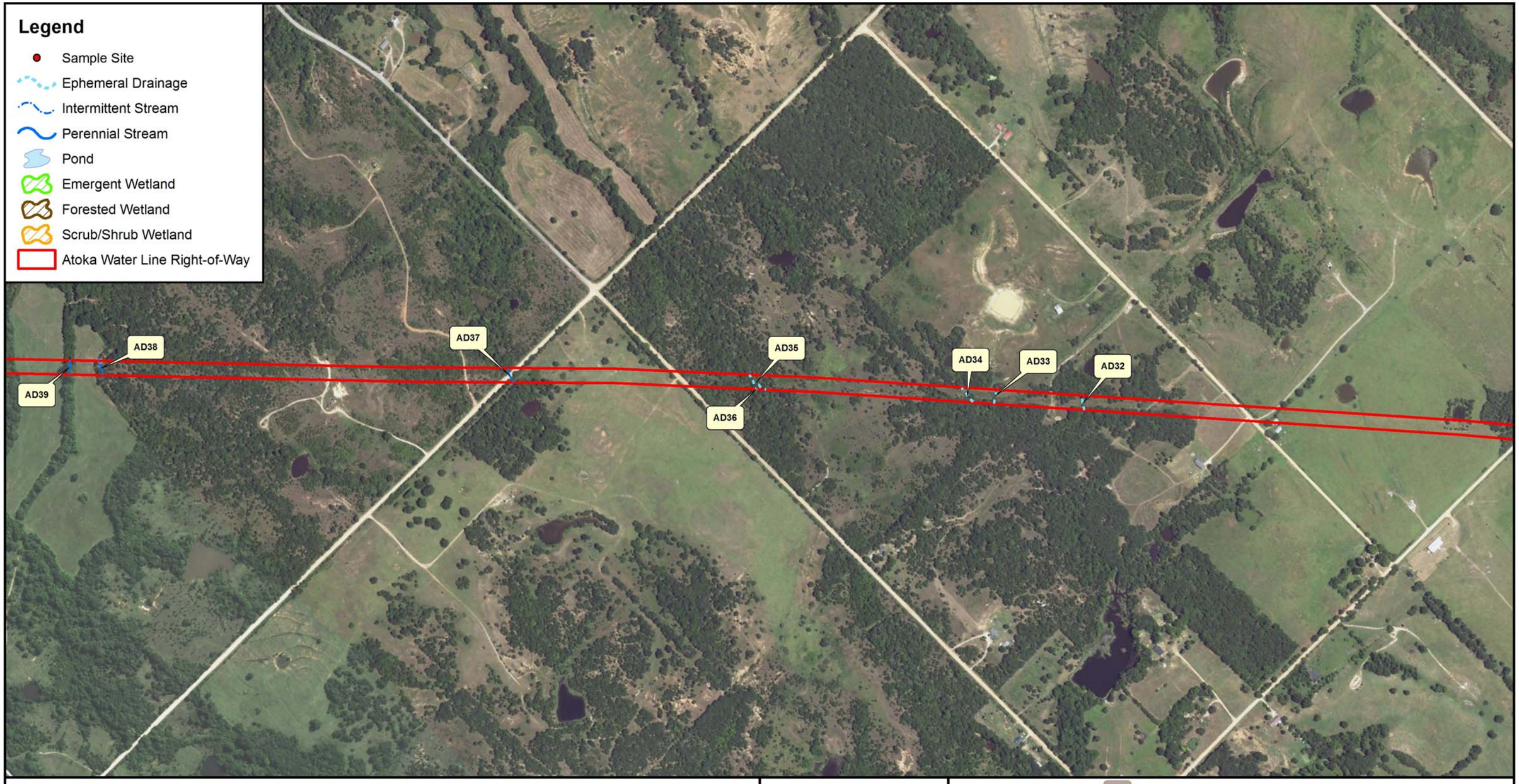
ENERCON

Figure 3.6: Aerial Photography

Source: 2015 USDA NAIP
Seminole County, Oklahoma

Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 13, 14 & 11, T5N R5E
Seminole County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.7: Aerial Photography
Source: 2015 USDA NAIP
Seminole County, Oklahoma
Prepared by: F. Woolridge; August 24, 2016

Feet
0 600 1,200 2,400

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 11, 10 & 3, T5N R5E; Section 34, T6N R5E
Seminole County, Oklahoma

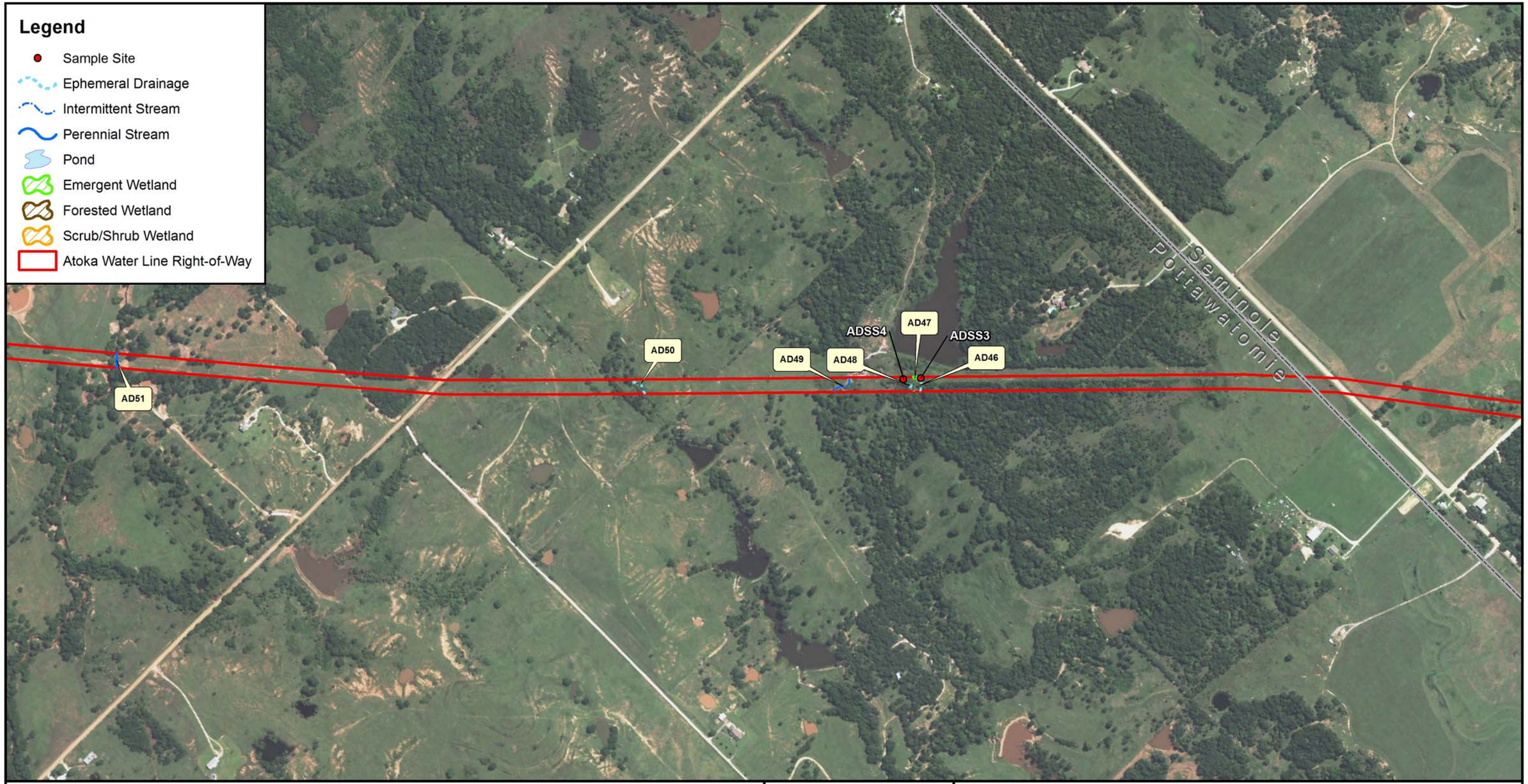
N E W S

1:8,000

ENERCON

Figure 3.8: Aerial Photography
Source: 2015 USDA NAIP
Seminole County, Oklahoma
Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 34, 33, 28 & 29, T6N R5E
Seminole and Pottawatomie Counties, Oklahoma

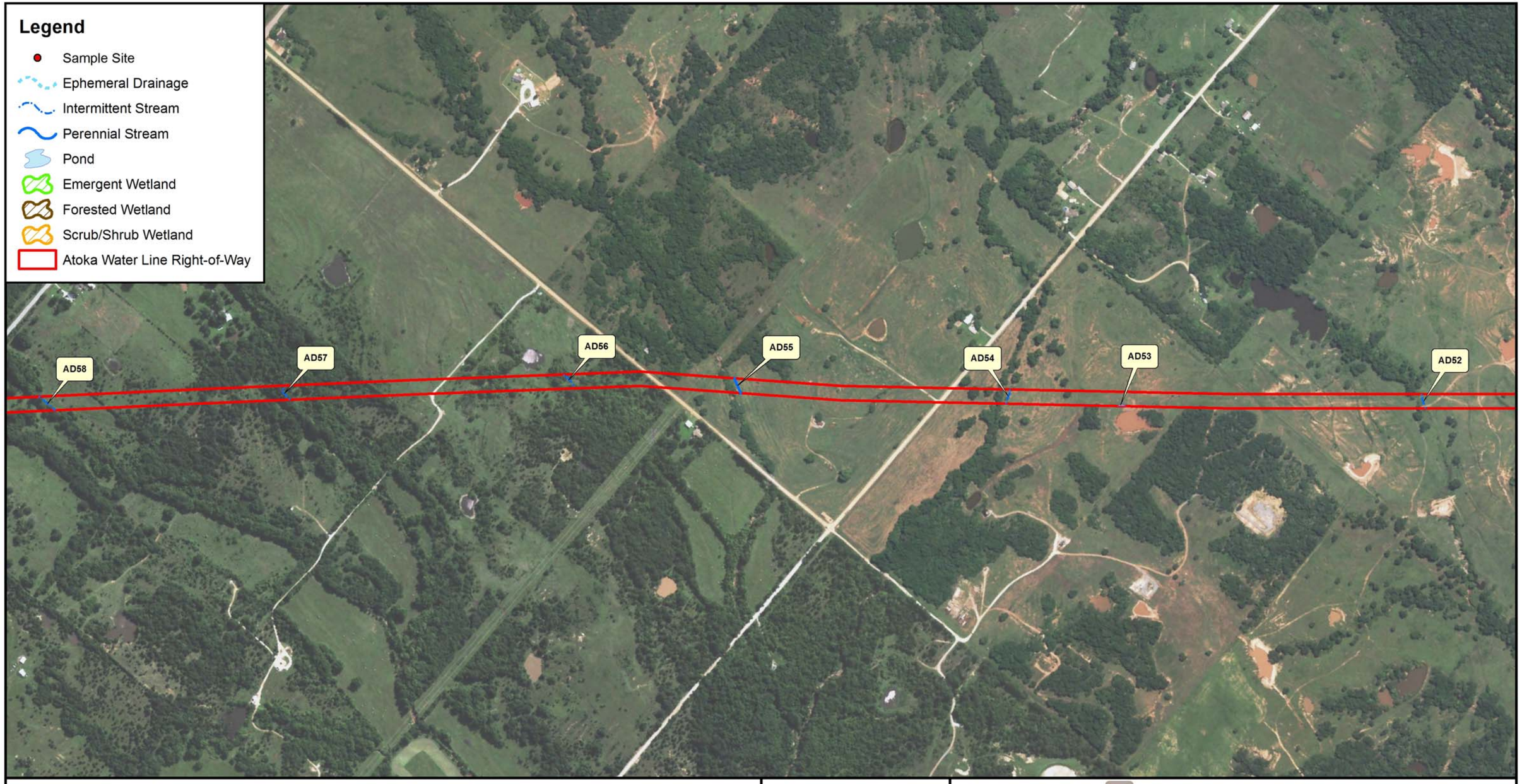
N E S W

1:8,000

ENERCON

Figure 3.9: Aerial Photography
Source: 2015 USDA NAIP
Seminole and Pottawatomie Counties, Oklahoma
Prepared by: F. Woolridge; August 24, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 29, 20 & 19, T6N R5E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.10: Aerial Photography
Source: 2015 USDA NAIP
Pottawatomie County, Oklahoma
Prepared by: F. Woolridge; August 24, 2016

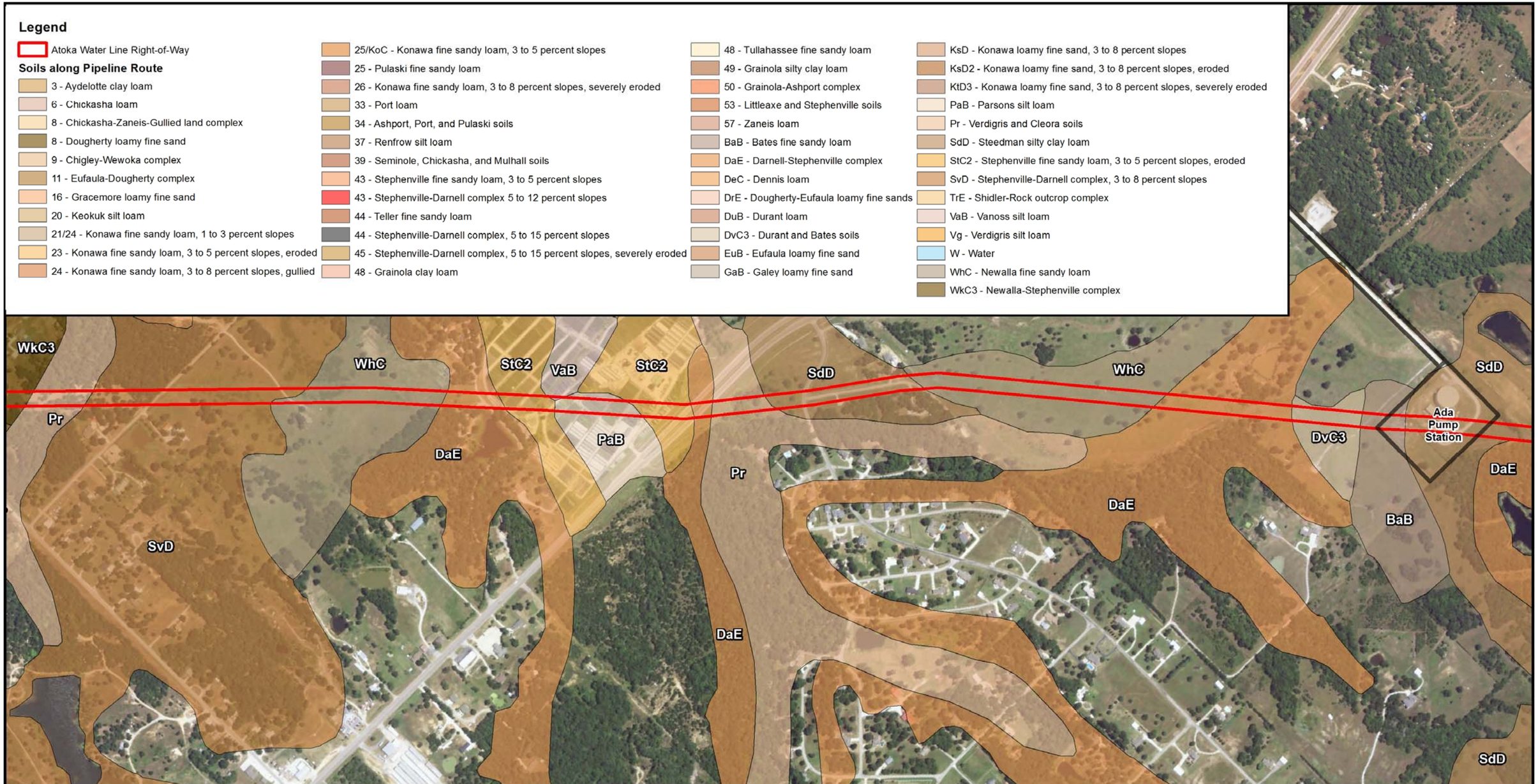
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 3 - Aydelotte clay loam
- 6 - Chickasha loam
- 8 - Chickasha-Zaneis-Gullied land complex
- 8 - Dougherty loamy fine sand
- 9 - Chigley-Wewoka complex
- 11 - Eufaula-Dougherty complex
- 16 - Gracemore loamy fine sand
- 20 - Keokuk silt loam
- 21/24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 23 - Konawa fine sandy loam, 3 to 5 percent slopes, eroded
- 24 - Konawa fine sandy loam, 3 to 8 percent slopes, gullied
- 25/KoC - Konawa fine sandy loam, 3 to 5 percent slopes
- 25 - Pulaski fine sandy loam
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 33 - Port loam
- 34 - Ashport, Port, and Pulaski soils
- 37 - Renfrow silt loam
- 39 - Seminole, Chickasha, and Mulhall soils
- 43 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex 5 to 12 percent slopes
- 44 - Teller fine sandy loam
- 44 - Stephenville-Darnell complex, 5 to 15 percent slopes
- 45 - Stephenville-Darnell complex, 5 to 15 percent slopes, severely eroded
- 48 - Grainola clay loam
- 48 - Tullahassee fine sandy loam
- 49 - Grainola silty clay loam
- 50 - Grainola-Ashport complex
- 53 - Littleaxe and Stephenville soils
- 57 - Zaneis loam
- BaB - Bates fine sandy loam
- DaE - Darnell-Stephenville complex
- DeC - Dennis loam
- DrE - Dougherty-Eufaula loamy fine sands
- DuB - Durant loam
- DvC3 - Durant and Bates soils
- EuB - Eufaula loamy fine sand
- GaB - Galey loamy fine sand
- KsD - Konawa loamy fine sand, 3 to 8 percent slopes
- KsD2 - Konawa loamy fine sand, 3 to 8 percent slopes, eroded
- KtD3 - Konawa loamy fine sand, 3 to 8 percent slopes, severely eroded
- PaB - Parsons silt loam
- Pr - Verdigris and Cleora soils
- SdD - Steedman silty clay loam
- StC2 - Stephenville fine sandy loam, 3 to 5 percent slopes, eroded
- SvD - Stephenville-Darnell complex, 3 to 8 percent slopes
- TrE - Shidler-Rock outcrop complex
- VaB - Vanoss silt loam
- Vg - Verdigris silt loam
- W - Water
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 32, 31 & 30, T4N R7E
Pontotoc County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 4.1: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Pontotoc County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 21, 2016

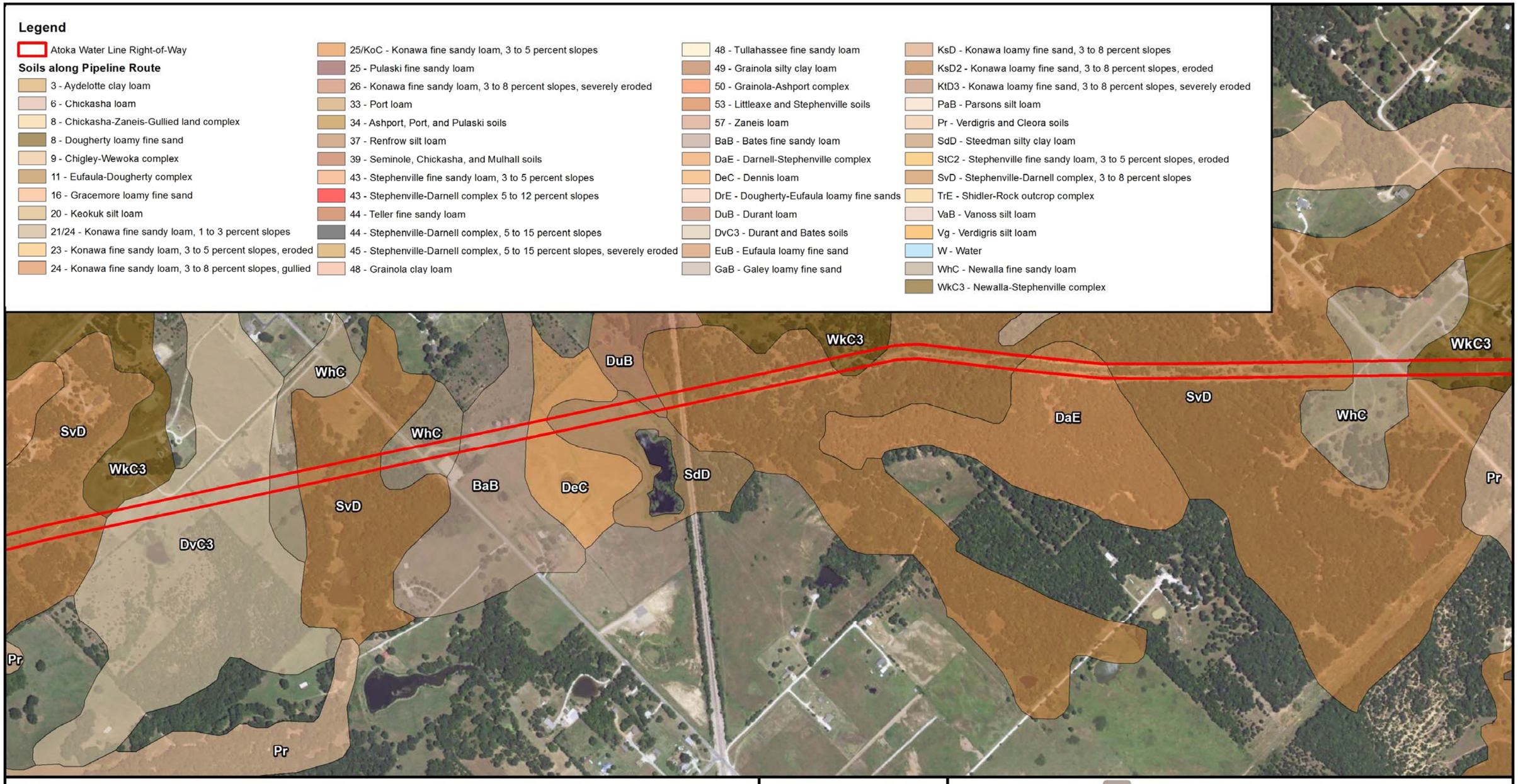
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 3 - Aydelotte clay loam
- 6 - Chickasha loam
- 8 - Chickasha-Zaneis-Gullied land complex
- 8 - Dougherty loamy fine sand
- 9 - Chigley-Wewoka complex
- 11 - Eufaula-Dougherty complex
- 16 - Gracemore loamy fine sand
- 20 - Keokuk silt loam
- 21/24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 23 - Konawa fine sandy loam, 3 to 5 percent slopes, eroded
- 24 - Konawa fine sandy loam, 3 to 8 percent slopes, gullied
- 25/KoC - Konawa fine sandy loam, 3 to 5 percent slopes
- 25 - Pulaski fine sandy loam
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 33 - Port loam
- 34 - Ashport, Port, and Pulaski soils
- 37 - Renfrow silt loam
- 39 - Seminole, Chickasha, and Mulhall soils
- 43 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex 5 to 12 percent slopes
- 44 - Teller fine sandy loam
- 44 - Stephenville-Darnell complex, 5 to 15 percent slopes
- 45 - Stephenville-Darnell complex, 5 to 15 percent slopes, severely eroded
- 48 - Grainola clay loam
- 48 - Tullahassee fine sandy loam
- 49 - Grainola silty clay loam
- 50 - Grainola-Ashport complex
- 53 - Littleaxe and Stephenville soils
- 57 - Zaneis loam
- BaB - Bates fine sandy loam
- DaE - Darnell-Stephenville complex
- DeC - Dennis loam
- DrE - Dougherty-Eufaula loamy fine sands
- DuB - Durant loam
- DvC3 - Durant and Bates soils
- EuB - Eufaula loamy fine sand
- GaB - Galey loamy fine sand
- KsD - Konawa loamy fine sand, 3 to 8 percent slopes
- KsD2 - Konawa loamy fine sand, 3 to 8 percent slopes, eroded
- KtD3 - Konawa loamy fine sand, 3 to 8 percent slopes, severely eroded
- PaB - Parsons silt loam
- Pr - Verdigris and Cleora soils
- SdD - Steedman silty clay loam
- StC2 - Stephenville fine sandy loam, 3 to 5 percent slopes, eroded
- SvD - Stephenville-Darnell complex, 3 to 8 percent slopes
- TrE - Shidler-Rock outcrop complex
- VaB - Vanoss silt loam
- Vg - Verdigris silt loam
- W - Water
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Section 30, T4N R7E; Sections 25, 24 & 23, T4N R6E
Pontotoc County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.2: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Pontotoc County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 21, 2016

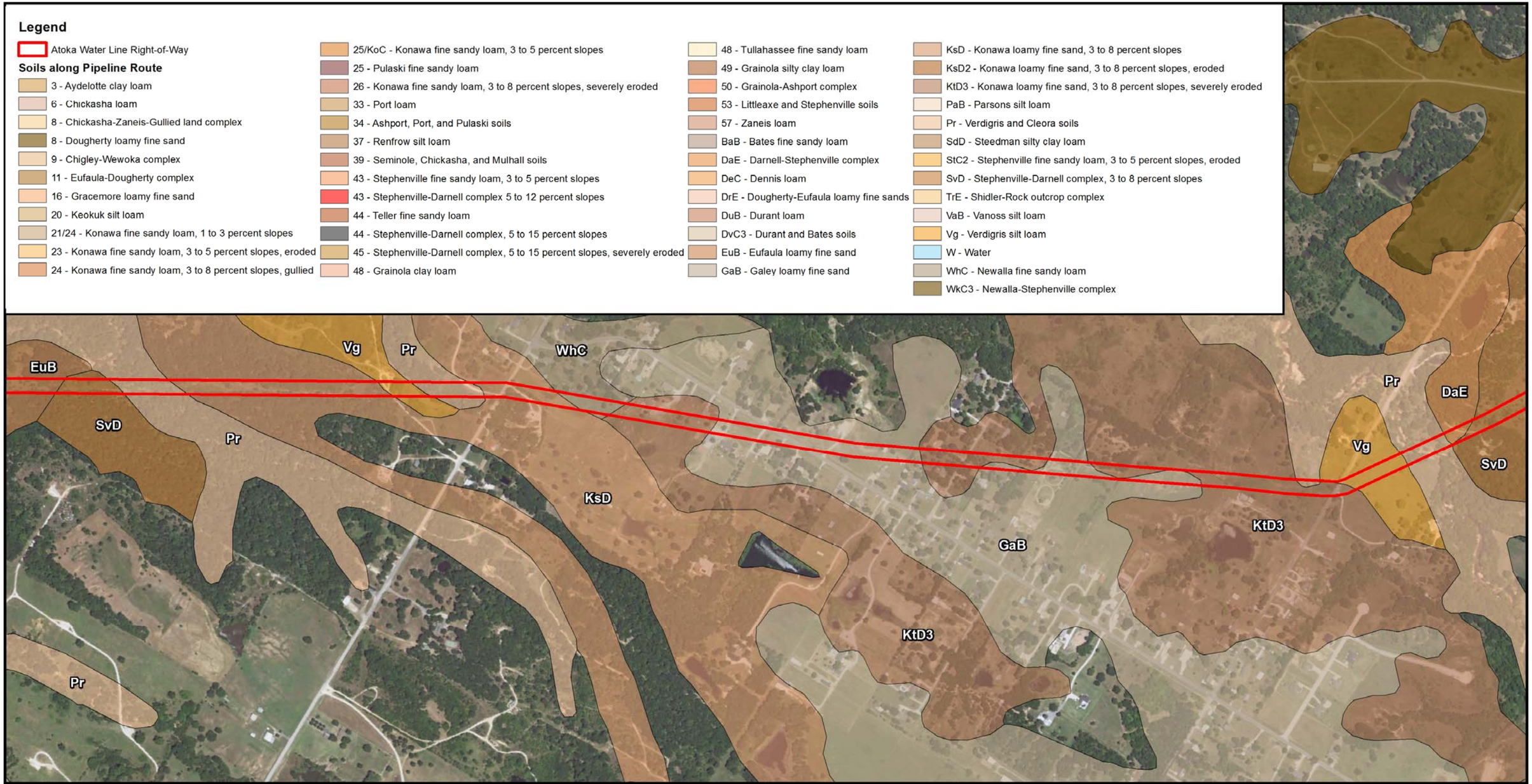
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 3 - Aydelotte clay loam
- 6 - Chickasha loam
- 8 - Chickasha-Zaneis-Gullied land complex
- 8 - Dougherty loamy fine sand
- 9 - Chigley-Wewoka complex
- 11 - Eufaula-Dougherty complex
- 16 - Gracemore loamy fine sand
- 20 - Keokuk silt loam
- 21/24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 23 - Konawa fine sandy loam, 3 to 5 percent slopes, eroded
- 24 - Konawa fine sandy loam, 3 to 8 percent slopes, gullied
- 25/KoC - Konawa fine sandy loam, 3 to 5 percent slopes
- 25 - Pulaski fine sandy loam
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 33 - Port loam
- 34 - Ashport, Port, and Pulaski soils
- 37 - Renfrow silt loam
- 39 - Seminole, Chickasha, and Mulhall soils
- 43 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex 5 to 12 percent slopes
- 44 - Teller fine sandy loam
- 44 - Stephenville-Darnell complex, 5 to 15 percent slopes
- 45 - Stephenville-Darnell complex, 5 to 15 percent slopes, severely eroded
- 48 - Grainola clay loam
- 48 - Tullahassee fine sandy loam
- 49 - Grainola silty clay loam
- 50 - Grainola-Ashport complex
- 53 - Littleaxe and Stephenville soils
- 57 - Zaneis loam
- BaB - Bates fine sandy loam
- DaE - Darnell-Stephenville complex
- DeC - Dennis loam
- DrE - Dougherty-Eufaula loamy fine sands
- DuB - Durant loam
- DvC3 - Durant and Bates soils
- EuB - Eufaula loamy fine sand
- GaB - Galey loamy fine sand
- KsD - Konawa loamy fine sand, 3 to 8 percent slopes
- KsD2 - Konawa loamy fine sand, 3 to 8 percent slopes, eroded
- KtD3 - Konawa loamy fine sand, 3 to 8 percent slopes, severely eroded
- PaB - Parsons silt loam
- Pr - Verdigris and Cleora soils
- SdD - Steedman silty clay loam
- StC2 - Stephenville fine sandy loam, 3 to 5 percent slopes, eroded
- SvD - Stephenville-Darnell complex, 3 to 8 percent slopes
- TrE - Shidler-Rock outcrop complex
- VaB - Vanoss silt loam
- Vg - Verdigris silt loam
- W - Water
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 23, 14, 15 & 10, T4N R6E
Pontotoc County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 4.3: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Pontotoc County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 21, 2016

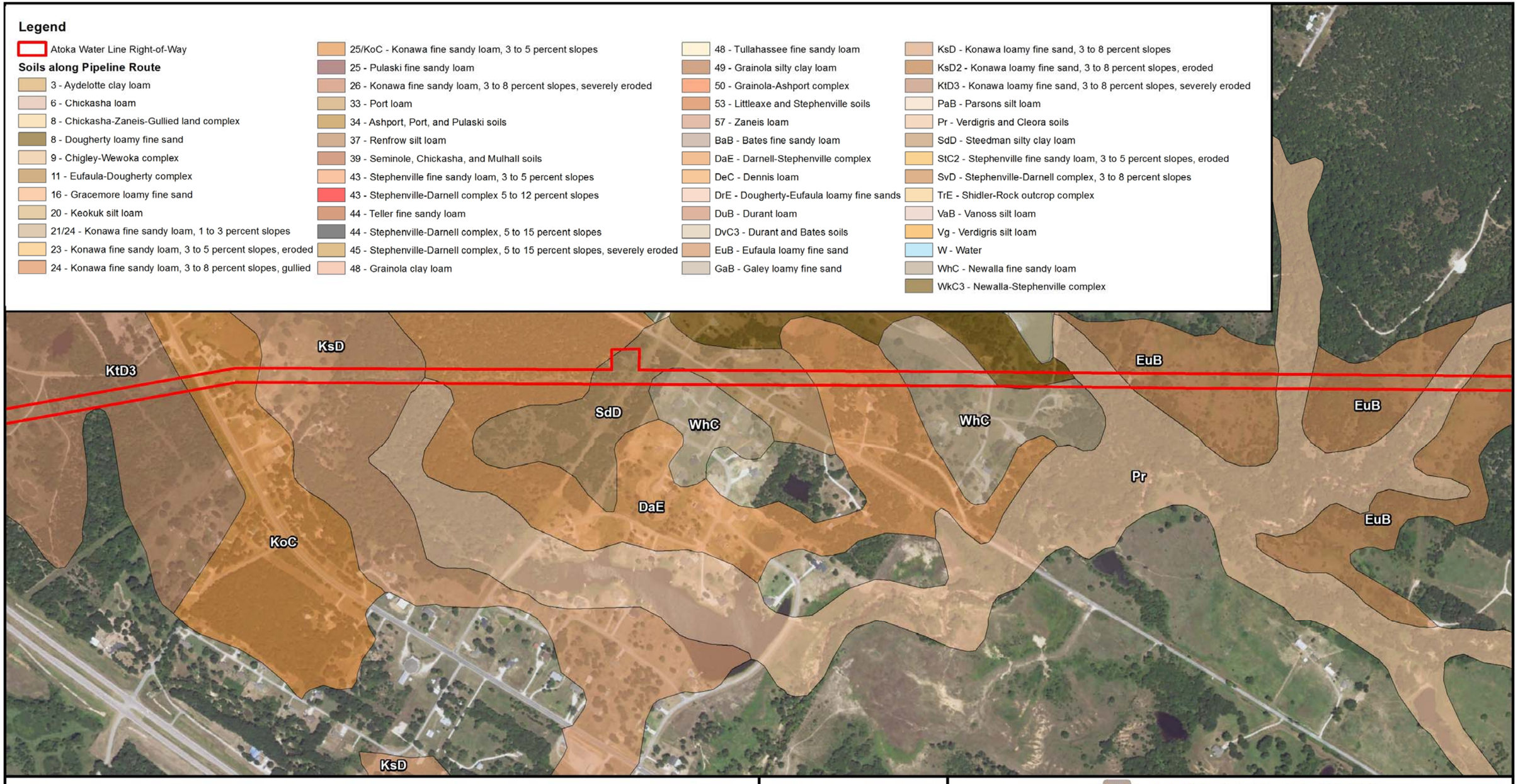
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 3 - Aydelotte clay loam
- 6 - Chickasha loam
- 8 - Chickasha-Zaneis-Gullied land complex
- 8 - Dougherty loamy fine sand
- 9 - Chigley-Wewoka complex
- 11 - Eufaula-Dougherty complex
- 16 - Gracemore loamy fine sand
- 20 - Keokuk silt loam
- 21/24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 23 - Konawa fine sandy loam, 3 to 5 percent slopes, eroded
- 24 - Konawa fine sandy loam, 3 to 8 percent slopes, gullied
- 25/KoC - Konawa fine sandy loam, 3 to 5 percent slopes
- 25 - Pulaski fine sandy loam
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 33 - Port loam
- 34 - Ashport, Port, and Pulaski soils
- 37 - Renfrow silt loam
- 39 - Seminole, Chickasha, and Mulhall soils
- 43 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex 5 to 12 percent slopes
- 44 - Teller fine sandy loam
- 44 - Stephenville-Darnell complex, 5 to 15 percent slopes
- 45 - Stephenville-Darnell complex, 5 to 15 percent slopes, severely eroded
- 48 - Grainola clay loam
- 48 - Tullahassee fine sandy loam
- 49 - Grainola silty clay loam
- 50 - Grainola-Ashport complex
- 53 - Littleaxe and Stephenville soils
- 57 - Zaneis loam
- BaB - Bates fine sandy loam
- DaE - Darnell-Stephenville complex
- DeC - Dennis loam
- DrE - Dougherty-Eufaula loamy fine sands
- DuB - Durant loam
- DvC3 - Durant and Bates soils
- EuB - Eufaula loamy fine sand
- GaB - Galey loamy fine sand
- KsD - Konawa loamy fine sand, 3 to 8 percent slopes
- KsD2 - Konawa loamy fine sand, 3 to 8 percent slopes, eroded
- KtD3 - Konawa loamy fine sand, 3 to 8 percent slopes, severely eroded
- PaB - Parsons silt loam
- Pr - Verdigris and Cleora soils
- SdD - Steedman silty clay loam
- StC2 - Stephenville fine sandy loam, 3 to 5 percent slopes, eroded
- SvD - Stephenville-Darnell complex, 3 to 8 percent slopes
- TrE - Shidler-Rock outcrop complex
- VaB - Vanoss silt loam
- Vg - Verdigris silt loam
- W - Water
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 10, 3 & 4, T4N R6E; Section 33, T5N R6E
Pontotoc County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 4.4: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Pontotoc County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 21, 2016

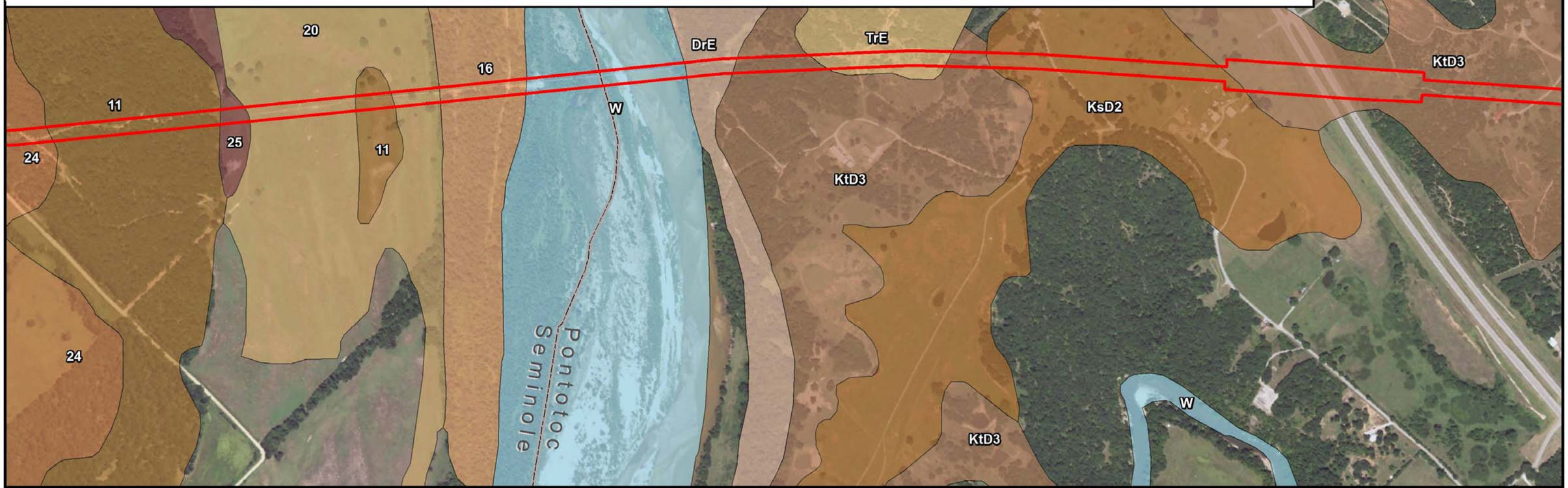
Feet
0 600 1,200 2,400

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 3 - Aydelotte clay loam
- 6 - Chickasha loam
- 8 - Chickasha-Zaneis-Gullied land complex
- 8 - Dougherty loamy fine sand
- 9 - Chigley-Wewoka complex
- 11 - Eufaula-Dougherty complex
- 16 - Gracemore loamy fine sand
- 20 - Keokuk silt loam
- 21/24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 23 - Konawa fine sandy loam, 3 to 5 percent slopes, eroded
- 24 - Konawa fine sandy loam, 3 to 8 percent slopes, gullied
- 25/KoC - Konawa fine sandy loam, 3 to 5 percent slopes
- 25 - Pulaski fine sandy loam
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 33 - Port loam
- 34 - Ashport, Port, and Pulaski soils
- 37 - Renfrow silt loam
- 39 - Seminole, Chickasha, and Mulhall soils
- 43 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex 5 to 12 percent slopes
- 44 - Teller fine sandy loam
- 44 - Stephenville-Darnell complex, 5 to 15 percent slopes
- 45 - Stephenville-Darnell complex, 5 to 15 percent slopes, severely eroded
- 48 - Grainola clay loam
- 48 - Tullahassee fine sandy loam
- 49 - Grainola silty clay loam
- 50 - Grainola-Ashport complex
- 53 - Littleaxe and Stephenville soils
- 57 - Zaneis loam
- BaB - Bates fine sandy loam
- DaE - Darnell-Stephenville complex
- DeC - Dennis loam
- DrE - Dougherty-Eufaula loamy fine sands
- DuB - Durant loam
- DvC3 - Durant and Bates soils
- EuB - Eufaula loamy fine sand
- GaB - Galey loamy fine sand
- KsD - Konawa loamy fine sand, 3 to 8 percent slopes
- KsD2 - Konawa loamy fine sand, 3 to 8 percent slopes, eroded
- KtD3 - Konawa loamy fine sand, 3 to 8 percent slopes, severely eroded
- PaB - Parsons silt loam
- Pr - Verdigris and Cleora soils
- SdD - Steedman silty clay loam
- StC2 - Stephenville fine sandy loam, 3 to 5 percent slopes, eroded
- SvD - Stephenville-Darnell complex, 3 to 8 percent slopes
- TrE - Shidler-Rock outcrop complex
- VaB - Vanoss silt loam
- Vg - Verdigris silt loam
- W - Water
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 33, 32 & 29, T5N R6E
Pontotoc and Seminole Counties, Oklahoma

N E S W

1:8,000

ENERCON

Figure 4.5: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Pontotoc and Seminole Counties, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 22, 2016

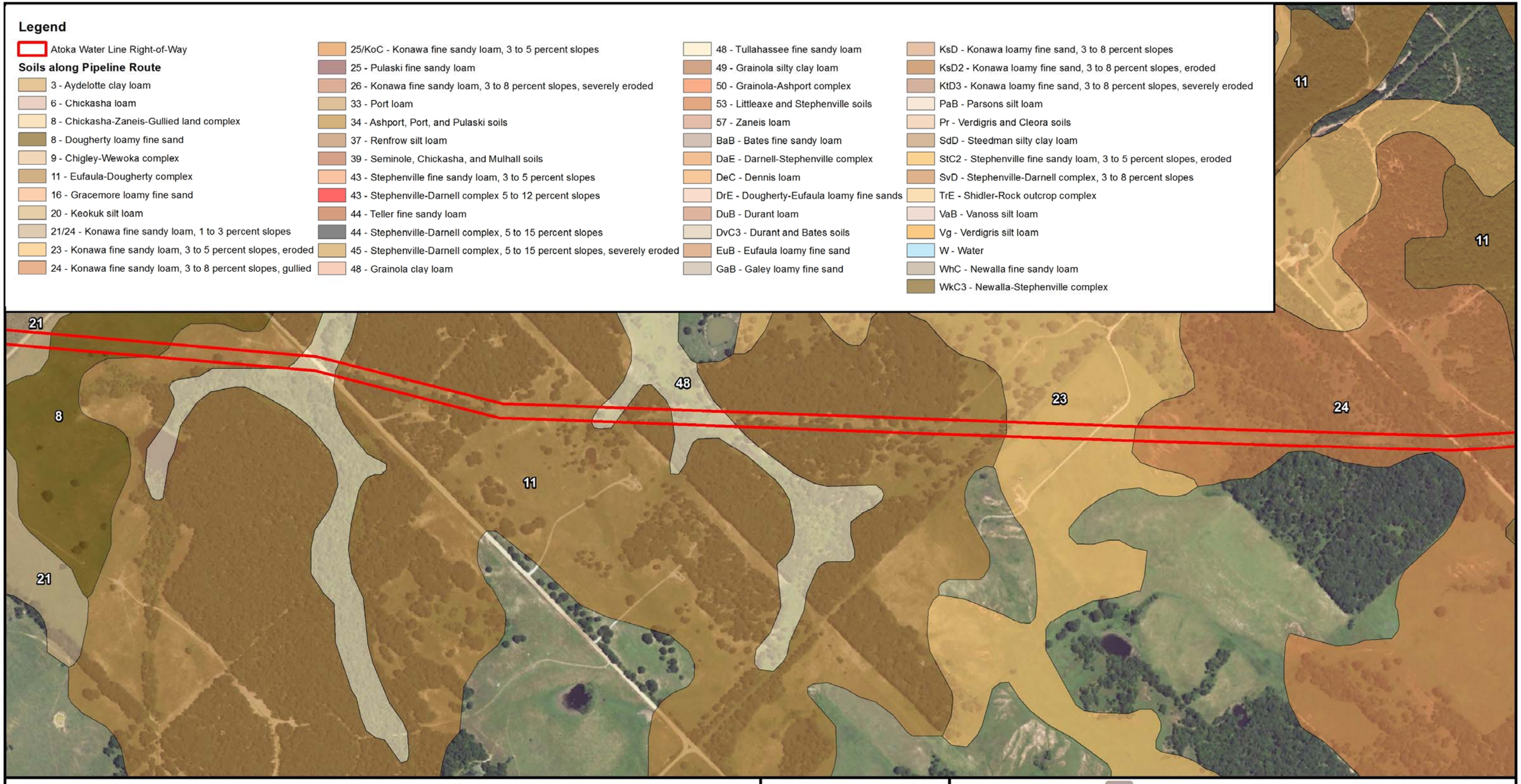
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 3 - Aydelotte clay loam
- 6 - Chickasha loam
- 8 - Chickasha-Zaneis-Gullied land complex
- 8 - Dougherty loamy fine sand
- 9 - Chigley-Wewoka complex
- 11 - Eufaula-Dougherty complex
- 16 - Gracemore loamy fine sand
- 20 - Keokuk silt loam
- 21/24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 23 - Konawa fine sandy loam, 3 to 5 percent slopes, eroded
- 24 - Konawa fine sandy loam, 3 to 8 percent slopes, gullied
- 25/KoC - Konawa fine sandy loam, 3 to 5 percent slopes
- 25 - Pulaski fine sandy loam
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 33 - Port loam
- 34 - Ashport, Port, and Pulaski soils
- 37 - Renfrow silt loam
- 39 - Seminole, Chickasha, and Mulhall soils
- 43 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex 5 to 12 percent slopes
- 44 - Teller fine sandy loam
- 44 - Stephenville-Darnell complex, 5 to 15 percent slopes
- 45 - Stephenville-Darnell complex, 5 to 15 percent slopes, severely eroded
- 48 - Grainola clay loam
- 48 - Tullahassee fine sandy loam
- 49 - Grainola silty clay loam
- 50 - Grainola-Ashport complex
- 53 - Littleaxe and Stephenville soils
- 57 - Zaneis loam
- BaB - Bates fine sandy loam
- DaE - Darnell-Stephenville complex
- DeC - Dennis loam
- DrE - Dougherty-Eufaula loamy fine sands
- DuB - Durant loam
- DvC3 - Durant and Bates soils
- EuB - Eufaula loamy fine sand
- GaB - Galey loamy fine sand
- KsD - Konawa loamy fine sand, 3 to 8 percent slopes
- KsD2 - Konawa loamy fine sand, 3 to 8 percent slopes, eroded
- KtD3 - Konawa loamy fine sand, 3 to 8 percent slopes, severely eroded
- PaB - Parsons silt loam
- Pr - Verdigris and Cleora soils
- SdD - Steedman silty clay loam
- StC2 - Stephenville fine sandy loam, 3 to 5 percent slopes, eroded
- SvD - Stephenville-Darnell complex, 3 to 8 percent slopes
- TrE - Shidler-Rock outcrop complex
- VaB - Vanoss silt loam
- Vg - Verdigris silt loam
- W - Water
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 29, 30 & 19, T5N R6E; Sections 24 & 13, T5N R5E
Seminole County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.6: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Seminole County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 21, 2016

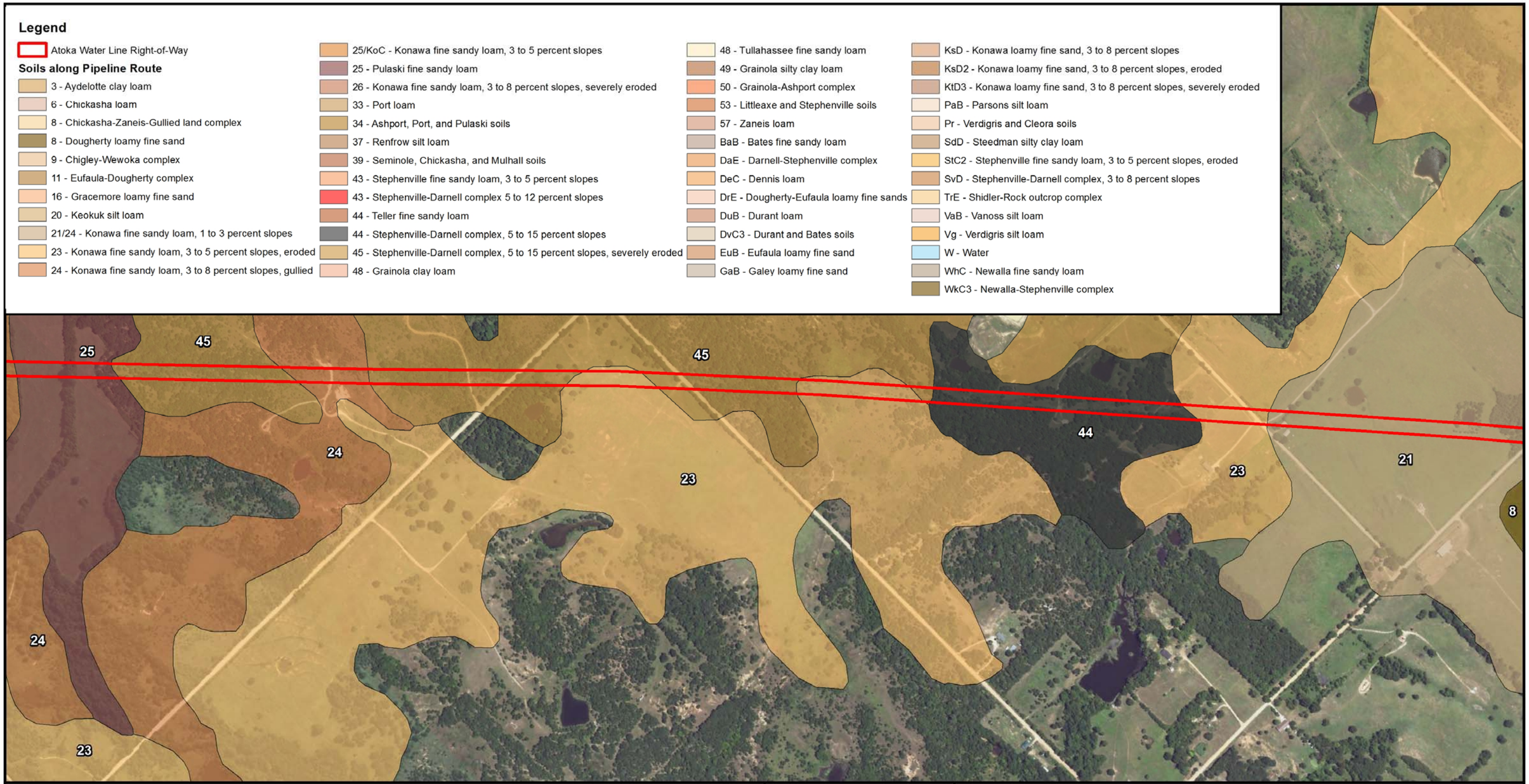
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 3 - Aydelotte clay loam
- 6 - Chickasha loam
- 8 - Chickasha-Zaneis-Gullied land complex
- 8 - Dougherty loamy fine sand
- 9 - Chigley-Wewoka complex
- 11 - Eufaula-Dougherty complex
- 16 - Gracemore loamy fine sand
- 20 - Keokuk silt loam
- 21/24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 23 - Konawa fine sandy loam, 3 to 5 percent slopes, eroded
- 24 - Konawa fine sandy loam, 3 to 8 percent slopes, gullied
- 25/KoC - Konawa fine sandy loam, 3 to 5 percent slopes
- 25 - Pulaski fine sandy loam
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 33 - Port loam
- 34 - Ashport, Port, and Pulaski soils
- 37 - Renfrow silt loam
- 39 - Seminole, Chickasha, and Mulhall soils
- 43 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex 5 to 12 percent slopes
- 44 - Teller fine sandy loam
- 44 - Stephenville-Darnell complex, 5 to 15 percent slopes
- 45 - Stephenville-Darnell complex, 5 to 15 percent slopes, severely eroded
- 48 - Grainola clay loam
- 48 - Tullahassee fine sandy loam
- 49 - Grainola silty clay loam
- 50 - Grainola-Ashport complex
- 53 - Littleaxe and Stephenville soils
- 57 - Zaneis loam
- BaB - Bates fine sandy loam
- DaE - Darnell-Stephenville complex
- DeC - Dennis loam
- DrE - Dougherty-Eufaula loamy fine sands
- DuB - Durant loam
- DvC3 - Durant and Bates soils
- EuB - Eufaula loamy fine sand
- GaB - Galey loamy fine sand
- KsD - Konawa loamy fine sand, 3 to 8 percent slopes
- KsD2 - Konawa loamy fine sand, 3 to 8 percent slopes, eroded
- KtD3 - Konawa loamy fine sand, 3 to 8 percent slopes, severely eroded
- PaB - Parsons silt loam
- Pr - Verdigris and Cleora soils
- SdD - Steedman silty clay loam
- StC2 - Stephenville fine sandy loam, 3 to 5 percent slopes, eroded
- SvD - Stephenville-Darnell complex, 3 to 8 percent slopes
- TrE - Shidler-Rock outcrop complex
- VaB - Vanoss silt loam
- Vg - Verdigris silt loam
- W - Water
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 13, 14 & 11, T5N R5E
Seminole County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.7: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Seminole County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 21, 2016

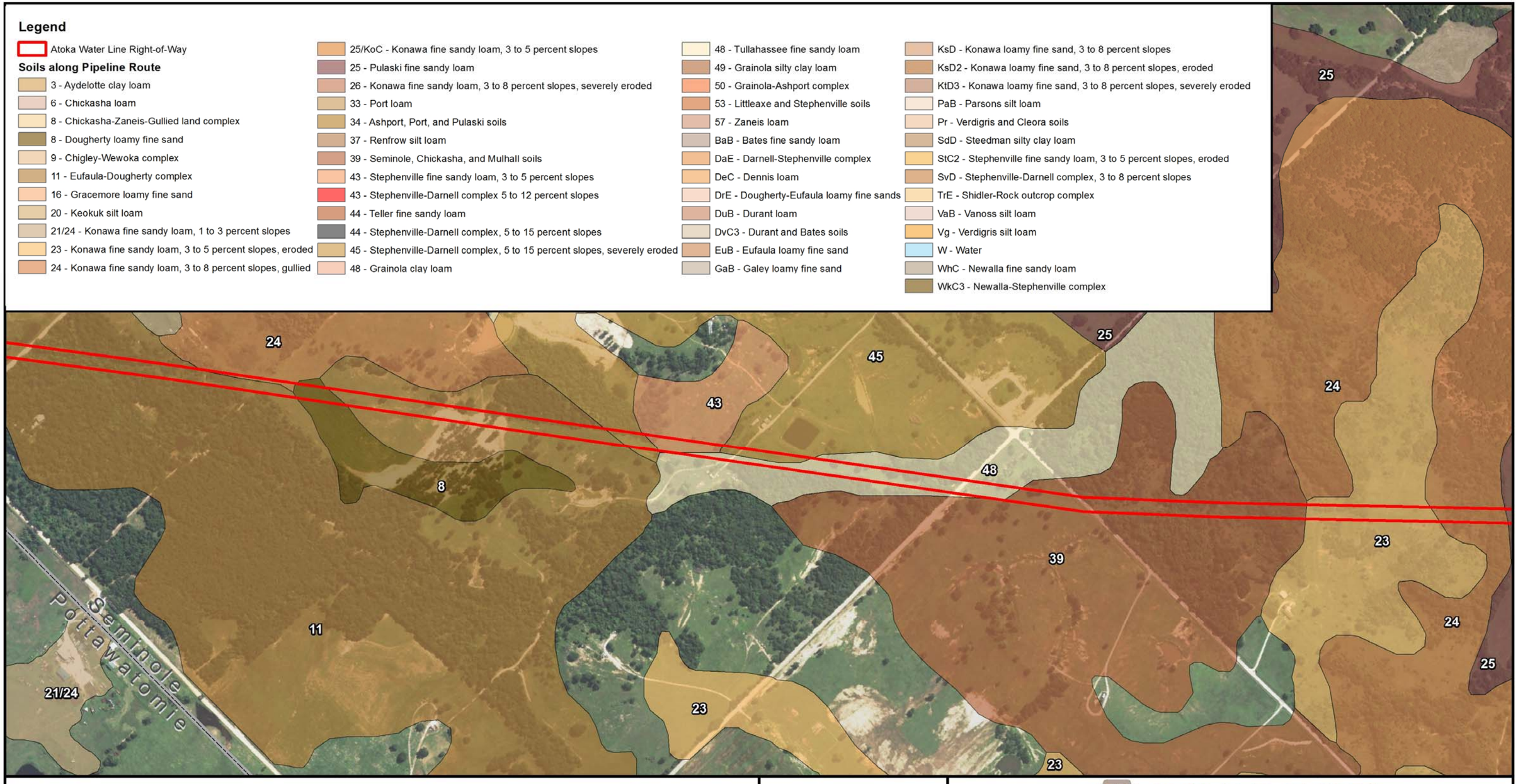
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 3 - Aydelotte clay loam
- 6 - Chickasha loam
- 8 - Chickasha-Zaneis-Gullied land complex
- 8 - Dougherty loamy fine sand
- 9 - Chigley-Wewoka complex
- 11 - Eufaula-Dougherty complex
- 16 - Gracemore loamy fine sand
- 20 - Keokuk silt loam
- 21/24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 23 - Konawa fine sandy loam, 3 to 5 percent slopes, eroded
- 24 - Konawa fine sandy loam, 3 to 8 percent slopes, gullied
- 25/KoC - Konawa fine sandy loam, 3 to 5 percent slopes
- 25 - Pulaski fine sandy loam
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 33 - Port loam
- 34 - Ashport, Port, and Pulaski soils
- 37 - Renfrow silt loam
- 39 - Seminole, Chickasha, and Mulhall soils
- 43 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex 5 to 12 percent slopes
- 44 - Teller fine sandy loam
- 44 - Stephenville-Darnell complex, 5 to 15 percent slopes
- 45 - Stephenville-Darnell complex, 5 to 15 percent slopes, severely eroded
- 48 - Grainola clay loam
- 48 - Tullahassee fine sandy loam
- 49 - Grainola silty clay loam
- 50 - Grainola-Ashport complex
- 53 - Littleaxe and Stephenville soils
- 57 - Zaneis loam
- BaB - Bates fine sandy loam
- DaE - Darnell-Stephenville complex
- DeC - Dennis loam
- DrE - Dougherty-Eufaula loamy fine sands
- DuB - Durant loam
- DvC3 - Durant and Bates soils
- EuB - Eufaula loamy fine sand
- GaB - Galey loamy fine sand
- KsD - Konawa loamy fine sand, 3 to 8 percent slopes
- KsD2 - Konawa loamy fine sand, 3 to 8 percent slopes, eroded
- KtD3 - Konawa loamy fine sand, 3 to 8 percent slopes, severely eroded
- PaB - Parsons silt loam
- Pr - Verdigris and Cleora soils
- SdD - Steedman silty clay loam
- StC2 - Stephenville fine sandy loam, 3 to 5 percent slopes, eroded
- SvD - Stephenville-Darnell complex, 3 to 8 percent slopes
- TrE - Shidler-Rock outcrop complex
- VaB - Vanoss silt loam
- Vg - Verdigris silt loam
- W - Water
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 11, 10 & 3, T5N R5E; Section 34, T6N R5E
Seminole County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.8: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Seminole County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 21, 2016

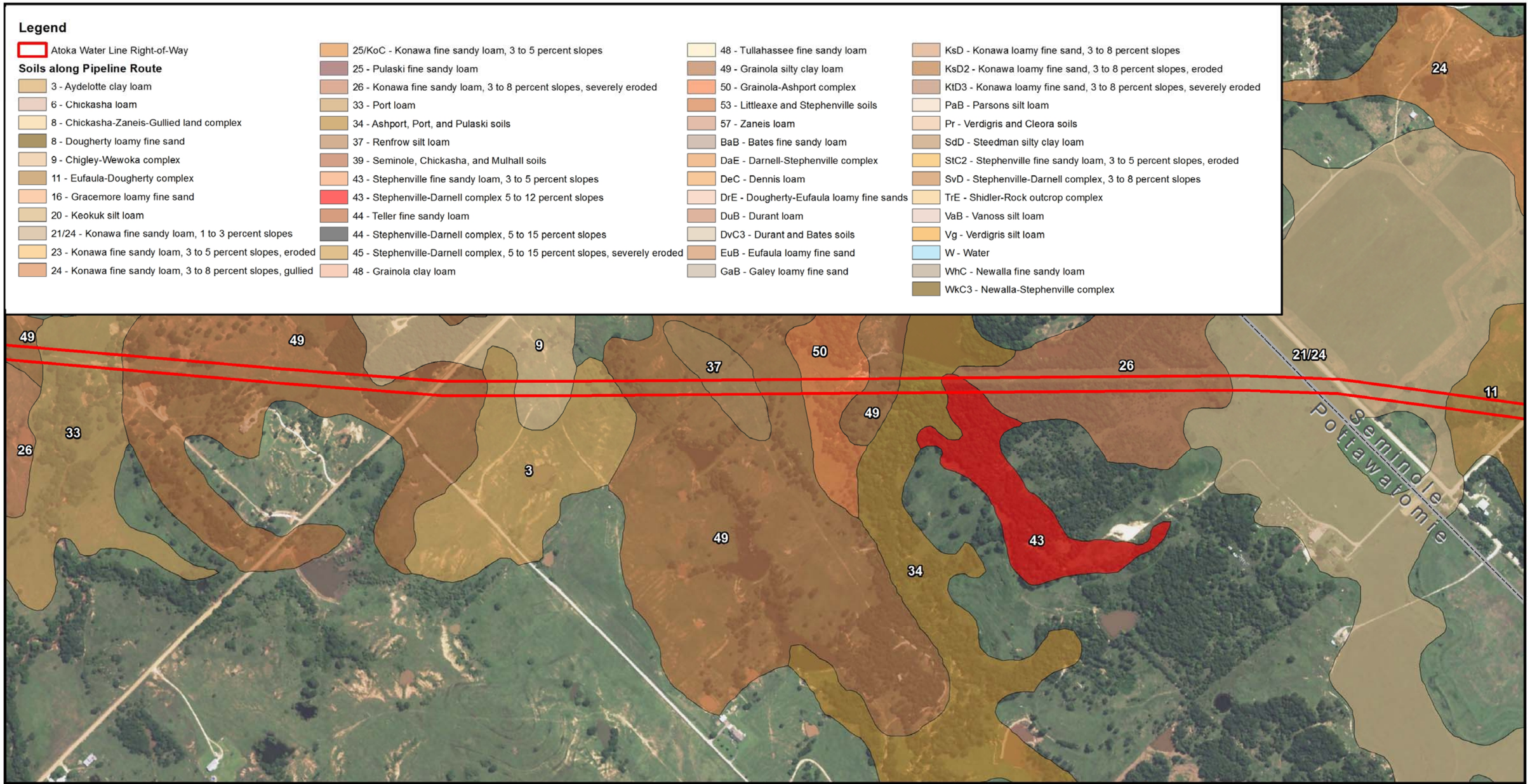
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 3 - Aydelotte clay loam
- 6 - Chickasha loam
- 8 - Chickasha-Zaneis-Gullied land complex
- 8 - Dougherty loamy fine sand
- 9 - Chigley-Wewoka complex
- 11 - Eufaula-Dougherty complex
- 16 - Gracemore loamy fine sand
- 20 - Keokuk silt loam
- 21/24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 23 - Konawa fine sandy loam, 3 to 5 percent slopes, eroded
- 24 - Konawa fine sandy loam, 3 to 8 percent slopes, gullied
- 25/KoC - Konawa fine sandy loam, 3 to 5 percent slopes
- 25 - Pulaski fine sandy loam
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 33 - Port loam
- 34 - Ashport, Port, and Pulaski soils
- 37 - Renfrow silt loam
- 39 - Seminole, Chickasha, and Mulhall soils
- 43 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex 5 to 12 percent slopes
- 44 - Teller fine sandy loam
- 44 - Stephenville-Darnell complex, 5 to 15 percent slopes
- 45 - Stephenville-Darnell complex, 5 to 15 percent slopes, severely eroded
- 48 - Grainola clay loam
- 48 - Tullahassee fine sandy loam
- 49 - Grainola silty clay loam
- 50 - Grainola-Ashport complex
- 53 - Littleaxe and Stephenville soils
- 57 - Zaneis loam
- BaB - Bates fine sandy loam
- DaE - Darnell-Stephenville complex
- DeC - Dennis loam
- DrE - Dougherty-Eufaula loamy fine sands
- DuB - Durant loam
- DvC3 - Durant and Bates soils
- EuB - Eufaula loamy fine sand
- GaB - Galey loamy fine sand
- KsD - Konawa loamy fine sand, 3 to 8 percent slopes
- KsD2 - Konawa loamy fine sand, 3 to 8 percent slopes, eroded
- KtD3 - Konawa loamy fine sand, 3 to 8 percent slopes, severely eroded
- PaB - Parsons silt loam
- Pr - Verdigris and Cleora soils
- SdD - Steedman silty clay loam
- StC2 - Stephenville fine sandy loam, 3 to 5 percent slopes, eroded
- SvD - Stephenville-Darnell complex, 3 to 8 percent slopes
- TrE - Shidler-Rock outcrop complex
- VaB - Vanoss silt loam
- Vg - Verdigris silt loam
- W - Water
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 34, 33, 28 & 29, T6N R5E
Seminole and Pottawatomie Counties, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.9: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Seminole and Pottawatomie Counties, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 21, 2016

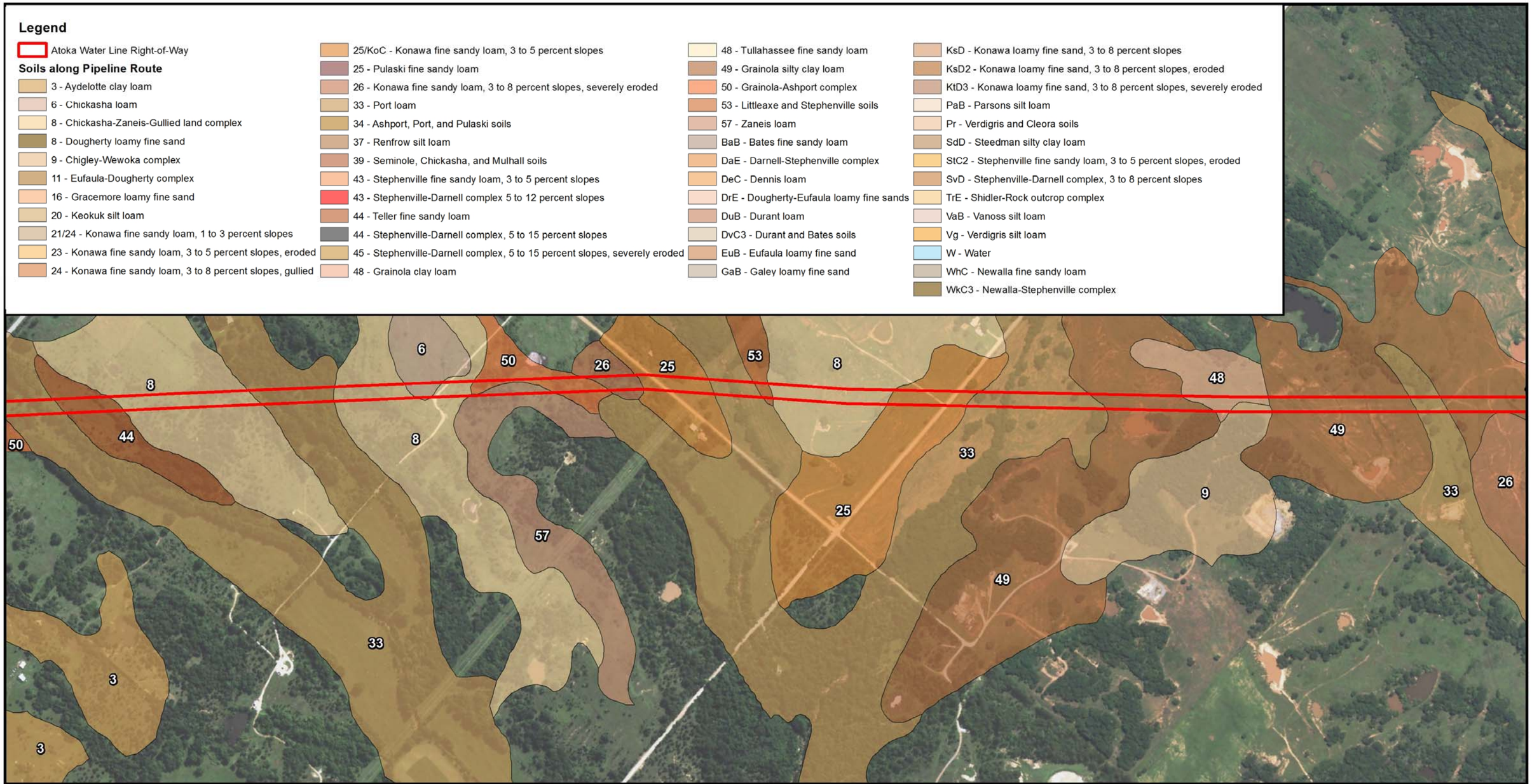
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 3 - Aydelotte clay loam
- 6 - Chickasha loam
- 8 - Chickasha-Zaneis-Gullied land complex
- 8 - Dougherty loamy fine sand
- 9 - Chigley-Wewoka complex
- 11 - Eufaula-Dougherty complex
- 16 - Gracemore loamy fine sand
- 20 - Keokuk silt loam
- 21/24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 23 - Konawa fine sandy loam, 3 to 5 percent slopes, eroded
- 24 - Konawa fine sandy loam, 3 to 8 percent slopes, gullied
- 25/KoC - Konawa fine sandy loam, 3 to 5 percent slopes
- 25 - Pulaski fine sandy loam
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 33 - Port loam
- 34 - Ashport, Port, and Pulaski soils
- 37 - Renfrow silt loam
- 39 - Seminole, Chickasha, and Mulhall soils
- 43 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex 5 to 12 percent slopes
- 44 - Teller fine sandy loam
- 44 - Stephenville-Darnell complex, 5 to 15 percent slopes
- 45 - Stephenville-Darnell complex, 5 to 15 percent slopes, severely eroded
- 48 - Grainola clay loam
- 48 - Tullahassee fine sandy loam
- 49 - Grainola silty clay loam
- 50 - Grainola-Ashport complex
- 53 - Littleaxe and Stephenville soils
- 57 - Zaneis loam
- BaB - Bates fine sandy loam
- DaE - Darnell-Stephenville complex
- DeC - Dennis loam
- DrE - Dougherty-Eufaula loamy fine sands
- DuB - Durant loam
- DvC3 - Durant and Bates soils
- EuB - Eufaula loamy fine sand
- GaB - Galey loamy fine sand
- KsD - Konawa loamy fine sand, 3 to 8 percent slopes
- KsD2 - Konawa loamy fine sand, 3 to 8 percent slopes, eroded
- KtD3 - Konawa loamy fine sand, 3 to 8 percent slopes, severely eroded
- PaB - Parsons silt loam
- Pr - Verdigris and Cleora soils
- SdD - Steedman silty clay loam
- StC2 - Stephenville fine sandy loam, 3 to 5 percent slopes, eroded
- SvD - Stephenville-Darnell complex, 3 to 8 percent slopes
- TrE - Shidler-Rock outcrop complex
- VaB - Vanoss silt loam
- Vg - Verdigris silt loam
- W - Water
- WhC - Newalla fine sandy loam
- WkC3 - Newalla-Stephenville complex



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 29, 20 & 19, T6N R5E
Pottawatomie County, Oklahoma

N E W S

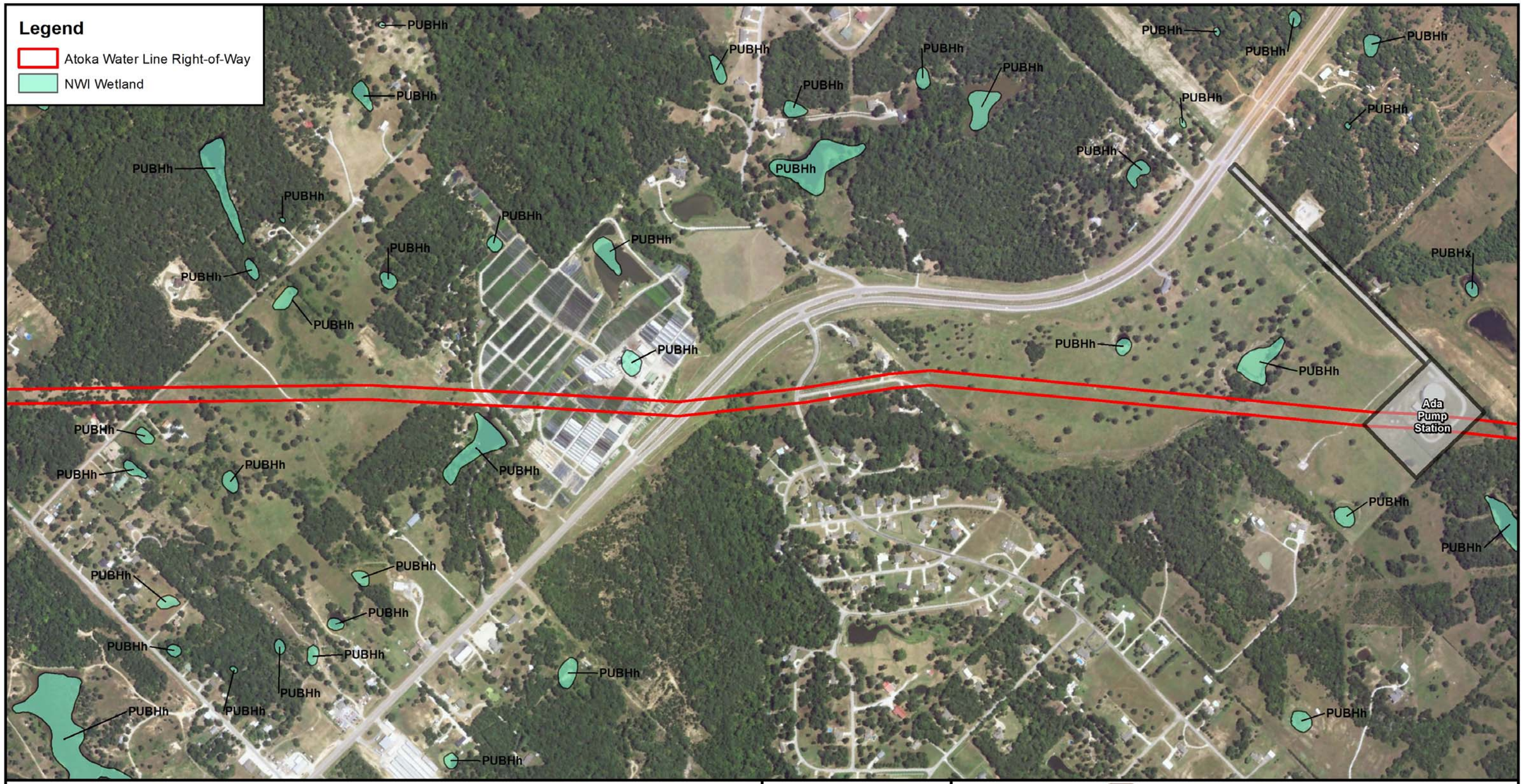
1:8,000

ENERCON

Figure 4.10: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie County, Oklahoma; 2015 USDA NAIP

Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 32, 31 & 30, T4N R7E
Pontotoc County, Oklahoma

1:8,000

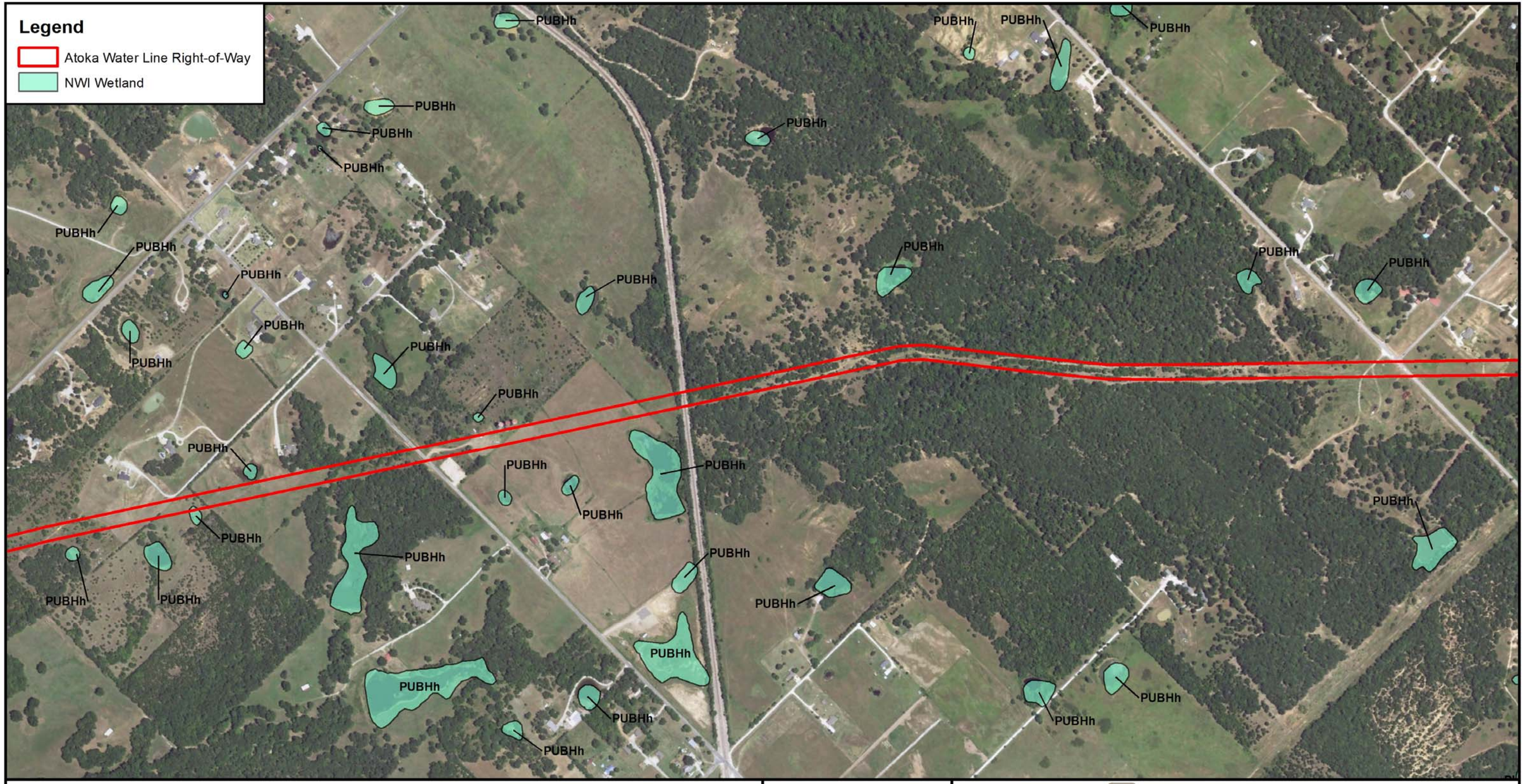
ENERCON

Figure 5.1: NWI Map

Source: US Fish and Wildlife Service - NWI Francis, OK Quadrangle;
2015 USDA NAIP - Pontotoc County, Oklahoma

Prepared by: F. Woolridge; July 21, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Section 30, T4N R7E; Sections 25, 24 & 23, T4N R6E
Pontotoc County, Oklahoma

N E W S

1:8,000

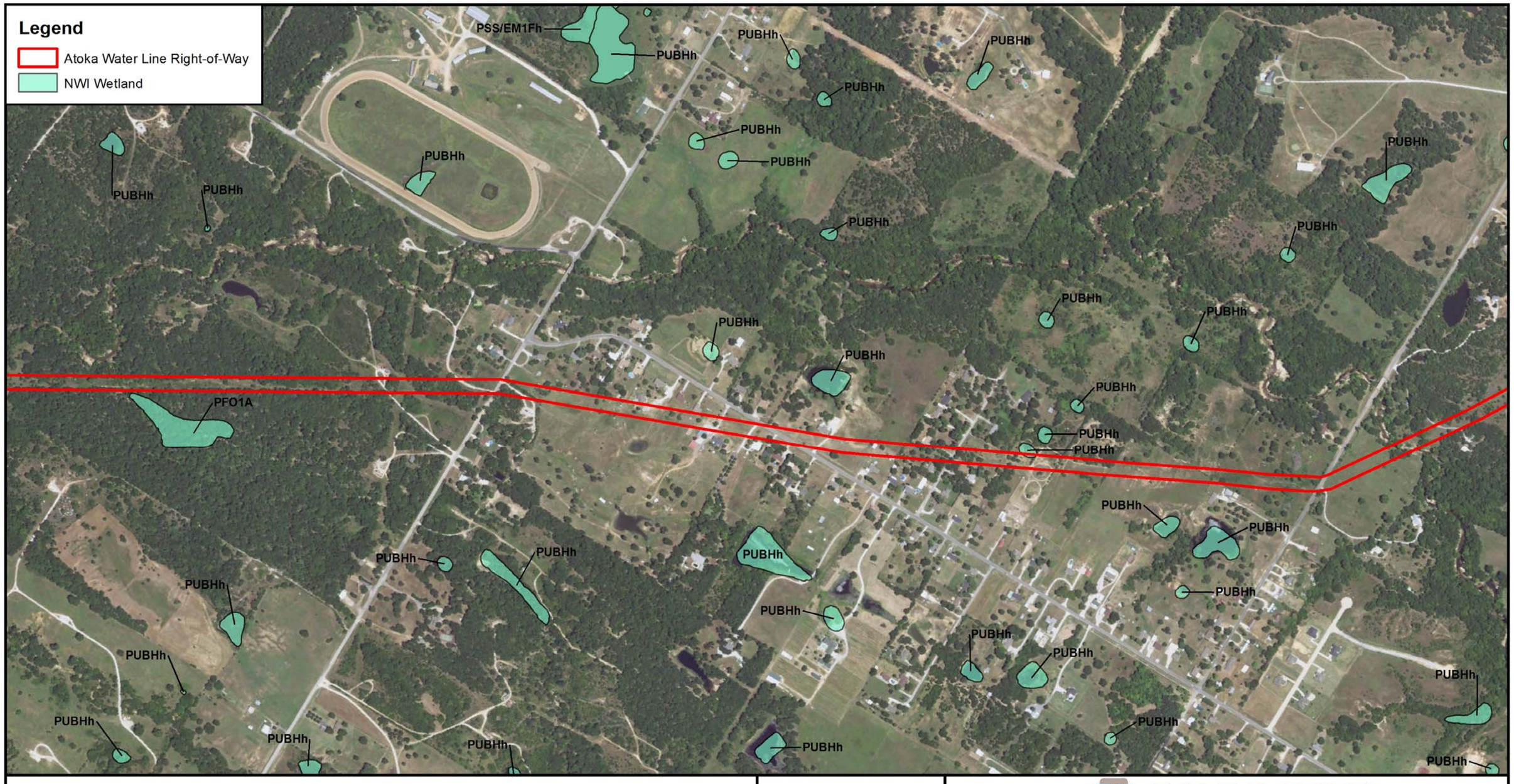
ENERCON

Figure 5.2: NWI Map

Source: US Fish and Wildlife Service - NWI Francis and Ada, OK Quadrangles;
2015 USDA NAIP - Pontotoc County, Oklahoma

Prepared by: F. Woolridge; July 22, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 23, 14, 15 & 10, T4N R6E
Pontotoc County, Oklahoma

1:8,000

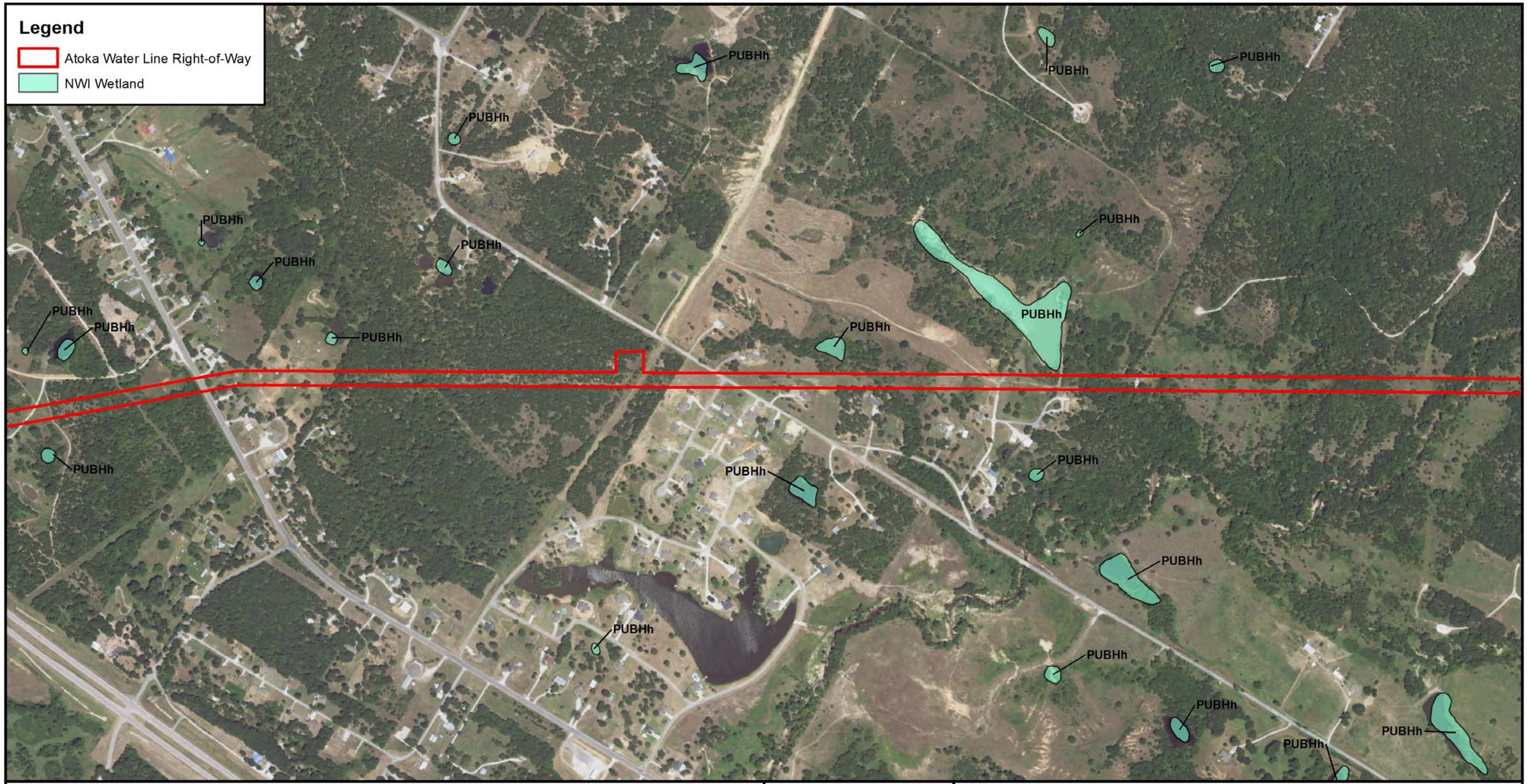
ENERCON

Figure 5.3: NWI Map

Source: US Fish and Wildlife Service - NWI Ada, OK Quadrangle;
2015 USDA NAIP - Pontotoc County, Oklahoma

Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

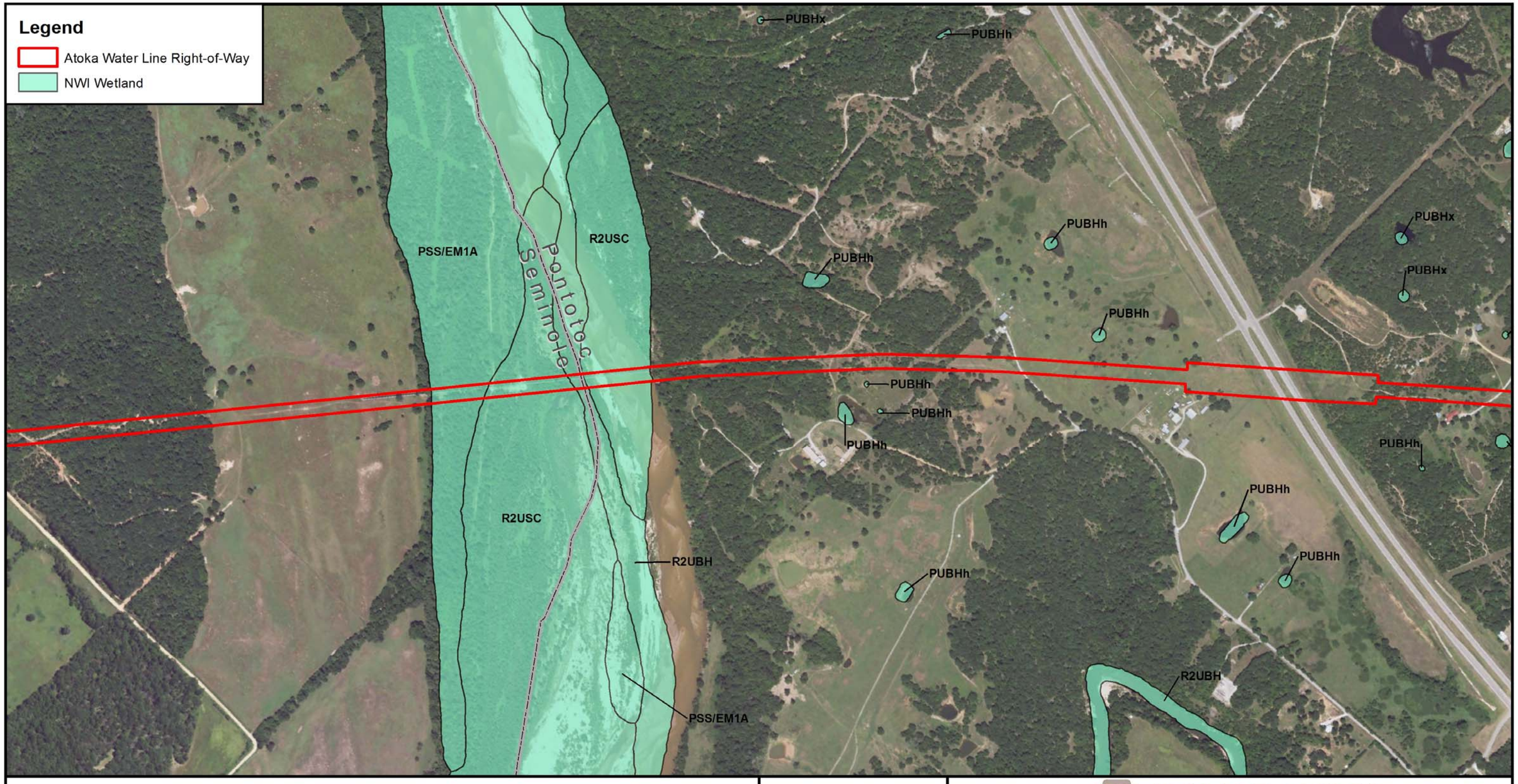
Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 10, 3 & 4, T4N R6E; Section 33, T5N R6E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 5.4: NWI Map
Source: US Fish and Wildlife Service - NWI Ada, OK Quadrangle;
2015 USDA NAIP - Pontotoc County, Oklahoma
Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 33, 32 & 29, T5N R6E
Pontotoc and Seminole Counties, Oklahoma

N E W S

1:8,000

ENERCON

Figure 5.5: NWI Map

Source: US Fish and Wildlife Service - NWI Ada and Vamoosa, OK Quadrangles;
2015 USDA NAIP - Pontotoc and Seminole Counties, Oklahoma

Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 29, 30 & 19, T5N R6E; Sections 24 & 13, T5N R5E
Seminole County, Oklahoma

N E W S

1:8,000

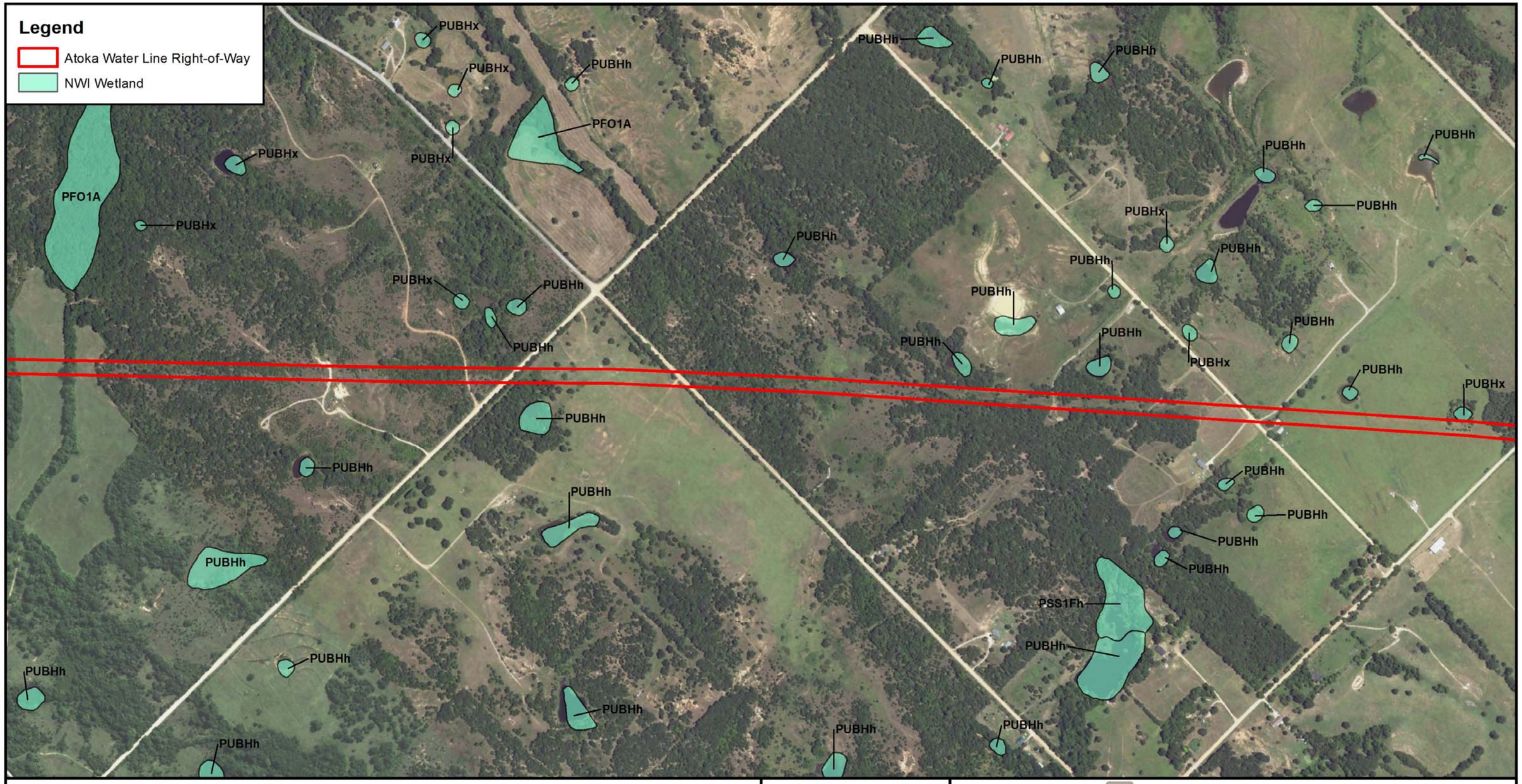
ENERCON

Figure 5.6: NWI Map

Source: US Fish and Wildlife Service - NWI Vamoosa, OK Quadrangle;
2015 USDA NAIP - Seminole County, Oklahoma

Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 13, 14 & 11, T5N R5E
Seminole County, Oklahoma

1:8,000

ENERCON

Figure 5.7: NWI Map

Source: US Fish and Wildlife Service - NWI Vamoosa and Konawa, OK Quadrangles;
2015 USDA NAIP - Seminole County, Oklahoma

Prepared by: F. Woolridge; July 14, 2016

Feet
0 600 1,200 2,400

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 11, 10 & 3, T5N R5E; Section 34, T6N R5E
Seminole County, Oklahoma

1:8,000

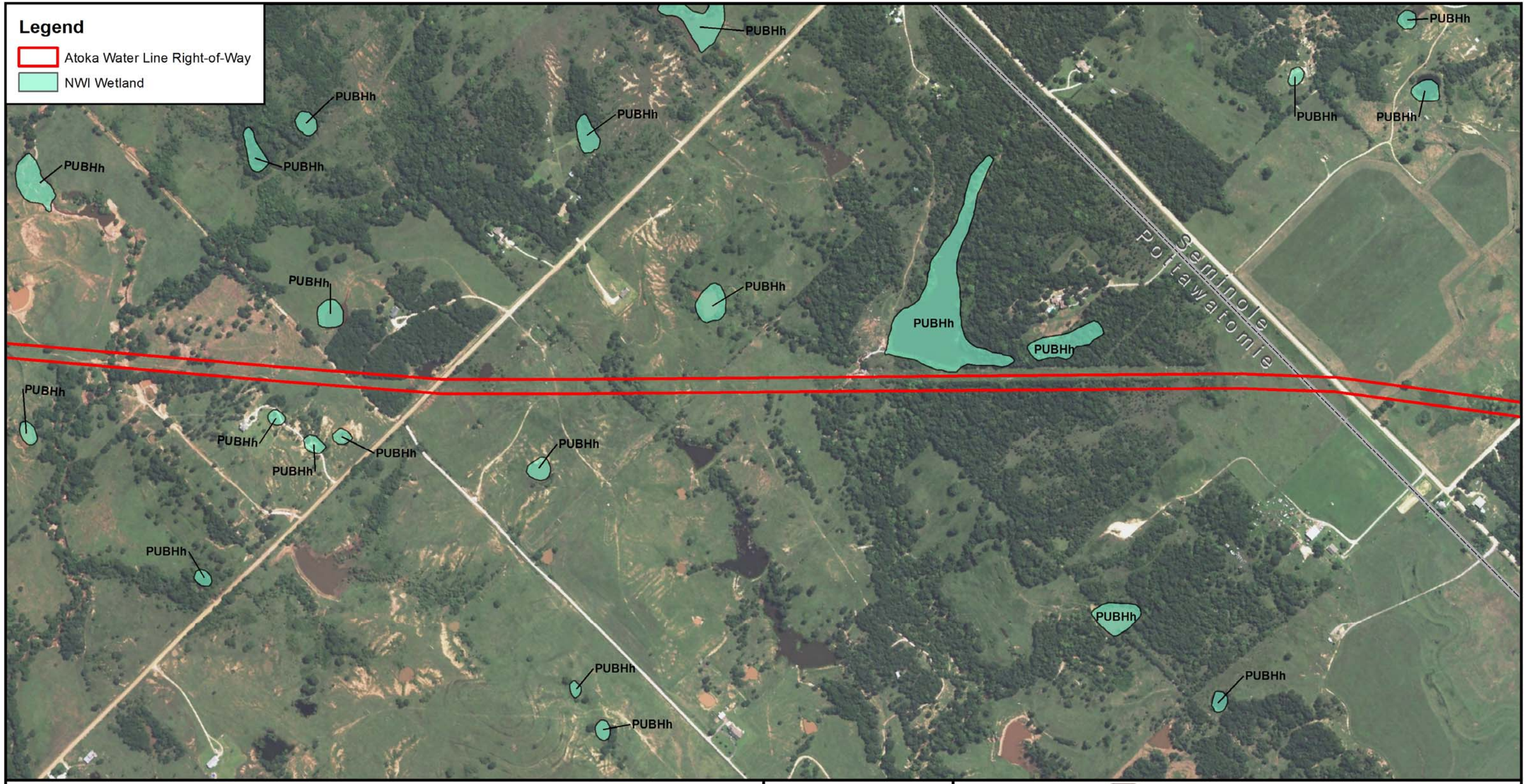
ENERCON

Figure 5.8: NWI Map

Source: US Fish and Wildlife Service - NWI Konawa, OK Quadrangle;
2015 USDA NAIP - Seminole County, Oklahoma

Prepared by: F. Woolridge; July 14, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 34, 33, 28 & 29, T6N R5E
Seminole and Pottawatomie Counties, Oklahoma

1:8,000

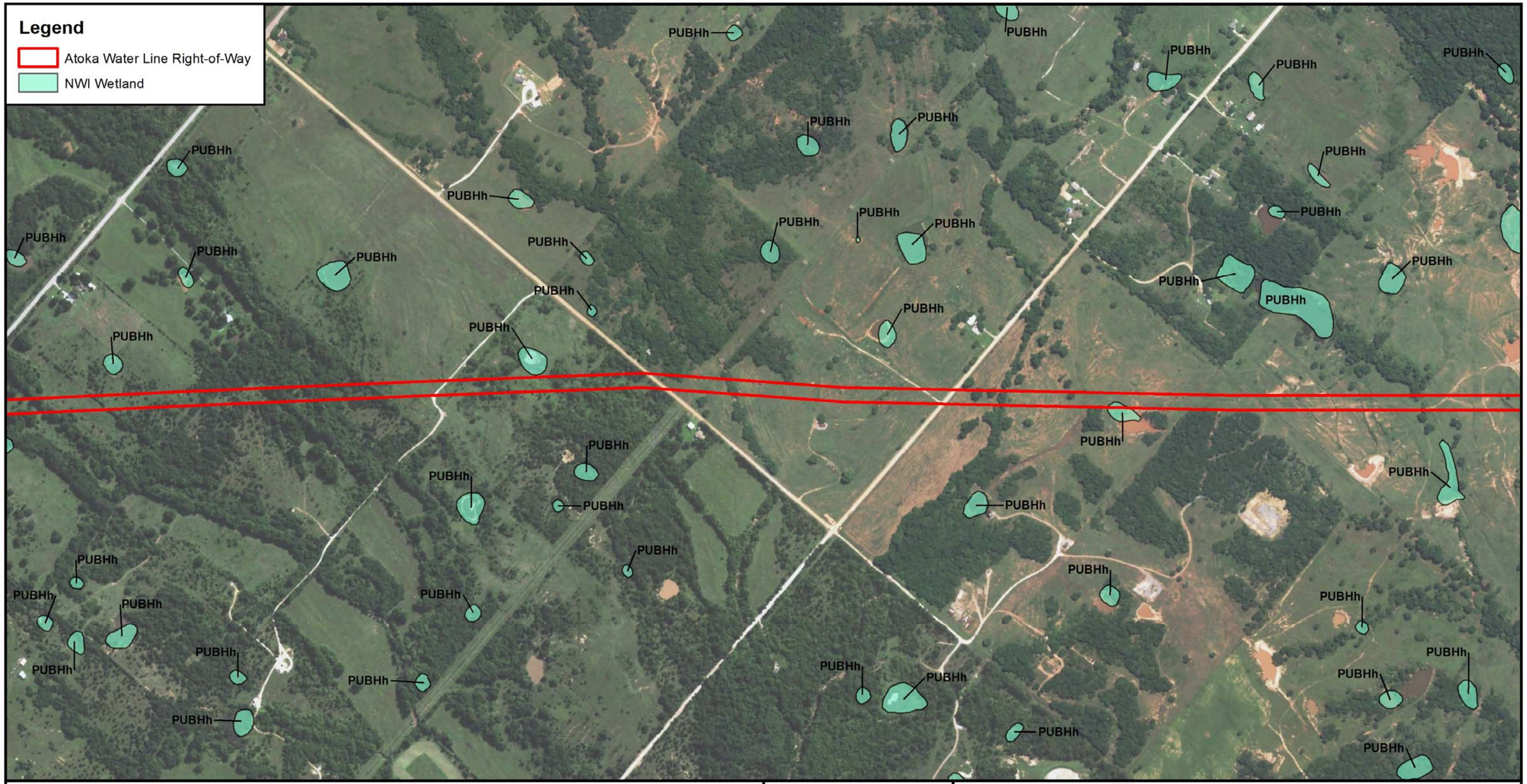
ENERCON

Figure 5.9: NWI Map

Source: US Fish and Wildlife Service - NWI Konawa, OK Quadrangle;
2015 USDA NAIP - Seminole and Pottawatomie Counties, Oklahoma

Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 29, 20 & 19, T6N R5E
Pottawatomie County, Oklahoma

1:8,000

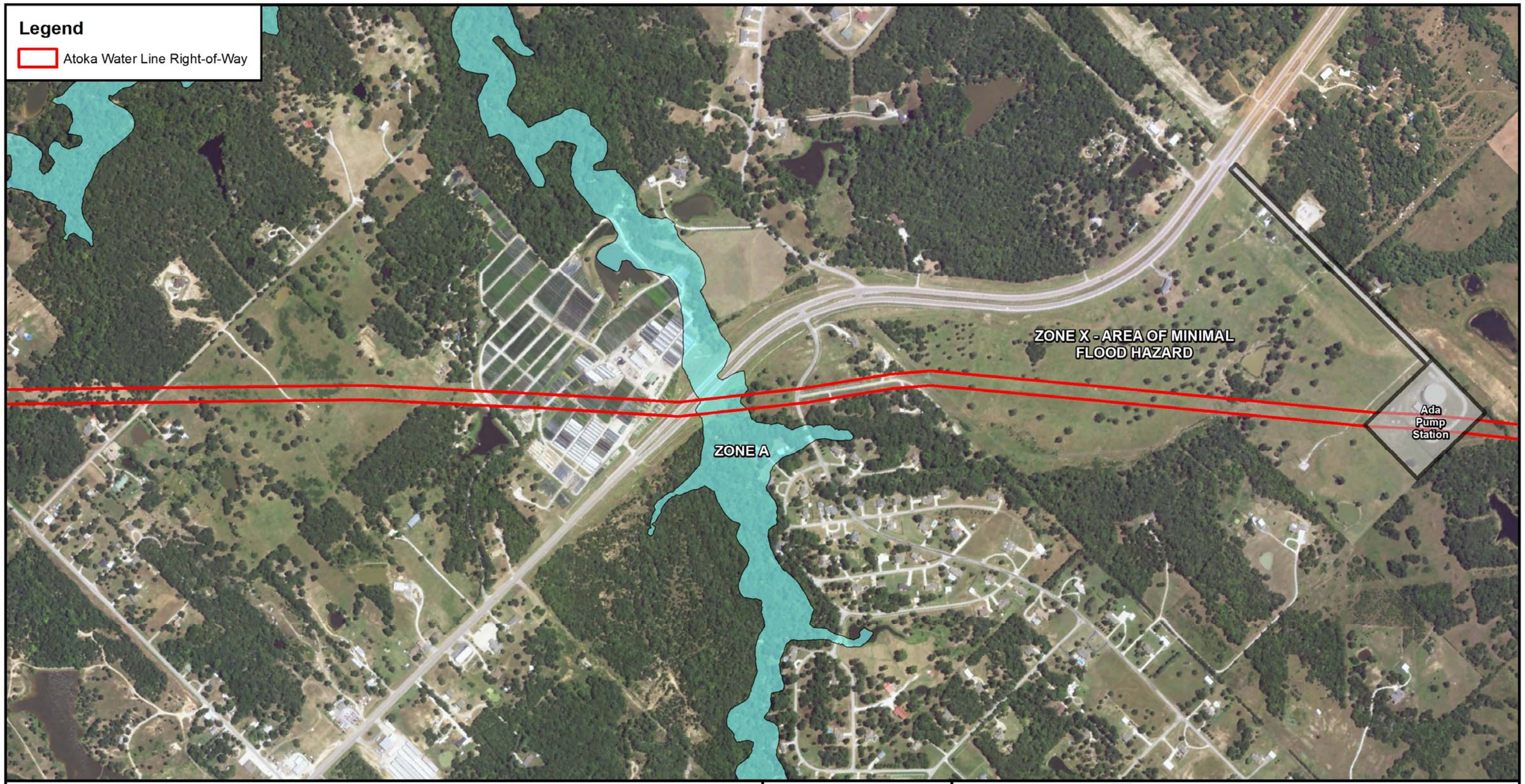
ENERCON

Figure 5.10: NWI Map

Source: US Fish and Wildlife Service - NWI Konawa, OK Quadrangle;
2015 USDA NAIP - Pottawatomie County, Oklahoma

Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 32, 31 & 30, T4N R7E
Pontotoc County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 6.1: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40123C0225D - July 17, 2012;
2015 USDA NAIP - Pontotoc County, Oklahoma
Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

ZONE A

ZONE X - AREA OF MINIMAL FLOOD HAZARD

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Section 30, T4N R7E; Sections 25, 24 & 23, T4N R6E
Pontotoc County, Oklahoma

N E W S

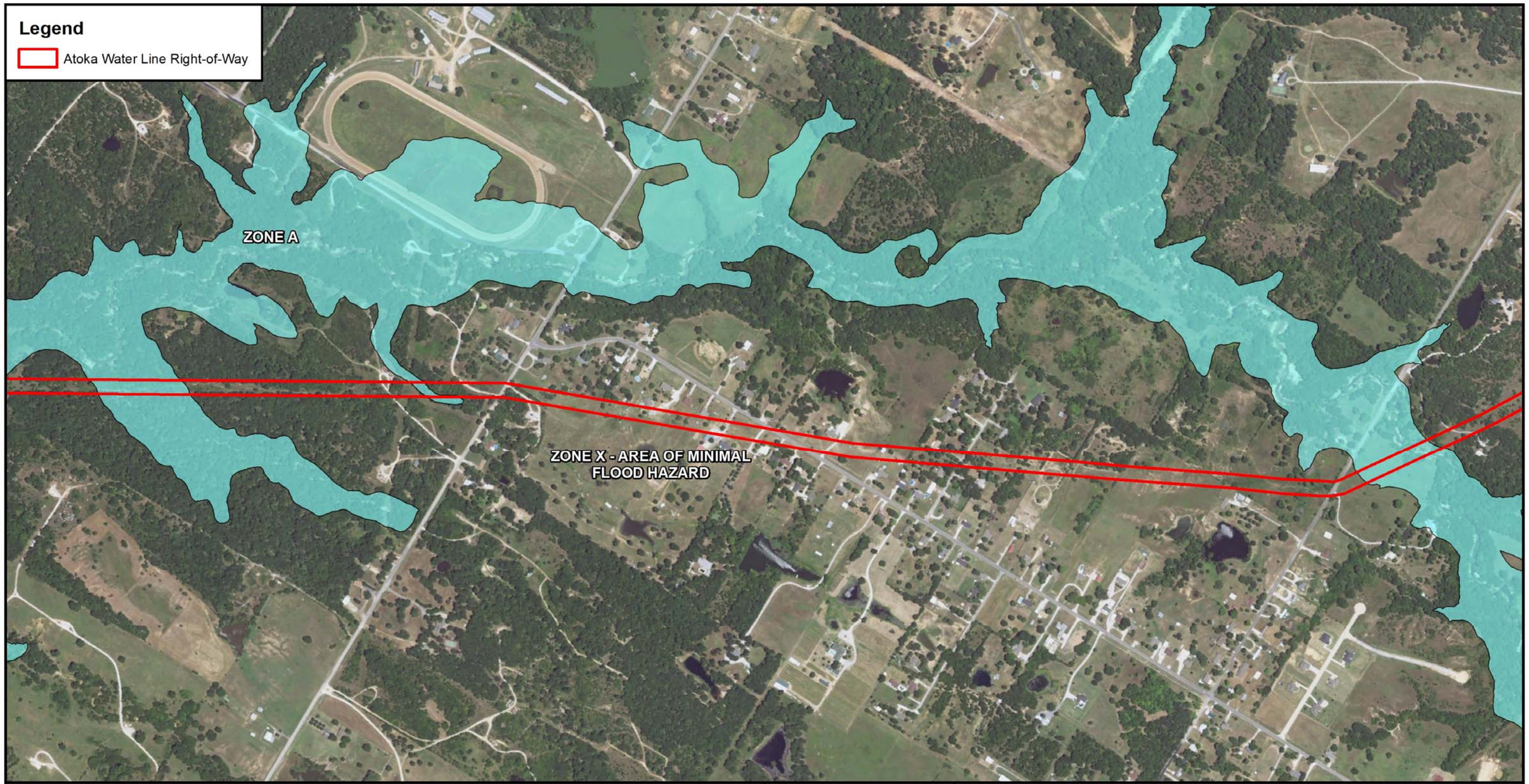
1:8,000

ENERCON

Figure 6.2: Flood Insurance Rate Map

Source: Federal Emergency Management Agency
Map #40123C0225D & #40123C0195D - July 17, 2012;
2015 USDA NAIP - Pontotoc County, Oklahoma
Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

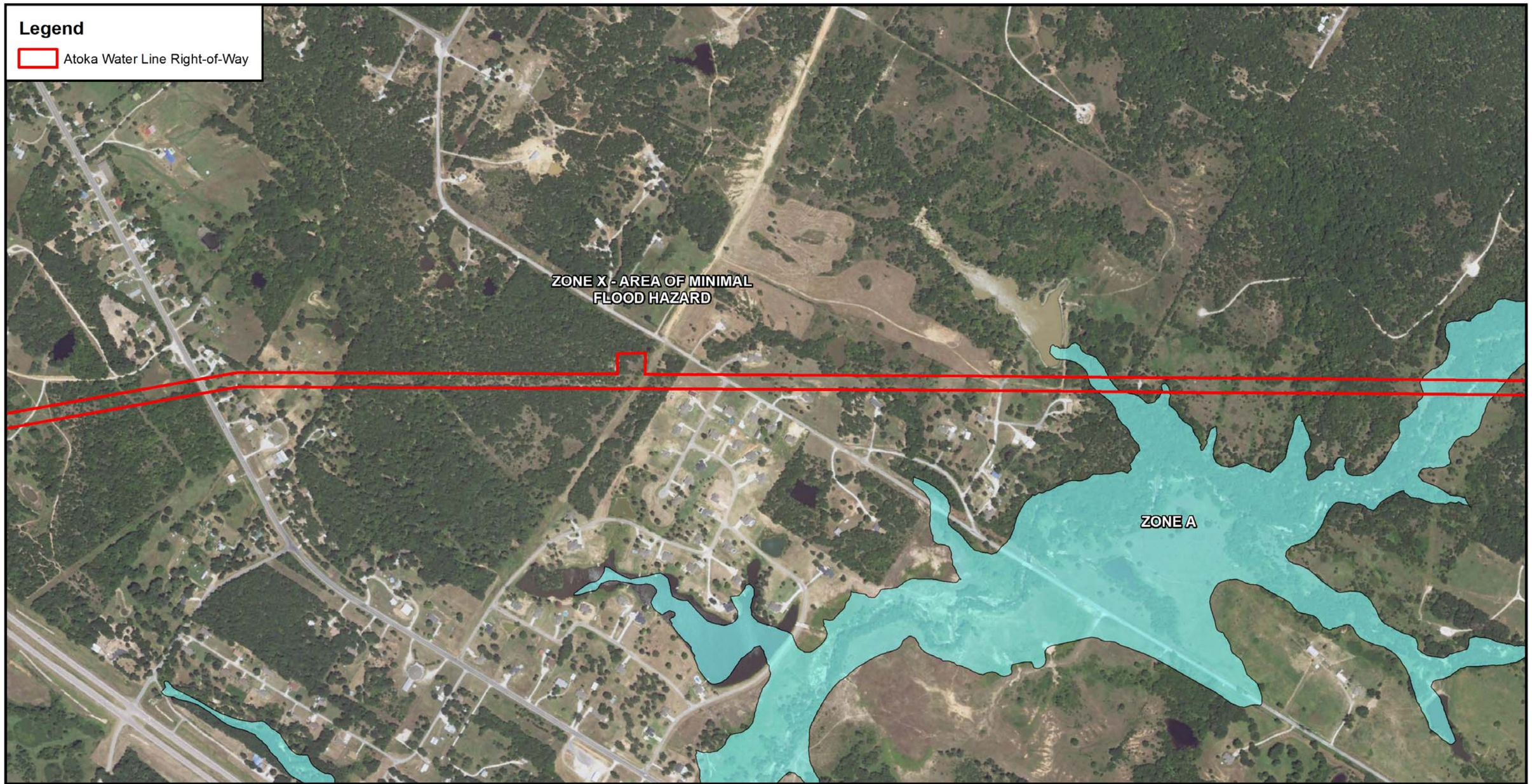
Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 23, 14, 15 & 10, T4N R6E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 6.3: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40123C0195D & #40123C0185D - July 17, 2012;
2015 USDA NAIP - Pontotoc County, Oklahoma
Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

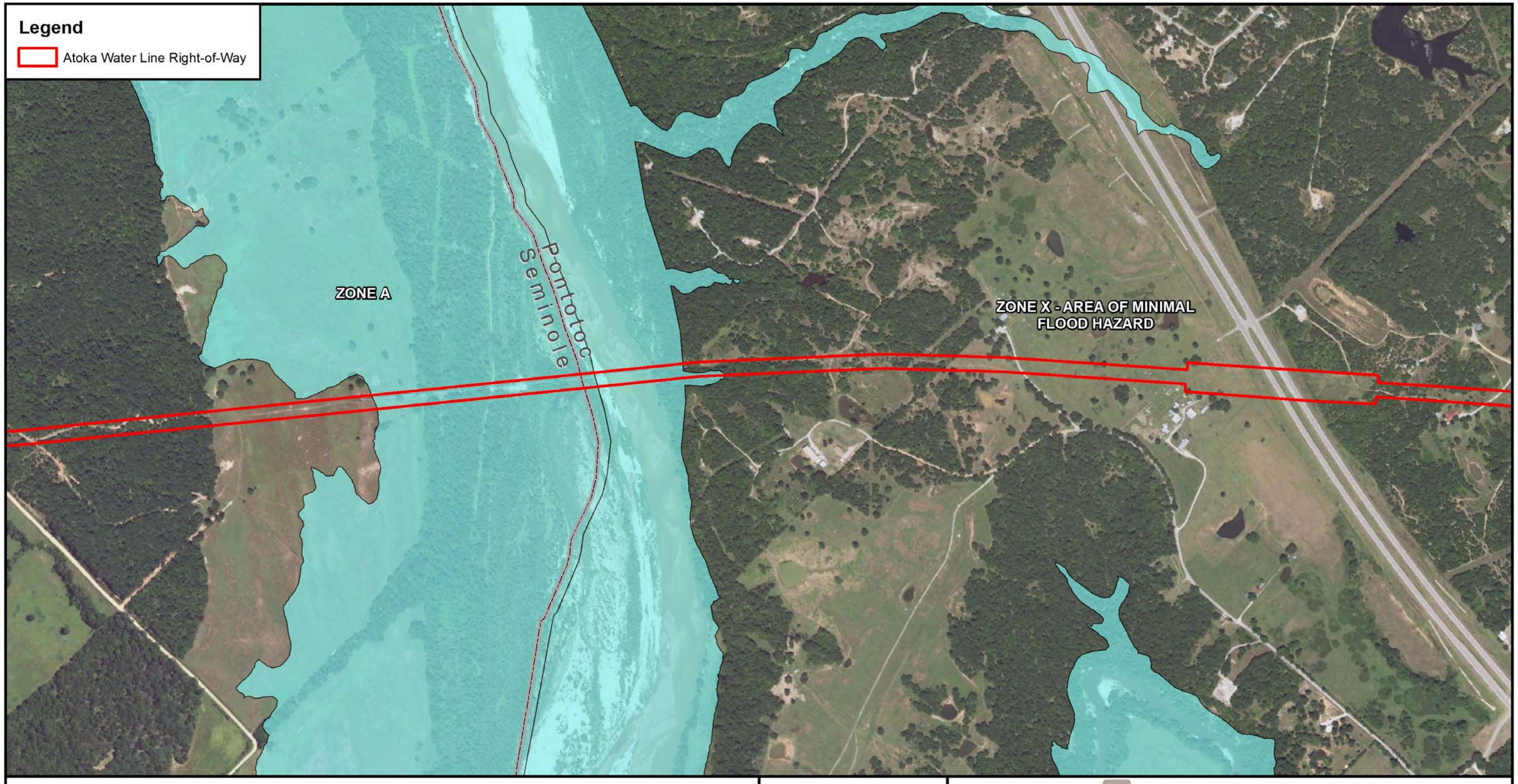
Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 10, 3 & 4, T4N R6E; Section 33, T5N R6E
Pontotoc County, Oklahoma

1:8,000

ENERCON

Figure 6.4: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40123C0185D - July 17, 2012;
2015 USDA NAIP - Pontotoc County, Oklahoma
Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 33, 32 & 29, T5N R6E
Pontotoc and Seminole Counties, Oklahoma

1:8,000

ENERCON

Figure 6.5: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40123C0185D & #40123C0180D - July 17, 2012; #40133C0450E - July 18, 2011;
2015 USDA NAIP - Pontotoc and Seminole Counties, Oklahoma
Prepared by: F. Woolridge; July 21, 2016

Feet
0 600 1,200 2,400

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 29, 30 & 19, T5N R6E; Sections 24 & 13, T5N R5E
Seminole County, Oklahoma

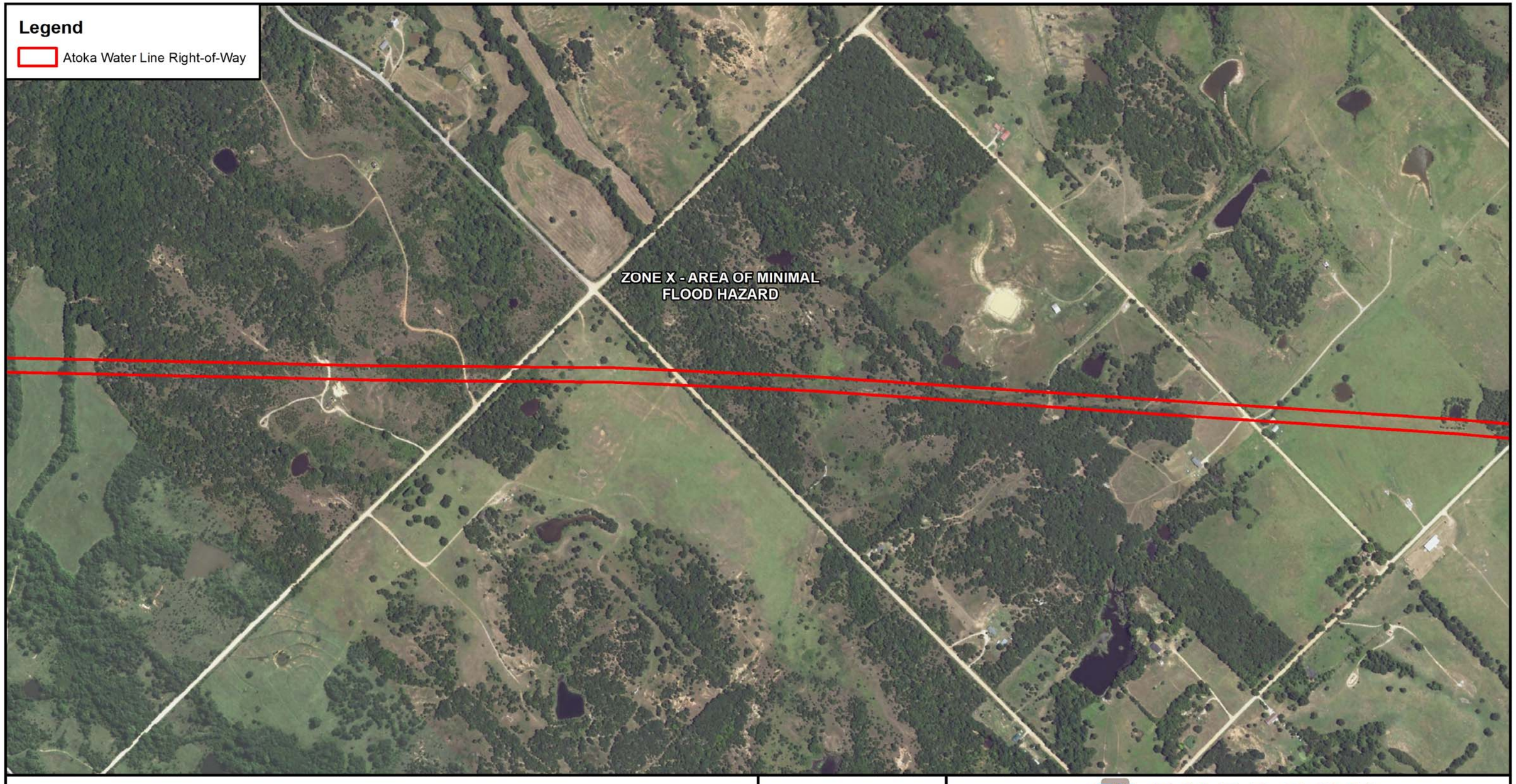
N E W S

1:8,000

ENERCON

Figure 6.6: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40133C0450E - July 18, 2011;
2015 USDA NAIP - Seminole County, Oklahoma
Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 13, 14 & 11, T5N R5E
Seminole County, Oklahoma

1:8,000

ENERCON

Figure 6.7: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40133C0450E and #40133C0425E - July 18, 2011;
2015 USDA NAIP - Seminole County, Oklahoma
Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 11, 10 & 3, T5N R5E; Section 34, T6N R5E
Seminole County, Oklahoma

1:8,000

ENERCON

Figure 6.8: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40133C0425E - July 18, 2011;
2015 USDA NAIP - Seminole County, Oklahoma
Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 34, 33, 28 & 29, T6N R5E
Seminole and Pottawatomie Counties, Oklahoma

N E S W

1:8,000

ENERCON

Figure 6.9: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40133C0425E - July 18, 2011; #40125C0550H - September 3, 2010;
2015 USDA NAIP - Seminole and Pottawatomie Counties, Oklahoma
Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station
Sections 29, 20 & 19, T6N R5E
Pottawatomie County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 6.10: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40125C0550H - September 3, 2010;
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: F. Woolridge; July 21, 2016

0 600 1,200 2,400 Feet

Table 1: Soils Series within the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc, Seminole, and Pottawatomie Counties, Oklahoma.

Table 1: Soils Series within the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc and Pottawatomie Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
PONTOTOC COUNTY					
Bates fine sandy loam	BaB	1 to 3	Well drained	Non-hydric	Interfluves and hillslopes, moderately high water capacity
Bates fine sandy loam	BaC	3 to 5	Well drained	Non-hydric	Interfluves and hillslopes, moderately high water capacity
Darnell-Stephenville complex	DaE	5 to 20	Well drained	Non-hydric	Summits and shoulders of low hills, very low to moderately high water capacity
Dennis loam	DeB	1 to 3	Somewhat poorly drained	Non-hydric	Interfluves and hillslopes, moderately low to moderately high water capacity
Dennis loam	DeC	3 to 5	Somewhat poorly drained	Non-hydric	Interfluves and hillslopes, moderately low to moderately high water capacity
Dennis loam, eroded	DeC2	3 to 5	Somewhat poorly drained	Non-hydric	Interfluves and hillslopes, moderately low to moderately high water capacity
Dougherty-Eufaula loamy fine sands,	DrE	8 to 20	Well drained	Non-hydric	Stabilized dunes on reworked stream terraces, moderately high to high water capacity
Durant and Bates soils, severely	DvC3	3 to 5	Moderately well drained	Non-hydric	Nearly level to sloping soils on upland flats and slightly convex broad ridges, low to moderately
Eufaula loamy fine sand	EuB	0 to 3	Somewhat excessively drained	Non-hydric	Stabilized dunes on reworked stream terraces, high to very high water capacity
Galey loamy fine sand	GaB	1 to 3	Moderately well drained	Non-hydric	Nearly level to sloping convex terraces of uplands, moderately high to high water capacity
Konawa fine sandy loam	KoC	3 to 5	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Konawa loamy fine sand	KsD	3 to8	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity

Table 1: Soils Series within the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc and Pottawatomie Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Konawa loamy fine sand, eroded	KsD2	3 to8	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Konawa loamy fine sand, severely	KtD3	3 to8	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Parsons silt loam	PaA	0 to 1	Somewhat poorly drained	Hydric	Interfluves, divides, and paleoterraces, very low to moderately low water capacity
Parsons silt loam	PaB	1 to 3	Somewhat poorly drained	Non-hydric	Interfluves, divides, and paleoterraces, very low to moderately low water capacity
Verdigris and Cleora soils, frequently	Pr	0 to 3	Well drained	Hydric	Very deep, well drained soils on floodplains
Steedman silty clay loam	SdD	3 to 8	Moderately well drained	Non-hydric	Ridge tops and slopes of uplands, very low to moderately high water capacity
Stephenville fine sandy loam, eroded	StC2	3 to 5	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately high to high water
Stephenville-Darnell complex	SvD	3 to 8	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately high water capacity
Shidler-Rock outcrop complex	TrE	5 to 30	Well drained	Non-hydric	Nearly level to sloping convex uplands, very low to low water capacity
Vanoss silt loam	VaB	1 to 3	Well drained	Non-hydric	Treads of stream terraces, moderately high to high water capacity
Verdigris silt loam, occasionally	Vg	0 to 1	Well drained	Hydric	Very deep, well drained soils on floodplains, moderately high to high water capacity
Newalla fine sandy loam	WhC	3 to 5	Moderately well drained	Non-hydric	Very gently sloping to steep summits and back slopes of uplands, very low to moderately low water capacity
Newalla-Stephenville complex,	WkC3	3 to 8	Moderately well drained	Non-hydric	Very gently sloping to steep summits and back slopes of uplands, very low to moderately

Table 1: Soils Series within the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc and Pottawatomie Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Mayes silt loam	WoA	0 to 1	Poorly drained	Non-hydric	Broad, smooth uplands, low to moderately low water capacity
Seminole County					
Dougherty loamy fine sand	8	3 to 8	Well drained	Non-hydric	Stabilized dunes on reworked stream terraces, moderately high to high water capacity
Eufaula-Dougherty complex	11	5 to 15	Somewhat excessively drained	Non-hydric	Stabilized dunes on reworked stream terraces, high to very high water capacity
Gracemore loamy fine sand, frequently flooded	16	0 to 1	Somewhat poorly drained	Hydric	Nearly level broad flood plains, high to very high water capacity
Keokuk silt loam	20	1 to 3	Well drained	Non-hydric	Nearly level flood plains, moderately high to high water capacity
Konawa fine sandy loam	21	1 to 3	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Konawa fine sandy loam, eroded	23	3 to 5	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Konawa fine sandy loam, eroded, gullied	24	3 to 8	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Pulaski fine sandy loam, occasionally flooded	25	0 to 1	Well drained	Non-hydric	Nearly level to very gently sloping floodplain soils on small tributaries, high water capacity
Seminole, Chickasha, and Mulhall soils, severely eroded	39	3 to 8	Moderately well drained	Non-hydric	Nearly level to sloping broad ridgetops and side slopes of convex hills, upland prairies, and low hills; moderately low to moderately high water table
Stephenville fine sandy loam	43	3 to 5	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately low water capacity

Table 1: Soils Series within the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc and Pottawatomie Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Stephenville-Darnell complex	44	5 to 15	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately high to high water capacity
Stephenville-Darnell complex, severely eroded	45	5 to 15	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately high water capacity
Tullahassee fine sandy loam, frequently flooded	48	0 to 1	Somewhat poorly drained	Hydric	Nearly level soils on smooth floodplains, high water capacity
Pottawatomie County					
Aydelotte loam	2	3 to 5	Well drained	Non-hydric	Very gently sloping to sloping soils on uplands, low to moderately low water capacity
Aydelotte clay loam, severely eroded	3	3 to 5	Well drained	Non-hydric	Very gently sloping to sloping soils on uplands, low to moderately low water capacity
Chickasha loam	6	1 to 3	Well drained	Non-hydric	Nearly level to sloping broad ridgetops and side slopes of convex hills, moderately high water capacity
Chickasha-Zaneis-Gullied land complex	8	3 to 8	Well drained	Non-hydric	Nearly level to sloping broad ridgetops, side slopes of convex hills, low hills; moderately high water capacity
Chigley-Wewoka complex	9	3 to 12	Moderately well drained	Non-hydric	Very gently sloping to steep uplands, moderately low to moderately high water capacity
Konawa loamy fine sand	23	3 to 8	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Konawa fine sandy loam	24	1 to 3	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity

Table 1: Soils Series within the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc and Pottawatomie Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Konawa fine sandy loam	25	3 to 5	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Konawa fine sandy loam, severely eroded	26	3 to 8	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Port loam, occasionally flooded	33	0 to 1	Well drained	Non-hydric	Nearly level to very gently sloping soils on narrow floodplains, moderately high to high water capacity
Ashport, Port, and Pulaski soils, frequently	34	0 to 1	Well drained	Non-hydric	Nearly level to gently sloping floodplains, moderately high to high water capacity
Renfrow silt loam	37	3 to 5	Well drained	Non-hydric	On summits and backslopes of low hills, very low to moderately low water capacity
Stephenville fine sandy loam	41	1 to 3	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately low water capacity
Stephenville fine sandy loam	42	3 to 5	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately low water capacity
Stephenville-Darnell complex	43	5 to 12	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately high to high water capacity
Teller fine sandy loam	44	3 to 5	Well drained	Non-hydric	Treads and risers of stream terraces, moderately high to high water capacity
Grainola clay loam	48	3 to 5	Well drained	Non-hydric	Summits and backslopes of low hills, very low to moderately high water capacity
Grainola silty clay loam	49	5 to 12	Well drained	Non-hydric	Summits and backslopes of low hills, very low to moderately high water capacity
Grainola-Ashport complex	50	0 to 8	Well drained	Non-hydric	Summits, backslopes of low hills, and floodplains, very low to moderately high water capacity
Littleaxe fine sandy loam	51	1 to 3	Well drained	Non-hydric	Very gently sloping or gently sloping upland ridge crests, moderately low water capacity

Table 1: Soils Series within the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc and Pottawatomie Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Littleaxe fine sandy loam	52	3 to 5	Well drained	Non-hydric	Very gently sloping or gently sloping upland ridge crests, moderately low water capacity
Littleaxe and Stephenville soils, severely	53	3 to 8	Well drained	Non-hydric	Very gently sloping or gently sloping upland ridge crests, moderately low water capacity

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc, Seminole, and Pottawatomie Counties, Oklahoma.

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc, Seminole, and Pottawatomie Counties, Oklahoma.[2]

FEATURE NAME	GENERAL TYPE	COWARDIN CLASSIFICATION	PREDICTED JURISDICTIONAL STATUS*	AREA (ACRES) WITHIN PIPELINE ROW	PCN REQUIRED**
AD3	Emergent wetland	PEM1E	No	0.08	No
AD12	Pond	PUBAx	No	0.03	No
AD29	Pond	NA[1]	No	0.00	No
AD45	Pond	PUBA	No	<0.01	No
AD47	Emergent wetland	PEM1E	Yes	0.02	No
AD53[3]	Pond	PUBHh	TBD	0.01	TBD
POTENTIALLY JURISDICTIONAL WETLANDS TOTAL: 0.10-ACRE					
POTENTIALLY JURISDICTIONAL POND TOTAL: 0.04-ACRE					

**Jurisdictional status is subject to Corps approval; ** PCNs are required only if the Corps determines the feature is jurisdictional; 1- Feature is mapped on the USGS topographic map; however, no surface water feature was observed at the mapped location; 2- At the time of site reconnaissance, access had not been approved for tribal land in the following areas: Sections 33, 29, 28, 20, 19, and 18, Township 6 North, Range 5 East. Additional water features may be present within the pipeline ROW; 3 –A mapped feature is located within a tract of tribal land and has not been evaluated in the field, stream length is estimated based on the USGS topographic map; TBD – To be determined after access to permission to access the site has been obtained.*

Table 3: Summary of streams and drainages in the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc, Seminole, and Pottawatomie Counties, Oklahoma.

Table 3: Summary of streams and drainages in the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc, Seminole, and Pottawatomie Counties, Oklahoma.[2]

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
AD1	Ephemeral	No	No	1	139	No
AD2	Intermittent	Yes	Yes	15	100	No
AD4	Ephemeral	No	No	1	126	No
AD5	Intermittent	Yes	Yes	6	209	Yes
AD6	Intermittent	Yes	Yes	4	117	No
AD7	Ephemeral	No	No	1	107	No
AD8	Ephemeral	Yes	Yes	3	137	No
AD9	Ephemeral	No	No	1	155	No
AD10	Intermittent	Yes	Yes	3	125	No
AD11	Perennial (Little Sandy Creek)	Yes	Yes	20	171	Yes
AD13	Intermittent	Yes	Yes	6	206	No
AD14	Ephemeral	No	No	1	187	No
AD15	Intermittent	Yes	Yes	4	140	Yes
AD16	Perennial (Little Sandy Creek)	Yes	Yes	20	119	No
AD17	Intermittent	Yes	Yes	4	104	No
AD18	Ephemeral	No	No	1	108	No
AD19	Intermittent	Yes	Yes	3	122	No
AD20	Ephemeral	No	No	2	185	No
AD21	Intermittent	Yes	Yes	5	124	No
AD22	Ephemeral	No	No	1	111	No
AD23	Ephemeral	Yes	Yes	1	104	No

Table 3: Summary of streams and drainages in the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc, Seminole, and Pottawatomie Counties, Oklahoma.[2]

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
AD24	Intermittent	Yes	No	NA[1]	0	No
AD25	Intermittent	No	Yes	5	216	Yes
AD26	Perennial (Canadian River)	Yes	Yes	280	112	Yes
AD27	Ephemeral	No	No	1	159	No
AD28	Ephemeral	Yes	Yes	2	222	Yes
AD30	Intermittent	Yes	Yes	2	128	No
AD31	Intermittent	Yes	Yes	6	102	No
AD32	Ephemeral	No	No	1	103	No
AD33	Ephemeral	No	No	1	105	No
AD34	Ephemeral	No	No	2	137	No
AD35	Ephemeral	Yes	Yes	3	169	No
AD36	Ephemeral	No	No	1	36	No
AD37	Intermittent	Yes	Yes	3	111	No
AD38	Intermittent	Yes	Yes	4	106	No
AD39	Intermittent	Yes	Yes	5	104	No
AD40	Ephemeral	No	No	2	107	No
AD41	Ephemeral	Yes	Yes	3	126	No
AD42	Intermittent	Yes	Yes	4	329	Yes
AD43	Ephemeral	Yes	Yes	2	110	Yes
AD44	Ephemeral	No	No	1	190	No
AD46	Ephemeral	Yes	Yes	2	82	No
AD48	Ephemeral	No	No	2	83	No
AD49	Intermittent	Yes	Yes	4	178	Yes

Table 3: Summary of streams and drainages in the Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station in Pontotoc, Seminole, and Pottawatomie Counties, Oklahoma.[2]

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
AD50	Ephemeral	No	No	2	150	No
AD51[3]	Perennial	Yes	TBD	TBD	100	TBD
AD52[3]	Intermittent	Yes	TBD	TBD	105	TBD
AD54[3]	Intermittent	Yes	TBD	TBD	104	TBD
AD55[3]	Perennial	Yes	TBD	TBD	112	TBD
AD56[3]	Intermittent	Yes	TBD	TBD	106	TBD
AD57[3]	Intermittent	Yes	TBD	TBD	123	TBD
AD58[3]	Intermittent	Yes	TBD	TBD	147	TBD
POTENTIALLY JURISDICTIONAL STREAM TOTAL: 6,858 LINEAR FEET						

**Jurisdictional status is subject to Corps approval; ** PCNs are required only if the Corps determines the feature is jurisdictional; 1- Feature mapped on the USGS topographic map; however no bed and bank was observed within the proposed pipeline ROW; 2- At the time of site reconnaissance, access had not been approved for tribal land in the following areas: Sections 33, 29, 28, 20, 19, and 18, Township 6 North, Range 5 East. Additional water features may be present within the pipeline ROW; 3 –A mapped feature is located within a tract of tribal land and has not been evaluated in the field, stream length is estimated based on the USGS topographic map; TBD – To be determined after access to permission to access the site has been obtained.*

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pontotoc County Sampling Date: 3/23/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: ADSS1

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 2, Township 2S, Range 11E

Landform (hillslope, terrace, etc.): Depression/Pooled Area Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR N Lat: 34.78367 Long: -96.60670 Datum: NAD83

Soil Map Unit Name: Stephenville fine sandy loam, 3-5% Slopes, Eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐	
Wetland Hydrology Present?	Yes ☒	No ☐	

Remarks:

Indicators for all three wetland criteria were observed. A small ephemeral drain poorly pools in the area, causing the emergent wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Taxodium distichum*	10	☒	OBL
2.		☐	
3.		☐	
4.		☐	
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
		= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Typha latifolia*	70	☒	OBL
2. *Juncus effusus*	10	☐	OBL
3. *Eleocharis spp.*	10	☐	---
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
	90	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.		☐	
2.		☐	
		= Total Cover	

% Bare Ground in Herb Stratum 10%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: ADSS1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	2"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pontotoc County Sampling Date: 4/8/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: ADSS2

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 29, Township 5N, Range 6E

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None Slope (%): 1-2

Subregion (LRR): LRR J Lat: 34.86889 Long: -96.69204 Datum: NAD83

Soil Map Unit Name: Dougherty-Eufaula loamy fine sands, 8-20% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Indicators for only one of the three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	50	[X]	FAC
2. *Platanus occidentalis*	40	[X]	FAC
3. *Ulmus americana*	10	[ ]	FAC
4.		[ ]	
	100	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Ulmus americana*	20	[X]	FAC
2. *Celtis occidentalis*	5	[X]	FACU
3.		[ ]	
4.		[ ]	
5.		[ ]	
	25	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Equisetum hyemale*	5	[X]	FACW
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	5	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Vitis spp.*	2	[X]	---
2.		[ ]	
	2	= Total Cover	

% Bare Ground in Herb Stratum 95%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: ADSS2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 7/6	100					Sand	
7-18	10YR 3/4	100					Sand Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 4/14/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: ADSS3

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 33, Township 6N, Range 5E

Landform (hillslope, terrace, etc.): Low Area Behind Pond Dam Local relief (concave, convex, none): None Slope (%): 1-2

Subregion (LRR): LRR J Lat: 34.95027 Long: -96.78227 Datum: NAD83

Soil Map Unit Name: Ashport, Port, and Pulaski soils, 0-1% Slopes, Frequently Flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators for all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Salix nigra*	5	[X]	FACW
2. *Populus deltoides*	5	[X]	FAC
3.		[ ]	
4.		[ ]	
5.		[ ]	
	10 = Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Typha latifolia*	30	[X]	OBL
2. *Eleocharis obtusa*	30	[X]	OBL
3. *Panicum virgatum*	10	[ ]	FAC
4. *Equisetum hyemale*	5	[ ]	FACW
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	75 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 25%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: ADSS3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☒ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	2"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 4/14/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: ADSS4

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 33, Township 6N, Range 5E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 1-2

Subregion (LRR): LRR J Lat: 34.95049 Long: -96.78257 Datum: NAD83

Soil Map Unit Name: Ashport, Port, and Pulaski soils, 0-1% Slopes, Frequently Flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks:

Indicators were not observed for any of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	10	☒	FAC
2. *Juniperus virginiana*	10	☒	UPL
3.		☐	
4.		☐	
	20	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Symphoricarpos occidentalis*	30	☒	UPL
2. *Juniperus virginiana*	20	☒	UPL
3.		☐	
4.		☐	
5.		☐	
	50	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Cynodon dactylon*	40	☒	FACU
2. *Andropogon virginicus*	40	☒	FACU
3. *Panicum virgatum*	10	☐	FAC
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
	90	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Smilax bona-nox*	30	☒	FACU
2.		☐	
	30	= Total Cover	

% Bare Ground in Herb Stratum 10%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 17% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species 20	x 3 = 60
FACU species 110	x 4 = 440
UPL species 60	x 5 = 300
Column Totals: 190 (A)	800 (B)

Prevalence Index = B/A = 4.21

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: ADSS4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	5YR4/6	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed. Some pebbles were located within the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): NA
Water Table Present?	Yes ☐	No ☒	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

Site Photographs

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 4:
ADA PUMP STATION TO KONAWA PUMP STATION

Typical view of habitat types found within the proposed Atoka Water Line Section 4: Ada Pump Station to Konawa Pump Station.

Photograph 1: View of the Ada Pump Station, facing southeast.

Photograph 2: Typical view of maintained residential/commercial lawn vegetative community, facing northwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 4:
ADA PUMP STATION TO KONAWA PUMP STATION

Photograph 3: Typical view of heavily grazed mixed grass pasture habitat, facing northwest.

Representative water features within the Atoka Water Line ROW between Ada and Konawa Pump Stations

Photograph 4: View of AD3, an emergent wetland, facing northeast.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 4:
ADA PUMP STATION TO KONAWA PUMP STATION

Photograph 5: View of AD5, a mapped intermittent stream, facing south.

Photograph 6: View of AD11, a mapped perennial stream (Sandy Creek), facing north.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 4:
ADA PUMP STATION TO KONAWA PUMP STATION

Photograph 7: View of AD12, a pond excavated within an upland, facing southwest.

Photograph 8: View of AD13, a mapped intermittent stream, facing north.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 4:
ADA PUMP STATION TO KONAWA PUMP STATION

Photograph 9: View of AD16, a mapped perennial stream (Little Sandy Creek), facing west.

Photograph 10: View of AD25, an unmapped intermittent stream, facing northwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 4:
ADA PUMP STATION TO KONAWA PUMP STATION

Photograph 11: View of AD26, a mapped perennial river (Canadian River), facing north.

Photograph 12: View of AD28, a mapped intermittent stream, facing northwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 4:
ADA PUMP STATION TO KONAWA PUMP STATION

Photograph 13: View of AD35, a mapped intermittent stream, facing north.

Photograph 14: View of AD49, a mapped intermittent stream, facing west.

Appendix E - Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station

Figures (Vicinity Map, Topographic Map, Aerial Photography, Soil Survey Map, NWI Map, Flood Insurance Rate Map)

Table 1: Soils Series within the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie County, Oklahoma.

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie County, Oklahoma.

Table 3: Summary of streams and drainages in the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie County, Oklahoma.

Wetland Determination Data Forms

Site Photographs

Figures

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Section 18, T6N R5E; Sections 13, 12, 11, 10, 3 & 4, T6N R4E
Sections 33, 32, 29, 30 & 19, T7N R4E; Sections 24, 13, 14, 11,
10, 3 & 4, T7N R3E; Sections 33, 32, 29, 30 & 19, T8N R3E;
Sections 24, 13, 14, 11, 10, 9, 4 & 5, T8N R2E; Sections 32 & 31, T9N R2E
Pottawatomie County, Oklahoma

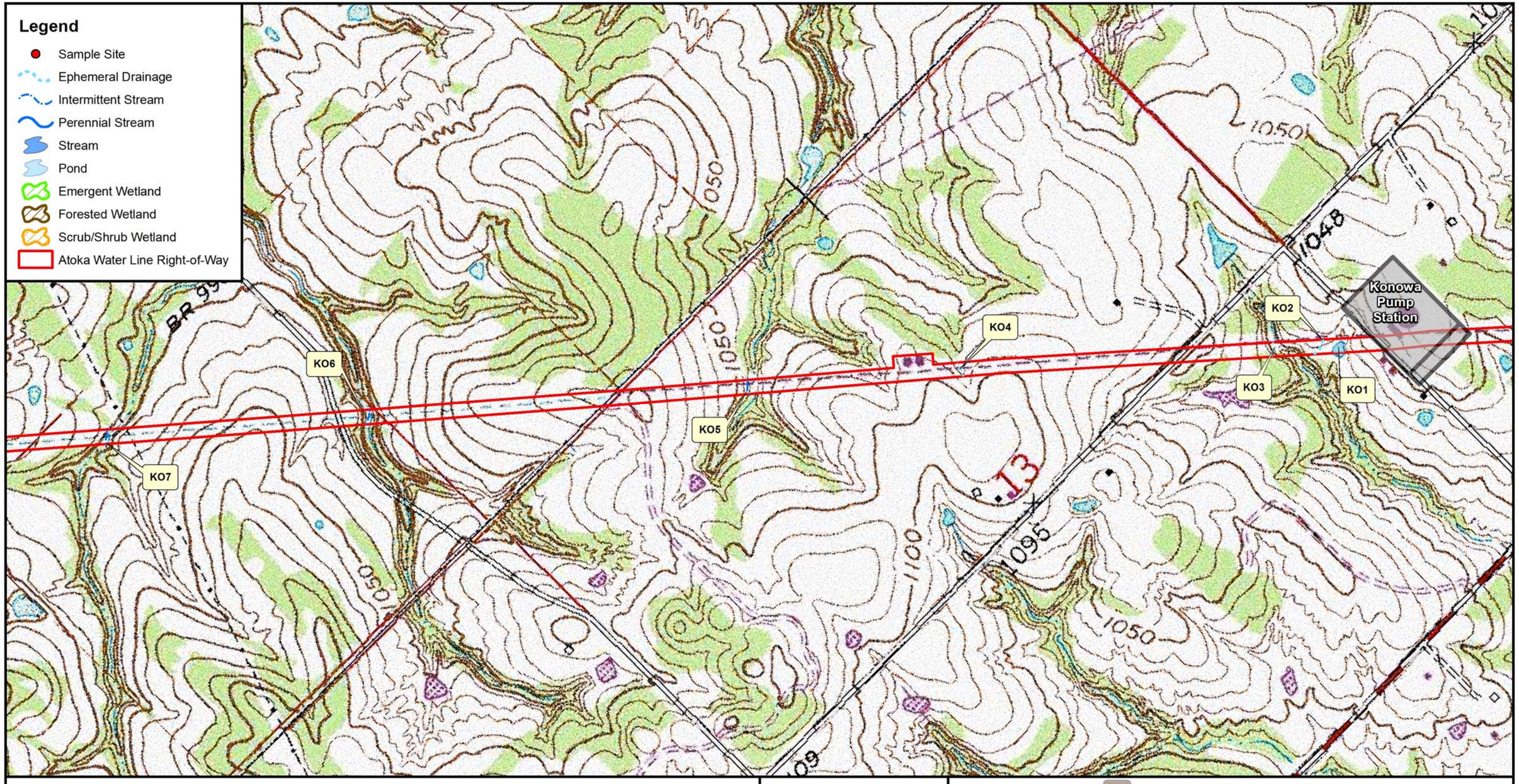
N
W E
S

1:130,000

ENERCON

Figure 1: Vicinity Map
Source: ESRI National Geographic World Map
Basemap
Prepared by: A. Couch; July 15, 2016

0 2.5 5 10 Miles



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Section 18, T6N R5E; Sections 13, 12 & 11, T6N R4E
Pottawatomie County, Oklahoma

1:8,000

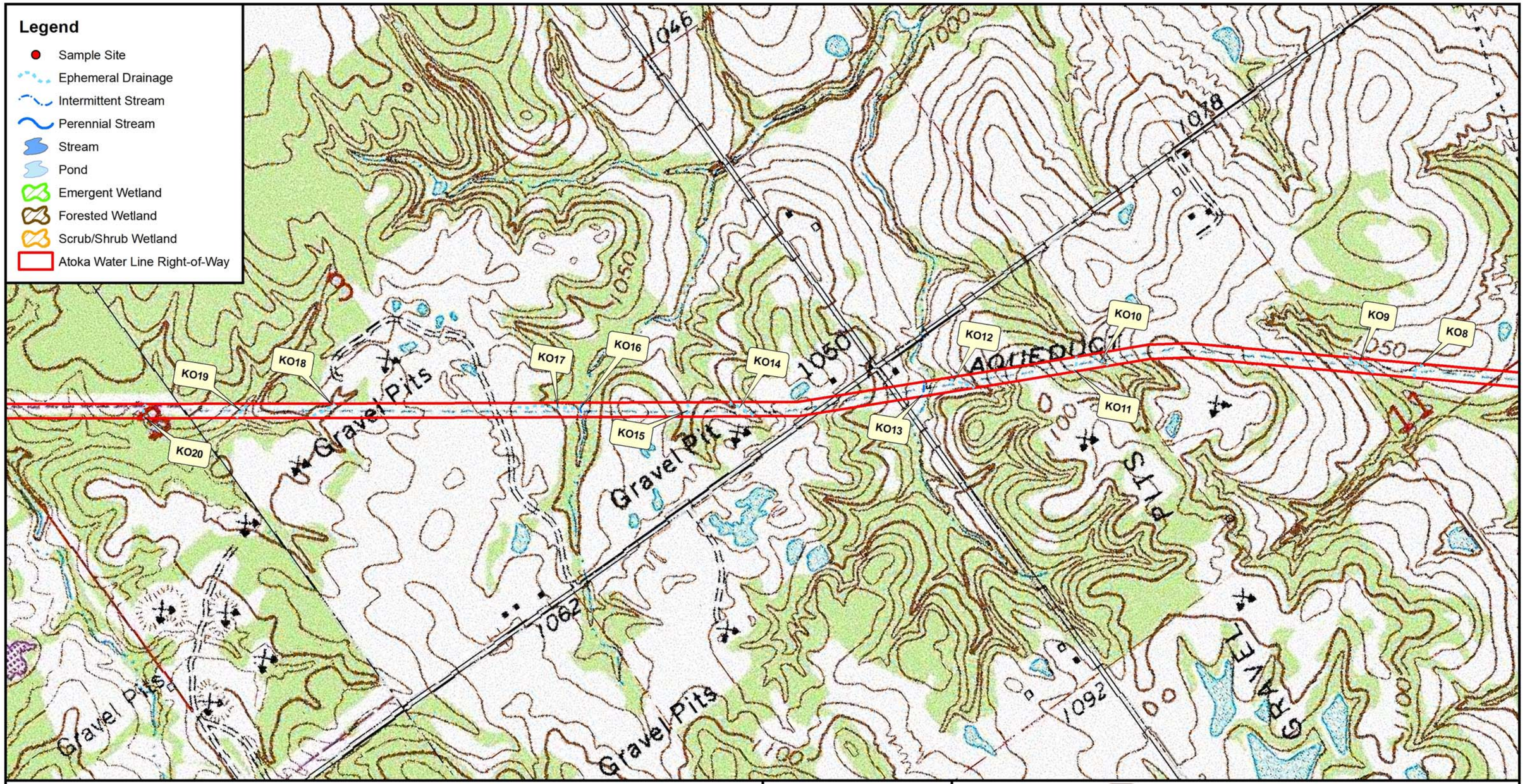
ENERCON

Figure 2.1: Topographic Map

Source: USGS 7.5 Minute Series
Konawa and Saint Louis, OK Quadrangles

Prepared by: A. Couch; August 23, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

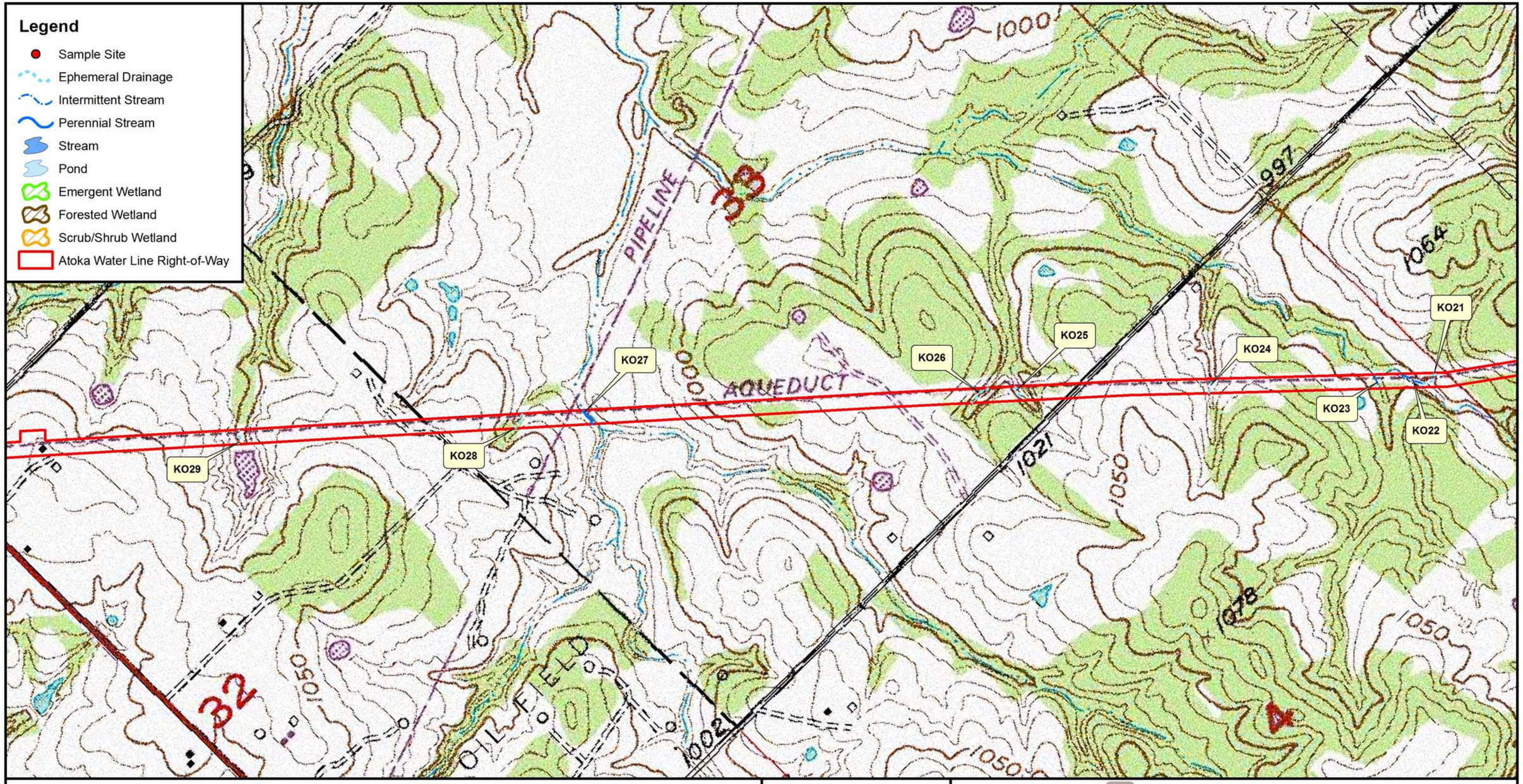
Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 11, 10 & 3, T6N R4E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 2.2: Topographic Map
Source: USGS 7.5 Minute Series
Saint Louis and Pearson, OK Quadrangles
Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 3 & 4, T6N R4E; Sections 33 & 32, T7N R4E
Pottawatomie County, Oklahoma

1:8,000

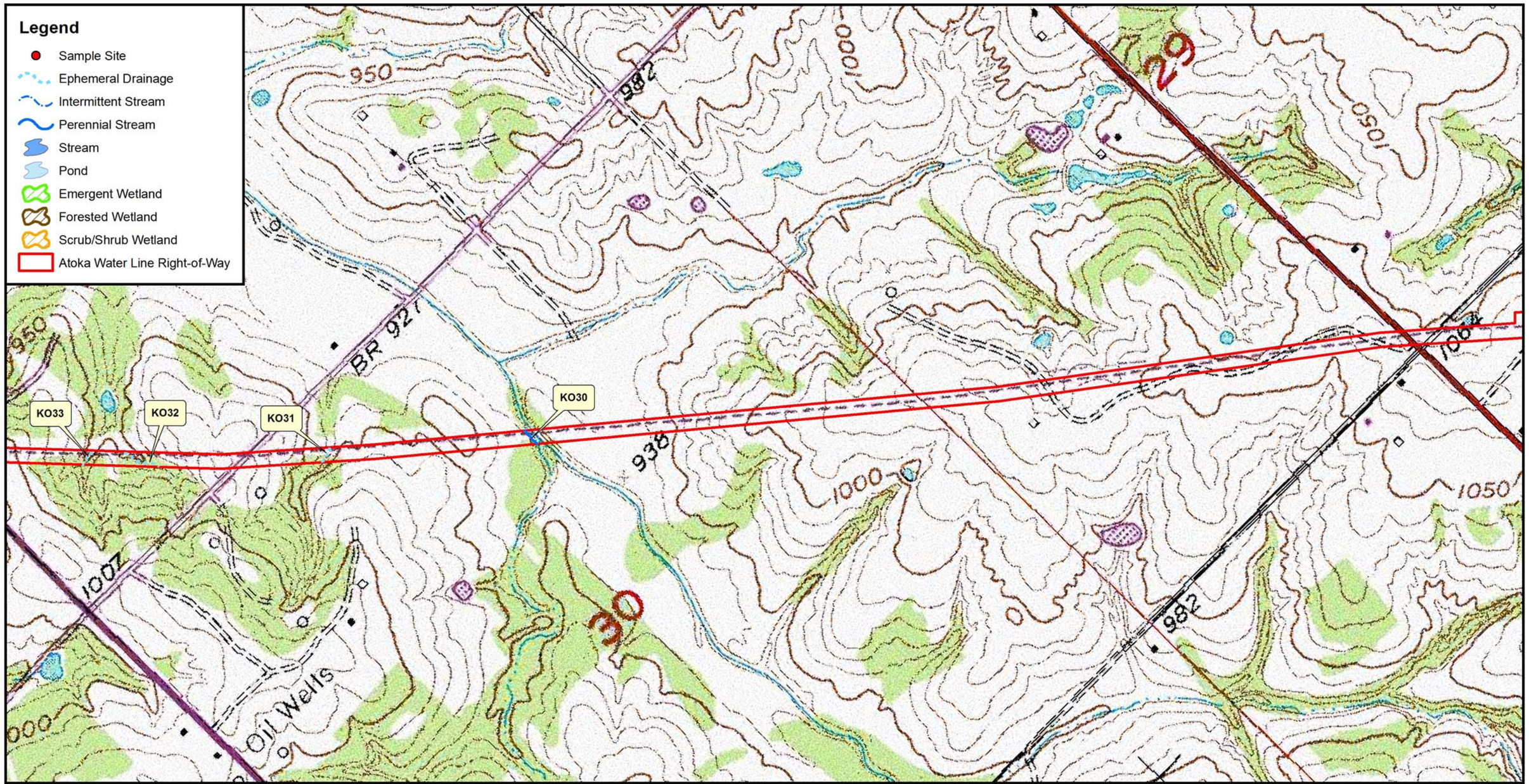
ENERCON

Figure 2.3: Topographic Map

Source: USGS 7.5 Minute Series
Pearson, OK Quadrangle

Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

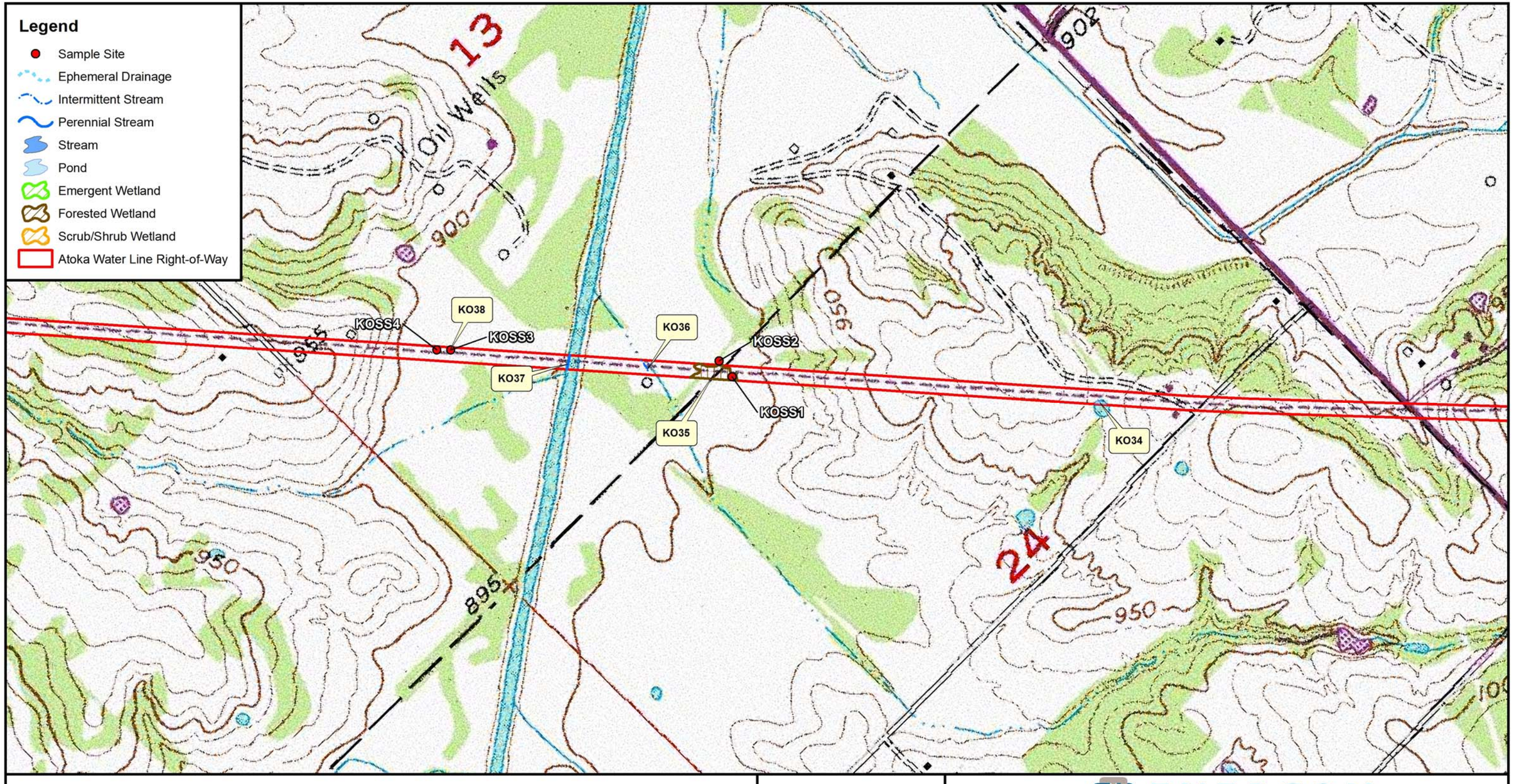
Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 32, 29, 30 & 19, T7N R4E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 2.4: Topographic Map
Source: USGS 7.5 Minute Series
Pearson, OK Quadrangle
Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Section 19, T7N R4E; Sections 24, 13 & 14, T7N R3E
Pottawatomie County, Oklahoma

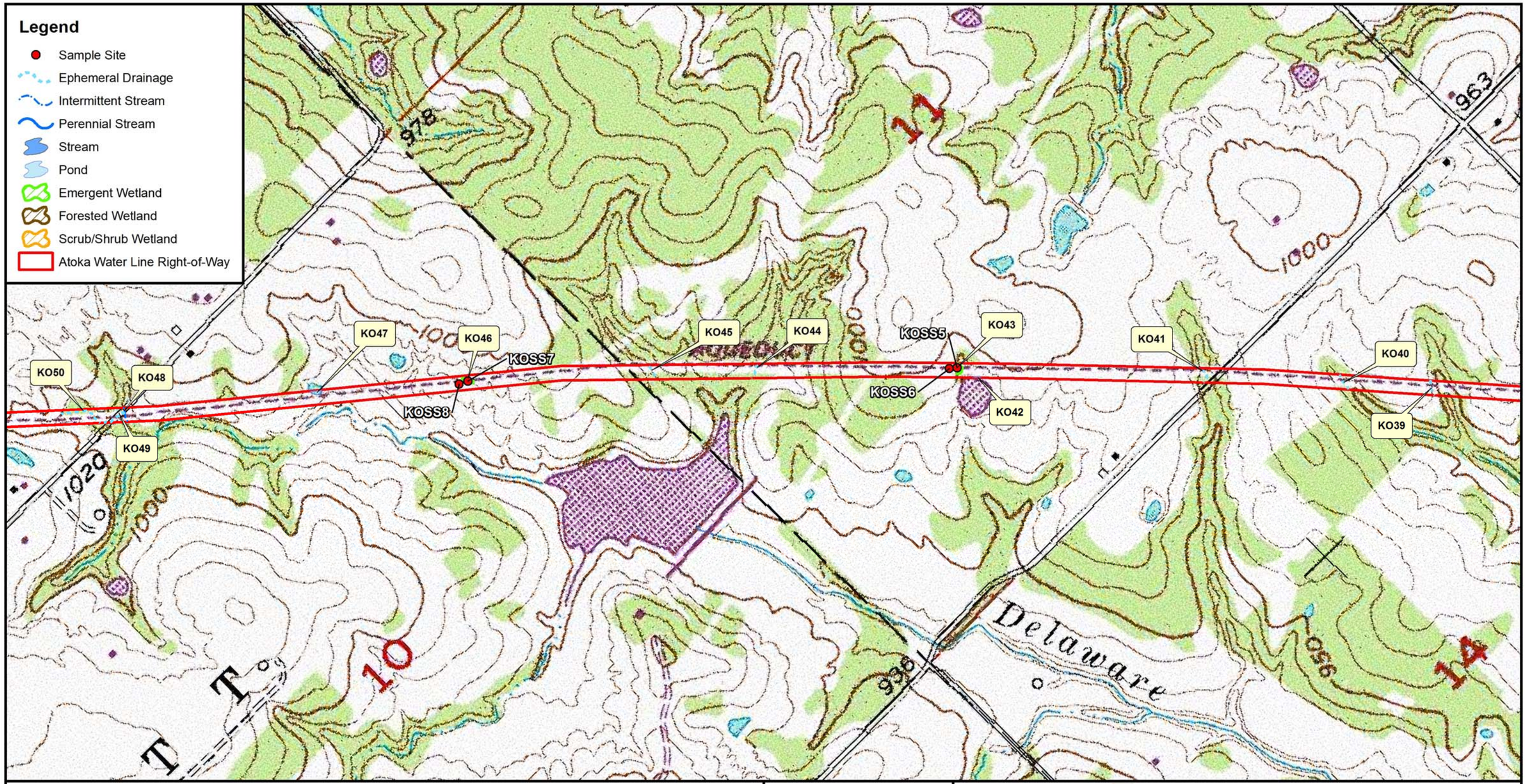
N E S W

1:8,000

ENERCON

Figure 2.5: Topographic Map
Source: USGS 7.5 Minute Series
Pearson, OK Quadrangle
Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 14, 11, 10 & 3, T7N R3E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 2.6: Topographic Map

Source: USGS 7.5 Minute Series
Pearson, OK Quadrangle

Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet

Legend

- Sample Site
- Ephemeral Drainage
- Intermittent Stream
- Perennial Stream
- Stream
- Pond
- Emergent Wetland
- Forested Wetland
- Scrub/Shrub Wetland
- Atoka Water Line Right-of-Way

KO60 KO58 KO56 KO59 KOSS10 KO57 KOSS9 KO55 KO54 KO53 KO52 KO51

1072 1029 1000 1050 1036 Well Oil Well PIPELINE

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 3 & 4, T7N R3E; Sections 33 & 32, T8N R3E
Pottawatomie County, Oklahoma

N E W S

1:8,000

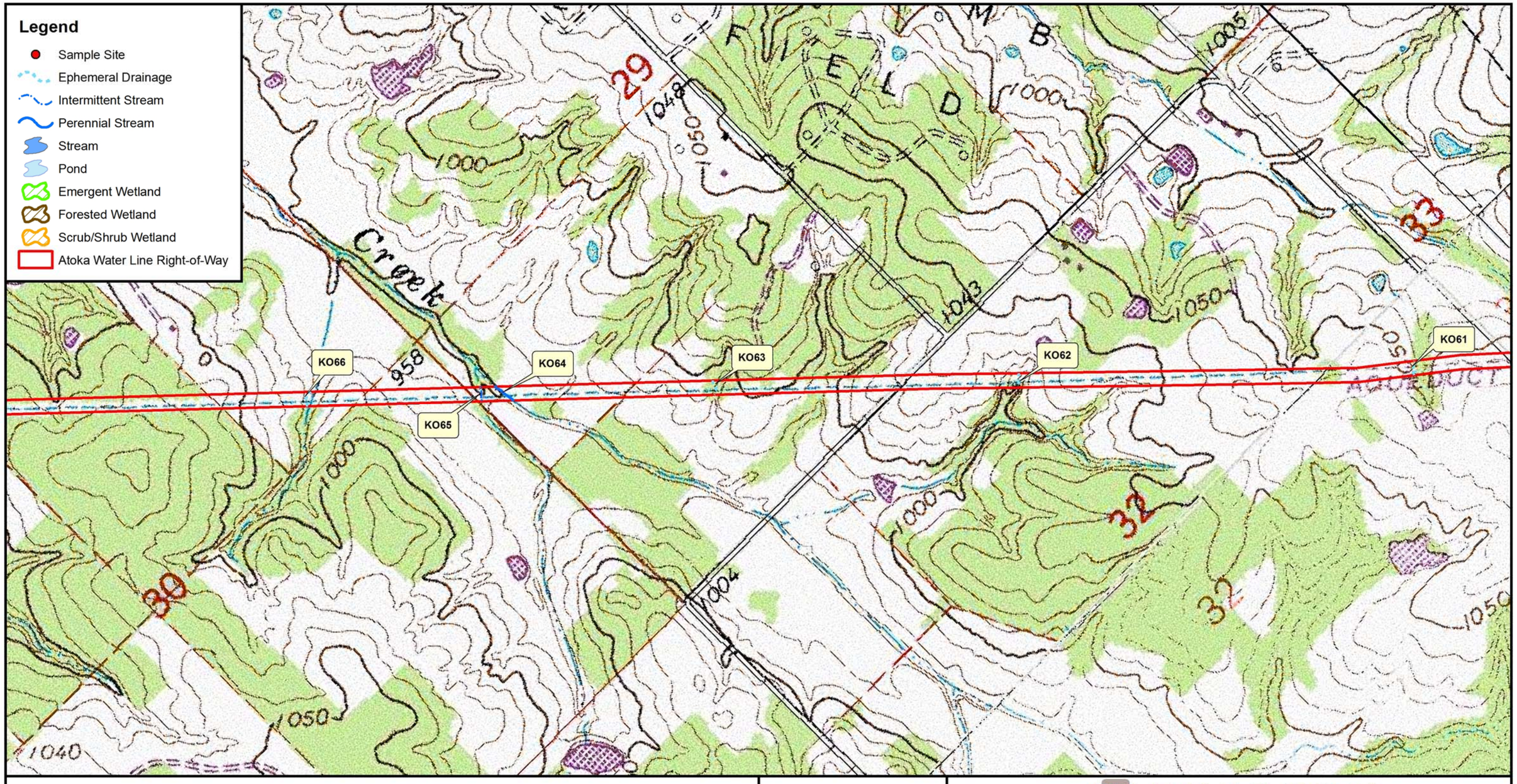
ENERCON

Figure 2.7: Topographic Map

Source: USGS 7.5 Minute Series
Pearson and Tribbey, OK Quradrangles

Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 32, 29 & 30, T8N R3E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 2.8: Topographic Map

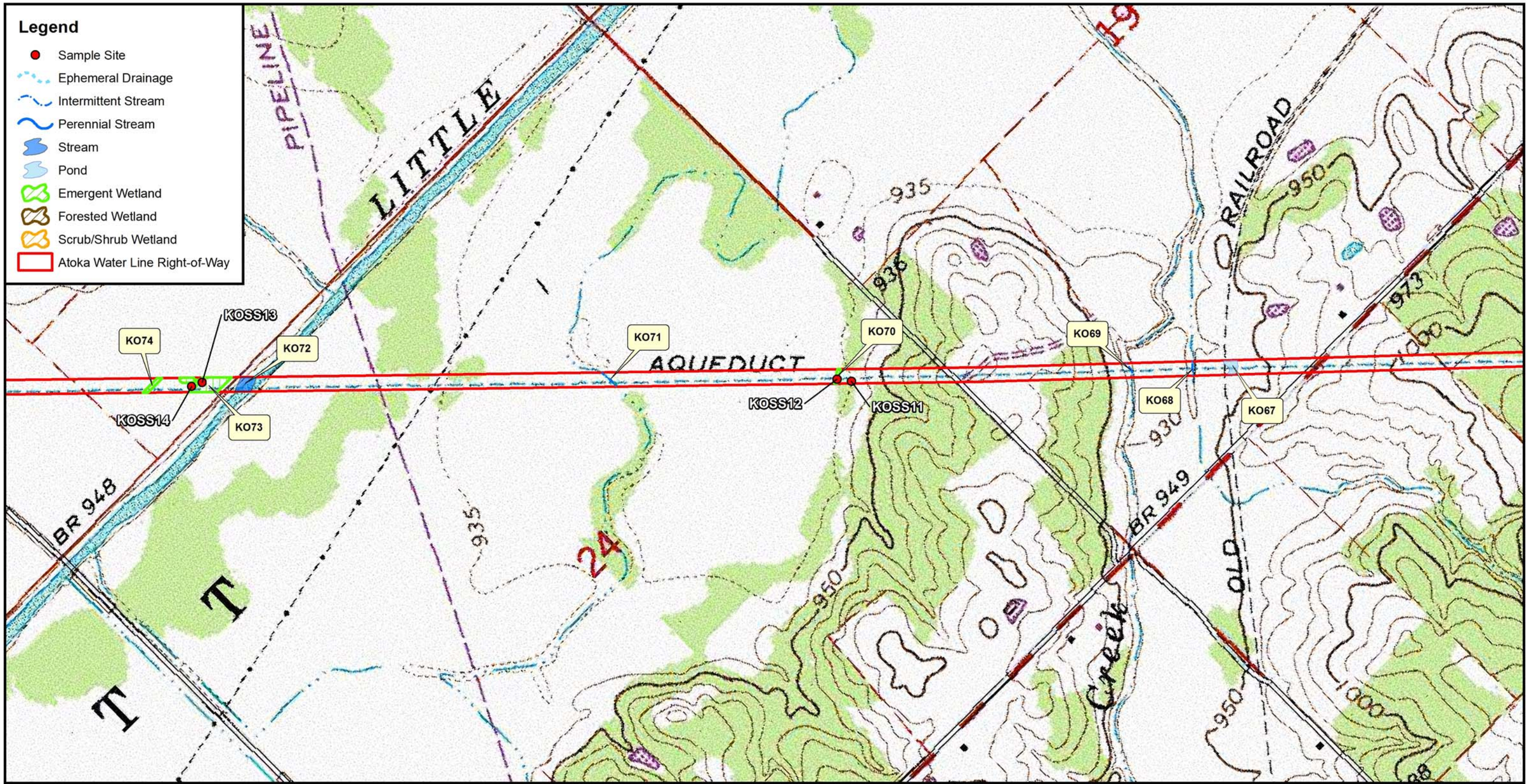
Source: USGS 7.5 Minute Series
Tribbey and Macomb, OK Quadrangles

Prepared by: A. Couch; August 23, 2016

Feet
0 600 1,200 2,400

Legend

- Sample Site
- Ephemeral Drainage
- Intermittent Stream
- Perennial Stream
- Stream
- Pond
- Emergent Wetland
- Forested Wetland
- Scrub/Shrub Wetland
- Atoka Water Line Right-of-Way



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 30 & 19, T8N R3E; Sections 24 & 13, T8N R2E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 2.9: Topographic Map

Source: USGS 7.5 Minute Series
Macomb, OK Quadrangle

Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet

Legend

- Sample Site
- Ephemeral Drainage
- Intermittent Stream
- Perennial Stream
- Stream
- Pond
- Emergent Wetland
- Forested Wetland
- Scrub/Shrub Wetland
- Atoka Water Line Right-of-Way

KO81 KO80 KO79 KO78 KO77 KO76 KO75 KOSS17 KOSS16 KOSS15

1000 1004 950 939 945 947 950 940 14

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 13, 14, 11 & 10, T8N R2E
Pottawatomie County, Oklahoma

N E S W

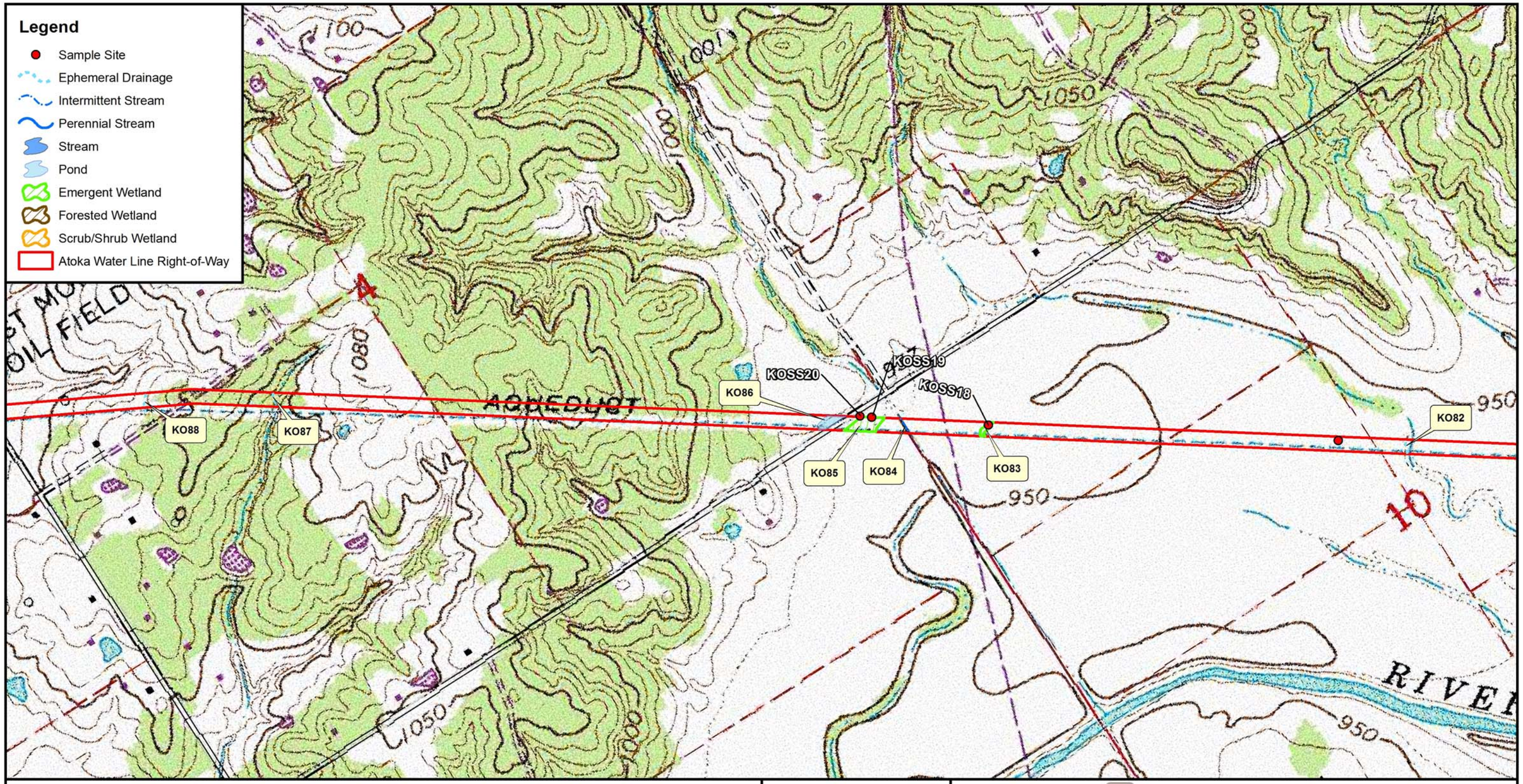
1:8,000

ENERCON

Figure 2.10: Topographic Map
Source: USGS 7.5 Minute Series
Macomb, OK Quadrangle

Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 10, 9 & 4, T8N R2E
Pottawatomie County, Oklahoma

1:8,000

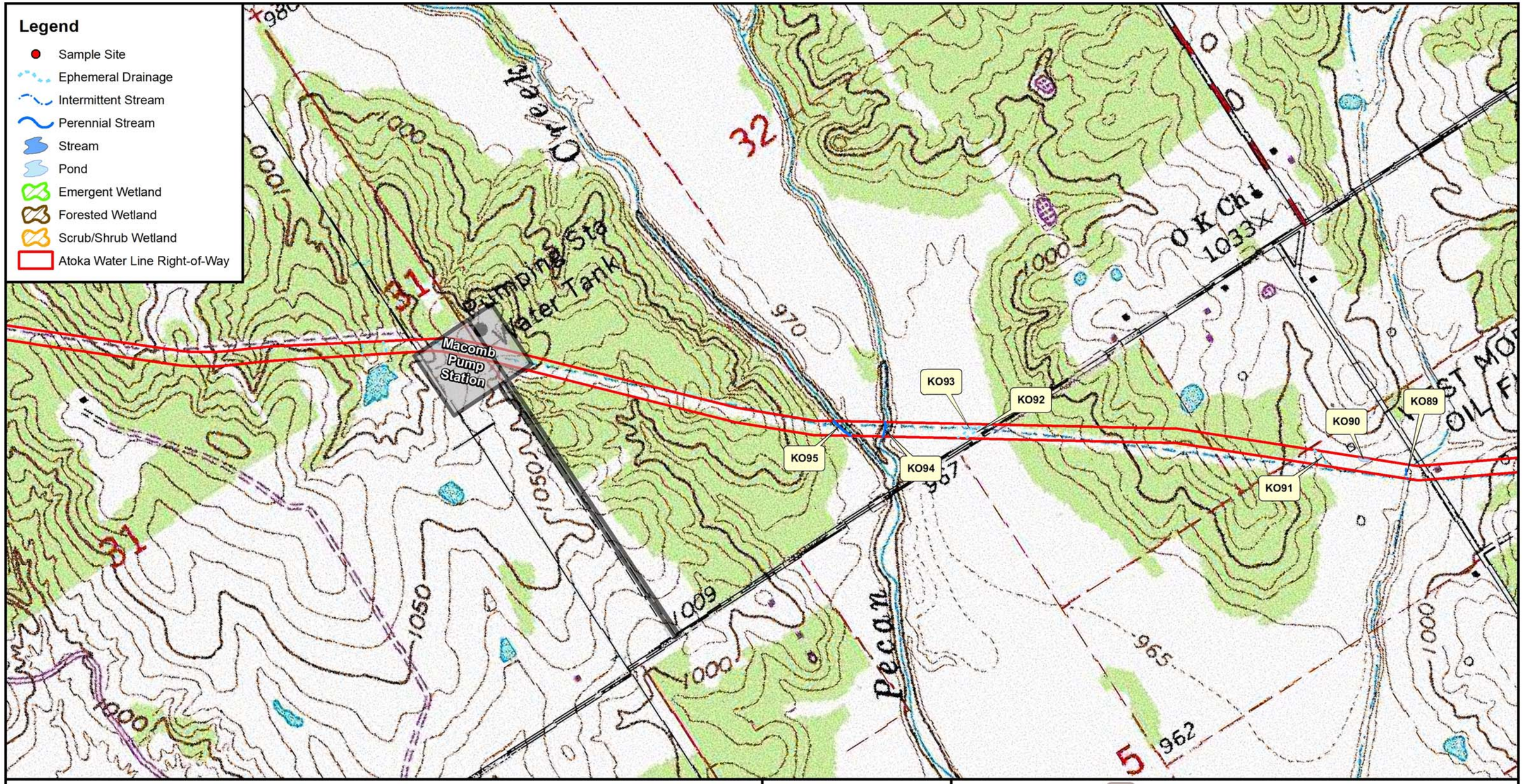
ENERCON

Figure 2.11: Topographic Map
Source: USGS 7.5 Minute Series
Macomb, OK Quadrangle
Prepared by: A. Couch; September 1, 2016

0 600 1,200 2,400 Feet

Legend

- Sample Site
- Ephemeral Drainage
- Intermittent Stream
- Perennial Stream
- Stream
- Pond
- Emergent Wetland
- Forested Wetland
- Scrub/Shrub Wetland
- Atoka Water Line Right-of-Way



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 4 & 5, T8N R2E; Sections 32 & 31, T9N R2E
Pottawatomie County, Oklahoma

1:8,000

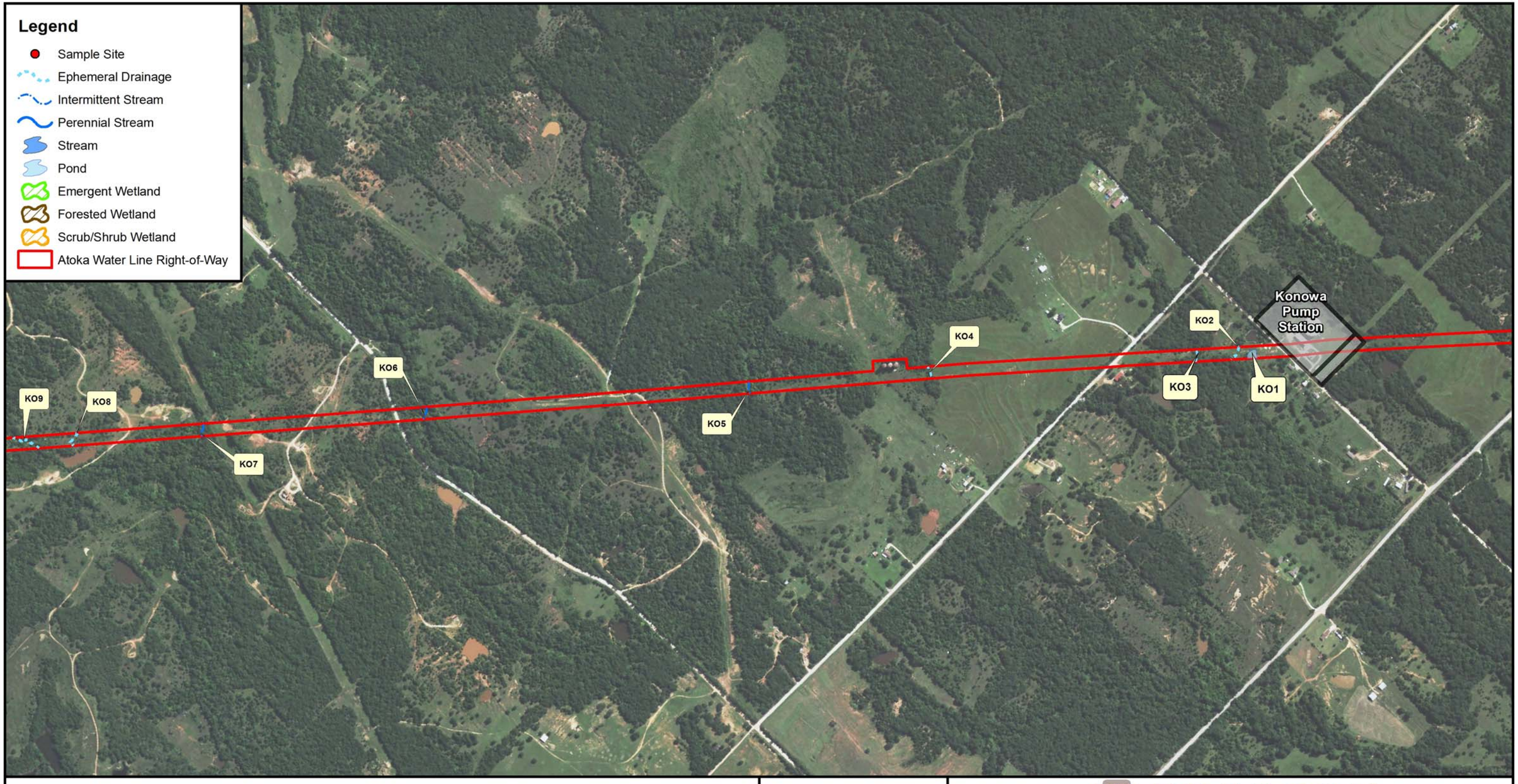
ENERCON

Figure 2.12: Topographic Map

Source: USGS 7.5 Minute Series
Macomb, OK Quadrangle

Prepared by: A. Couch; September 1, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Section 18, T6N R5E; Sections 13, 12 & 11, T6N R4E
Pottawatomie County, Oklahoma

N E S W

1:9,397

ENERCON

Figure 3.1: Aerial Photography
Source: 2015 USDA NAIP
Pottawatomie County, Oklahoma
Prepared by: A. Couch; August 23, 2016

0 700 1,400 2,800 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 11, 10 & 3, T6N R4E
Pottawatomie County, Oklahoma

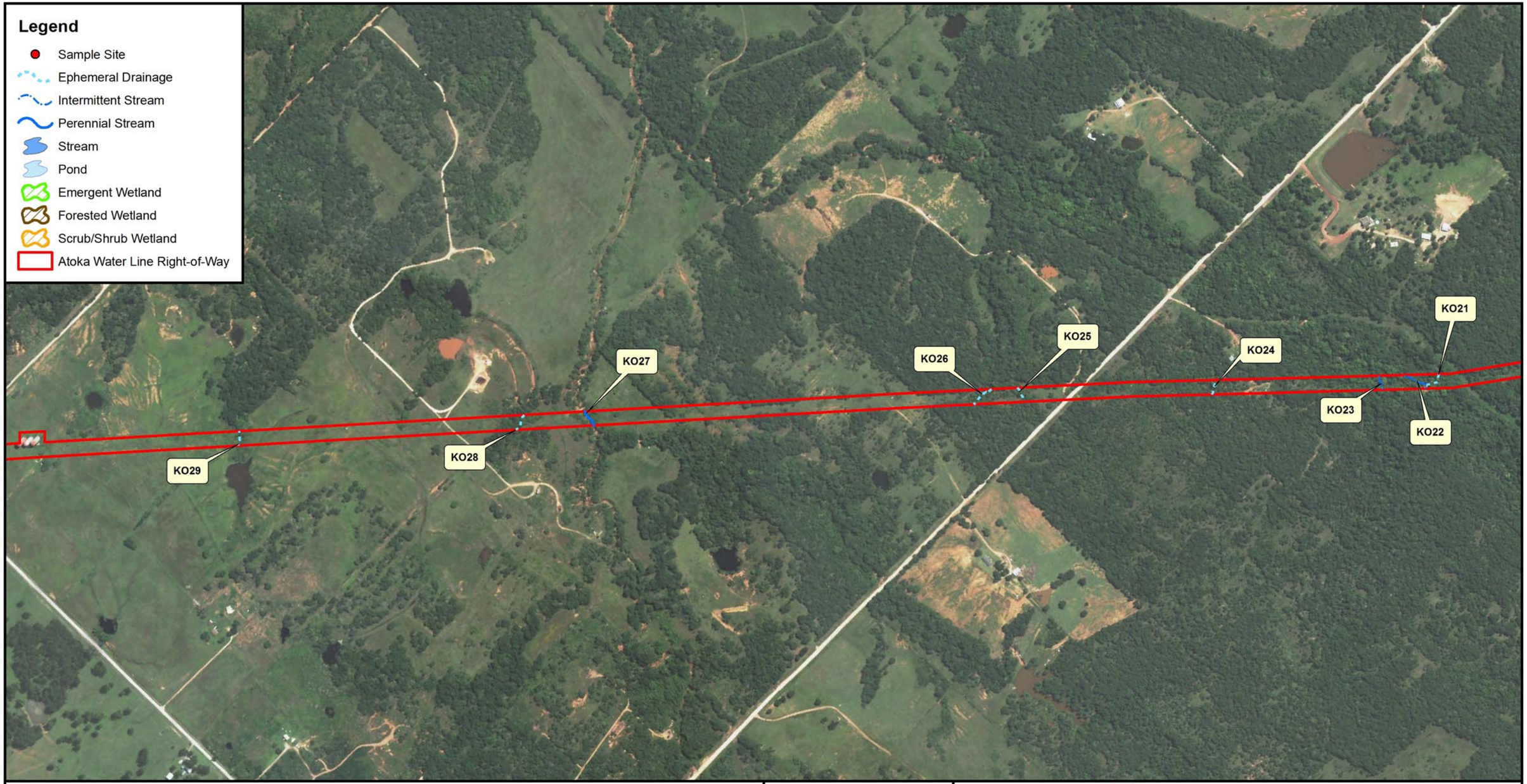
N E W S

1:8,000

ENERCON

Figure 3.2: Aerial Photography
Source: 2015 USDA NAIP
Pottawatomie County, Oklahoma
Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 3 & 4, T6N R4E; Sections 33 & 32, T7N R4E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.3: Aerial Photography

Source: 2015 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 32, 29, 30 & 19, T7N R4E
Pottawatomie County, Oklahoma

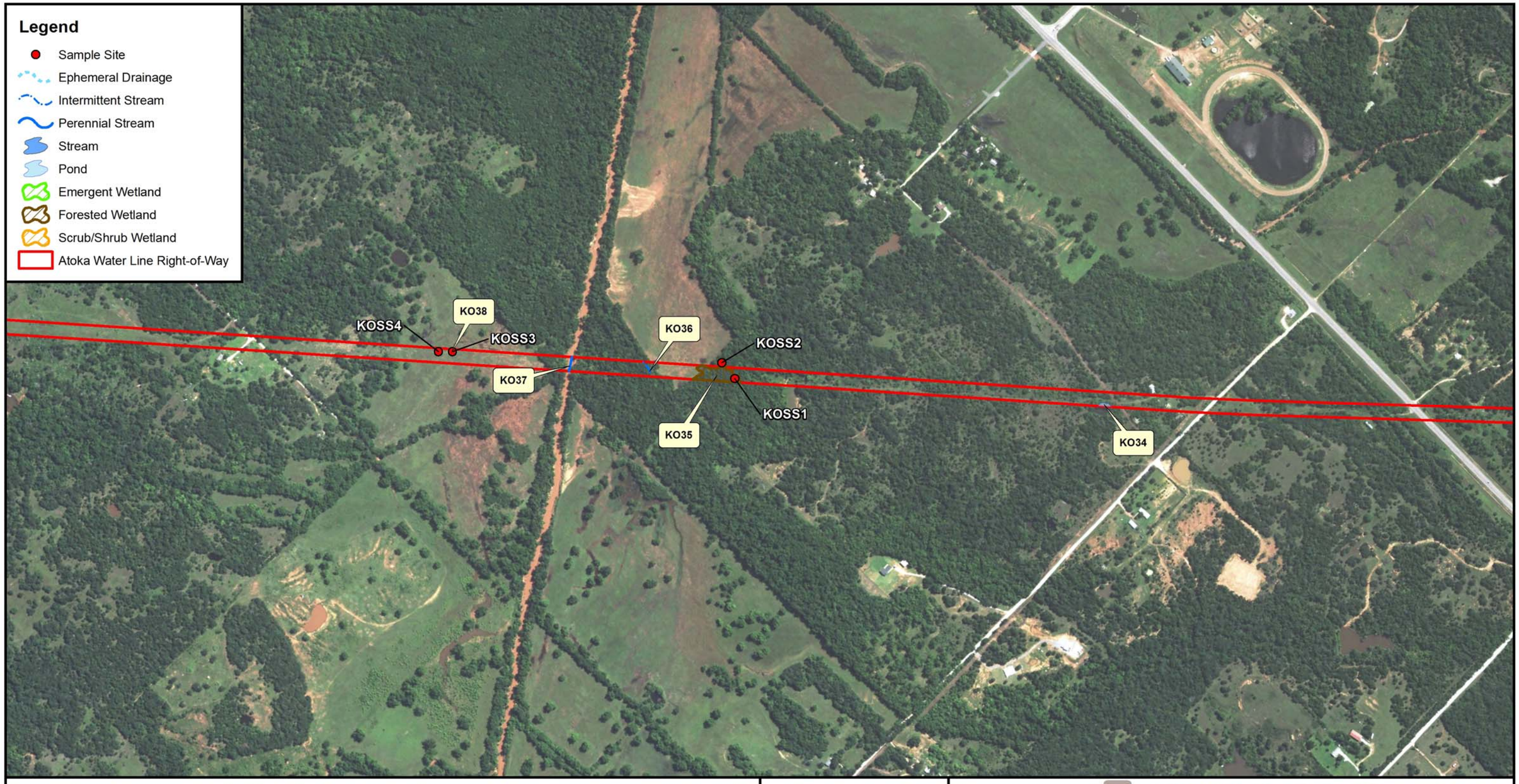
N E W S

1:8,000

ENERCON

Figure 3.4: Aerial Photography
Source: 2015 USDA NAIP
Pottawatomie County, Oklahoma
Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Section 19, T7N R4E; Sections 24, 13 & 14, T7N R3E
Pottawatomie County, Oklahoma

N E W S

1:8,000

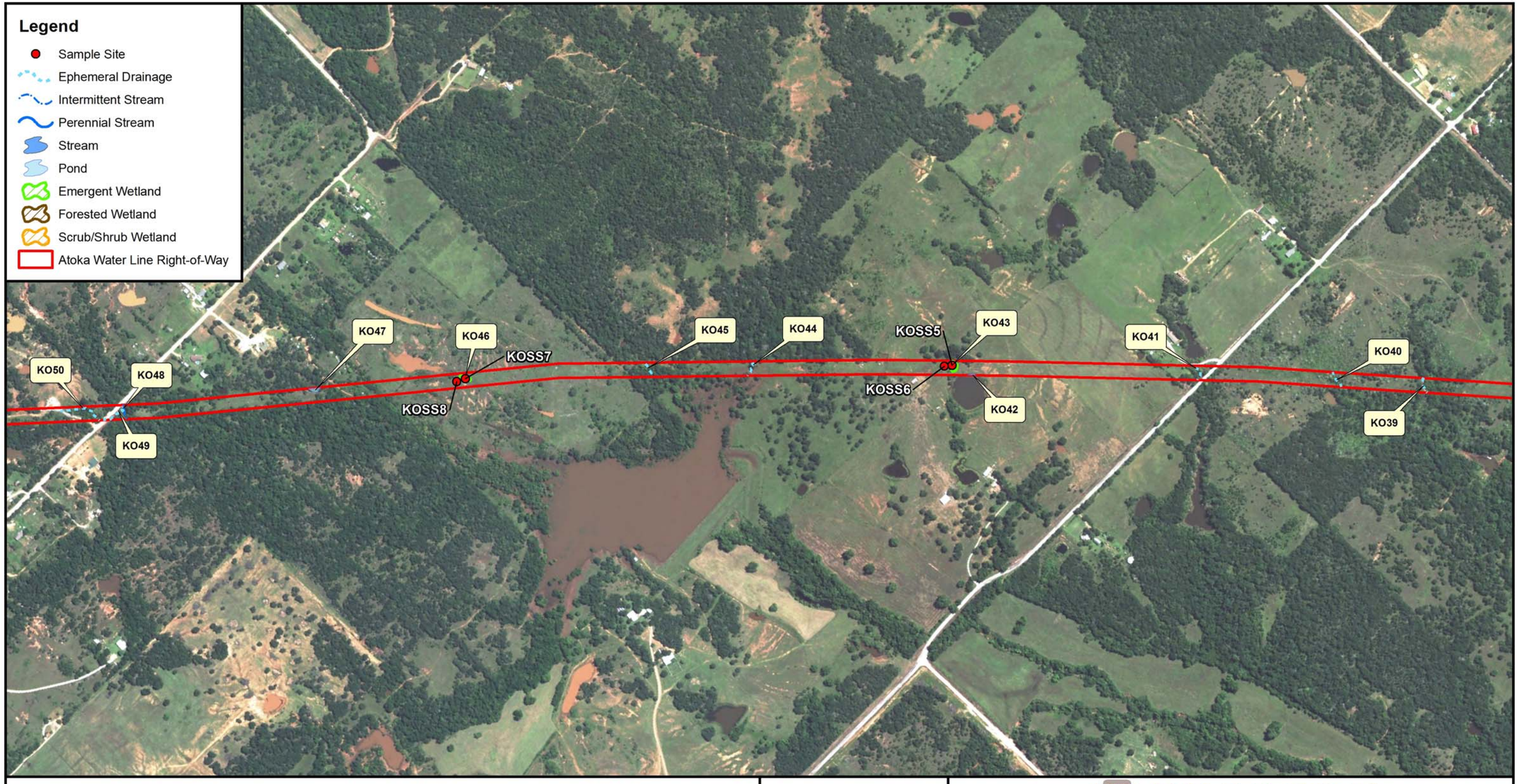
ENERCON

Figure 3.5: Aerial Photography

Source: 2015 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 14, 11, 10 & 3, T7N R3E
Pottawatomie County, Oklahoma

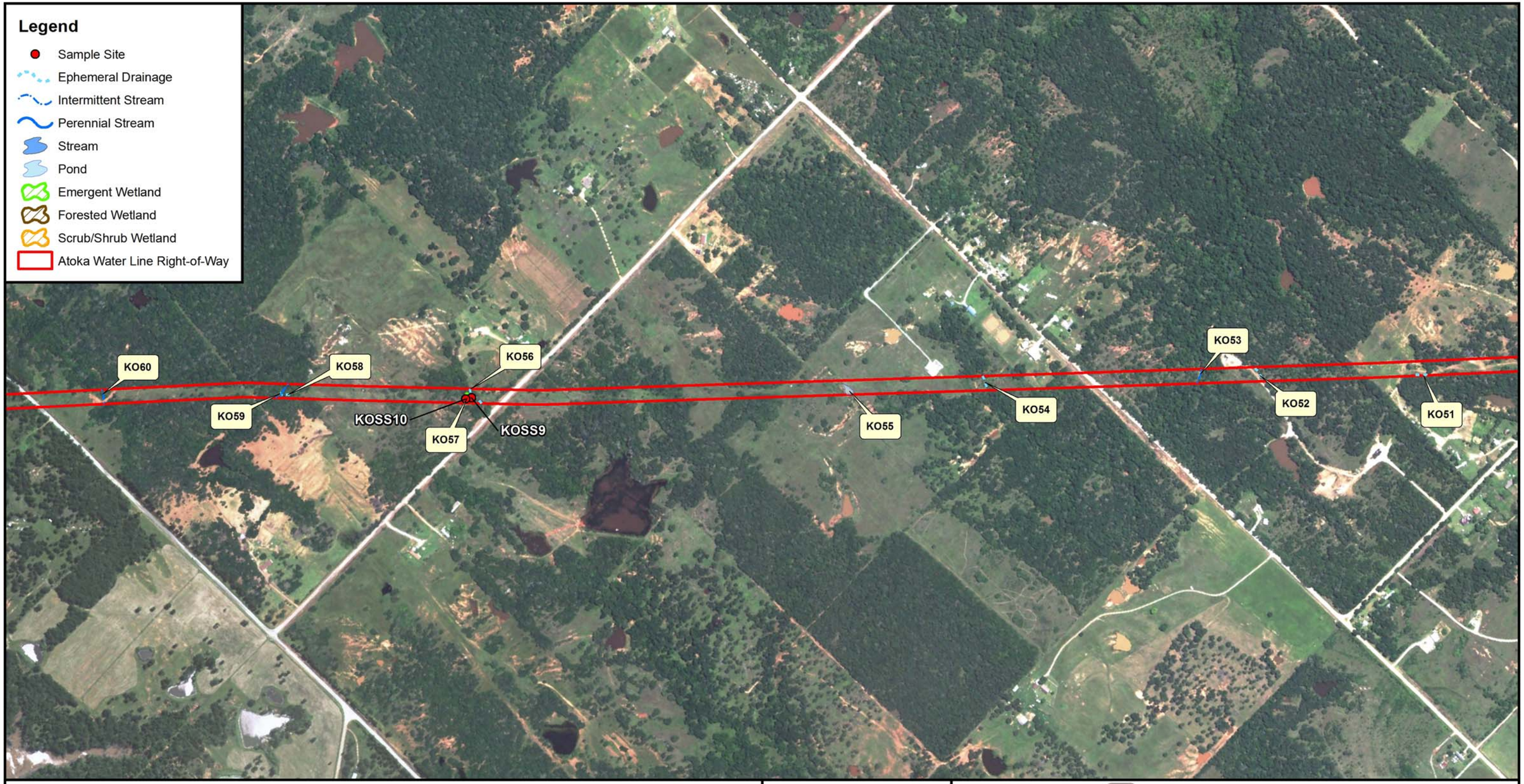
N E S W

1:8,000

ENERCON

Figure 3.6: Aerial Photography
Source: 2015 USDA NAIP
Pottawatomie County, Oklahoma
Prepared by: A. Couch; August 23, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 3 & 4, T7N R3E; Sections 33 & 32, T8N R3E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.7: Aerial Photography
Source: 2015 USDA NAIP
Pottawatomie County, Oklahoma
Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 32, 29 & 30, T8N R3E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.8: Aerial Photography
Source: 2015 USDA NAIP
Pottawatomie County, Oklahoma
Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 30 & 19, T8N R3E; Sections 24 & 13, T8N R2E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.9: Aerial Photography
Source: 2015 USDA NAIP
Pottawatomie County, Oklahoma
Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 13, 14, 11 & 10, T8N R2E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.10: Aerial Photography
Source: 2015 USDA NAIP
Pottawatomie County, Oklahoma
Prepared by: A. Couch; August 23, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 10, 9 & 4, T8N R2E
Pottawatomie County, Oklahoma

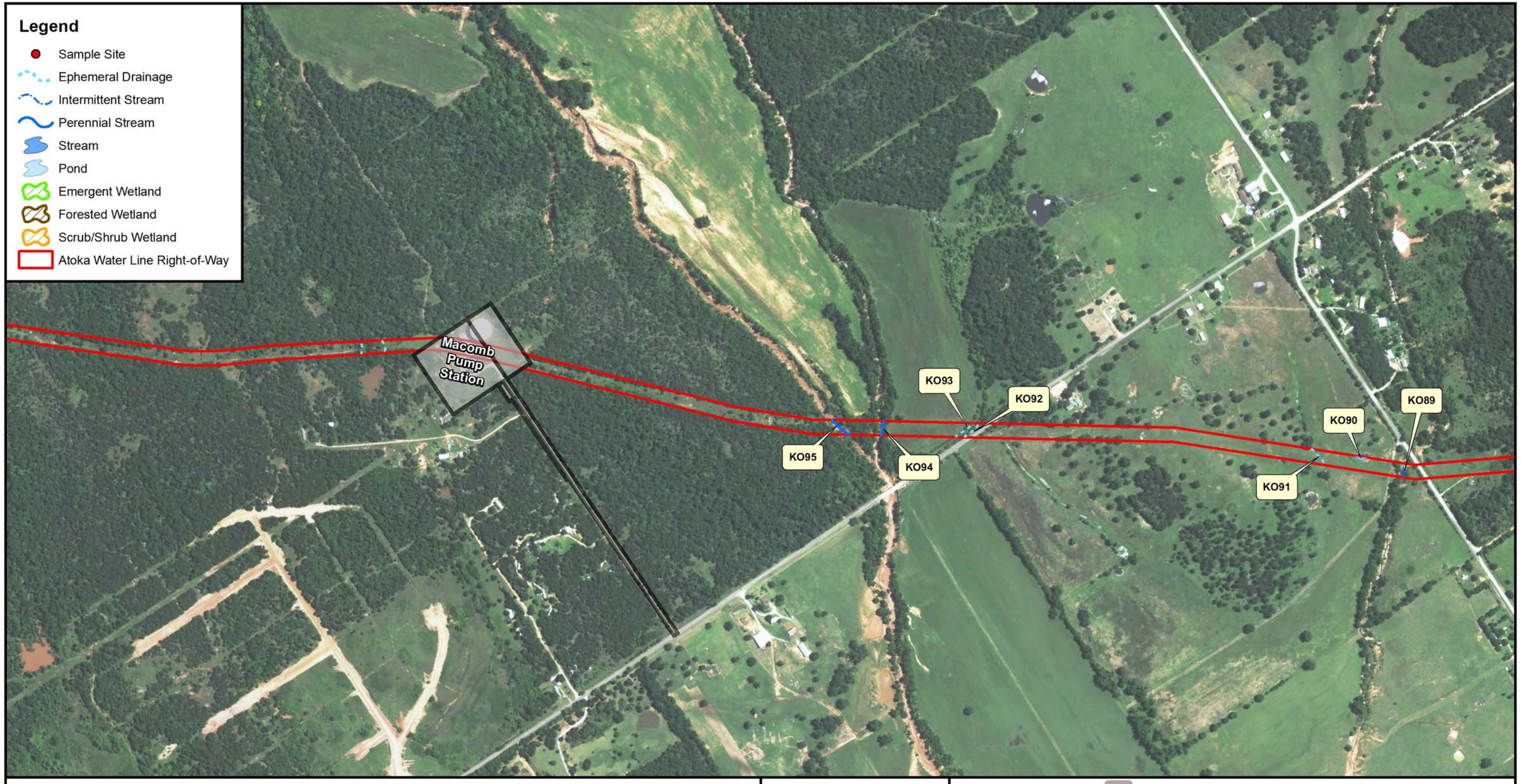
N E W S

1:8,000

ENERCON

Figure 3.11: Aerial Photography
Source: 2015 USDA NAIP
Pottawatomie County, Oklahoma
Prepared by: A. Couch; September 1, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 4 & 5, T8N R2E; Sections 32 & 31, T9N R2E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 3.12: Aerial Photography

Source: 2015 USDA NAIP
Pottawatomie County, Oklahoma

Prepared by: A. Couch; September 1, 2016

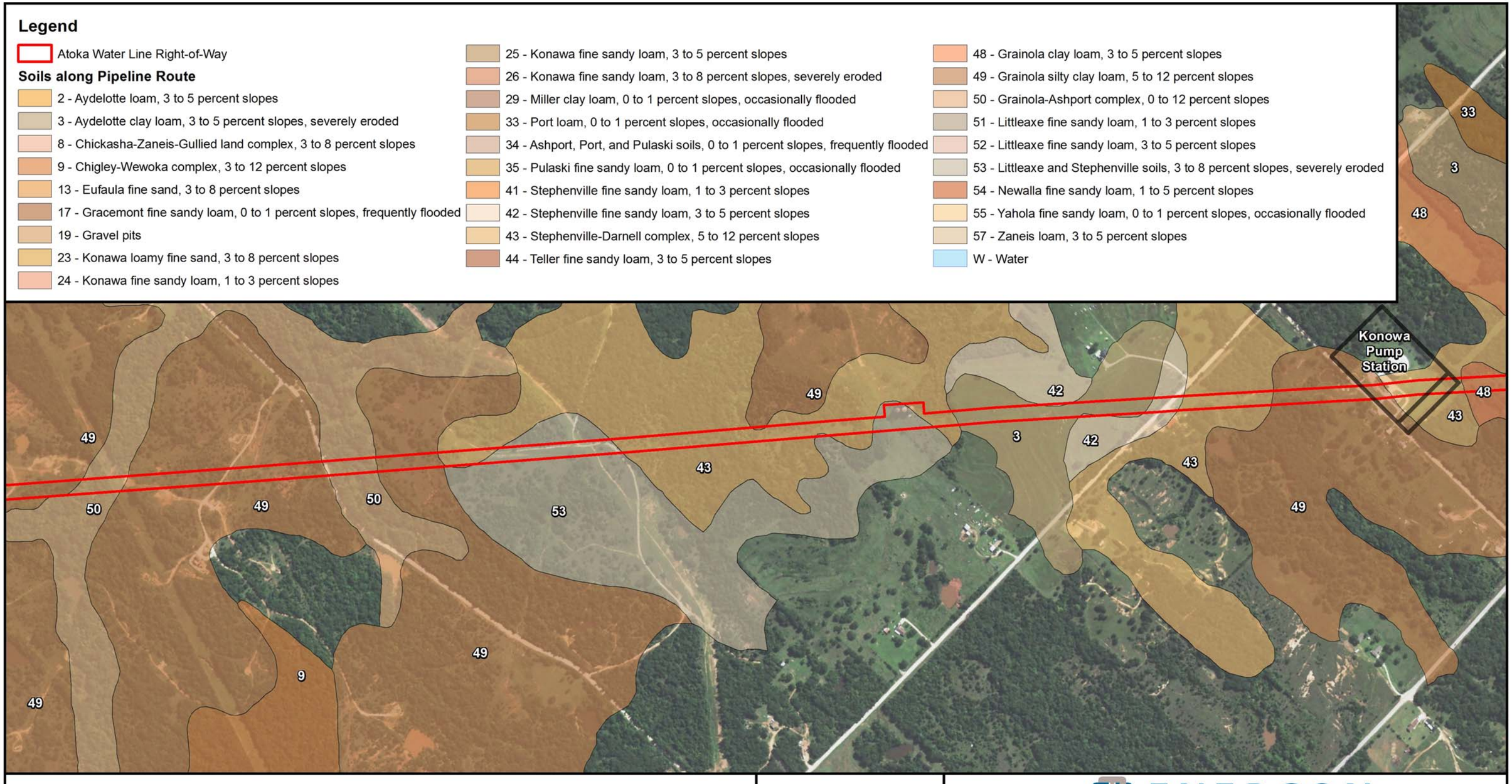
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 2 - Aydelotte loam, 3 to 5 percent slopes
- 3 - Aydelotte clay loam, 3 to 5 percent slopes, severely eroded
- 8 - Chickasha-Zaneis-Gullied land complex, 3 to 8 percent slopes
- 9 - Chigley-Wewoka complex, 3 to 12 percent slopes
- 13 - Eufaula fine sand, 3 to 8 percent slopes
- 17 - Gracemont fine sandy loam, 0 to 1 percent slopes, frequently flooded
- 19 - Gravel pits
- 23 - Konawa loamy fine sand, 3 to 8 percent slopes
- 24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 25 - Konawa fine sandy loam, 3 to 5 percent slopes
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 29 - Miller clay loam, 0 to 1 percent slopes, occasionally flooded
- 33 - Port loam, 0 to 1 percent slopes, occasionally flooded
- 34 - Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded
- 35 - Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 41 - Stephenville fine sandy loam, 1 to 3 percent slopes
- 42 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex, 5 to 12 percent slopes
- 44 - Teller fine sandy loam, 3 to 5 percent slopes
- 48 - Grainola clay loam, 3 to 5 percent slopes
- 49 - Grainola silty clay loam, 5 to 12 percent slopes
- 50 - Grainola-Ashport complex, 0 to 12 percent slopes
- 51 - Littleaxe fine sandy loam, 1 to 3 percent slopes
- 52 - Littleaxe fine sandy loam, 3 to 5 percent slopes
- 53 - Littleaxe and Stephenville soils, 3 to 8 percent slopes, severely eroded
- 54 - Newalla fine sandy loam, 1 to 5 percent slopes
- 55 - Yahola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 57 - Zaneis loam, 3 to 5 percent slopes
- W - Water



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Section 18, T6N R5E; Sections 13, 12 & 11, T6N R4E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.1: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 17, 2016

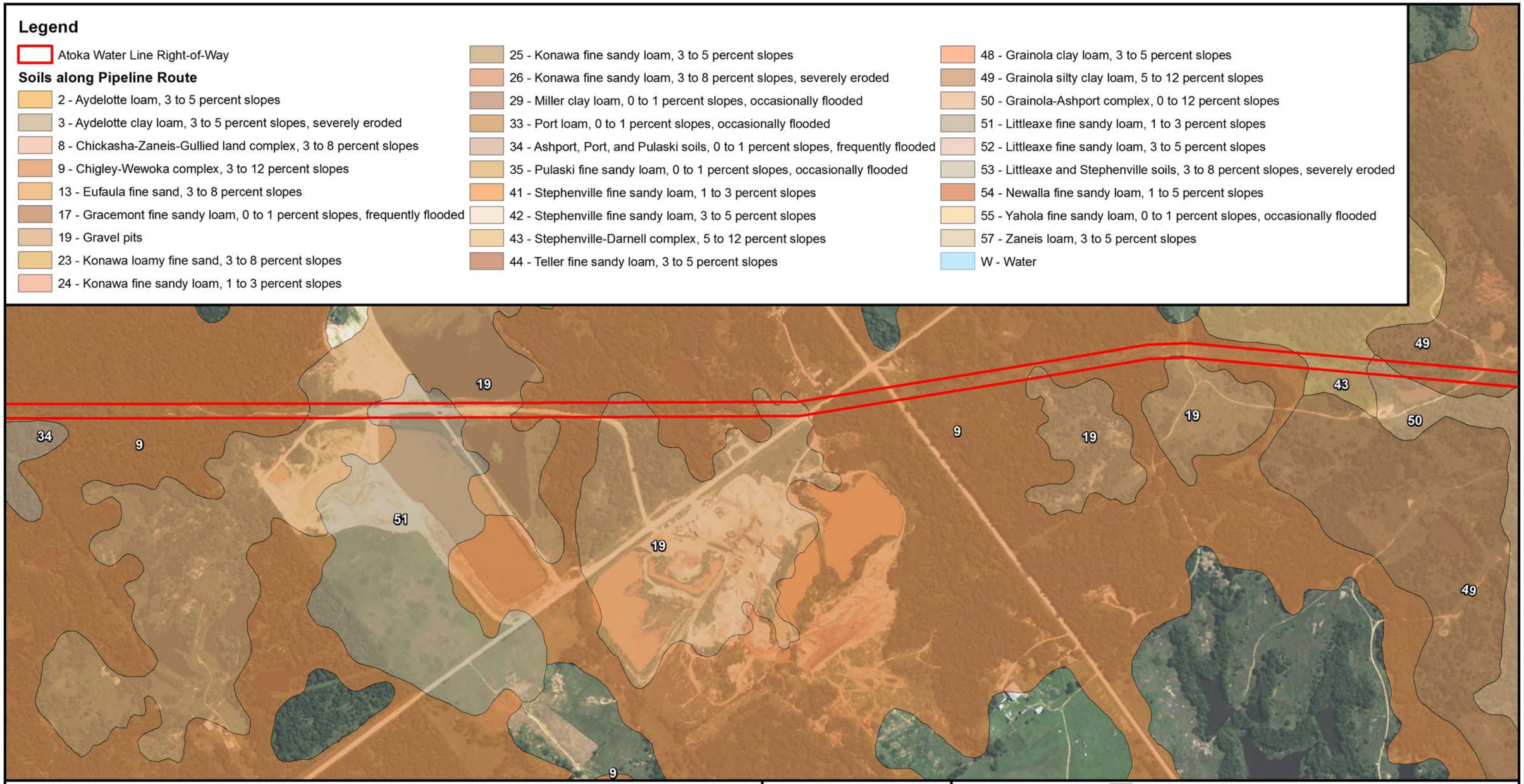
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 2 - Aydelotte loam, 3 to 5 percent slopes
- 3 - Aydelotte clay loam, 3 to 5 percent slopes, severely eroded
- 8 - Chickasha-Zaneis-Gullied land complex, 3 to 8 percent slopes
- 9 - Chigley-Wewoka complex, 3 to 12 percent slopes
- 13 - Eufaula fine sand, 3 to 8 percent slopes
- 17 - Gracemont fine sandy loam, 0 to 1 percent slopes, frequently flooded
- 19 - Gravel pits
- 23 - Konawa loamy fine sand, 3 to 8 percent slopes
- 24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 25 - Konawa fine sandy loam, 3 to 5 percent slopes
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 29 - Miller clay loam, 0 to 1 percent slopes, occasionally flooded
- 33 - Port loam, 0 to 1 percent slopes, occasionally flooded
- 34 - Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded
- 35 - Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 41 - Stephenville fine sandy loam, 1 to 3 percent slopes
- 42 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex, 5 to 12 percent slopes
- 44 - Teller fine sandy loam, 3 to 5 percent slopes
- 48 - Grainola clay loam, 3 to 5 percent slopes
- 49 - Grainola silty clay loam, 5 to 12 percent slopes
- 50 - Grainola-Ashport complex, 0 to 12 percent slopes
- 51 - Littleaxe fine sandy loam, 1 to 3 percent slopes
- 52 - Littleaxe fine sandy loam, 3 to 5 percent slopes
- 53 - Littleaxe and Stephenville soils, 3 to 8 percent slopes, severely eroded
- 54 - Newalla fine sandy loam, 1 to 5 percent slopes
- 55 - Yahola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 57 - Zaneis loam, 3 to 5 percent slopes
- W - Water



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 11, 10 & 3, T6N R4E
Pottawatomie County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 4.2: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 18, 2016

0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 2 - Aydelotte loam, 3 to 5 percent slopes
- 3 - Aydelotte clay loam, 3 to 5 percent slopes, severely eroded
- 8 - Chickasha-Zaneis-Gullied land complex, 3 to 8 percent slopes
- 9 - Chigley-Wewoka complex, 3 to 12 percent slopes
- 13 - Eufaula fine sand, 3 to 8 percent slopes
- 17 - Gracemont fine sandy loam, 0 to 1 percent slopes, frequently flooded
- 19 - Gravel pits
- 23 - Konawa loamy fine sand, 3 to 8 percent slopes
- 24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 25 - Konawa fine sandy loam, 3 to 5 percent slopes
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 29 - Miller clay loam, 0 to 1 percent slopes, occasionally flooded
- 33 - Port loam, 0 to 1 percent slopes, occasionally flooded
- 34 - Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded
- 35 - Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 41 - Stephenville fine sandy loam, 1 to 3 percent slopes
- 42 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex, 5 to 12 percent slopes
- 44 - Teller fine sandy loam, 3 to 5 percent slopes
- 48 - Grainola clay loam, 3 to 5 percent slopes
- 49 - Grainola silty clay loam, 5 to 12 percent slopes
- 50 - Grainola-Ashport complex, 0 to 12 percent slopes
- 51 - Littleaxe fine sandy loam, 1 to 3 percent slopes
- 52 - Littleaxe fine sandy loam, 3 to 5 percent slopes
- 53 - Littleaxe and Stephenville soils, 3 to 8 percent slopes, severely eroded
- 54 - Newalla fine sandy loam, 1 to 5 percent slopes
- 55 - Yahola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 57 - Zaneis loam, 3 to 5 percent slopes
- W - Water

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 3 & 4, T6N R4E; Sections 33 & 32, T7N R4E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.3: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 18, 2016

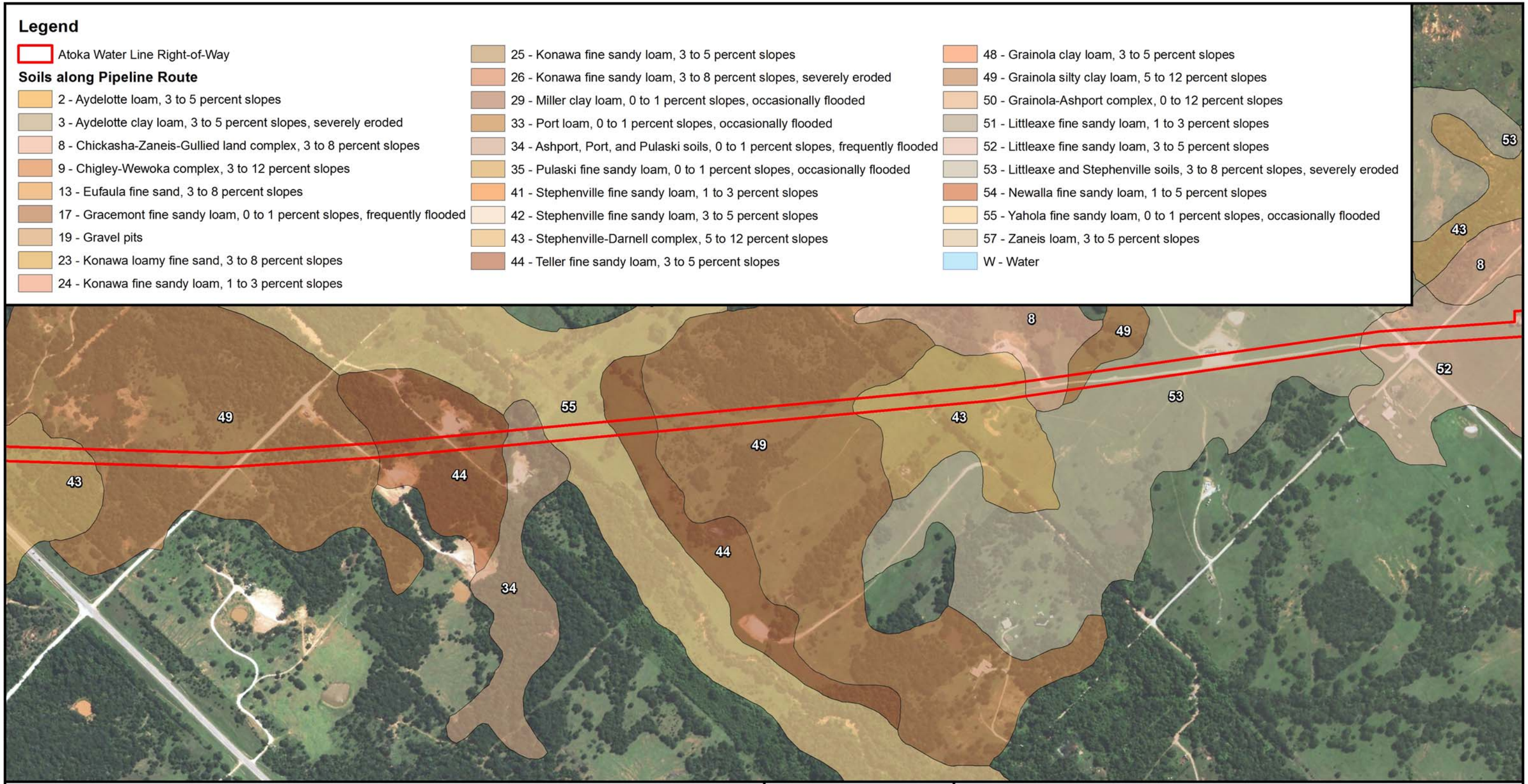
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 2 - Aydelotte loam, 3 to 5 percent slopes
- 3 - Aydelotte clay loam, 3 to 5 percent slopes, severely eroded
- 8 - Chickasha-Zaneis-Gullied land complex, 3 to 8 percent slopes
- 9 - Chigley-Wewoka complex, 3 to 12 percent slopes
- 13 - Eufaula fine sand, 3 to 8 percent slopes
- 17 - Gracemont fine sandy loam, 0 to 1 percent slopes, frequently flooded
- 19 - Gravel pits
- 23 - Konawa loamy fine sand, 3 to 8 percent slopes
- 24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 25 - Konawa fine sandy loam, 3 to 5 percent slopes
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 29 - Miller clay loam, 0 to 1 percent slopes, occasionally flooded
- 33 - Port loam, 0 to 1 percent slopes, occasionally flooded
- 34 - Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded
- 35 - Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 41 - Stephenville fine sandy loam, 1 to 3 percent slopes
- 42 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex, 5 to 12 percent slopes
- 44 - Teller fine sandy loam, 3 to 5 percent slopes
- 48 - Grainola clay loam, 3 to 5 percent slopes
- 49 - Grainola silty clay loam, 5 to 12 percent slopes
- 50 - Grainola-Ashport complex, 0 to 12 percent slopes
- 51 - Littleaxe fine sandy loam, 1 to 3 percent slopes
- 52 - Littleaxe fine sandy loam, 3 to 5 percent slopes
- 53 - Littleaxe and Stephenville soils, 3 to 8 percent slopes, severely eroded
- 54 - Newalla fine sandy loam, 1 to 5 percent slopes
- 55 - Yahola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 57 - Zaneis loam, 3 to 5 percent slopes
- W - Water



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 32, 29, 30 & 19, T7N R4E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.4: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 18, 2016

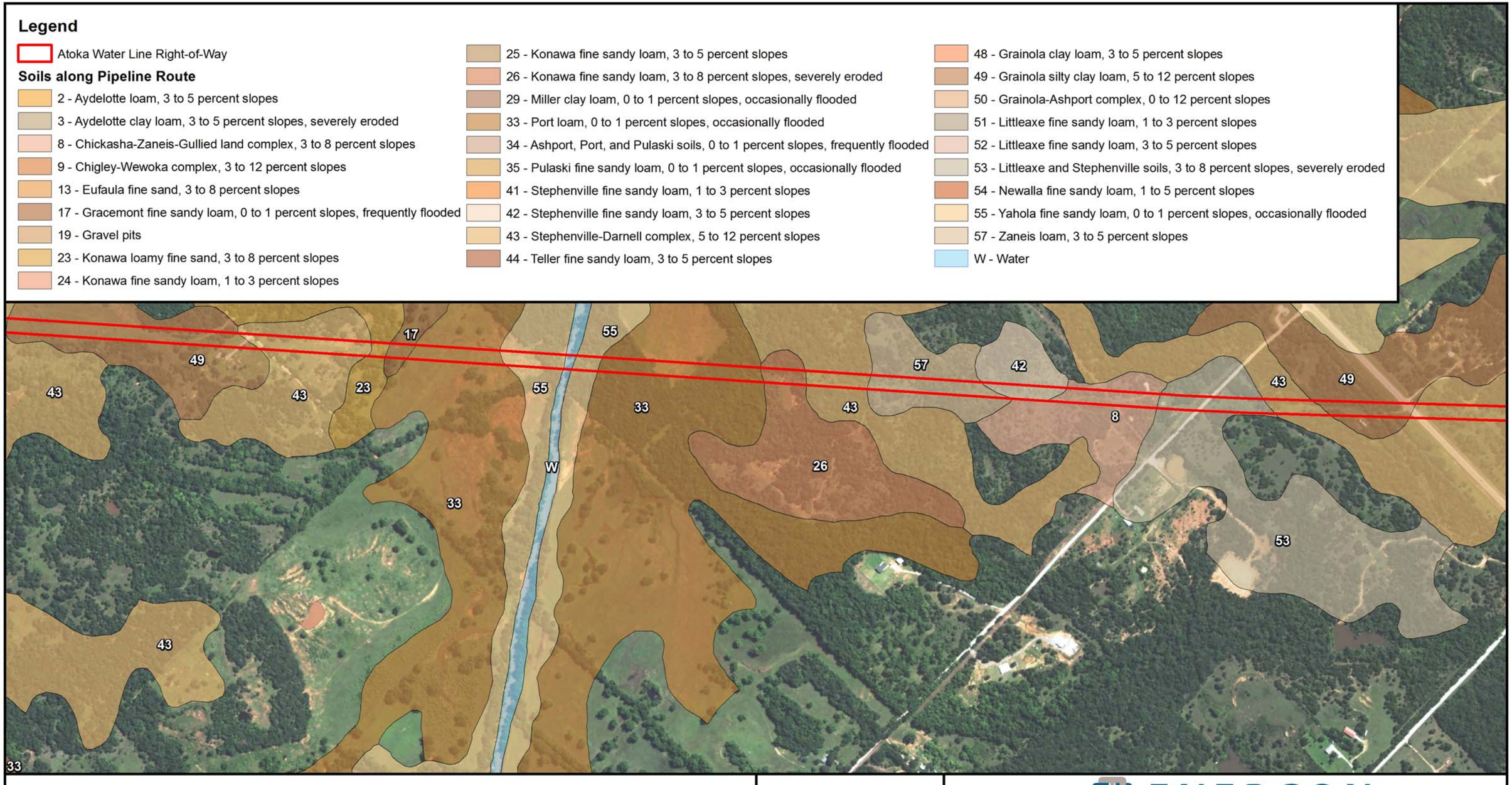
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 2 - Aydelotte loam, 3 to 5 percent slopes
- 3 - Aydelotte clay loam, 3 to 5 percent slopes, severely eroded
- 8 - Chickasha-Zaneis-Gullied land complex, 3 to 8 percent slopes
- 9 - Chigley-Wewoka complex, 3 to 12 percent slopes
- 13 - Eufaula fine sand, 3 to 8 percent slopes
- 17 - Gracemont fine sandy loam, 0 to 1 percent slopes, frequently flooded
- 19 - Gravel pits
- 23 - Konawa loamy fine sand, 3 to 8 percent slopes
- 24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 25 - Konawa fine sandy loam, 3 to 5 percent slopes
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 29 - Miller clay loam, 0 to 1 percent slopes, occasionally flooded
- 33 - Port loam, 0 to 1 percent slopes, occasionally flooded
- 34 - Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded
- 35 - Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 41 - Stephenville fine sandy loam, 1 to 3 percent slopes
- 42 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex, 5 to 12 percent slopes
- 44 - Teller fine sandy loam, 3 to 5 percent slopes
- 48 - Grainola clay loam, 3 to 5 percent slopes
- 49 - Grainola silty clay loam, 5 to 12 percent slopes
- 50 - Grainola-Ashport complex, 0 to 12 percent slopes
- 51 - Littleaxe fine sandy loam, 1 to 3 percent slopes
- 52 - Littleaxe fine sandy loam, 3 to 5 percent slopes
- 53 - Littleaxe and Stephenville soils, 3 to 8 percent slopes, severely eroded
- 54 - Newalla fine sandy loam, 1 to 5 percent slopes
- 55 - Yahola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 57 - Zaneis loam, 3 to 5 percent slopes
- W - Water



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Section 19, T7N R4E; Sections 24, 13 & 14, T7N R3E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.5: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 22, 2016

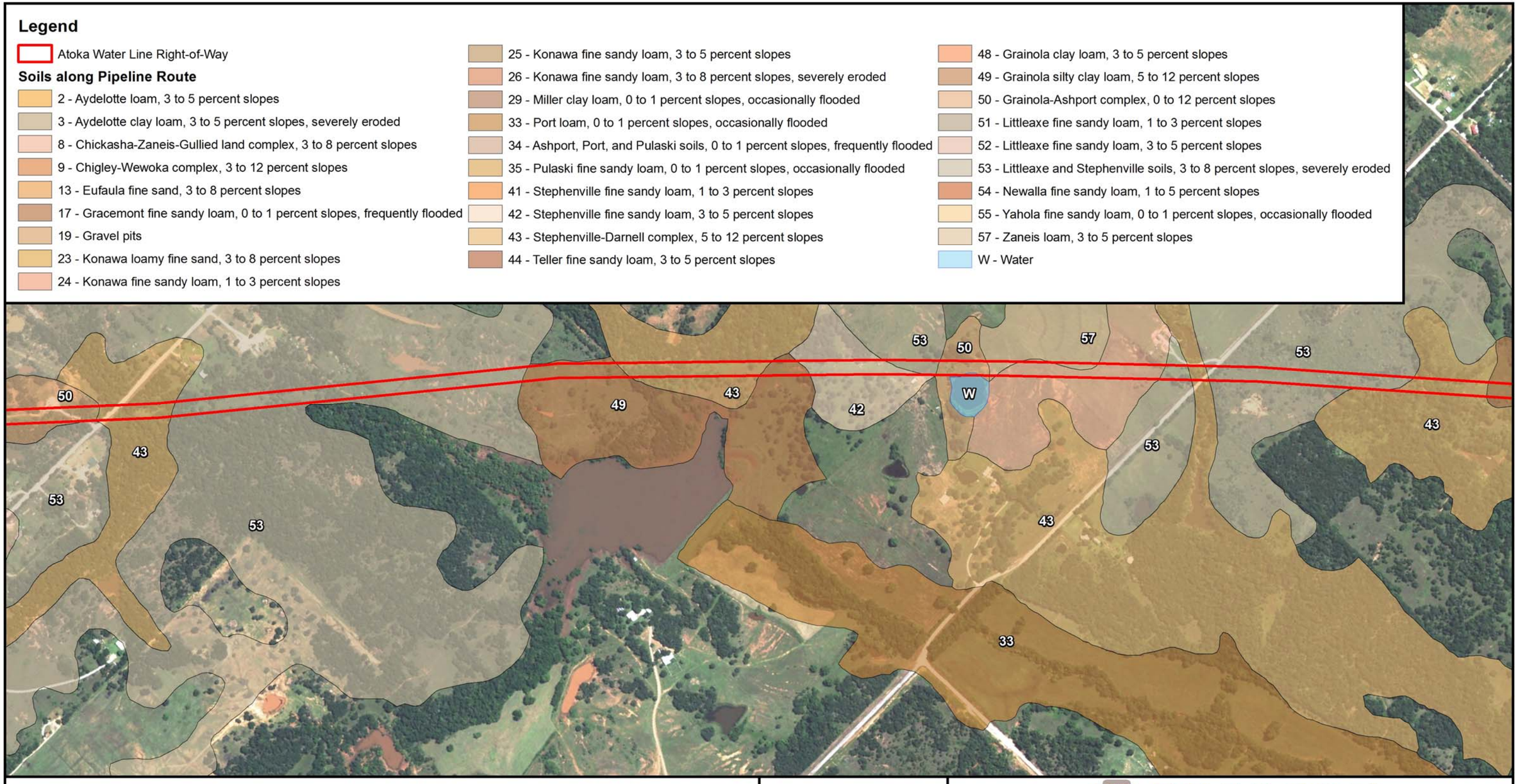
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 2 - Aydelotte loam, 3 to 5 percent slopes
- 3 - Aydelotte clay loam, 3 to 5 percent slopes, severely eroded
- 8 - Chickasha-Zaneis-Gullied land complex, 3 to 8 percent slopes
- 9 - Chigley-Wewoka complex, 3 to 12 percent slopes
- 13 - Eufaula fine sand, 3 to 8 percent slopes
- 17 - Gracemont fine sandy loam, 0 to 1 percent slopes, frequently flooded
- 19 - Gravel pits
- 23 - Konawa loamy fine sand, 3 to 8 percent slopes
- 24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 25 - Konawa fine sandy loam, 3 to 5 percent slopes
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 29 - Miller clay loam, 0 to 1 percent slopes, occasionally flooded
- 33 - Port loam, 0 to 1 percent slopes, occasionally flooded
- 34 - Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded
- 35 - Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 41 - Stephenville fine sandy loam, 1 to 3 percent slopes
- 42 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex, 5 to 12 percent slopes
- 44 - Teller fine sandy loam, 3 to 5 percent slopes
- 48 - Grainola clay loam, 3 to 5 percent slopes
- 49 - Grainola silty clay loam, 5 to 12 percent slopes
- 50 - Grainola-Ashport complex, 0 to 12 percent slopes
- 51 - Littleaxe fine sandy loam, 1 to 3 percent slopes
- 52 - Littleaxe fine sandy loam, 3 to 5 percent slopes
- 53 - Littleaxe and Stephenville soils, 3 to 8 percent slopes, severely eroded
- 54 - Newalla fine sandy loam, 1 to 5 percent slopes
- 55 - Yahola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 57 - Zaneis loam, 3 to 5 percent slopes
- W - Water



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 14, 11, 10 & 3, T7N R3E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.6: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie County, Oklahoma; 2015 USDA NAIP
Prepared by: A. Couch; July 22, 2016

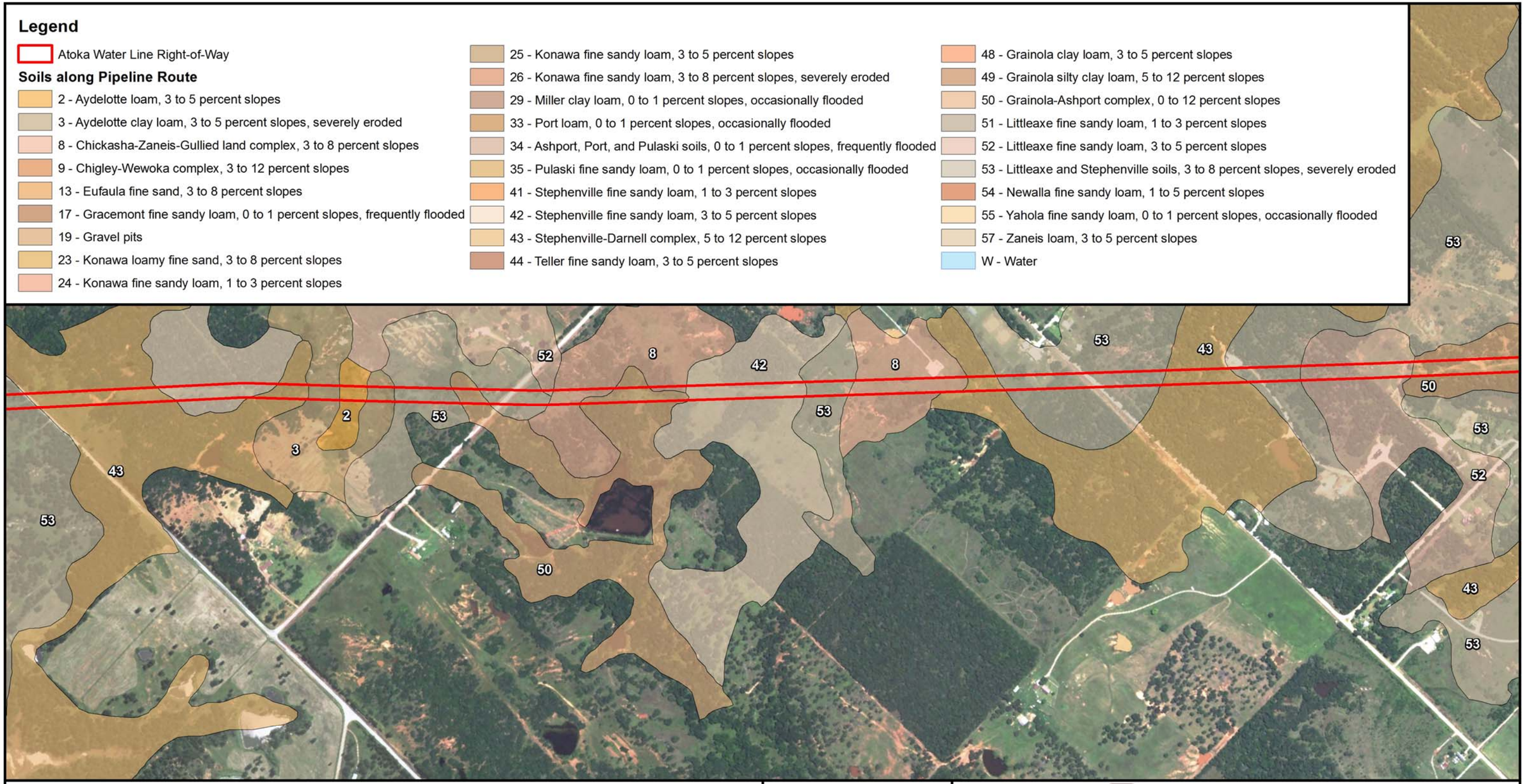
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 2 - Aydelotte loam, 3 to 5 percent slopes
- 3 - Aydelotte clay loam, 3 to 5 percent slopes, severely eroded
- 8 - Chickasha-Zaneis-Gullied land complex, 3 to 8 percent slopes
- 9 - Chigley-Wewoka complex, 3 to 12 percent slopes
- 13 - Eufaula fine sand, 3 to 8 percent slopes
- 17 - Gracemont fine sandy loam, 0 to 1 percent slopes, frequently flooded
- 19 - Gravel pits
- 23 - Konawa loamy fine sand, 3 to 8 percent slopes
- 24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 25 - Konawa fine sandy loam, 3 to 5 percent slopes
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 29 - Miller clay loam, 0 to 1 percent slopes, occasionally flooded
- 33 - Port loam, 0 to 1 percent slopes, occasionally flooded
- 34 - Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded
- 35 - Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 41 - Stephenville fine sandy loam, 1 to 3 percent slopes
- 42 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex, 5 to 12 percent slopes
- 44 - Teller fine sandy loam, 3 to 5 percent slopes
- 48 - Grainola clay loam, 3 to 5 percent slopes
- 49 - Grainola silty clay loam, 5 to 12 percent slopes
- 50 - Grainola-Ashport complex, 0 to 12 percent slopes
- 51 - Littleaxe fine sandy loam, 1 to 3 percent slopes
- 52 - Littleaxe fine sandy loam, 3 to 5 percent slopes
- 53 - Littleaxe and Stephenville soils, 3 to 8 percent slopes, severely eroded
- 54 - Newalla fine sandy loam, 1 to 5 percent slopes
- 55 - Yahola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 57 - Zaneis loam, 3 to 5 percent slopes
- W - Water



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 3 & 4, T7N R3E; Sections 33 & 32, T8N R3E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.7: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 18, 2016

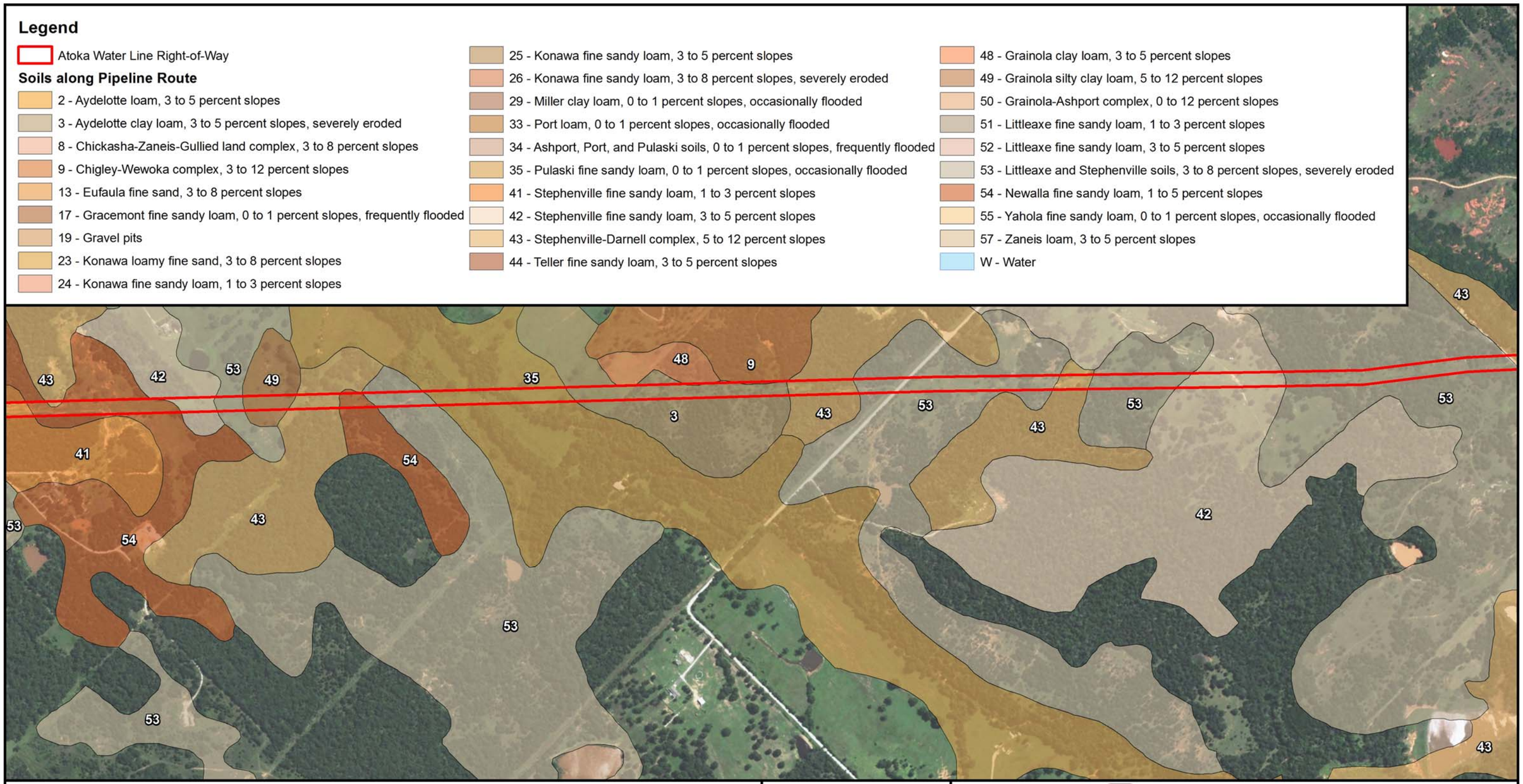
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 2 - Aydelotte loam, 3 to 5 percent slopes
- 3 - Aydelotte clay loam, 3 to 5 percent slopes, severely eroded
- 8 - Chickasha-Zaneis-Gullied land complex, 3 to 8 percent slopes
- 9 - Chigley-Wewoka complex, 3 to 12 percent slopes
- 13 - Eufaula fine sand, 3 to 8 percent slopes
- 17 - Gracemont fine sandy loam, 0 to 1 percent slopes, frequently flooded
- 19 - Gravel pits
- 23 - Konawa loamy fine sand, 3 to 8 percent slopes
- 24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 25 - Konawa fine sandy loam, 3 to 5 percent slopes
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 29 - Miller clay loam, 0 to 1 percent slopes, occasionally flooded
- 33 - Port loam, 0 to 1 percent slopes, occasionally flooded
- 34 - Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded
- 35 - Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 41 - Stephenville fine sandy loam, 1 to 3 percent slopes
- 42 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex, 5 to 12 percent slopes
- 44 - Teller fine sandy loam, 3 to 5 percent slopes
- 48 - Grainola clay loam, 3 to 5 percent slopes
- 49 - Grainola silty clay loam, 5 to 12 percent slopes
- 50 - Grainola-Ashport complex, 0 to 12 percent slopes
- 51 - Littleaxe fine sandy loam, 1 to 3 percent slopes
- 52 - Littleaxe fine sandy loam, 3 to 5 percent slopes
- 53 - Littleaxe and Stephenville soils, 3 to 8 percent slopes, severely eroded
- 54 - Newalla fine sandy loam, 1 to 5 percent slopes
- 55 - Yahola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 57 - Zaneis loam, 3 to 5 percent slopes
- W - Water



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 32, 29 & 30, T8N R3E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.8: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie County, Oklahoma; 2015 USDA NAIP
Prepared by: A. Couch; July 18, 2016

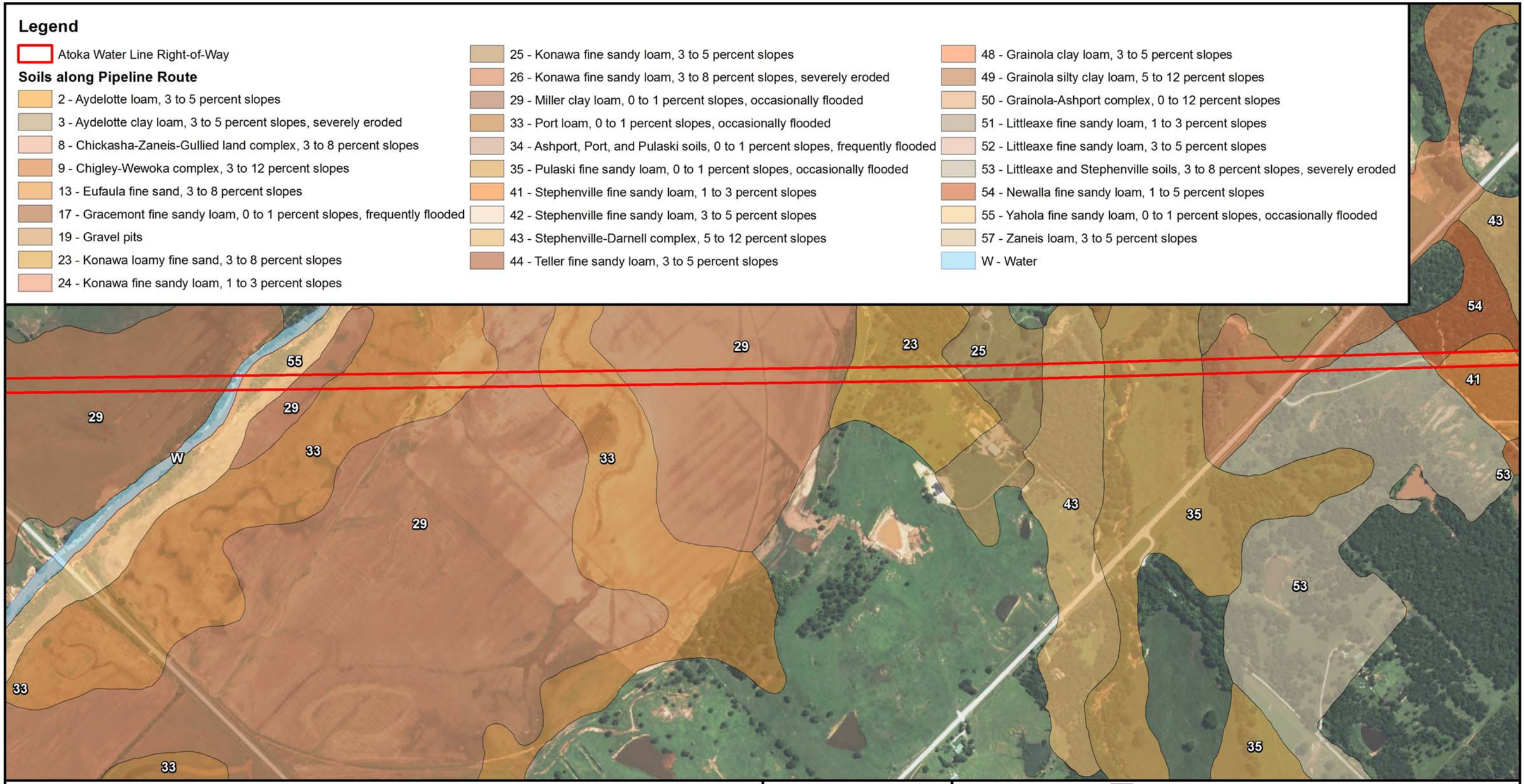
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 2 - Aydelotte loam, 3 to 5 percent slopes
- 3 - Aydelotte clay loam, 3 to 5 percent slopes, severely eroded
- 8 - Chickasha-Zaneis-Gullied land complex, 3 to 8 percent slopes
- 9 - Chigley-Wewoka complex, 3 to 12 percent slopes
- 13 - Eufaula fine sand, 3 to 8 percent slopes
- 17 - Gracemont fine sandy loam, 0 to 1 percent slopes, frequently flooded
- 19 - Gravel pits
- 23 - Konawa loamy fine sand, 3 to 8 percent slopes
- 24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 25 - Konawa fine sandy loam, 3 to 5 percent slopes
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 29 - Miller clay loam, 0 to 1 percent slopes, occasionally flooded
- 33 - Port loam, 0 to 1 percent slopes, occasionally flooded
- 34 - Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded
- 35 - Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 41 - Stephenville fine sandy loam, 1 to 3 percent slopes
- 42 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex, 5 to 12 percent slopes
- 44 - Teller fine sandy loam, 3 to 5 percent slopes
- 48 - Grainola clay loam, 3 to 5 percent slopes
- 49 - Grainola silty clay loam, 5 to 12 percent slopes
- 50 - Grainola-Ashport complex, 0 to 12 percent slopes
- 51 - Littleaxe fine sandy loam, 1 to 3 percent slopes
- 52 - Littleaxe fine sandy loam, 3 to 5 percent slopes
- 53 - Littleaxe and Stephenville soils, 3 to 8 percent slopes, severely eroded
- 54 - Newalla fine sandy loam, 1 to 5 percent slopes
- 55 - Yahola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 57 - Zaneis loam, 3 to 5 percent slopes
- W - Water



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 30 & 19, T8N R3E; Sections 24 & 13, T8N R2E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.9: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 18, 2016

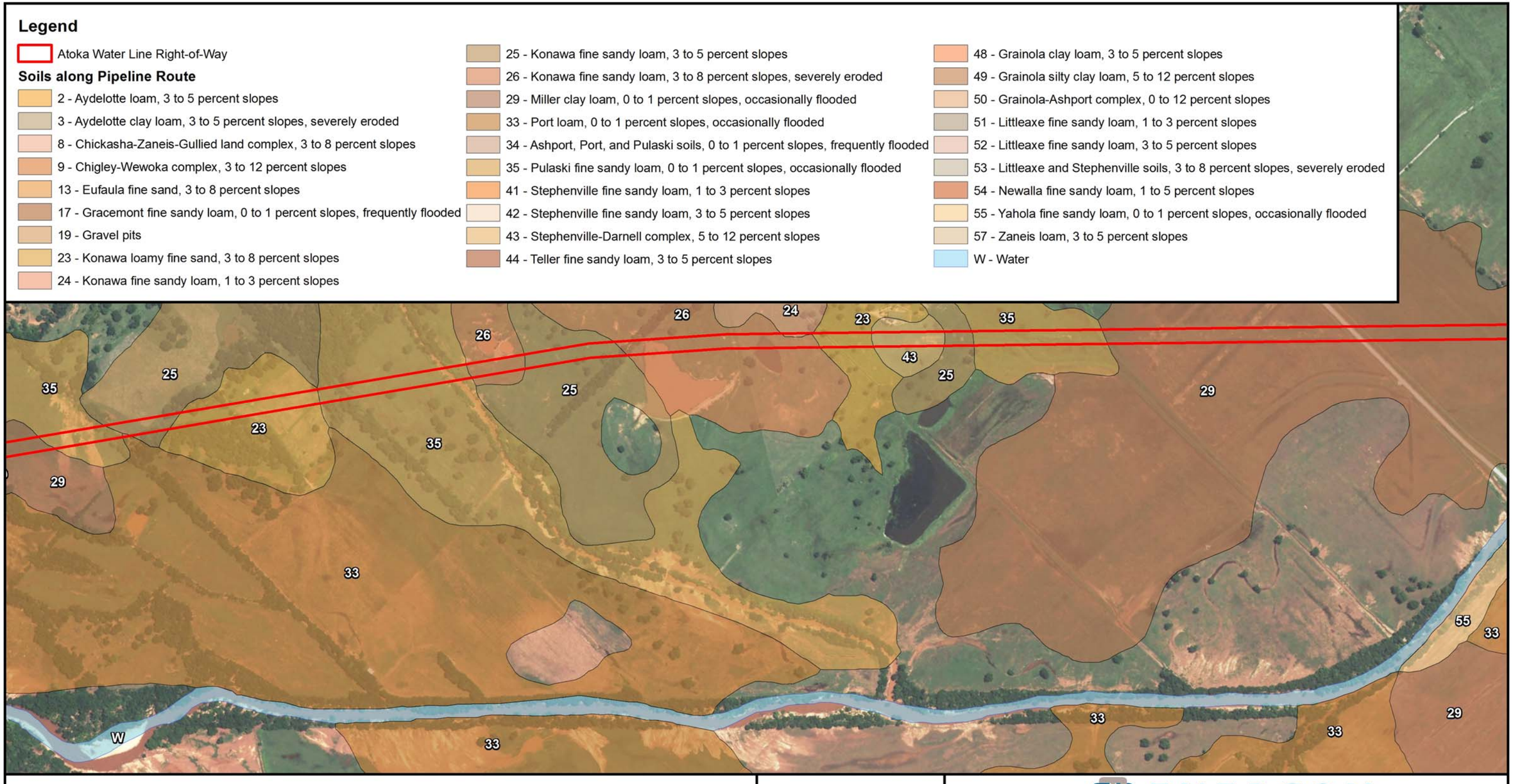
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 2 - Aydelotte loam, 3 to 5 percent slopes
- 3 - Aydelotte clay loam, 3 to 5 percent slopes, severely eroded
- 8 - Chickasha-Zaneis-Gullied land complex, 3 to 8 percent slopes
- 9 - Chigley-Wewoka complex, 3 to 12 percent slopes
- 13 - Eufaula fine sand, 3 to 8 percent slopes
- 17 - Gracemont fine sandy loam, 0 to 1 percent slopes, frequently flooded
- 19 - Gravel pits
- 23 - Konawa loamy fine sand, 3 to 8 percent slopes
- 24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 25 - Konawa fine sandy loam, 3 to 5 percent slopes
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 29 - Miller clay loam, 0 to 1 percent slopes, occasionally flooded
- 33 - Port loam, 0 to 1 percent slopes, occasionally flooded
- 34 - Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded
- 35 - Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 41 - Stephenville fine sandy loam, 1 to 3 percent slopes
- 42 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex, 5 to 12 percent slopes
- 44 - Teller fine sandy loam, 3 to 5 percent slopes
- 48 - Grainola clay loam, 3 to 5 percent slopes
- 49 - Grainola silty clay loam, 5 to 12 percent slopes
- 50 - Grainola-Ashport complex, 0 to 12 percent slopes
- 51 - Littleaxe fine sandy loam, 1 to 3 percent slopes
- 52 - Littleaxe fine sandy loam, 3 to 5 percent slopes
- 53 - Littleaxe and Stephenville soils, 3 to 8 percent slopes, severely eroded
- 54 - Newalla fine sandy loam, 1 to 5 percent slopes
- 55 - Yahola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 57 - Zaneis loam, 3 to 5 percent slopes
- W - Water



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 13, 14, 11 & 10, T8N R2E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.10: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 18, 2016

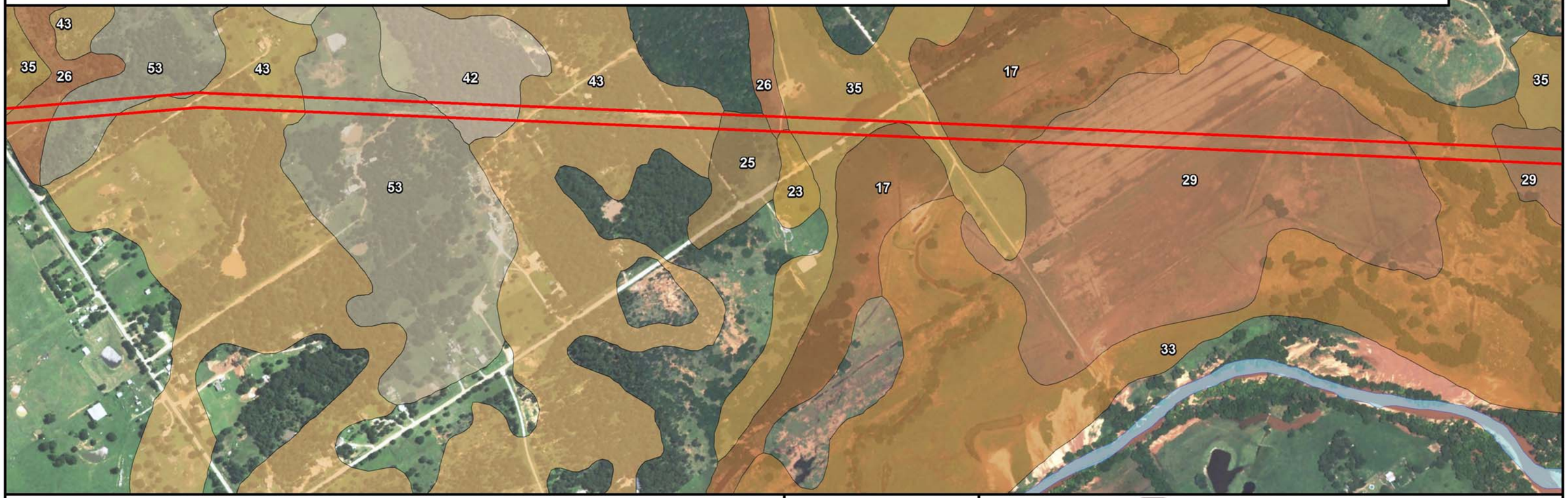
0 600 1,200 2,400 Feet

Legend

- Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 2 - Aydelotte loam, 3 to 5 percent slopes
- 3 - Aydelotte clay loam, 3 to 5 percent slopes, severely eroded
- 8 - Chickasha-Zaneis-Gullied land complex, 3 to 8 percent slopes
- 9 - Chigley-Wewoka complex, 3 to 12 percent slopes
- 13 - Eufaula fine sand, 3 to 8 percent slopes
- 17 - Gracemont fine sandy loam, 0 to 1 percent slopes, frequently flooded
- 19 - Gravel pits
- 23 - Konawa loamy fine sand, 3 to 8 percent slopes
- 24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 25 - Konawa fine sandy loam, 3 to 5 percent slopes
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 29 - Miller clay loam, 0 to 1 percent slopes, occasionally flooded
- 33 - Port loam, 0 to 1 percent slopes, occasionally flooded
- 34 - Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded
- 35 - Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 41 - Stephenville fine sandy loam, 1 to 3 percent slopes
- 42 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex, 5 to 12 percent slopes
- 44 - Teller fine sandy loam, 3 to 5 percent slopes
- 48 - Grainola clay loam, 3 to 5 percent slopes
- 49 - Grainola silty clay loam, 5 to 12 percent slopes
- 50 - Grainola-Ashport complex, 0 to 12 percent slopes
- 51 - Littleaxe fine sandy loam, 1 to 3 percent slopes
- 52 - Littleaxe fine sandy loam, 3 to 5 percent slopes
- 53 - Littleaxe and Stephenville soils, 3 to 8 percent slopes, severely eroded
- 54 - Newalla fine sandy loam, 1 to 5 percent slopes
- 55 - Yahola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 57 - Zaneis loam, 3 to 5 percent slopes
- W - Water



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 10, 9 & 4, T8N R2E
Pottawatomie County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 4.11: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie County, Oklahoma; 2015 USDA NAIP
Prepared by: A. Couch; July 18, 2016

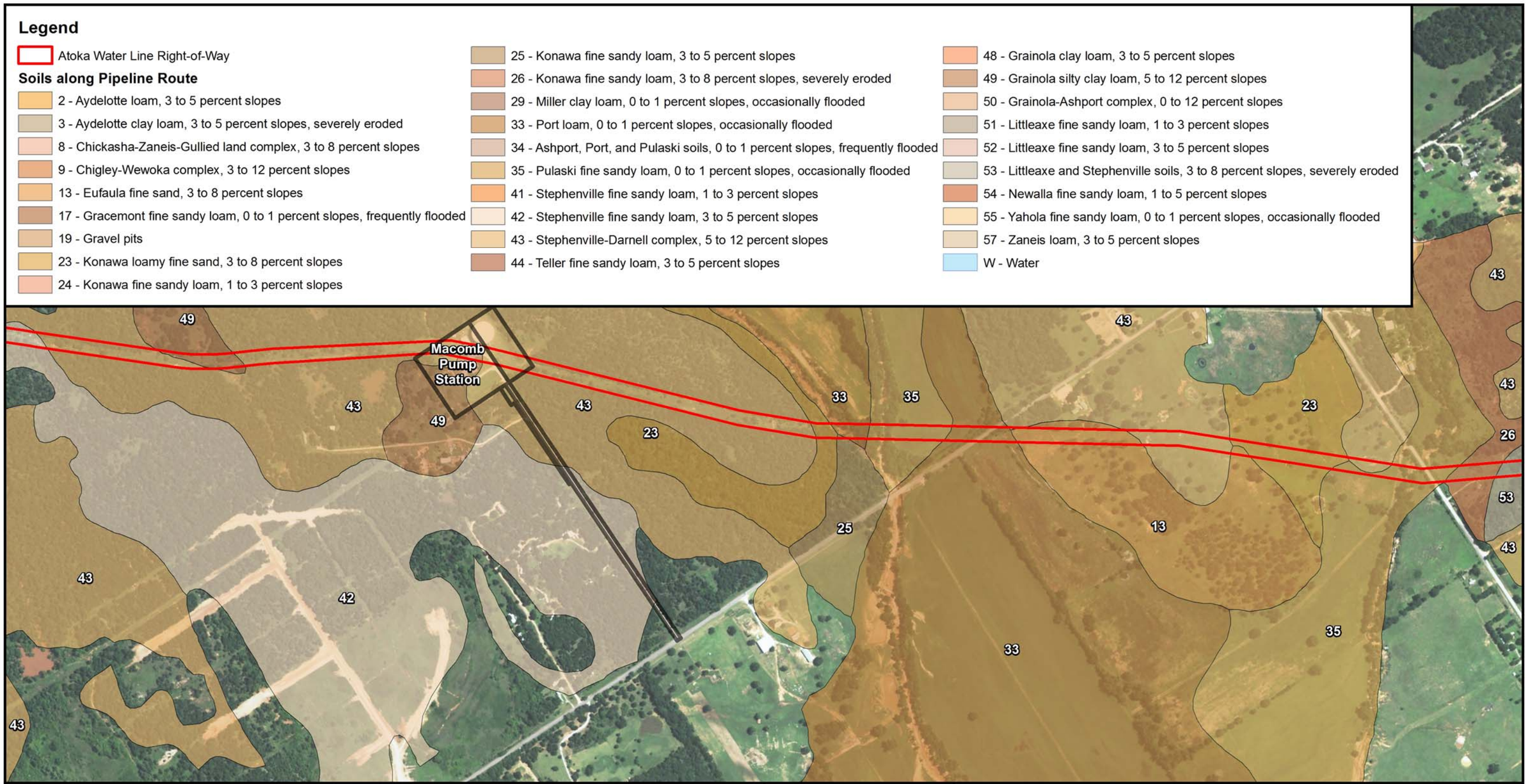
0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Soils along Pipeline Route

- 2 - Aydelotte loam, 3 to 5 percent slopes
- 3 - Aydelotte clay loam, 3 to 5 percent slopes, severely eroded
- 8 - Chickasha-Zaneis-Gullied land complex, 3 to 8 percent slopes
- 9 - Chigley-Wewoka complex, 3 to 12 percent slopes
- 13 - Eufaula fine sand, 3 to 8 percent slopes
- 17 - Gracemont fine sandy loam, 0 to 1 percent slopes, frequently flooded
- 19 - Gravel pits
- 23 - Konawa loamy fine sand, 3 to 8 percent slopes
- 24 - Konawa fine sandy loam, 1 to 3 percent slopes
- 25 - Konawa fine sandy loam, 3 to 5 percent slopes
- 26 - Konawa fine sandy loam, 3 to 8 percent slopes, severely eroded
- 29 - Miller clay loam, 0 to 1 percent slopes, occasionally flooded
- 33 - Port loam, 0 to 1 percent slopes, occasionally flooded
- 34 - Ashport, Port, and Pulaski soils, 0 to 1 percent slopes, frequently flooded
- 35 - Pulaski fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 41 - Stephenville fine sandy loam, 1 to 3 percent slopes
- 42 - Stephenville fine sandy loam, 3 to 5 percent slopes
- 43 - Stephenville-Darnell complex, 5 to 12 percent slopes
- 44 - Teller fine sandy loam, 3 to 5 percent slopes
- 48 - Grainola clay loam, 3 to 5 percent slopes
- 49 - Grainola silty clay loam, 5 to 12 percent slopes
- 50 - Grainola-Ashport complex, 0 to 12 percent slopes
- 51 - Littleaxe fine sandy loam, 1 to 3 percent slopes
- 52 - Littleaxe fine sandy loam, 3 to 5 percent slopes
- 53 - Littleaxe and Stephenville soils, 3 to 8 percent slopes, severely eroded
- 54 - Newalla fine sandy loam, 1 to 5 percent slopes
- 55 - Yahola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 57 - Zaneis loam, 3 to 5 percent slopes
- W - Water



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 4 & 5, T8N R2E; Sections 32 & 31, T9N R2E
Pottawatomie County, Oklahoma

N E W S

1:8,000

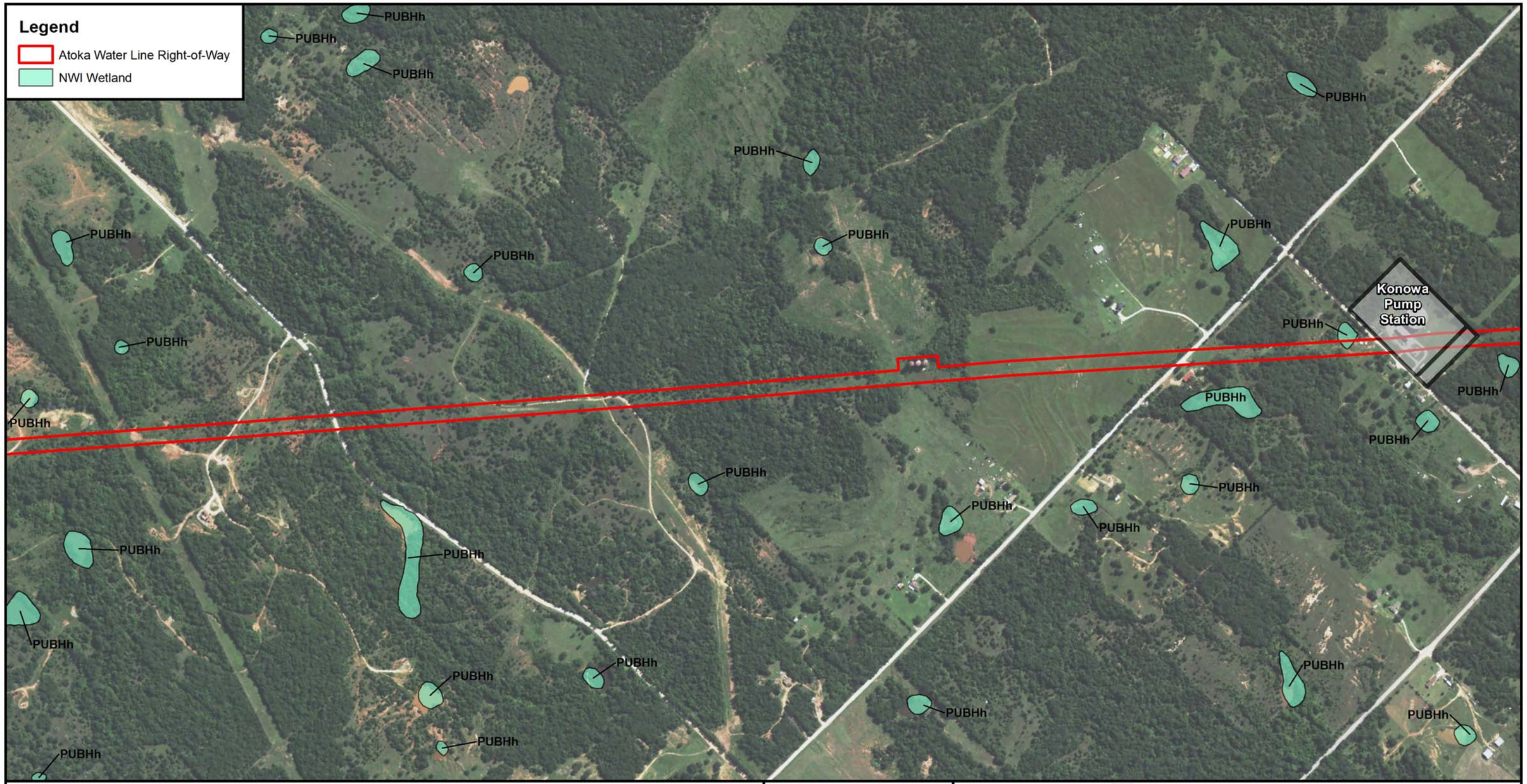
ENERCON

Figure 4.12: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie County, Oklahoma; 2015 USDA NAIP

Prepared by: A. Couch; July 18, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Section 18, T6N R5E; Sections 13, 12 & 11, T6N R4E
Pottawatomie County, Oklahoma

N E S W

1:8,000

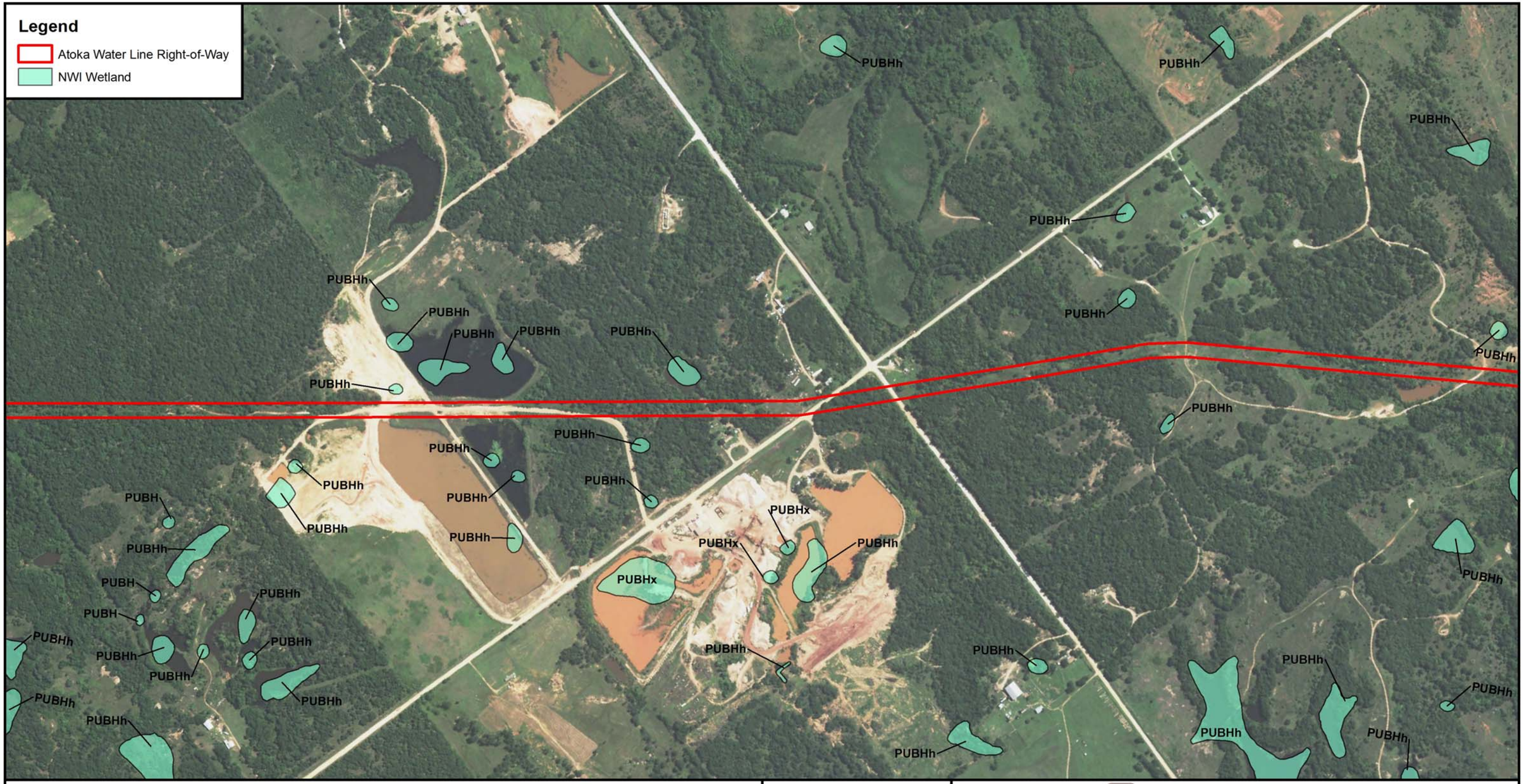
ENERCON

Figure 5.1: NWI Map

Source: US Fish and Wildlife Service - NWI Konawa and Saint Louis, OK Quadrangles
2015 USDA NAIP - Pottawatomie County, Oklahoma

Prepared by: A. Couch; July 22, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 11, 10 & 3, T6N R4E
Pottawatomie County, Oklahoma

1:8,000

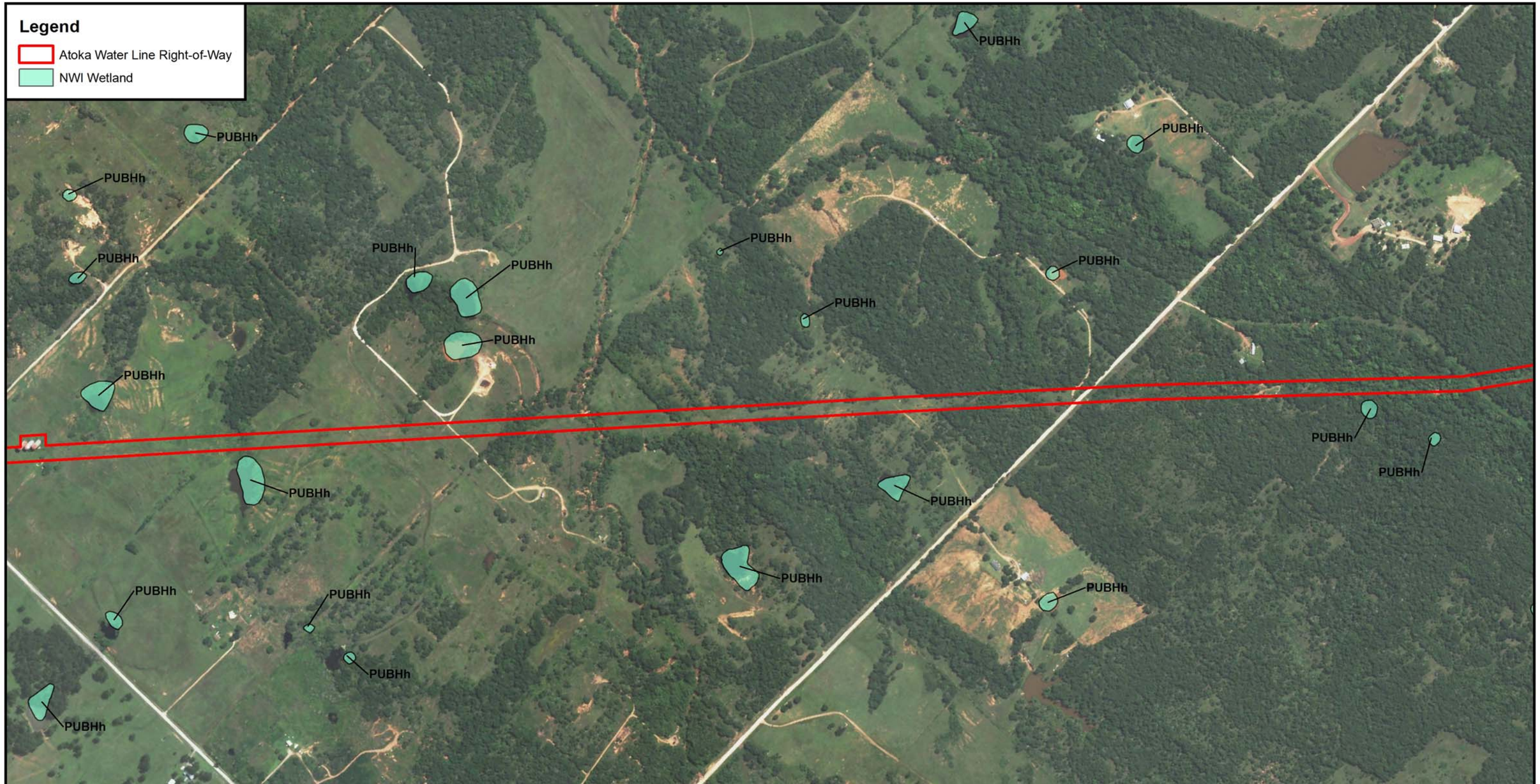
ENERCON

Figure 5.2: NWI Map

Source: US Fish and Wildlife Service - NWI Saint Louis and Pearson, OK Quadrangles
2015 USDA NAIP - Pottawatomie County, Oklahoma

Prepared by: A. Couch; July 22, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 3 & 4, T6N R4E; Sections 33 & 32, T7N R4E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 5.3: NWI Map

Source: US Fish and Wildlife Service - NWI Pearson, OK Quadrangle
2015 USDA NAIP - Pottawatomie County, Oklahoma

Prepared by: A. Couch; July 18, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 32, 29, 30 & 19, T7N R4E
Pottawatomie County, Oklahoma

N E W S

1:8,000

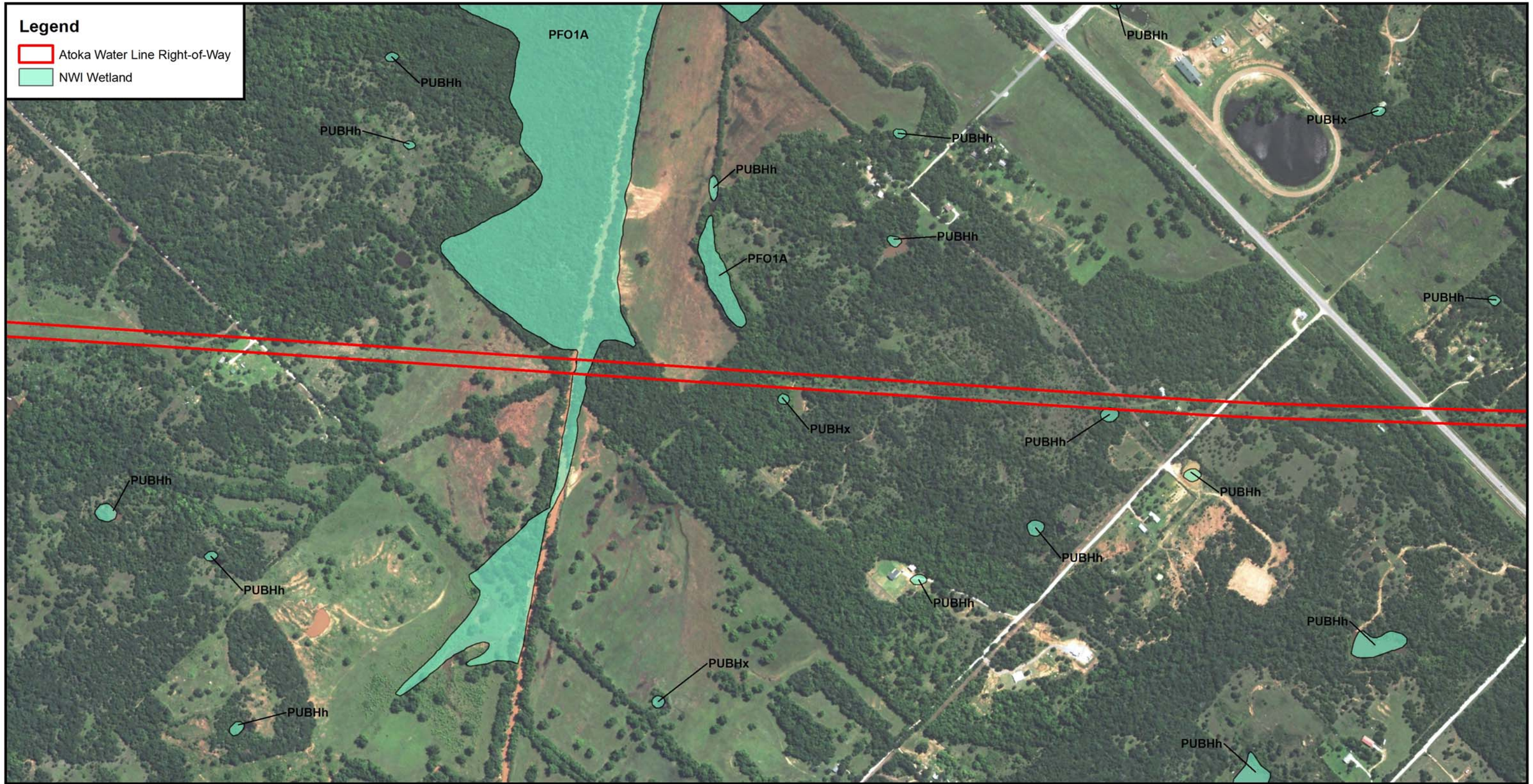
ENERCON

Figure 5.4: NWI Map

Source: US Fish and Wildlife Service - NWI Pearson, OK Quadrangle
2015 USDA NAIP - Pottawatomie County, Oklahoma

Prepared by: A. Couch; July 18, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Section 19, T7N R4E; Sections 24, 13 & 14, T7N R3E
Pottawatomie County, Oklahoma

1:8,000

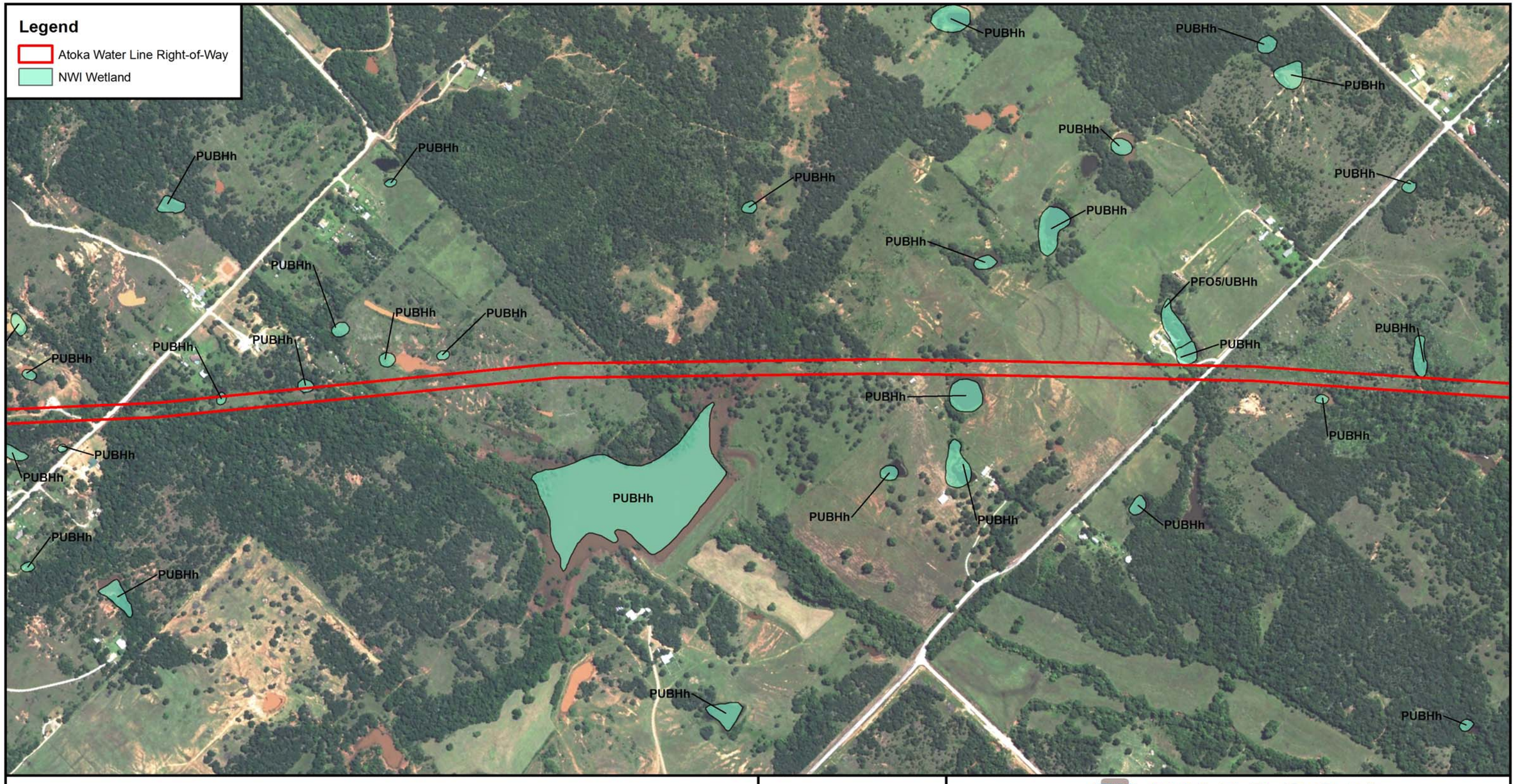
ENERCON

Figure 5.5: NWI Map

Source: US Fish and Wildlife Service - NWI Pearson, OK Quadrangle
2015 USDA NAIP - Pottawatomie County, Oklahoma

Prepared by: A. Couch; July 13, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 14, 11, 10 & 3, T7N R3E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 5.6: NWI Map
Source: US Fish and Wildlife Service - NWI Pearson, OK Quadrangle
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: A. Couch; July 18, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 3 & 4, T7N R3E; Sections 33 & 32, T8N R3E
Pottawatomie County, Oklahoma

1:8,000

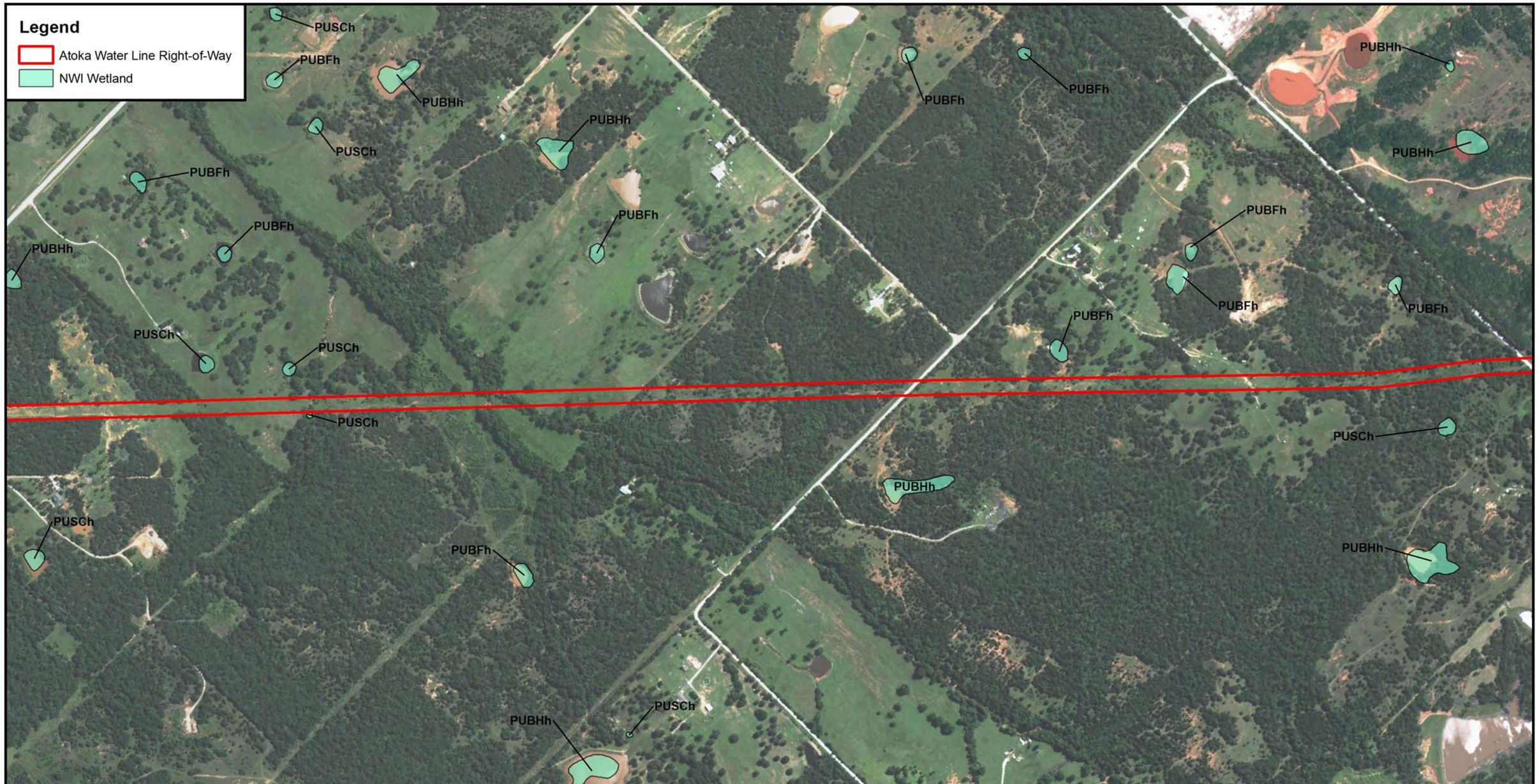
ENERCON

Figure 5.7: NWI Map

Source: US Fish and Wildlife Service - NWI Pearson and Tribbey, OK Quradrangles
2015 USDA NAIP - Pottawatomie County, Oklahoma

Prepared by: A. Couch; July 22, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 32, 29 & 30, T8N R3E
Pottawatomie County, Oklahoma

1:8,000

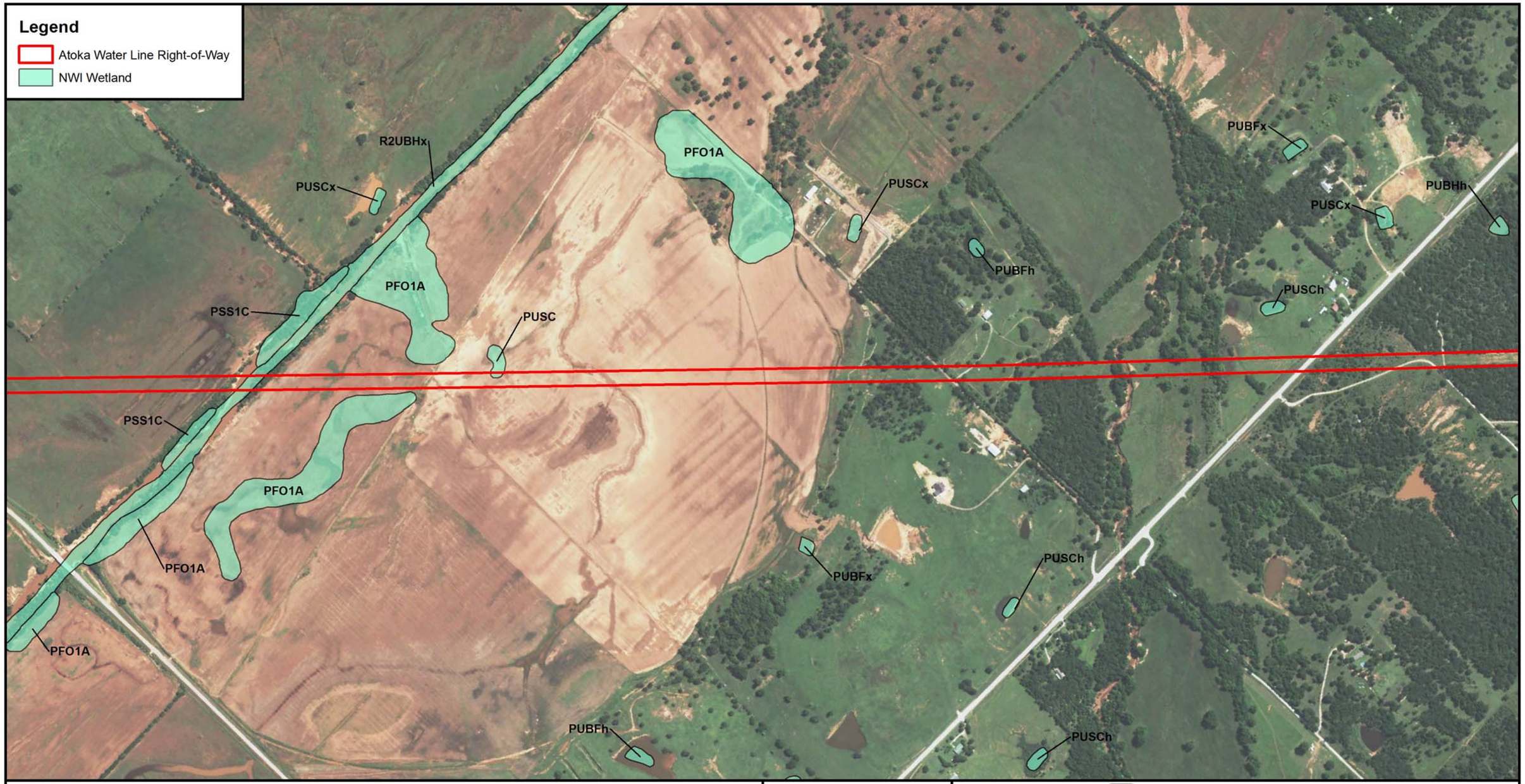
ENERCON

Figure 5.8: NWI Map

Source: US Fish and Wildlife Service - NWI Tribbey and Macomb, OK Quadrangles
2015 USDA NAIP - Pottawatomie County, Oklahoma

Prepared by: A. Couch; July 18, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 30 & 19, T8N R3E; Sections 24 & 13, T8N R2E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 5.9: NWI Map

Source: US Fish and Wildlife Service - NWI Macomb, OK Quadrangle
2015 USDA NAIP - Pottawatomie County, Oklahoma

Prepared by: A. Couch; July 18, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 13, 14, 11 & 10, T8N R2E
Pottawatomie County, Oklahoma

1:8,000

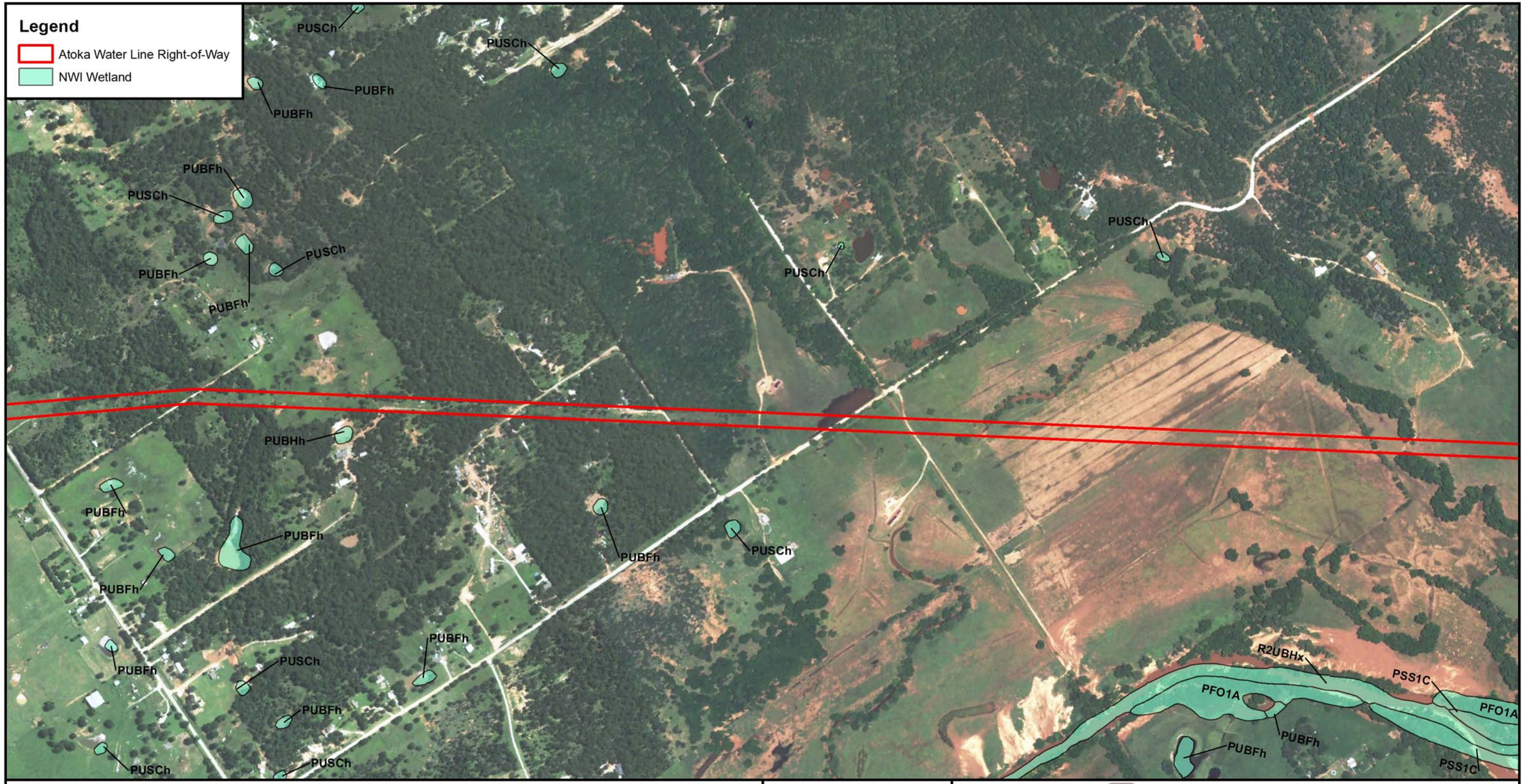
ENERCON

Figure 5.10: NWI Map

Source: US Fish and Wildlife Service - NWI Macomb, OK Quadrangle
2015 USDA NAIP - Pottawatomie County, Oklahoma

Prepared by: A. Couch; July 18, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 10, 9 & 4, T8N R2E
Pottawatomie County, Oklahoma

N E S W

1:8,000

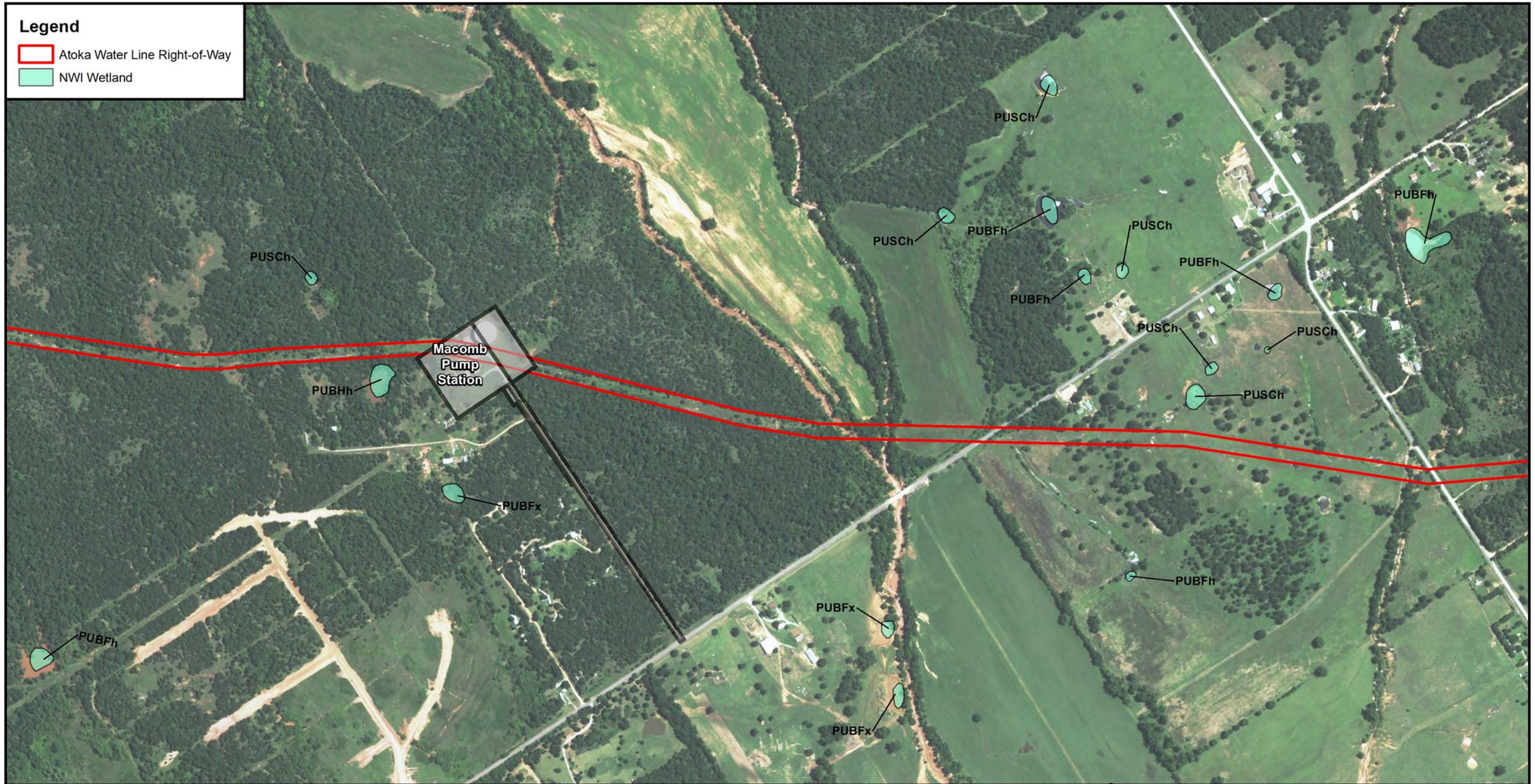
ENERCON

Figure 5.11: NWI Map

Source: US Fish and Wildlife Service - NWI Macomb, OK Quadrangle
2015 USDA NAIP - Pottawatomie County, Oklahoma

Prepared by: A. Couch; July 18, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 4 & 5, T8N R2E; Sections 32 & 31, T9N R2E
Pottawatomie County, Oklahoma

1:8,000

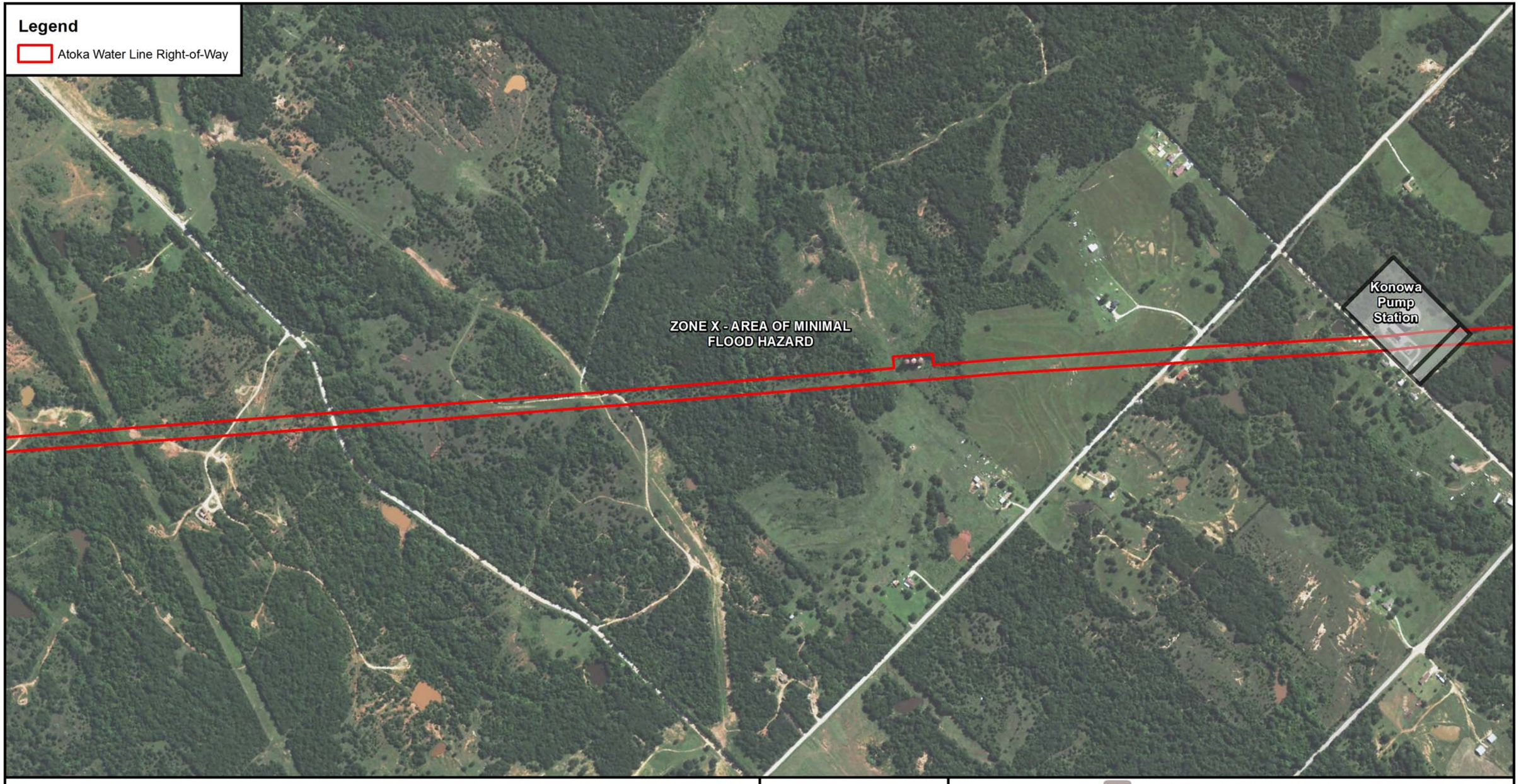
ENERCON

Figure 5.12: NWI Map

Source: US Fish and Wildlife Service - NWI Macomb, OK Quadrangle
2015 USDA NAIP - Pottawatomie County, Oklahoma

Prepared by: A. Couch; July 22, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Section 18, T6N R5E; Sections 13, 12 & 11, T6N R4E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 6.1: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40125C0550H & #40125C0450H - September 3, 2010
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: A. Couch; July 22, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

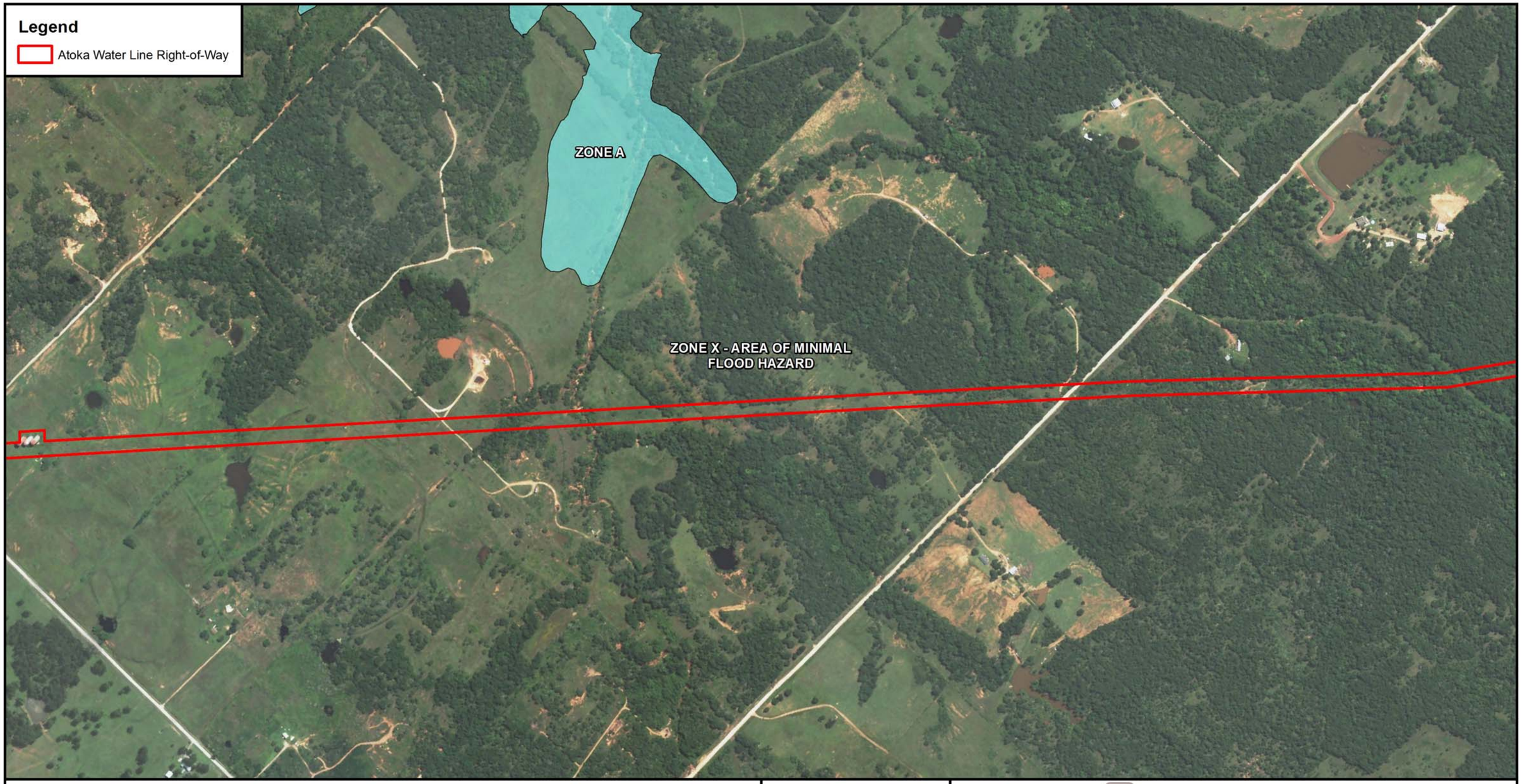
Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 11, 10 & 3, T6N R4E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 6.2: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40125C0450H & #40125C0425H - September 3, 2010
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: A. Couch; July 13, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 3 & 4, T6N R4E; Sections 33 & 32, T7N R4E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 6.3: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40125C0425H - September 3, 2010
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: A. Couch; July 13, 2016

Feet
0 600 1,200 2,400

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 32, 29, 30 & 19, T7N R4E
Pottawatomie County, Oklahoma

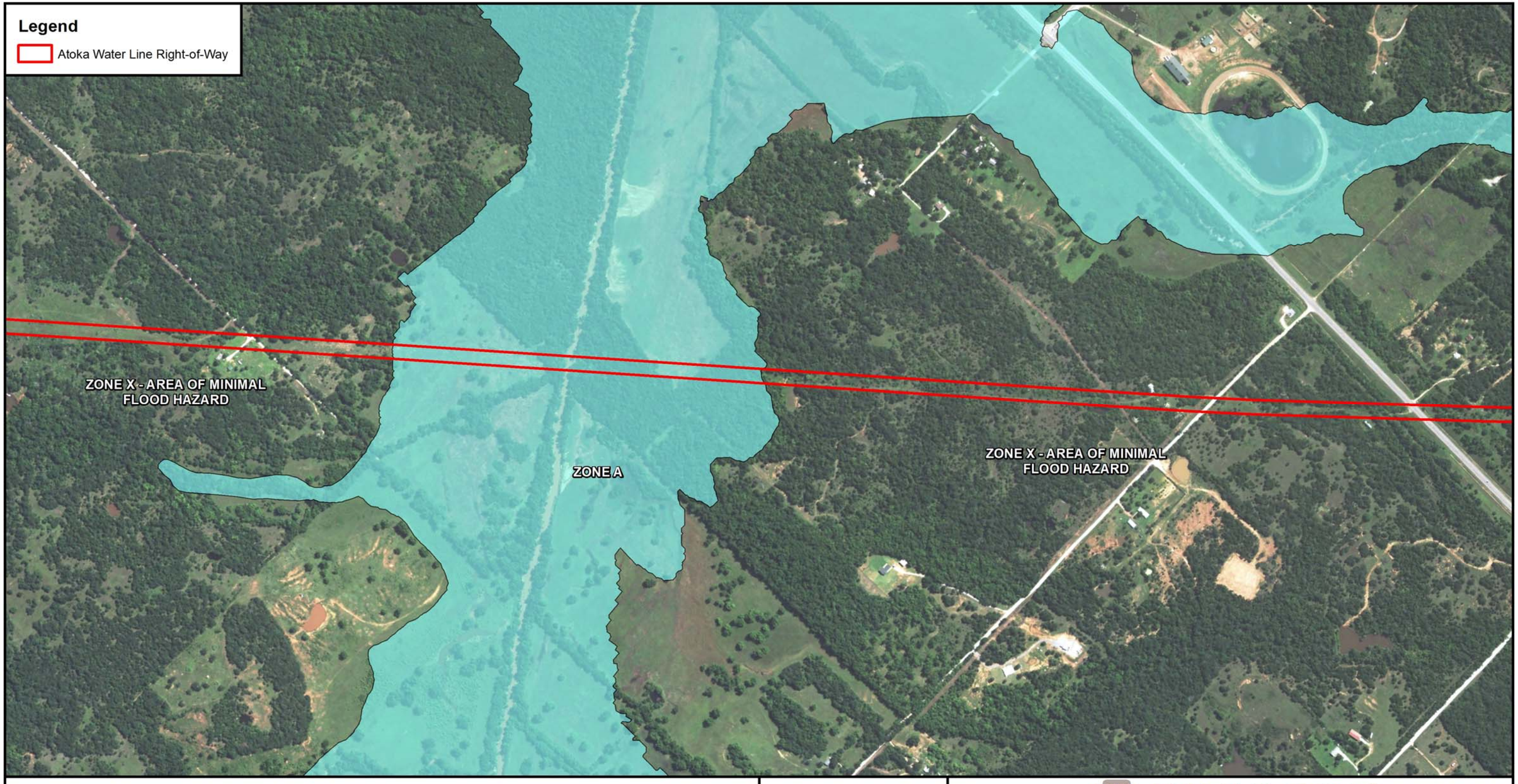
N E S W

1:8,000

ENERCON

Figure 6.4: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40125C0425H - September 3, 2010
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: A. Couch; July 13, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Section 19, T7N R4E; Sections 24, 13 & 14, T7N R3E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 6.5: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40125C0425H - September 3, 2010
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: A. Couch; July 13, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

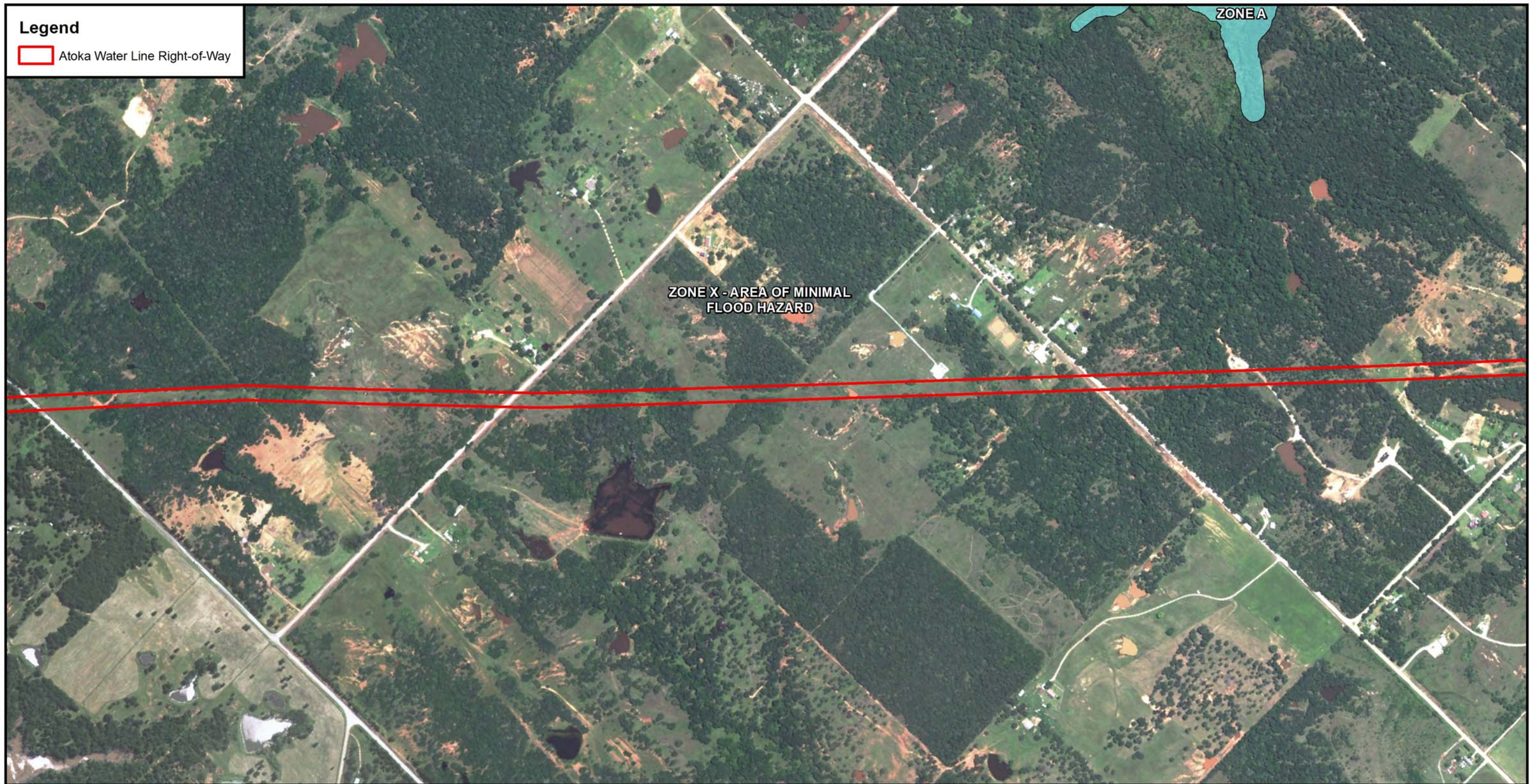
Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 14, 11, 10 & 3, T7N R3E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 6.6: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40125C0425H - September 3, 2010
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: A. Couch; July 13, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 3 & 4, T7N R3E; Sections 33 & 32, T8N R3E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 6.7: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40125C0425H & 40125C04005H - September 3, 2010
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: A. Couch; July 18, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 32, 29 & 30, T8N R3E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 6.8: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40125C0400H & 40125C0300 - September 3, 2010
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: A. Couch; July 14, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 30 & 19, T8N R3E; Sections 24 & 13, T8N R2E
Pottawatomie County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 6.9: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40125C0300H - September 3, 2010
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: A. Couch; July 14, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 13, 14, 11 & 10, T8N R2E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 6.10: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40125C0300H & #40125C0290H - September 3, 2010
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: A. Couch; July 14, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

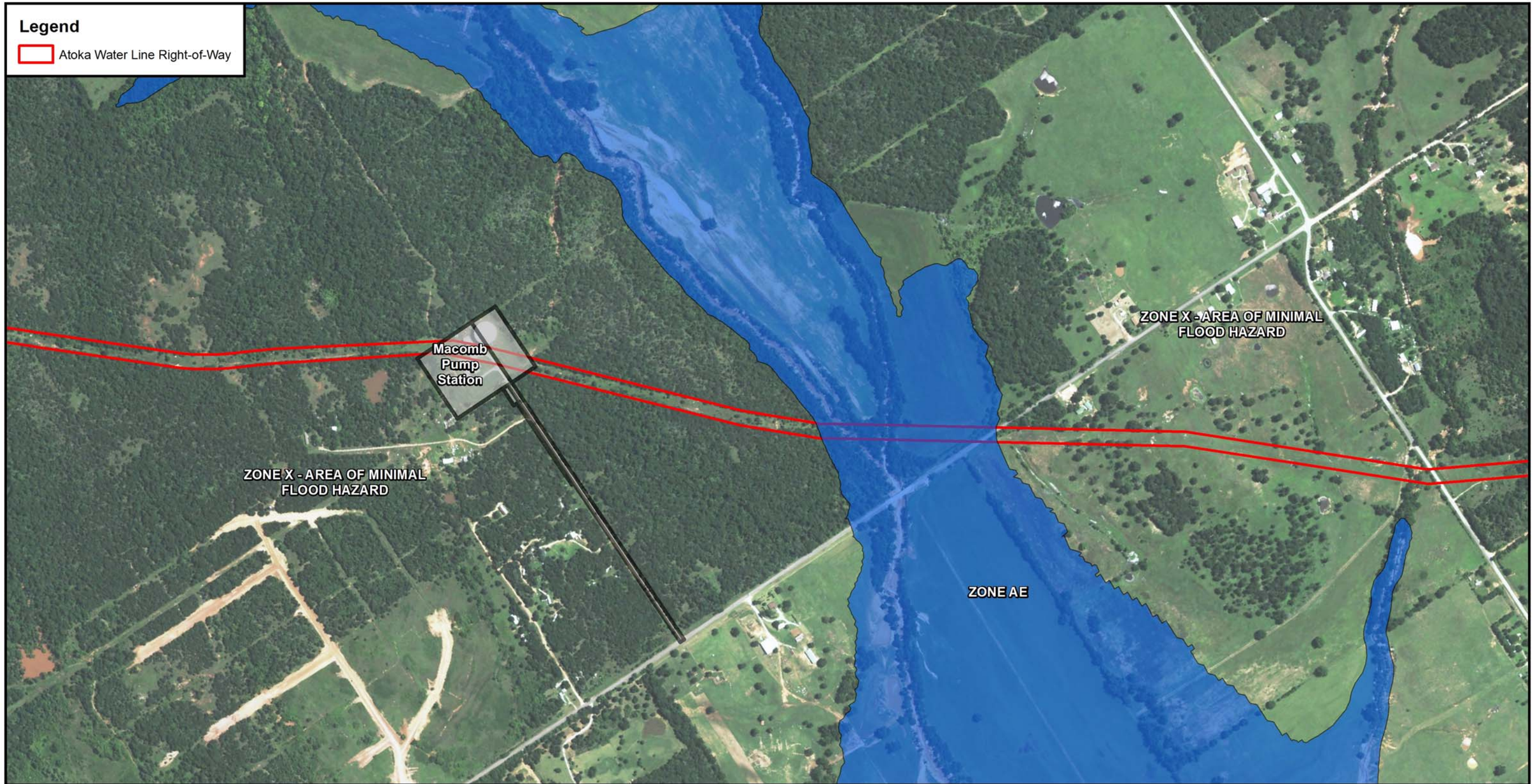
Subject Property:
Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 10, 9 & 4, T8N R2E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 6.11: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
Map #40125C0290H & #40125C0280H - September 3, 2010
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: A. Couch; July 14, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 5: Konowa Pump Station to Macomb Pump Station
Sections 4 & 5, T8N R2E; Sections 32 & 31, T9N R2E
Pottawatomie County, Oklahoma

1:8,000

ENERCON

Figure 6.12: Flood Insurance Rate Map

Source: Federal Emergency Management Agency
Map #40125C0280H & #40125C0260H - September 3, 2010
2015 USDA NAIP - Pottawatomie County, Oklahoma
Prepared by: A. Couch; July 22, 2016

0 600 1,200 2,400 Feet

Table 1: Soils Series within the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie County, Oklahoma.

Table 1: Soils Series within the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Aydelotte loam	2	3 to 5	Well drained	Non-hydric	Very gently sloping to sloping soils on uplands, low to moderately low water capacity
Aydelotte clay loam, severely eroded	3	3 to 5	Well drained	Non-hydric	Very gently sloping to sloping soils on uplands, low to moderately low water capacity
Chickasha-Zaneis-Gullied land complex	8	3 to 8	Well drained	Non-hydric	Nearly level to sloping broad ridgetops, side slopes of convex hills, low hills; moderately high
Chigley-Wewoka complex	9	3 to 12	Moderately well drained	Non-hydric	Very gently sloping to steep uplands, moderately low to moderately high water capacity
Eufaula fine sand	13	3 to 8	Somewhat excessively drained	Non-hydric	Stabilized dunes on reworked stream terraces, high to very high water capacity
Gracemont fine sandy loam, frequently flooded	17	0 to 1	Somewhat poorly drained	Non-hydric	Nearly level or very gently sloping soils on narrow floodplains, moderately high to high water capacity
Gravel pits	19	NA	NA	NA	NA
Konawa loamy fine sand	23	3 to 8	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Konawa fine sandy loam	25	3 to 5	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Konawa fine sandy loam, severely eroded	26	3 to 8	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Miller clay loam, occasionally flooded	29	0 to 1	Moderately well drained	Non-hydric	Nearly level soils on broad smooth floodplains, low to moderately low water capacity
Port loam, occasionally flooded	33	0 to 1	Well drained	Non-hydric	Nearly level to very gently sloping soils on narrow floodplains, moderately high to high water

Table 1: Soils Series within the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Aydelotte loam	2	3 to 5	Well drained	Non-hydric	Very gently sloping to sloping soils on uplands, low to moderately low water capacity
Aydelotte clay loam, severely eroded	3	3 to 5	Well drained	Non-hydric	Very gently sloping to sloping soils on uplands, low to moderately low water capacity
Chickasha-Zaneis-Gullied land complex	8	3 to 8	Well drained	Non-hydric	Nearly level to sloping broad ridgetops, side slopes of convex hills, low hills; moderately high
Chigley-Wewoka complex	9	3 to 12	Moderately well drained	Non-hydric	Very gently sloping to steep uplands, moderately low to moderately high water capacity
Eufaula fine sand	13	3 to 8	Somewhat excessively drained	Non-hydric	Stabilized dunes on reworked stream terraces, high to very high water capacity
Gracemont fine sandy loam, frequently flooded	17	0 to 1	Somewhat poorly drained	Non-hydric	Nearly level or very gently sloping soils on narrow floodplains, moderately high to high water capacity
Gravel pits	19	NA	NA	NA	NA
Konawa loamy fine sand	23	3 to 8	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Konawa fine sandy loam	25	3 to 5	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Konawa fine sandy loam, severely eroded	26	3 to 8	Well drained	Non-hydric	Treads and risers of low stream terraces, moderately high to high water capacity
Miller clay loam, occasionally flooded	29	0 to 1	Moderately well drained	Non-hydric	Nearly level soils on broad smooth floodplains, low to moderately low water capacity
Port loam, occasionally flooded	33	0 to 1	Well drained	Non-hydric	Nearly level to very gently sloping soils on narrow floodplains, moderately high to high water

Table 1: Soils Series within the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Ashport, Port, and Pulaski soils, frequently flooded	34	0 to 1	Well drained	Non-hydric	Nearly level to gently sloping floodplains, moderately high to high water capacity
Pulaski fine sandy loam, occasionally	35	0 to 1	Well drained	Non-hydric	Nearly level to very gently sloping floodplain soils on small tributaries, high water capacity
Stephenville fine sandy loam	41	1 to 3	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately low water capacity
Stephenville fine sandy loam	42	3 to 5	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately low water capacity
Stephenville-Darnell complex	43	5 to 12	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately high to high water
Teller fine sandy loam	44	3 to 5	Well drained	Non-hydric	Treads and risers of stream terraces, moderately high to high water capacity
Grainola clay loam	48	3 to 5	Well drained	Non-hydric	Summits and backslopes of low hills, very low to moderately high water capacity
Grainola silty clay loam	49	5 to 12	Well drained	Non-hydric	Summits and backslopes of low hills, very low to moderately high water capacity
Grainola-Ashport complex	50	0 to 8	Well drained	Non-hydric	Summits, backslopes of low hills, and floodplains, very low to moderately high water capacity
Littleaxe fine sandy loam	51	1 to 3	Well drained	Non-hydric	Very gently sloping or gently sloping upland ridge crests, moderately low water capacity
Littleaxe fine sandy loam	52	3 to 5	Well drained	Non-hydric	Very gently sloping or gently sloping upland ridge crests, moderately low water capacity
Littleaxe and Stephenville soils, severely	53	3 to 8	Well drained	Non-hydric	Very gently sloping or gently sloping upland ridge crests, moderately low water capacity
Newalla fine sandy loam	54	3 to 5	Moderately well drained	Non-hydric	Very gently sloping to steep summits and back slopes of uplands, very low to moderately

Table 1: Soils Series within the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Ashport, Port, and Pulaski soils, frequently flooded	34	0 to 1	Well drained	Non-hydric	Nearly level to gently sloping floodplains, moderately high to high water capacity
Pulaski fine sandy loam, occasionally	35	0 to 1	Well drained	Non-hydric	Nearly level to very gently sloping floodplain soils on small tributaries, high water capacity
Stephenville fine sandy loam	41	1 to 3	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately low water capacity
Stephenville fine sandy loam	42	3 to 5	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately low water capacity
Stephenville-Darnell complex	43	5 to 12	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately high to high water
Teller fine sandy loam	44	3 to 5	Well drained	Non-hydric	Treads and risers of stream terraces, moderately high to high water capacity
Grainola clay loam	48	3 to 5	Well drained	Non-hydric	Summits and backslopes of low hills, very low to moderately high water capacity
Grainola silty clay loam	49	5 to 12	Well drained	Non-hydric	Summits and backslopes of low hills, very low to moderately high water capacity
Grainola-Ashport complex	50	0 to 8	Well drained	Non-hydric	Summits, backslopes of low hills, and floodplains, very low to moderately high water capacity
Littleaxe fine sandy loam	51	1 to 3	Well drained	Non-hydric	Very gently sloping or gently sloping upland ridge crests, moderately low water capacity
Littleaxe fine sandy loam	52	3 to 5	Well drained	Non-hydric	Very gently sloping or gently sloping upland ridge crests, moderately low water capacity
Littleaxe and Stephenville soils, severely	53	3 to 8	Well drained	Non-hydric	Very gently sloping or gently sloping upland ridge crests, moderately low water capacity
Newalla fine sandy loam	54	3 to 5	Moderately well drained	Non-hydric	Very gently sloping to steep summits and back slopes of uplands, very low to moderately

Table 1: Soils Series within the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Yahola fine sandy loam, occasionally	55	0 to 1	Well drained	Non-hydric	Nearly level flood plains of major streams, high water capacity
Zaneis loam	57	3 to 5	Well drained	Non-hydric	Crests and side slopes of low hills, very low to moderately low water capacity

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie County, Oklahoma.

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie County, Oklahoma.

FEATURE NAME	GENERAL TYPE	COWARDIN CLASSIFICATION	PREDICTED JURISDICTIONAL STATUS*	AREA (ACRES) WITHIN PIPELINE ROW	PCN REQUIRED**
KO1	Pond	NA[1]	No	0.00	No
KO34	Pond	NA[1]	No	0.00	No
KO35	Forested wetland	PFO1D	Yes	0.55	Yes
KO38	Emergent wetland	PEM1A	Yes	0.01	No
KO42	Pond	PUBHh	No	0.01	No
KO43	Emergent wetland	PEM1A	No	0.06	No
KO46	Emergent wetland	PEM1A	No	0.03	No
KO47	Pond	NA[1]	No	0.00	No
KO55	Pond	PUBHx	No	0.07	No
KO57	Emergent wetland	PEM1A	No	0.01	No
KO67	Pond	PUBA	No	0.17	No
KO70	Emergent wetland	PEM1A	No	0.05	No
KO73	Emergent wetland	PEM1A	Yes	0.53	Yes
KO74	Emergent wetland	PEM1A	Yes	0.09	Yes
KO75	Emergent wetland	PEM1A	No	0.79	No
KO78	Pond	PUBHx	No	0.12	No
KO79	Pond	PUBHh	Yes	0.27	Yes
KO83	Emergent wetland	PEM1A	No	0.09	No
KO85	Emergent wetland	PEM1A	Yes	0.42	Yes
KO86	Pond	PUBH	Yes	0.25	Yes

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie County, Oklahoma.

FEATURE NAME	GENERAL TYPE	COWARDIN CLASSIFICATION	PREDICTED JURISDICTIONAL STATUS*	AREA (ACRES) WITHIN PIPELINE ROW	PCN REQUIRED**
KO90	Pond	PUBHx	No	0.04	No
POTENTIALLY JURISDICTIONAL WETLANDS TOTAL: 2.63 ACRES					
POTENTIALLY JURISDICTIONAL POND TOTAL: 0.93-ACRE					

**Jurisdictional status is subject to Corps approval; ** PCNs are required only if the Corps determines the feature is jurisdictional; 1- Feature is mapped on the USGS topographic map; however, no surface water feature was observed at the mapped location.*

Table 3: Summary of streams and drainages in the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie County, Oklahoma.

Table 3: Summary of streams and drainages in the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie County, Oklahoma.

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
KO2	Ephemeral	No	No	1	127	No
KO3	Ephemeral	Yes	Yes	2	103	No
KO4	Ephemeral	No	No	1	105	No
KO5	Intermittent	Yes	Yes	7	103	No
KO6	Intermittent	Yes	Yes	8	107	No
KO7	Intermittent	Yes	Yes	8	105	No
KO8	Ephemeral	No	No	1	139	No
KO9	Ephemeral	No	No	2	270	No
KO10	Ephemeral	No	No	1	138	No
KO11	Ephemeral	No	No	1	108	No
KO12	Ephemeral	No	No	1	204	No
KO13	Intermittent	Yes	Yes	3	108	No
KO14	Ephemeral	No	No	2	207	No
KO15	Ephemeral	No	No	2	104	No
KO16	Intermittent	Yes	Yes	8	105	No
KO17	Ephemeral	No	No	1	445	No
KO18	Ephemeral	No	No	2	197	No
KO19	Ephemeral	No	No	2	129	No
KO20	Ephemeral	No	No	3	107	No
KO21	Ephemeral	No	No	2	137	No
KO22	Intermittent	Yes	Yes	4	204	Yes
KO23	Ephemeral	No	No	3	105	No
KO24	Ephemeral	No	No	3	109	No
KO25	Ephemeral	No	No	3	111	No

Table 3: Summary of streams and drainages in the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie County, Oklahoma.

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
KO26	Ephemeral	No	No	3	174	No
KO27	Perennial	Yes	Yes	15	118	No
KO28	Ephemeral	No	No	2	128	No
KO29	Ephemeral	No	No	1	104	No
KO30	Perennial	Yes	Yes	10	126	No
KO31	Ephemeral	No	No	2	137	No
KO32	Ephemeral	No	No	1	307	No
KO33	Ephemeral	No	No	1	145	No
KO36	Intermittent	Yes	Yes	4	126	No
KO37	Perennial (Salt Creek)	Yes	Yes	30	101	No
KO39	Ephemeral	No	No	2	114	No
KO40	Ephemeral	No	No	2	125	No
KO41	Ephemeral	No	No	3	109	No
KO44	Ephemeral	No	No	2	122	No
KO45	Ephemeral	No	No	2	118	No
KO48	Ephemeral	No	No	6	104	No
KO49	Ephemeral	No	No	2	189	No
KO50	Ephemeral	No	No	2	314	No
KO51	Ephemeral	No	No	2	90	No
KO52	Ephemeral	No	No	1	121	No
KO53	Intermittent	Yes	Yes	5	107	No
KO54	Ephemeral	No	No	2	112	No
KO56	Ephemeral	No	No	1	136	No
KO58	Ephemeral	No	No	2	95	No

Table 3: Summary of streams and drainages in the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie County, Oklahoma.

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
KO59	Intermittent	Yes	Yes	4	132	No
KO60	Intermittent	Yes	Yes	6	104	No
KO61	Ephemeral	No	No	2	111	No
KO62	Ephemeral	No	No	1	104	No
KO63	Ephemeral	No	No	1	111	No
KO64	Intermittent	Yes	Yes	10	162	No
KO65	Intermittent	Yes	Yes	4	103	No
KO66	Ephemeral	Yes	Yes	2	126	No
KO68	Intermittent	Yes	No	NA[1]	0	No
KO69	Intermittent	Yes	Yes	8	115	No
KO71	Intermittent	Yes	No	NA[1]	0	No
KO72	Perennial (Little River)	Yes	Yes	55	100	No
KO76	Ephemeral	Yes	Yes	2	121	No
KO77	Ephemeral	No	No	2	155	No
KO80	Intermittent (Jim Creek)	Yes	Yes	10	121	No
KO81	Ephemeral	Yes	Yes	3	121	No
KO82	Ephemeral	Yes	Yes	2	105	No
KO84	Intermittent	Yes	No	NA[1]	0	No
KO87	Ephemeral	Yes	Yes	1	110	No
KO88	Ephemeral	No	No	1	115	No
KO89	Intermittent	Yes	Yes	6	104	No
KO91	Ephemeral	No	No	2	152	No
KO92	Ephemeral	No	No	3	146	No
KO93	Ephemeral	No	No	1	159	No

Table 3: Summary of streams and drainages in the Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station in Pottawatomie County, Oklahoma.

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
KO94	Perennial	Yes	Yes	10	102	No
KO95	Perennial (Pecan Creek)	Yes	Yes	20	156	No
POTENTIALLY JURISDICTIONAL STREAM TOTAL: 9,734 LINEAR FEET						

**Jurisdictional status is subject to Corps approval; ** PCNs are required only if the Corps determines the feature is jurisdictional; 1- Feature mapped on the USGS topographic map; however no bed and bank was observed within the proposed pipeline ROW*

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/5/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS1

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 24, Township 7N, Range 3E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR J Lat: 35.07257 Long: -96.94205 Datum: NAD83

Soil Map Unit Name: Port loam, 0-1%, Occasionally Flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators for all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	90	[X]	FAC
2. *Salix nigra*	10	[ ]	FACW
3.		[ ]	
4.		[ ]	
	100	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Fraxinus pennsylvanica*	40	[X]	FAC
2. *Maclura pomifera*	5	[ ]	FACU
3.		[ ]	
4.		[ ]	
5.		[ ]	
	45	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Carex cherokeensis*	30	[X]	FACW
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	30	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
		= Total Cover	

% Bare Ground in Herb Stratum 70%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: KOSS1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☒ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	3"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/5/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS2

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 13, Township 7N, Range 3E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2-3

Subregion (LRR): LRR J Lat: 35.07297 Long: -96.94199 Datum: NAD83

Soil Map Unit Name: Port loam, 0-1%, Occasionally Flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [X]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Indicators were not observed for any of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Celtis occidentalis*	60	[X]	FACU
2. *Juniperus virginiana*	20	[X]	UPL
3. *Fraxinus pennsylvanica*	20	[X]	FAC
4.		[ ]	
	100	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Toxicodendron radicans*	20	[X]	FACU
2. *Juniperus virginiana*	10	[X]	UPL
3.		[ ]	
4.		[ ]	
5.		[ ]	
	30	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Elymus virginicus*	20	[X]	FAC
2. *Galium spp.*	5	[ ]	---
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	25	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Smilax bona-nox*	50	[X]	FACU
2. *Parthenocissus quinquefolia*	10	[ ]	FACU
	60	= Total Cover	

% Bare Ground in Herb Stratum 75%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 29% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	40	x 3 =	120
FACU species	140	x 4 =	560
UPL species	30	x 5 =	150
Column Totals:	210 (A)		830 (B)

Prevalence Index = B/A = 3.95

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [ ] No [X]

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: KOSS2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5 YR 2.5/3						Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/10/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS3

Investigator(s): B.W. Barnes; C.B. McCoy; E. Ellis Section, Township, Range: Section 13, Township 7N, Range 3E

Landform (hillslope, terrace, etc.): Flat Floodplain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR J Lat: 35.07679 Long: -96.94621 Datum: NAD83

Soil Map Unit Name: Port Loam, 0-1% Slopes, Occasionally Flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators for all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Persicaria hydropiperoides*	65	[X]	OBL
2. *Schedonorus arundinaceus*	5	[ ]	FACU
3. *Carex spp.*	5	[ ]	---
4.		[ ]	
5.		[ ]	
	75 = Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	= Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 25%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: KOSS3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No soil pit was dug due to inundation. Soils are assumed hyrdic.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	3"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/10/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS4

Investigator(s): B.W. Barnes; C.B. McCoy; E. Ellis Section, Township, Range: Section 13, Township 7N, Range 3E

Landform (hillslope, terrace, etc.): Flat Floodplain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR J Lat: 35.07699 Long: -96.94644 Datum: NAD83

Soil Map Unit Name: Port Loam, 0-1% Slopes, Occasionally Flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [X]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Indicators were not observed for any of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Schedonorus arundinaceus*	80	[X]	FACU
2. *Lolium perenne*	10	[ ]	FACU
3. *Bromus tectorum*	10	[ ]	NL
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 90	x 4 =	360
UPL species	x 5 =	
Column Totals: 90 (A)		360 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [ ] No [X]

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: KOSS4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	5YR 4/4	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/10/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS5

Investigator(s): B.W. Barnes; C.B. McCoy; E. Ellis Section, Township, Range: Section 11, Township 7N, Range 3E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR J Lat: 35.09089 Long: -96.96141 Datum: NAD83

Soil Map Unit Name: Grainola-Ashport Complex, 0-12% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐	
Wetland Hydrology Present?	Yes ☒	No ☐	

Remarks:

Indicators for all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	10	☒	FACW
2.		☐	
3.		☐	
4.		☐	
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Salix nigra*	20	☒	FACW
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	20 = Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Persicaria hydropiperoides*	75	☒	OBL
2. *Eleocharis obtusa*	10	☐	OBL
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
	85 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum 15%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: KOSS5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No soil pit was dug due to inundation. Soils are assumed hyrdic.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	6"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/10/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS6

Investigator(s): B.W. Barnes; C.B. McCoy; E. Ellis Section, Township, Range: Section 11, Township 7N, Range 3E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3-5

Subregion (LRR): LRR J Lat: 35.09099 Long: -96.96155 Datum: NAD83

Soil Map Unit Name: Grainola-Ashport Complex, 0-12% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [X]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Indicators were not observed for any of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Schedonorus arundinaceus*	30	[X]	FACU
2. *Schizachyrium scoparium*	30	[X]	FACU
3. *Bromus tectorum*	20	[X]	NL
4. *Lespedeza cuneata*	10	[ ]	FACU
5. *Lolium perenne*	10	[ ]	FACU
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	= Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 80	x 4 =	320
UPL species	x 5 =	
Column Totals: 80 (A)		320 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [ ] No [X]

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: KOSS6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	5YR 4/4	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/10/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS7

Investigator(s): B.W. Barnes; C.B. McCoy; E. Ellis Section, Township, Range: Section 10, Township 7N, Range 3E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR J Lat: 35.09738 Long: -96.96959 Datum: NAD83

Soil Map Unit Name: Littleaxe and Stephenville Soils, 3-8% Slopes, Severely Eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators for all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Salix nigra*	30	[X]	FACW
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	30 = Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Eleocharis obtusa*	25	[X]	OBL
2. *Cyperus spp.*	5	[ ]	---
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	30 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 70%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: KOSS7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No soil pit was dug due to inundation. Soils are assumed hyrdic.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	2"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/10/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS8

Investigator(s): B.W. Barnes; C.B. McCoy; E. Ellis Section, Township, Range: Section 10, Township 7N, Range 3E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 4-8

Subregion (LRR): LRR J Lat: 35.09746 Long: -96.96978 Datum: NAD83

Soil Map Unit Name: Littleaxe and Stephenville Soils, 3-8% Slopes, Severely Eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [X]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Indicators were not observed for any of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Juniperus virginiana*	15	[X]	UPL
2.		[ ]	
3.		[ ]	
4.		[ ]	
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Juniperus virginiana*	5	[X]	UPL
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	5	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Sorghastrum nutans*	70	[X]	FACU
2. *Schizachyrium scoparium*	20	[X]	FACU
3. *Lespedeza cuneata*	10	[ ]	FACU
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
		= Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 100	x 4 =	400
UPL species 20	x 5 =	100
Column Totals: 120 (A)		500 (B)

Prevalence Index = B/A = 4.16

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [ ] No [X]

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: KOSS8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	5YR 4/4	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/11/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS9

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 33, Township 8N, Range 3E

Landform (hillslope, terrace, etc.): Light Sloping Hill Local relief (concave, convex, none): Convex Slope (%): 1-3

Subregion (LRR): LRR J Lat: 35.11671 Long: -96.99495 Datum: NAD83

Soil Map Unit Name: Grainola-Ashport complex, 0-12% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil Yes, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators for all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Eleocharis obtusa*	75	[X]	OBL
2. *Andropogon glomeratus*	20	[X]	FACW
3. *Lespedeza cuneata*	5	[ ]	FACU
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: KOSS9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	5YR 4/4	80	7.5YR2.5/1	20	D	M	SCL	
5-18	5YR 4/4	100					SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☒ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Problematic red parent soil masking hydric soil indicators was present within the soil pit.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☒ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	1"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/11/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS10

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 33, Township 8N, Range 3E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-5

Subregion (LRR): LRR J Lat: 35.11677 Long: -96.99508 Datum: NAD83

Soil Map Unit Name: Grainola-Ashport complex, 0-12% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks:

Indicators were not observed for any of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Juniperus virginiana*	40	☒	UPL
2.		☐	
3.		☐	
4.		☐	
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Juniperus virginiana*	10	☒	UPL
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	10	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Sorghum halepense*	40	☒	FACU
2. *Lespedeza cuneata*	10	☐	FACU
3. *Galium spp.*	10	☐	---
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
	60	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.		☐	
2.		☐	
		= Total Cover	

% Bare Ground in Herb Stratum 50%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 50	x 4 =	200
UPL species 50	x 5 =	250
Column Totals: 100 (A)		450 (B)

Prevalence Index = B/A = 4.5

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: KOSS10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	5YR 4/6	100					SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): NA
Water Table Present?	Yes ☐	No ☒	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/12/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS11

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 24, Township 8N, Range 2E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 1-2

Subregion (LRR): LRR J Lat: 35.15116 Long: -97.03842 Datum: NAD83

Soil Map Unit Name: Konawa loamy fine sand, 3-8% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [X]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Indicators for none of the three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Cynodon dactylon*	95	[X]	FACU
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 95	x 4 =	380
UPL species	x 5 =	
Column Totals: 95 (A)		380 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [ ] No [X]

Remarks:

Indicators of wetland vegetation were not observed.

SOIL

Sampling Point: KOSS11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR 3/4	100					Sand Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/12/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS12

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 24, Township 8N, Range 2E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR J Lat: 35.15139 Long: -97.03861 Datum: NAD83

Soil Map Unit Name: Miller clay loam, 0-1% Slopes, Occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators of all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Typha latifolia*	40	[X]	OBL
2. *Eleocharis obtusa*	5	[ ]	OBL
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	45 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: KOSS12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	18"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/24/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS13

Investigator(s): B.W. Barnes and J.P. Schatte Section, Township, Range: Section 13, Township 8N, Range 2E

Landform (hillslope, terrace, etc.): Depression in floodplain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR J Lat: 35.15998 Long: -97.04898 Datum: NAD83

Soil Map Unit Name: Miller clay loam, 0-1% Slopes, Occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators for all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Carex lupulina*	60	[X]	OBL
2. *Carex crus-corvi*	30	[X]	OBL
3. *Carex spp.*	5	[ ]	---
4. *Juncus spp.*	2	[ ]	---
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	97 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 3%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: KOSS13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☒ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☒ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	2"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/24/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS14

Investigator(s): B.W. Barnes and J.P. Schatte Section, Township, Range: Section 13, Township 8N, Range 2E

Landform (hillslope, terrace, etc.): Flat land in floodplain Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR): LRR J Lat: 35.16007 Long: -97.04923 Datum: NAD83

Soil Map Unit Name: Miller clay loam, 0-1% Slopes, Occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks:

Indicators were not observed for any of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Cynodon dactylon*	85	☒	FACU
2. *Setaria spp.*	15	☐	---
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
	= Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 85	x 4 =	340
UPL species	x 5 =	
Column Totals: 85 (A)		340 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: KOSS14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	5YR 4/6	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☒ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): NA
Water Table Present?	Yes ☐	No ☒	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/12/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS15

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 14, Township 8N, Range 2E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR J Lat: 35.165074 Long: -97.05550 Datum: NAD83

Soil Map Unit Name: Miller clay loam, 0-1% Slopes, Occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐	
Wetland Hydrology Present?	Yes ☒	No ☐	

Remarks:

Indicators of all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Carex cherokeensis*	70	☒	FACW
2. *Rumex crispus*	10	☐	FAC
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
	80 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum 20%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: KOSS15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☒ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	3"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	0"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/12/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS16

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 14, Township 8N, Range 2E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 1-2

Subregion (LRR): LRR J Lat: 35.16513 Long: -97.05546 Datum: NAD83

Soil Map Unit Name: Miller clay loam, 0-1% slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Indicators for one of the three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Ranunculus parviflorus*	50	[X]	FAC
2. *Cynodon dactylon*	40	[X]	FACU
3. *Rumex crispus*	5	[ ]	FAC
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 55	x 3 =	165
FACU species 40	x 4 =	160
UPL species	x 5 =	
Column Totals: 95 (A)		325 (B)

Prevalence Index = B/A = 3.42

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: KOSS16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR 4/4	100					Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/12/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS17

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 14, Township 8N, Range 2E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-1

Subregion (LRR): LRR J Lat: 35.16769 Long: -97.05855 Datum: NAD83

Soil Map Unit Name: Pulaski fine sandy loam, 0-1% Slopes, Occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [ ] No [X]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Indicators for only one of the three wetland criteria were observed. Recent heavy rain had the area flooded, however the water was flowing out of the area, thus we concluded the area does not retain water long after rain events.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Ranunculus parviflorus*	70	[X]	FAC
2. *Schedonorus arundinaceus*	20	[ ]	FACU
3. *Rumex crispus*	10	[ ]	FAC
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: KOSS17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR 3/3	99	5YR 4/6	1	C	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed. Water was present while on site from recent heavy rains, however it appears to flow off and most likely does not stay in the area much after rain events.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 5/12/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS18

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 10, Township 8N, Range 2E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR J Lat: 35.18698 Long: -97.08792 Datum: NAD83

Soil Map Unit Name: Gracemont fine sandy loam, 0-1% Slopes, Frequently flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators of all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	5	[X]	FACW
2.		[ ]	
3.		[ ]	
4.		[ ]	
	5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
		= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Juncus effusus*	40	[X]	OBL
2. *Carex cherokeensis*	20	[X]	FACW
3. *Ranunculus parviflorus*	5	[ ]	FAC
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	65	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
		= Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: KOSS18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	6"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 8/29/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS19

Investigator(s): B.W. Barnes and W.A. Ward Section, Township, Range: Section 9, Township 8N, Range 2E

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): LRR J Lat: 35.188335 Long: -97.090083 Datum: NAD83

Soil Map Unit Name: Pulaski Fine Sandy Loam 0-1% NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators for all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Eleocharis palustris*	70	[X]	OBL
2. *Persicaria hydropiperoides*	20	[X]	OBL
3. *Ambrosia artemisiifolia*	3	[ ]	FACU
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	= Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	93 = Total Cover		

% Bare Ground in Herb Stratum %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species		x 2 =	
FAC species		x 3 =	
FACU species	3	x 4 =	12
UPL species		x 5 =	
Column Totals:	93 (A)		102 (B)

Prevalence Index = B/A = 1.1

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: KOSS19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 3/4	100					Clay loam	
4-12	7.5YR 4/6	95	5YR 4/6	5	C	M	Sandy loar	
12-18	2.5YR 4/1	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Indicators of hydric soil were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☒ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): N/A

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Pottawatomie County Sampling Date: 8/29/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: KOSS20

Investigator(s): B.W. Barnes and W.A. Ward Section, Township, Range: Section 9, Township 8N, Range 2E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 3

Subregion (LRR): LRR J Lat: 35.188474 Long: -97.090083 Datum: NAD83

Soil Map Unit Name: Pulaski fine sandy loam 0-1% NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks:

Indicators were not observed for any of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Cynodon dactylon*	70	☒	FACU
2. *Ambrosia artemisiifolia*	10	☐	FACU
3. *Xanthium strumarium*	5	☐	FACU
4. *Asclepias subverticillata*	5	☐	FACU
5. *Helenium amarum*	5	☐	FACU
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 5	x 3 =	15
FACU species 90	x 4 =	360
UPL species	x 5 =	
Column Totals: 95 (A)		375 (B)

Prevalence Index = B/A = 3.94

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: KOSS20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR 4/4	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

Site Photographs

SITE PHOTOGRAPHS: ATOKA WATER LINE SECCTION 5:
KONAWA PUMP STATION TO MACOMB PUMP STATION

Typical view of habitat types found within the proposed Atoka Water Line Section 5: Konawa Pump Station to Macomb Pump Station.

Photograph 1: View of the Konawa Pump Station, facing southeast.

Photograph 2: Typical view of mixed grass pasture habitat, facing northwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECCTION 5:
KONAWA PUMP STATION TO MACOMB PUMP STATION

Photograph 3: Typical view of mowed pipeline ROW planted with mixed grasses, facing northwest.

Photograph 4: Typical view of mowed residential lawn, facing northwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECCTION 5: KONAWA PUMP STATION TO MACOMB PUMP STATION

Representative water features within the Atoka Water Line ROW between Konawa and Macomb Pump Stations

Photograph 5: Typical view of KO22, a mapped intermittent stream, facing southeast.

Photograph 6: View of KO35, a forested wetland, facing north.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECCTION 5:
KONAWA PUMP STATION TO MACOMB PUMP STATION

Photograph 7: View of KO37, a mapped perennial stream (Salt Creek), facing northwest.

Photograph 8: View of KO64, a mapped intermittent stream, facing north.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECCTION 5:
KONAWA PUMP STATION TO MACOMB PUMP STATION

Photograph 9: View of KO72, a mapped perennial stream (Little River), facing east.

Photograph 10: View of KO80, a mapped intermittent stream (Jim Creek), facing north.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECCTION 5:
KONAWA PUMP STATION TO MACOMB PUMP STATION

Photograph 11: View of KO95, a mapped perennial stream (Pecan Creek), facing north.

Appendix F - Atoka Water Line Section 6: Macomb Pump Station to Lake Stanley Draper Pump Station

Figures (Vicinity Map, Topographic Map, Aerial Photography, Soil Survey Map, NWI Map, Flood Insurance Rate Map)

Table 1: Soils Series within the Atoka Water Line Section 6: Macomb Pump Station to Lake Stanley Draper Pump Station in Pottawatomie and Cleveland Counties, Oklahoma.

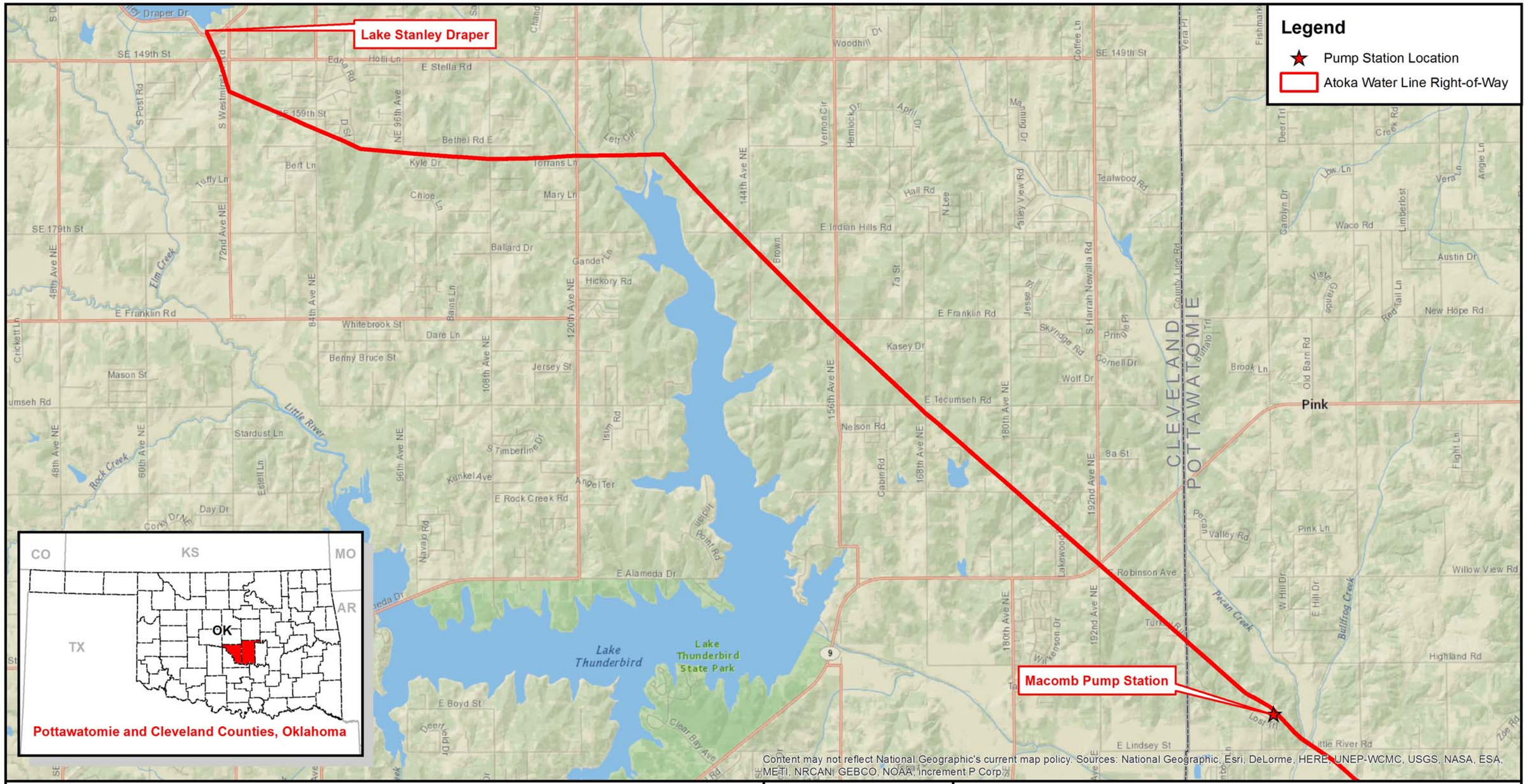
Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 6: Macomb Pump Station to Lake Stanley Draper Pump Station in Pottawatomie and Cleveland Counties, Oklahoma.

Table 3: Summary of streams and drainages in the Atoka Water Line Section 6: Macomb Pump Station to Lake Stanley Draper Pump Station in Pottawatomie and Cleveland Counties, Oklahoma.

Wetland Determination Data Forms

Site Photographs

Figures



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: Macomb Pump Station to Lake Stanley Draper
Sections 32, 31 & 30, T9N R2E; Sections 25, 24, 23, 14, 15, 16, 9, 8, 5 & 6, T9N R1E;
Section 31, T10N R1E; Sections 36, 35, 34, 33, 28, 29, 30 & 19, T10N R1W
Pottawatomie and Cleveland Counties, Oklahoma

N
W E
S

1:70,000

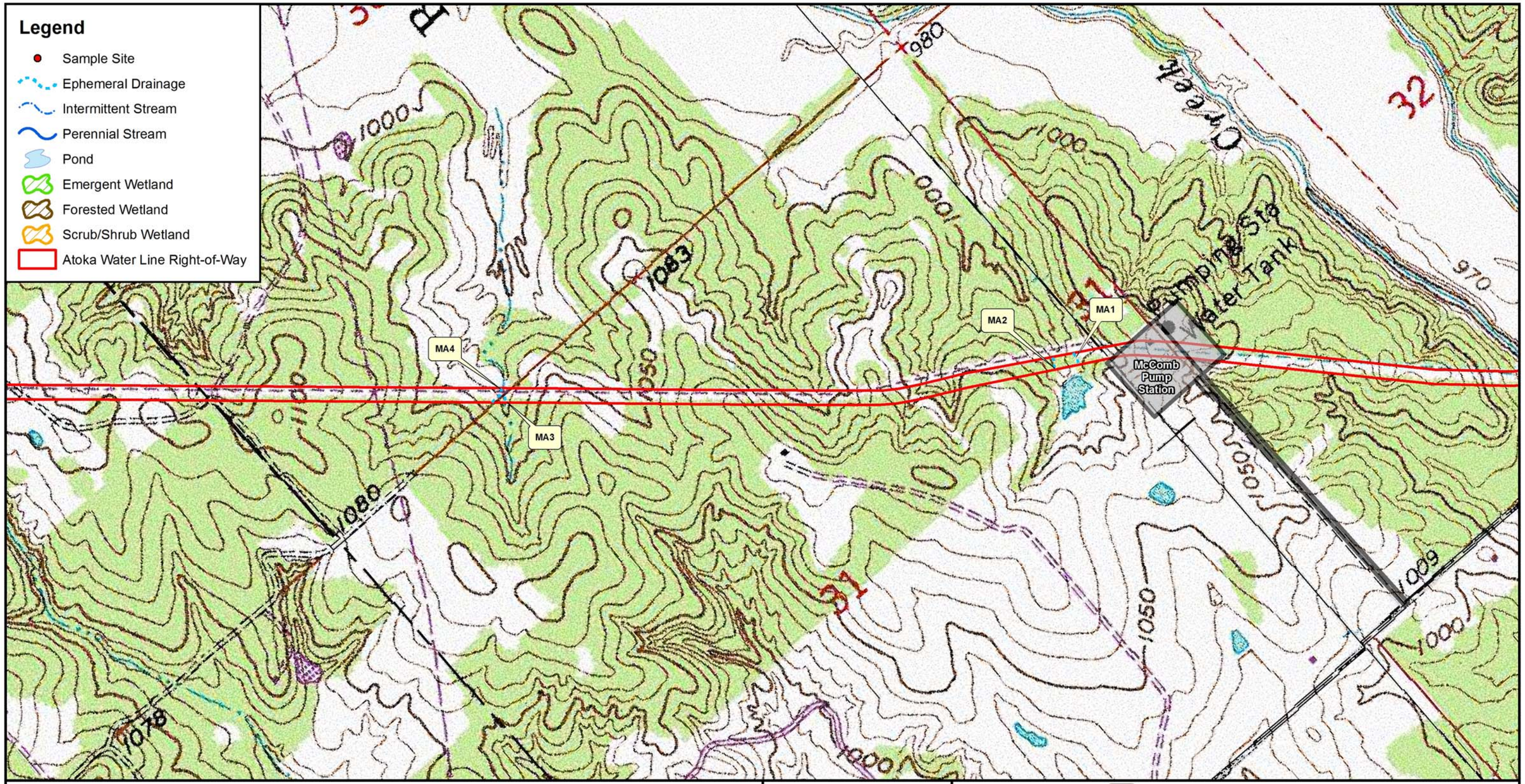
ENERCON

Figure 1: Vicinity Map

Source: ESRI National Geographic World Map Basemap

Prepared by: JL Riggs; July 20, 2016

0 0.75 1.5 3 Miles



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 32, 31 & 30, T9N R2E; Section 25, T9N R1E
Pottawatomie and Cleveland Counties, Oklahoma

1:8,000

ENERCON

Figure 2.1: Topographic Map

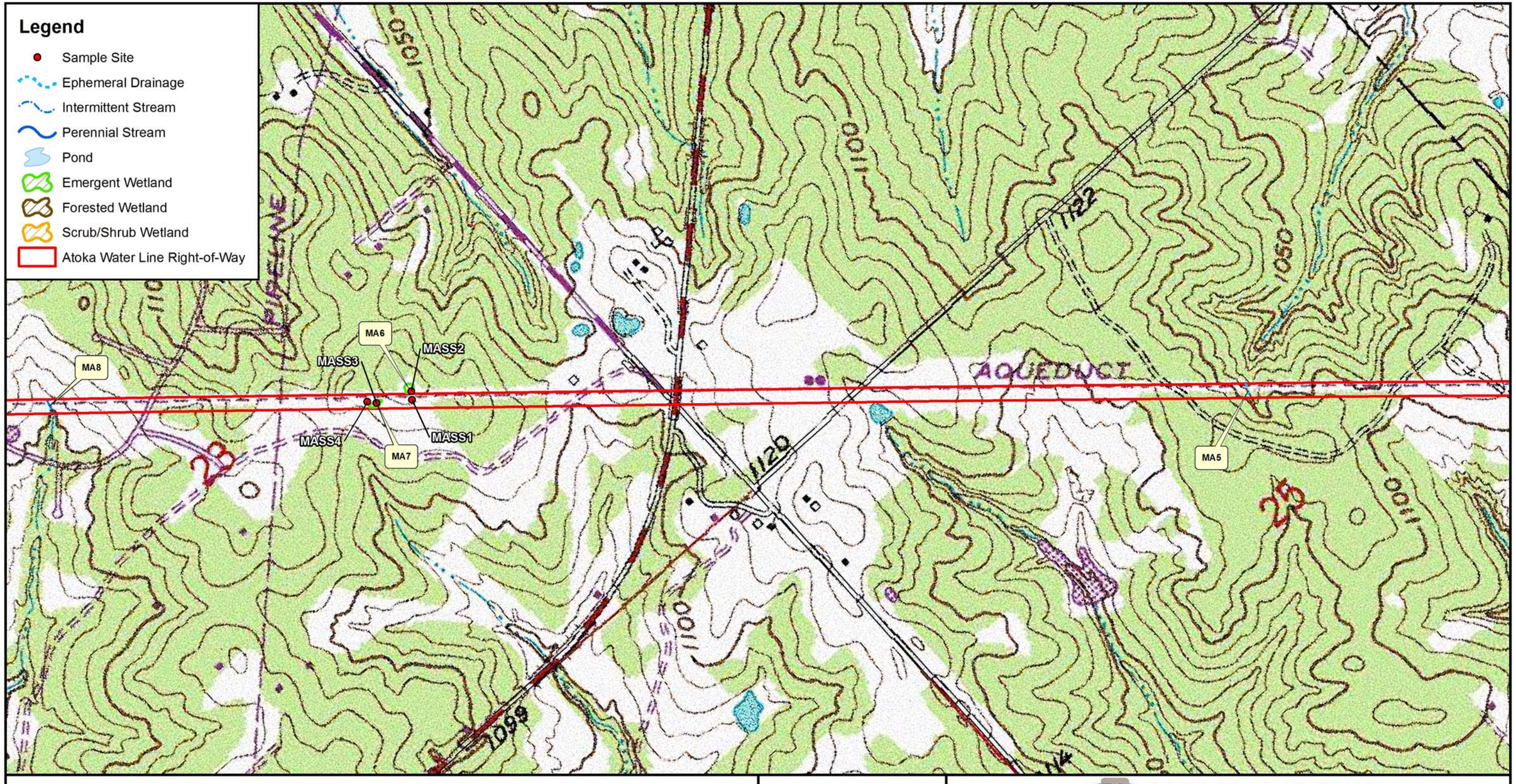
Source: USGS 7.5 Minute Series
Macomb and Little Axe, OK Quadrangles

Prepared by: JL Riggs; July 15, 2016

Feet
0 600 1,200 2,400

Legend

- Sample Site
- Ephemeral Drainage
- Intermittent Stream
- Perennial Stream
- Pond
- Emergent Wetland
- Forested Wetland
- Scrub/Shrub Wetland
- Atoka Water Line Right-of-Way



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 25, 24 & 23, T9N R1E
Cleveland County, Oklahoma

N E W S

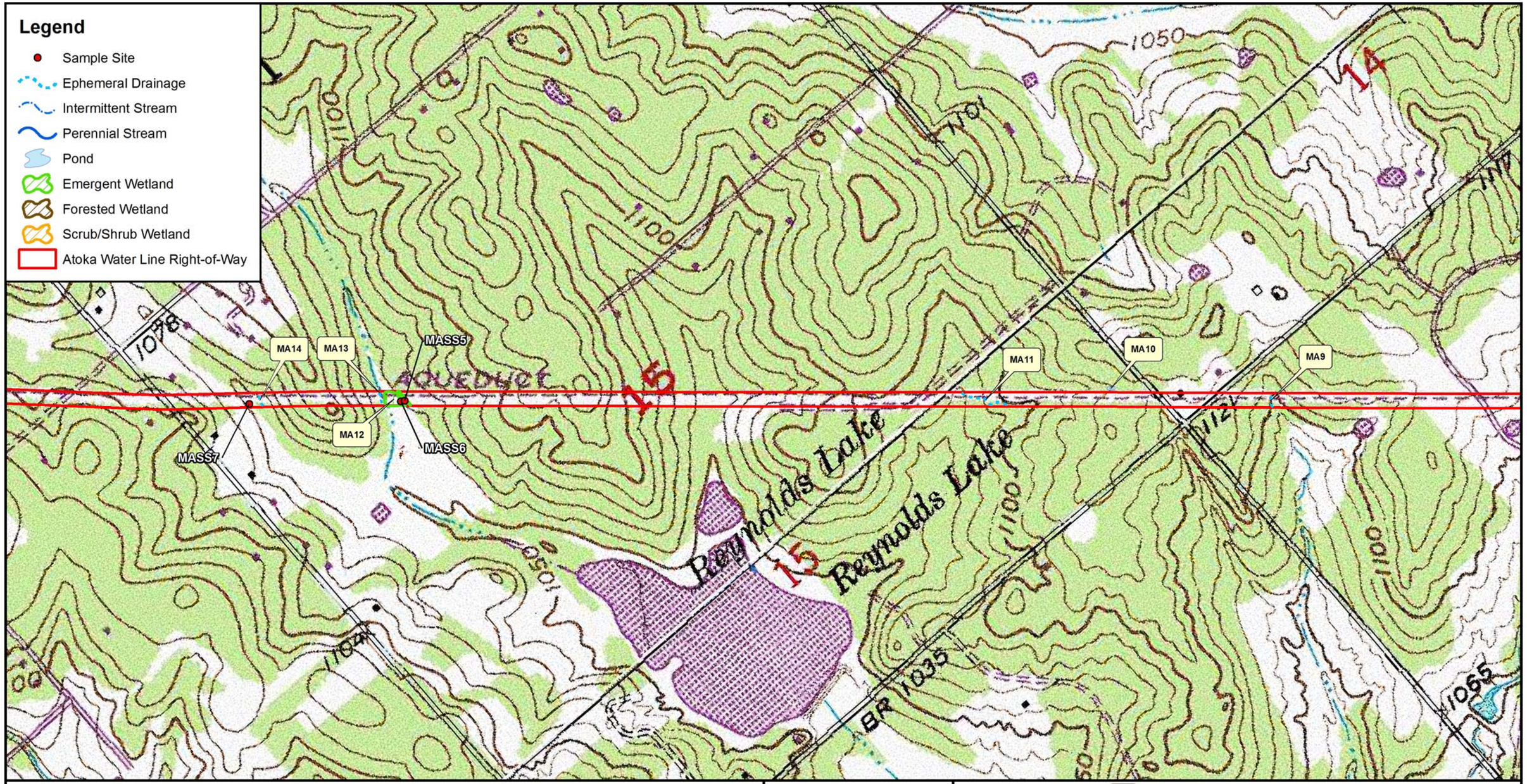
1:8,000

ENERCON

Figure 2.2: Topographic Map
Source: USGS 7.5 Minute Series
Little Axe, OK Quadrangle

Prepared by: JL Riggs; July 19, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 23, 14, 15, 16 & 9, T9N R1E
Cleveland County, Oklahoma

N E W S

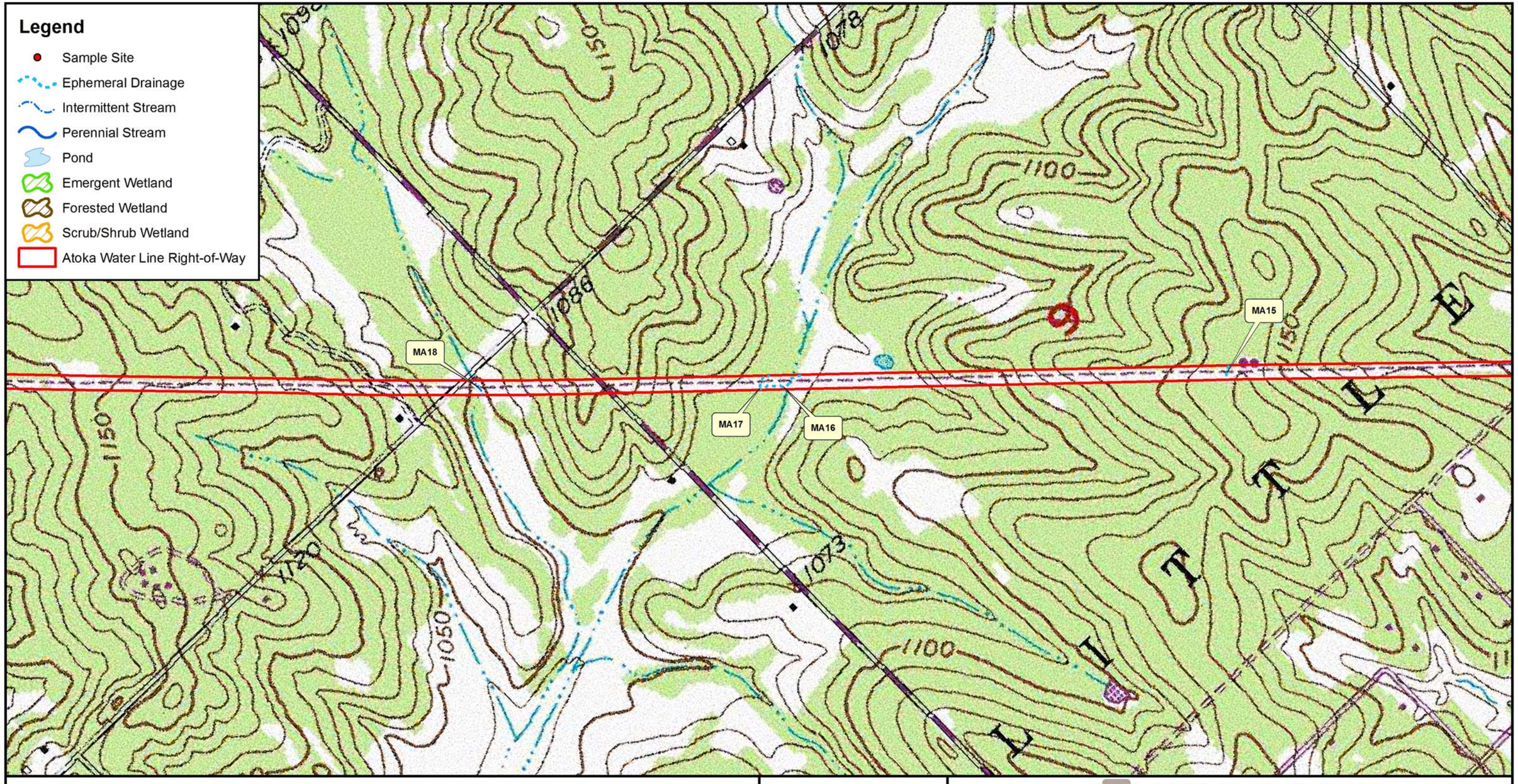
1:8,000

ENERCON

Figure 2.3: Topographic Map
Source: USGS 7.5 Minute Series
Little Axe and Stella, OK Quadrangles

Prepared by: JL Riggs; July 19, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 9, 8 & 5, T9N R1E
Cleveland County, Oklahoma

N E W S

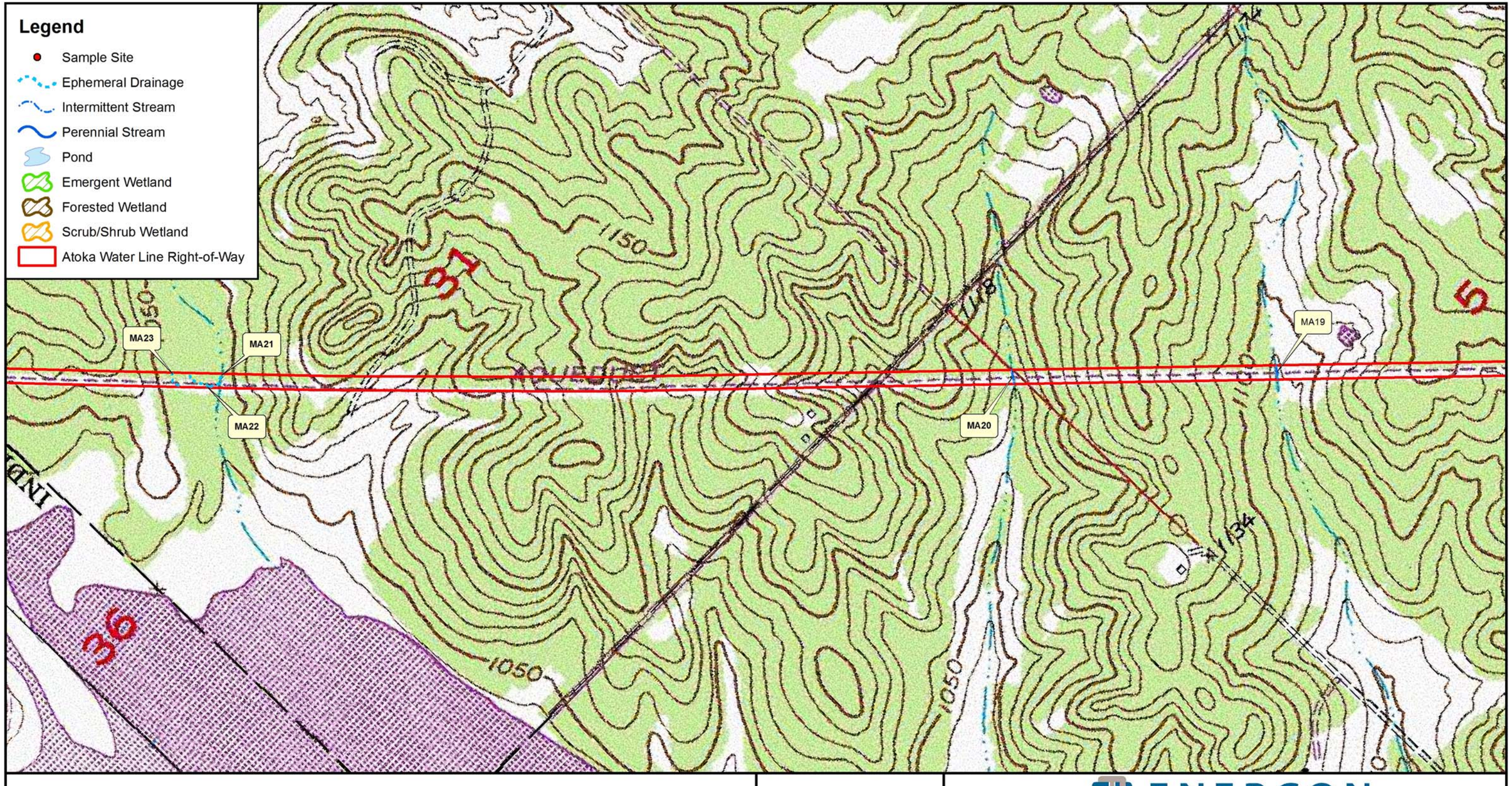
1:8,000

ENERCON

Figure 2.4: Topographic Map
Source: USGS 7.5 Minute Series
Stella, OK Quadrangle

Prepared by: JL Riggs; July 19, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 5 & 6, T9N R1E; Section 31, T10N R1E
Cleveland County, Oklahoma

1:8,000

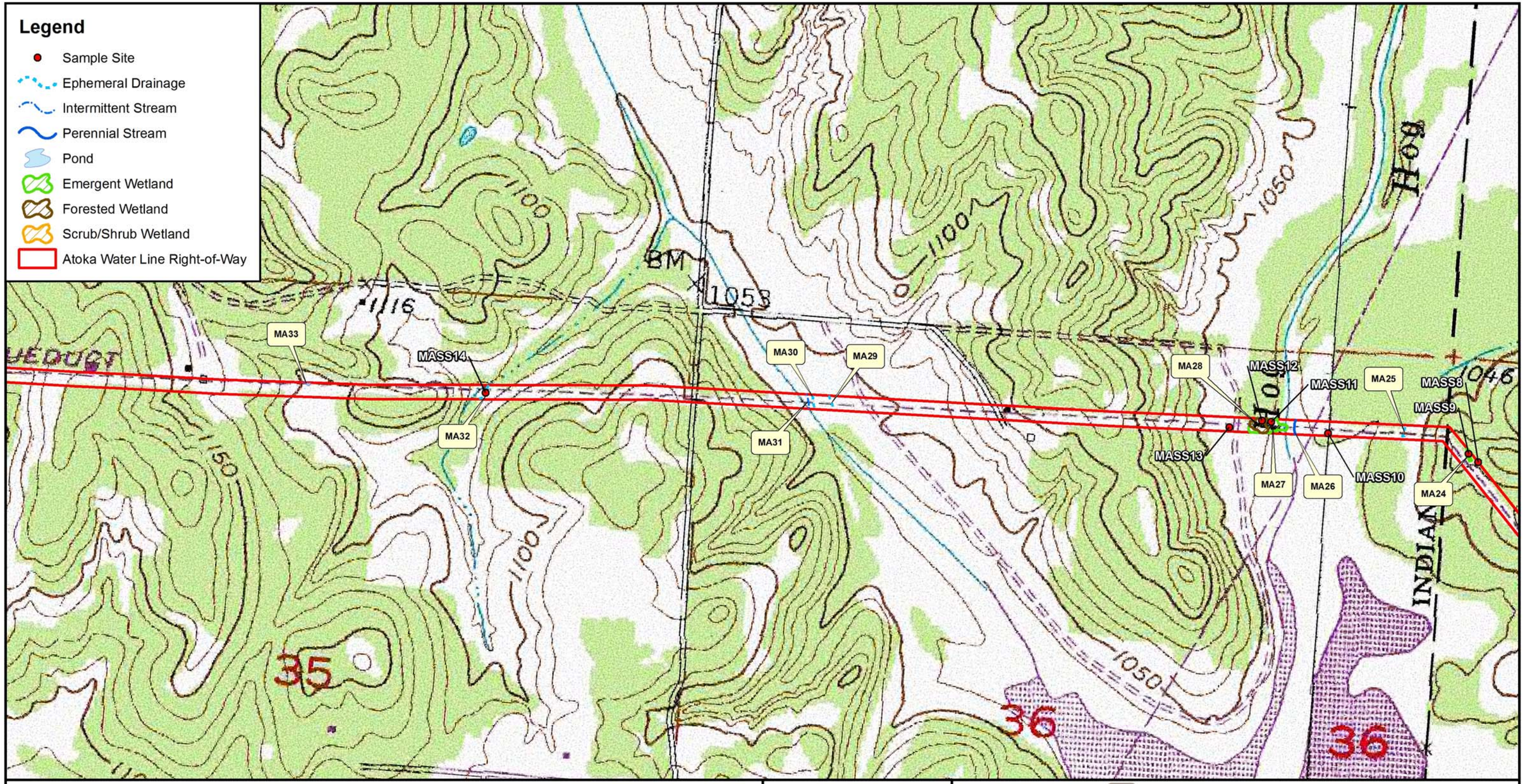
ENERCON

Figure 2.5: Topographic Map

Source: USGS 7.5 Minute Series
Stella, OK Quadrangle

Prepared by: JL Riggs; July 19, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Section 31, T10N R1E; Sections 36 & 35, T10N R1W
Cleveland County, Oklahoma

N
W E
S
1:8,000

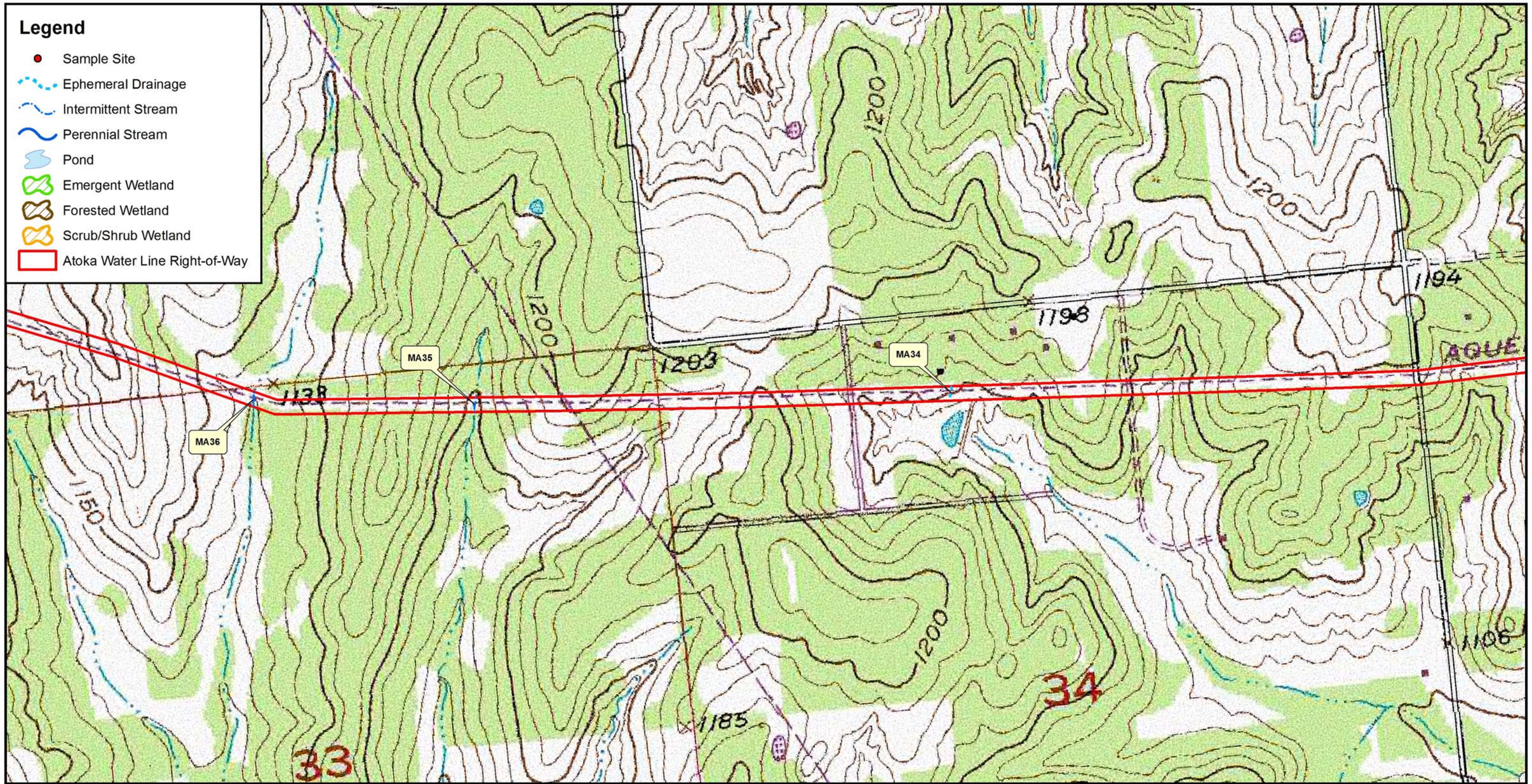
ENERCON

Figure 2.6: Topographic Map

Source: USGS 7.5 Minute Series
Stella and Franklin, OK Quadrangles

Prepared by: JL Riggs; September 27, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 35, 34, 33 & 28, T10N R1W
Cleveland County, Oklahoma

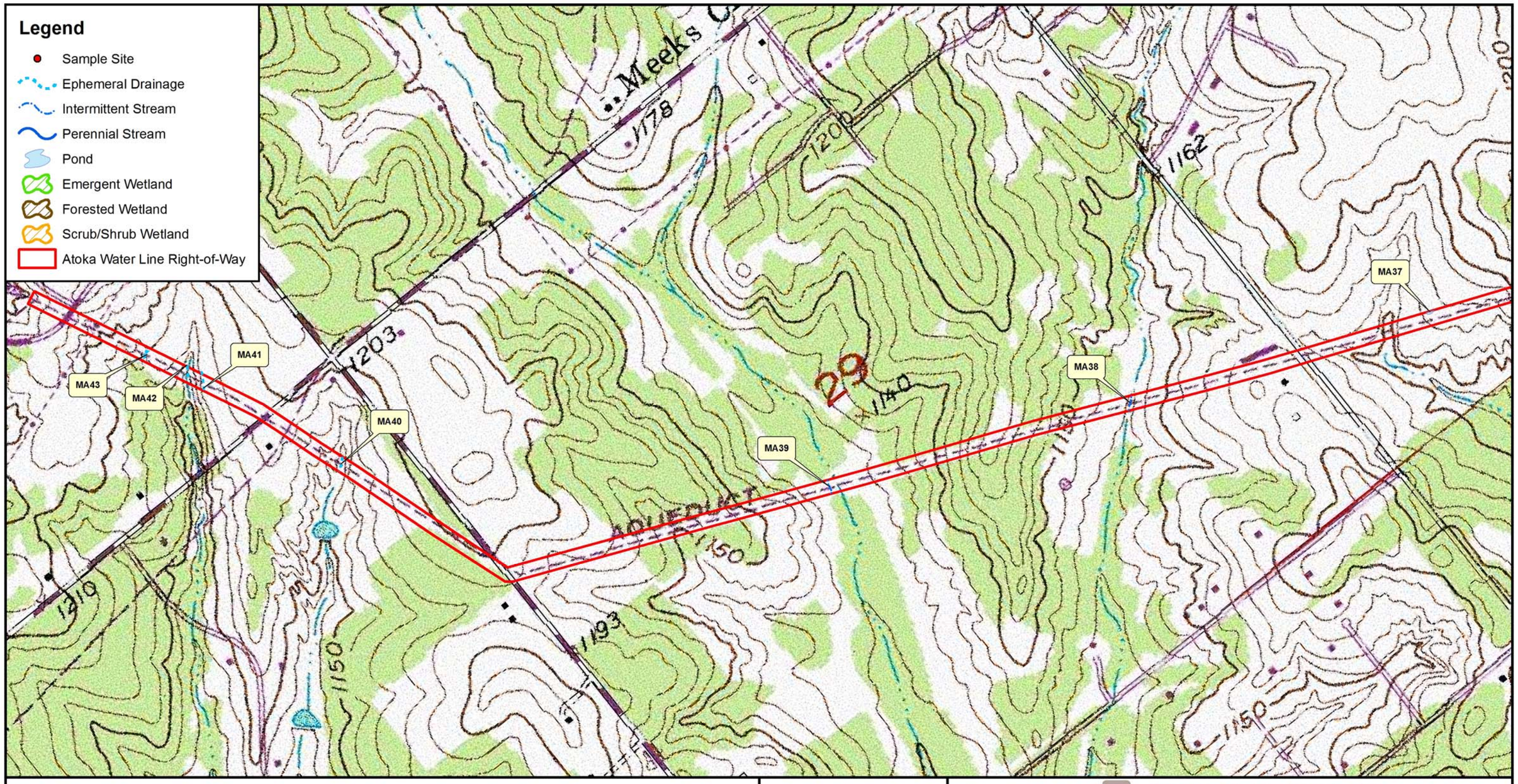
N
W E
S
1:8,000

ENERCON

Figure 2.7: Topographic Map
Source: USGS 7.5 Minute Series
Franklin, OK Quadrangle

Prepared by: JL Riggs; July 19, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 28, 29, 30 & 19, T10N R1W
Cleveland County, Oklahoma

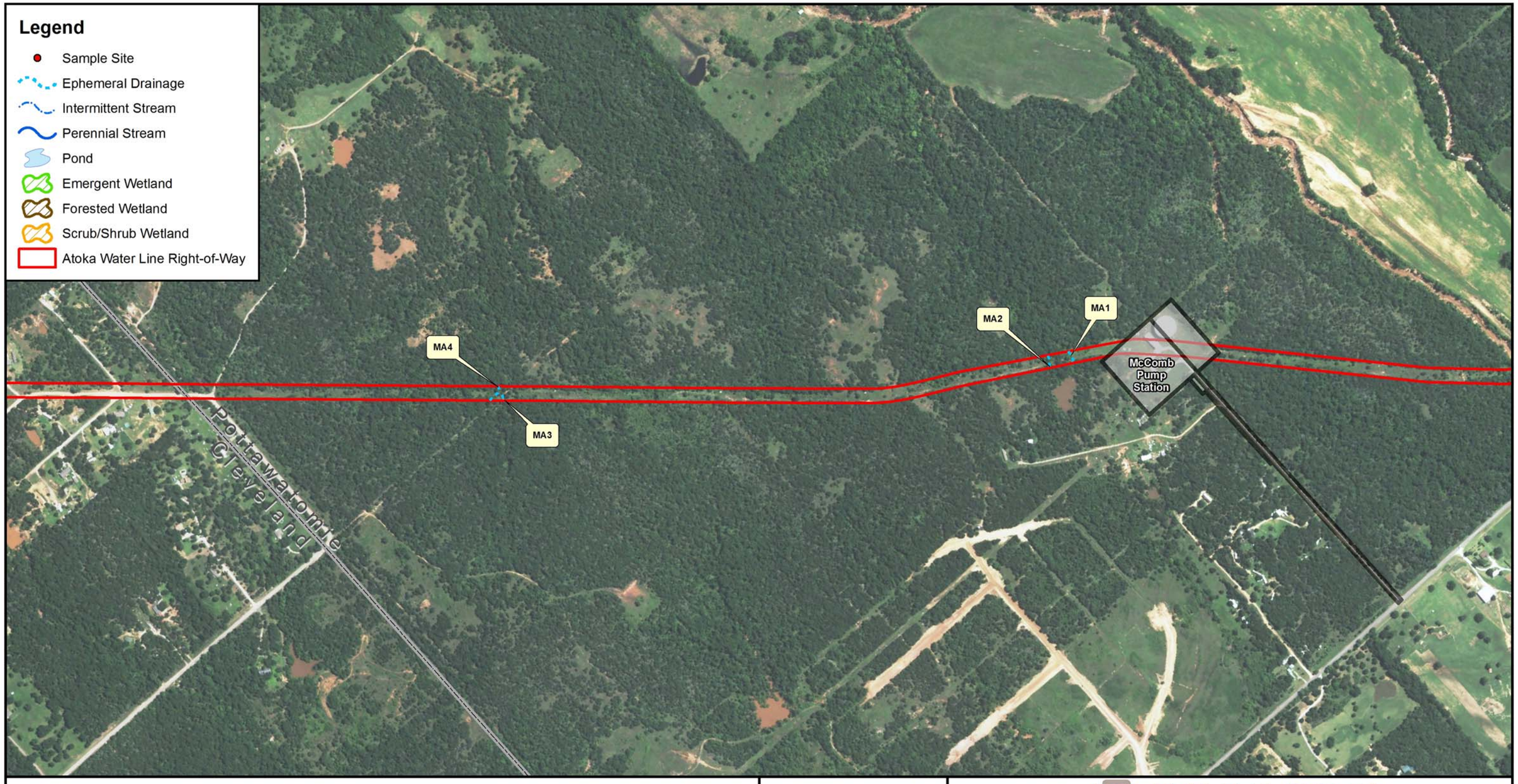
1:8,000

ENERCON

Figure 2.8: Topographic Map
Source: USGS 7.5 Minute Series
Franklin, OK Quadrangle

Prepared by: JL Riggs; July 19, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 32, 31 & 30, T9N R2E; Section 25, T9N R1E
Pottawatomie and Cleveland Counties, Oklahoma

N E W S

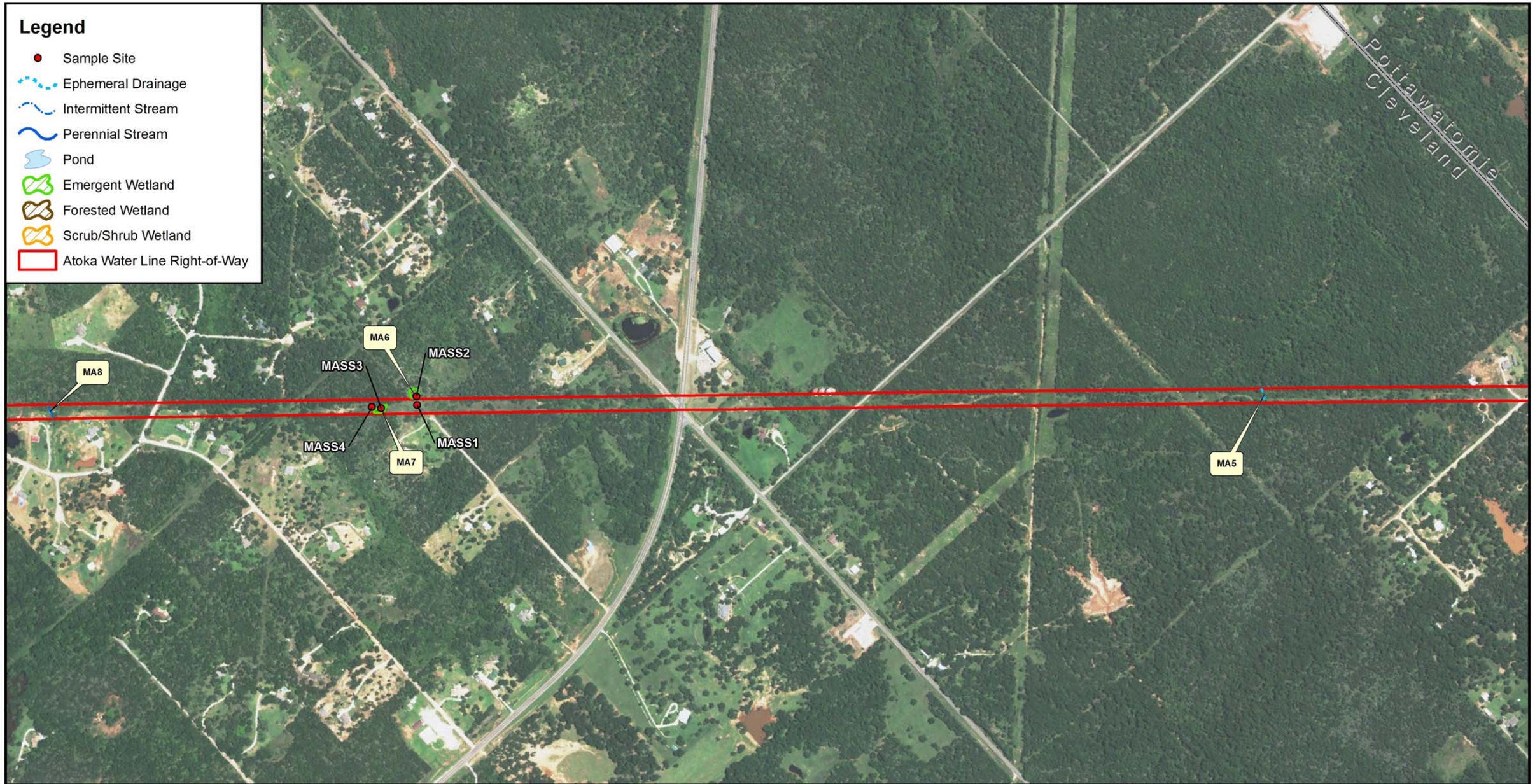
1:8,000

ENERCON

Figure 3.1: Aerial Photography
Source: 2015 USDA NAIP
Pottawatomie and Cleveland Counties, Oklahoma

Prepared by: JL Riggs; July 19, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 25, 24 & 23, T9N R1E
Cleveland County, Oklahoma

N E W S

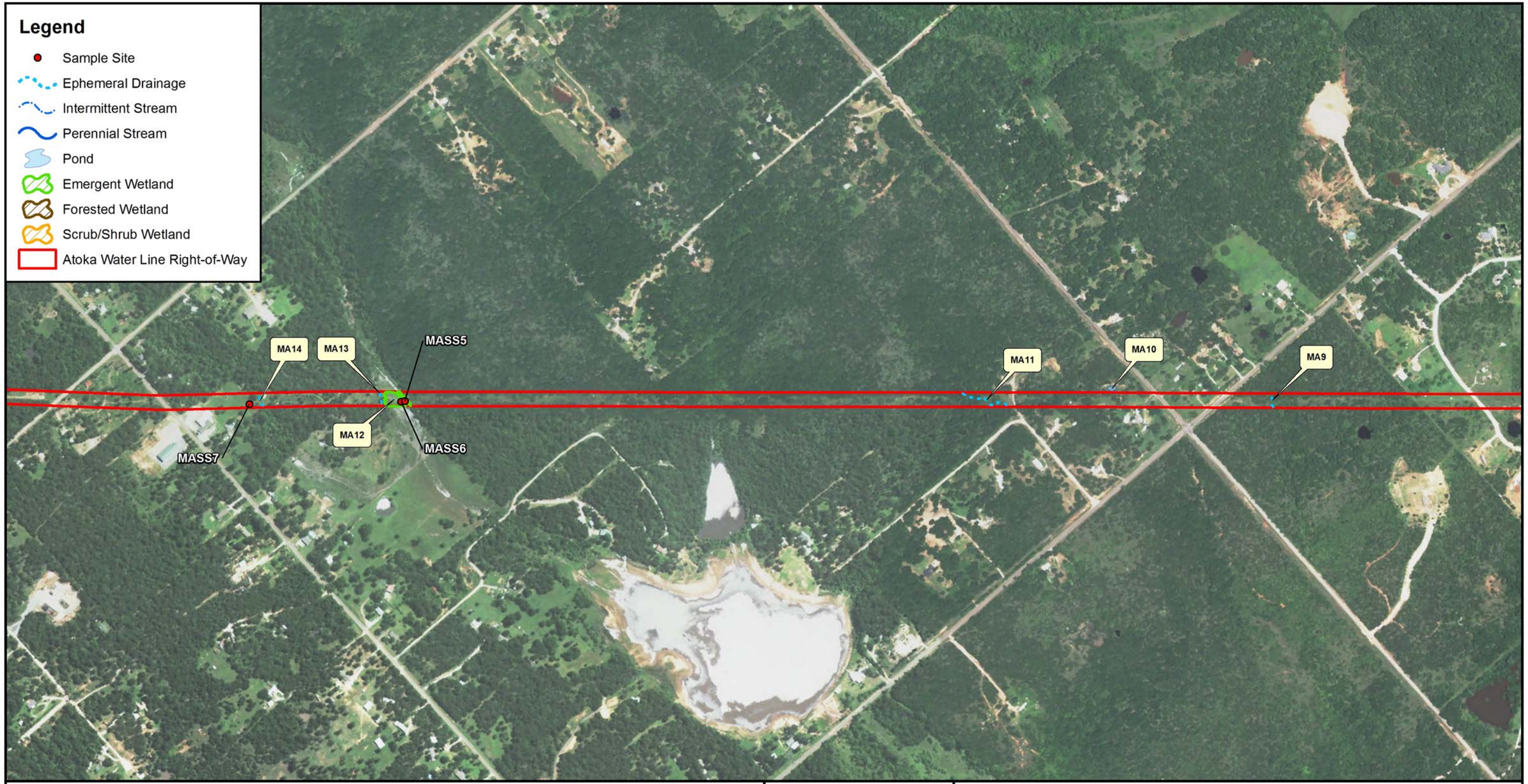
1:8,000

ENERCON

Figure 3.2: Aerial Photography
Source: 2015 USDA NAIP
Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 23, 14, 15, 16 & 9, T9N R1E
Cleveland County, Oklahoma

N E W S

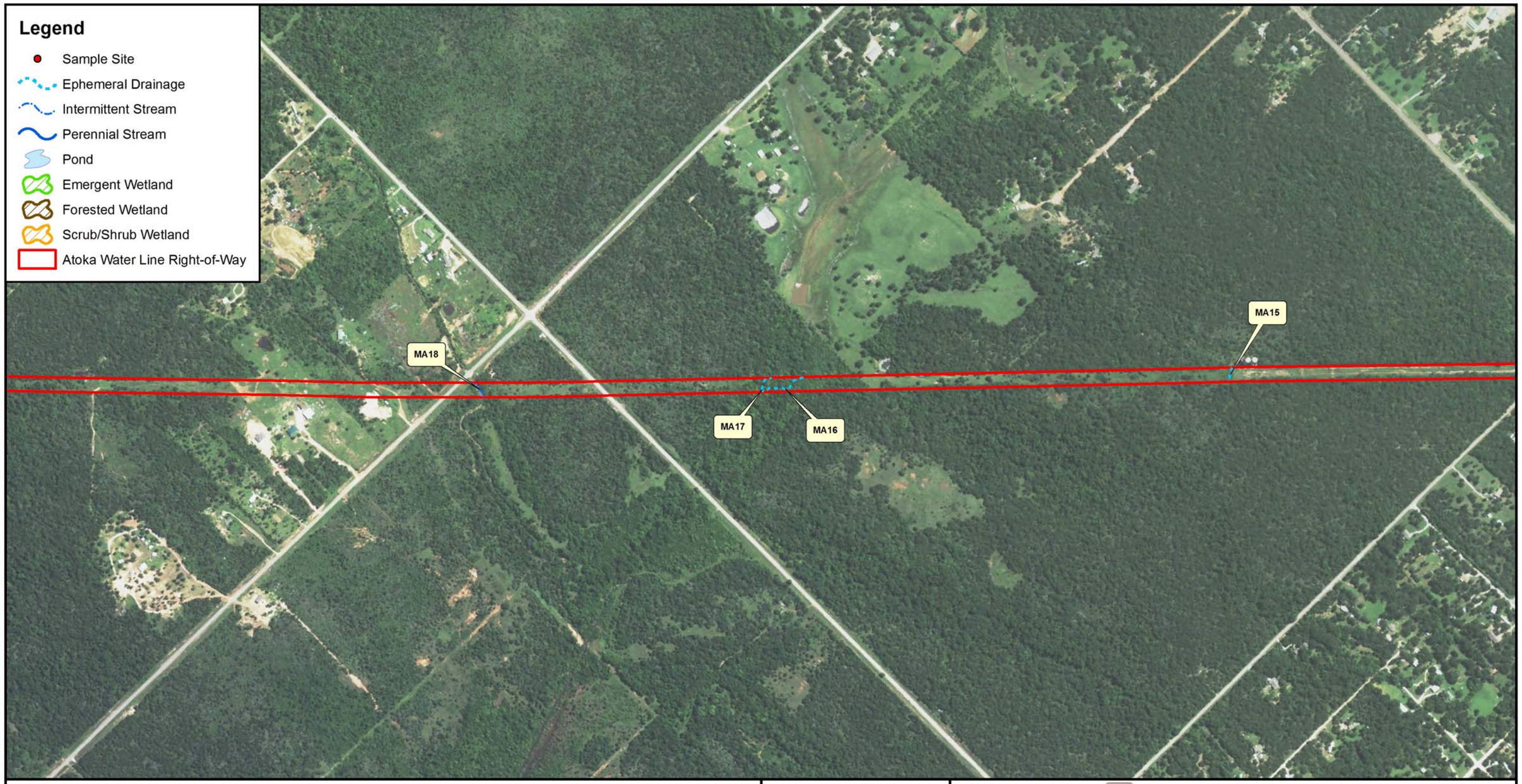
1:8,000

ENERCON

Figure 3.3: Aerial Photography
Source: 2015 USDA NAIP
Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 9, 8 & 5, T9N R1E
Cleveland County, Oklahoma

N E W S

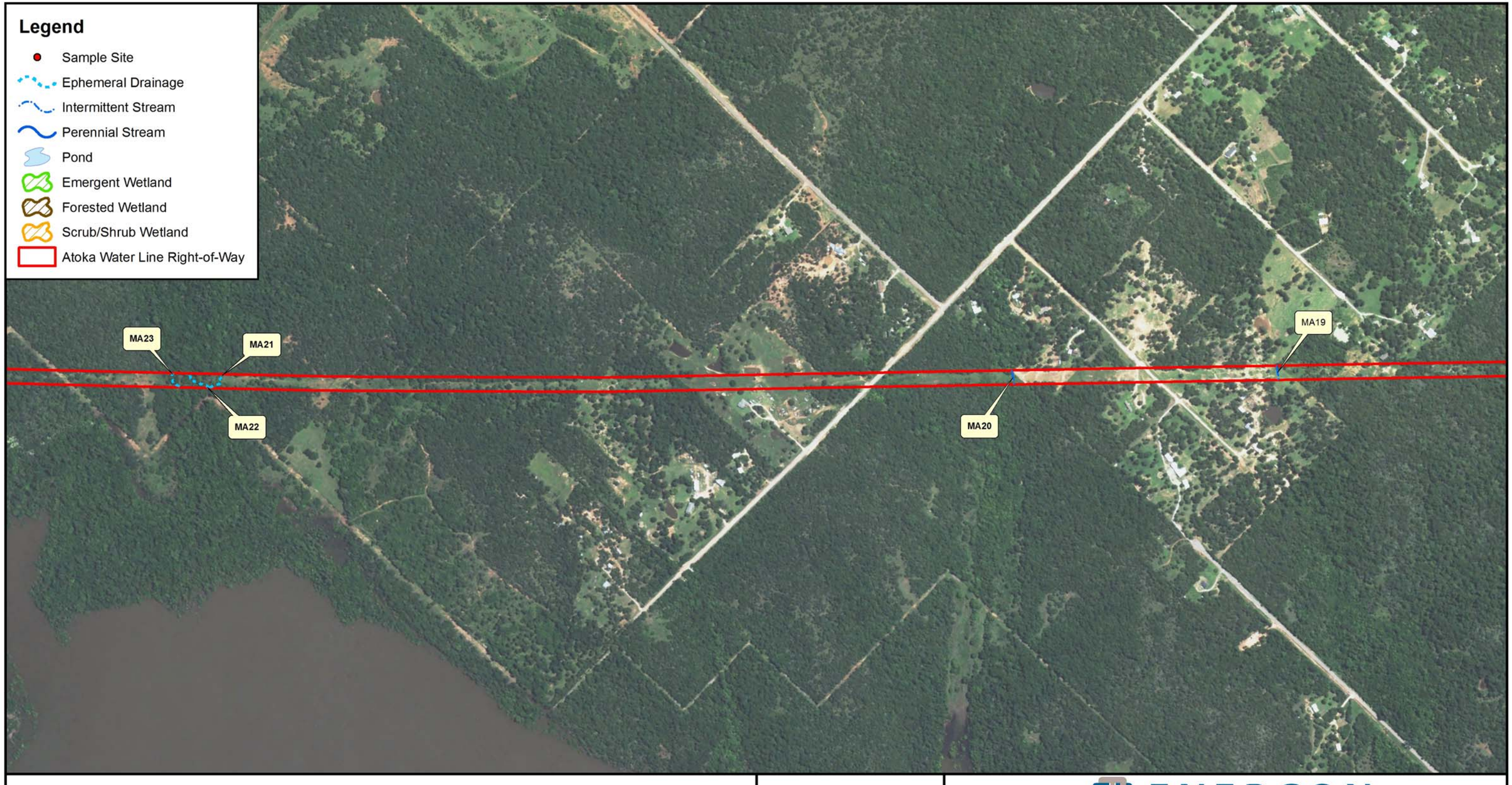
1:8,000

ENERCON

Figure 3.4: Aerial Photography
Source: 2015 USDA NAIP
Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 5 & 6, T9N R1E; Section 31, T10N R1E
Cleveland County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 3.5: Aerial Photography
Source: 2015 USDA NAIP
Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Section 31, T10N R1E; Sections 36 & 35, T10N R1W
Cleveland County, Oklahoma

N
W E
S
1:8,000

ENERCON

Figure 3.6: Aerial Photography

Source: 2015 USDA NAIP
Cleveland County, Oklahoma

Prepared by: JL Riggs; September 27, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 35, 34, 33 & 28, T10N R1W
Cleveland County, Oklahoma

N
W E
S
1:8,000

ENERCON

Figure 3.7: Aerial Photography
Source: 2015 USDA NAIP
Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 28, 29, 30 & 19, T10N R1W
Cleveland County, Oklahoma

N E S W

1:8,000

ENERCON

Figure 3.8: Aerial Photography

Source: 2015 USDA NAIP
Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Pottawatomie County Soil

- 42 - Stephenville fine sandy loam
- 43 - Stephenville-Darnell complex
- 49 - Grainola silty clay loam

Cleveland County Soil

- 1 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes
- 2 - Harrah fine sandy loam, 5 to 8 percent slopes
- 5 - Harrah fine sandy loam, 5 to 8 percent slopes, gullied
- 7 - Stephenville-Darsil complex, 1 to 5 percent slopes
- 8 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, gullied
- 15 - Littleaxe loamy fine sand
- 20 - Tribbey fine sandy loam
- 35 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, eroded
- 36 - Stephenville-Darsil complex, 1 to 5 percent slopes, eroded
- 37 - Harrah fine sandy loam, 5 to 8 percent slopes, eroded
- 67 - Newalla fine sandy loam
- 95 - Pulaski fine sandy loam

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 32, 31 & 30, T9N R2E; Section 25, T9N R1E
Pottawatomie and Cleveland Counties, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.1: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Pottawatomie and Cleveland Counties, Oklahoma; 2015 USDA NAIP

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet

Legend

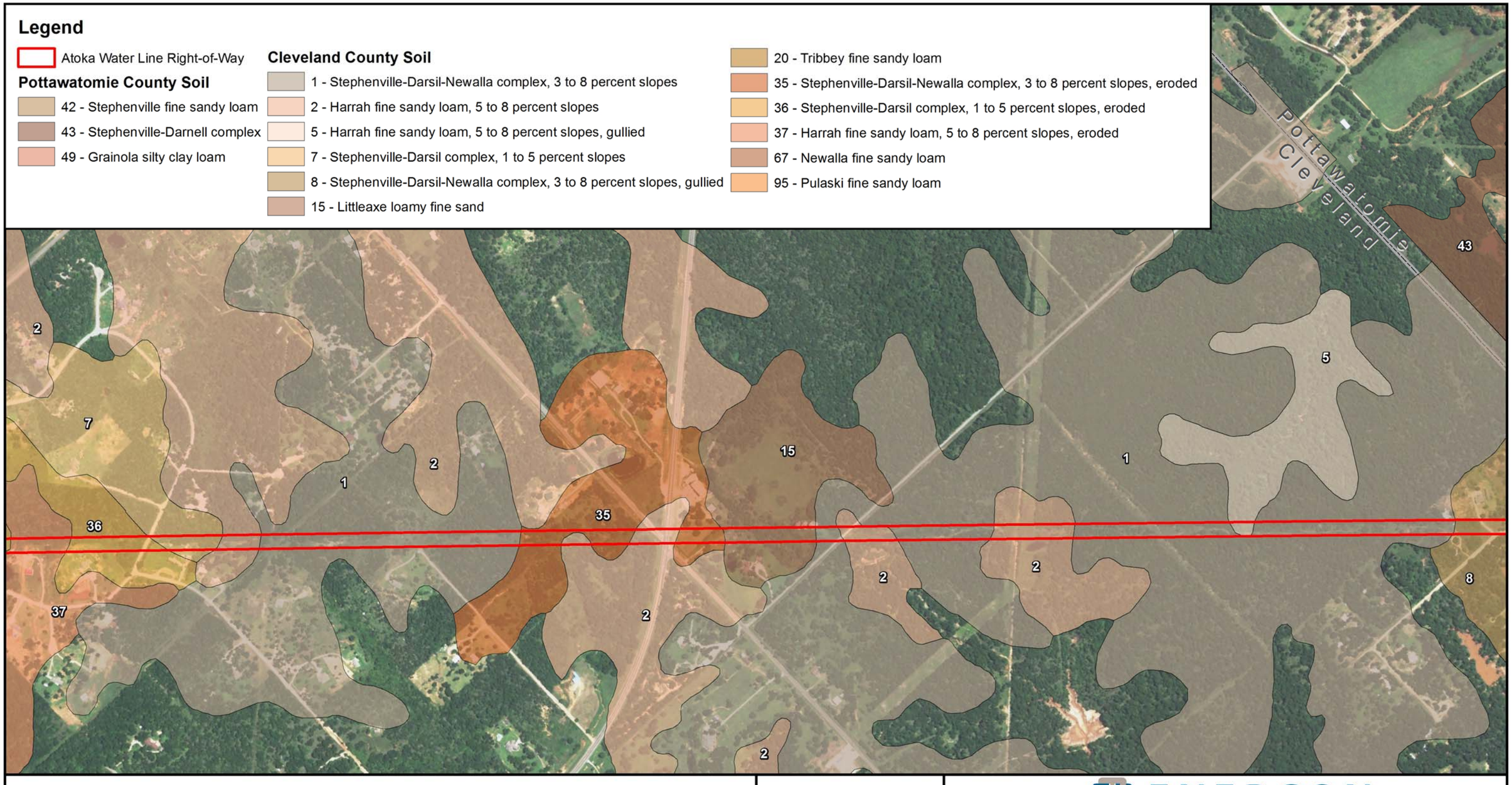
Atoka Water Line Right-of-Way

Pottawatomie County Soil

- 42 - Stephenville fine sandy loam
- 43 - Stephenville-Darnell complex
- 49 - Grainola silty clay loam

Cleveland County Soil

- 1 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes
- 2 - Harrah fine sandy loam, 5 to 8 percent slopes
- 5 - Harrah fine sandy loam, 5 to 8 percent slopes, gullied
- 7 - Stephenville-Darsil complex, 1 to 5 percent slopes
- 8 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, gullied
- 15 - Littleaxe loamy fine sand
- 20 - Tribbey fine sandy loam
- 35 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, eroded
- 36 - Stephenville-Darsil complex, 1 to 5 percent slopes, eroded
- 37 - Harrah fine sandy loam, 5 to 8 percent slopes, eroded
- 67 - Newalla fine sandy loam
- 95 - Pulaski fine sandy loam



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 25, 24 & 23, T9N R1E
Cleveland County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.2: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Cleveland County, Oklahoma; 2015 USDA NAIP

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet

Legend

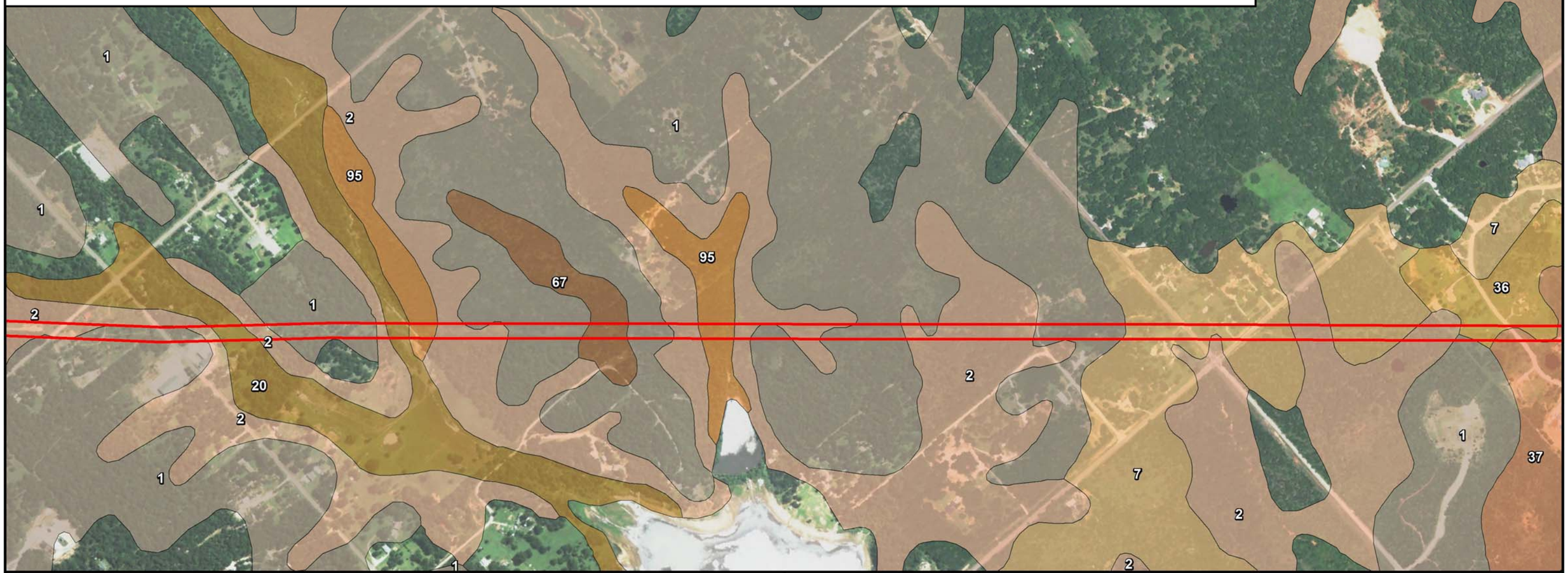
Atoka Water Line Right-of-Way

Pottawatomie County Soil

- 42 - Stephenville fine sandy loam
- 43 - Stephenville-Darnell complex
- 49 - Grainola silty clay loam

Cleveland County Soil

- 1 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes
- 2 - Harrah fine sandy loam, 5 to 8 percent slopes
- 5 - Harrah fine sandy loam, 5 to 8 percent slopes, gullied
- 7 - Stephenville-Darsil complex, 1 to 5 percent slopes
- 8 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, gullied
- 15 - Littleaxe loamy fine sand
- 20 - Tribbey fine sandy loam
- 35 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, eroded
- 36 - Stephenville-Darsil complex, 1 to 5 percent slopes, eroded
- 37 - Harrah fine sandy loam, 5 to 8 percent slopes, eroded
- 67 - Newalla fine sandy loam
- 95 - Pulaski fine sandy loam



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 23, 14, 15, 16 & 9, T9N R1E
Cleveland County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.3: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Cleveland County, Oklahoma; 2015 USDA NAIP

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet

Legend

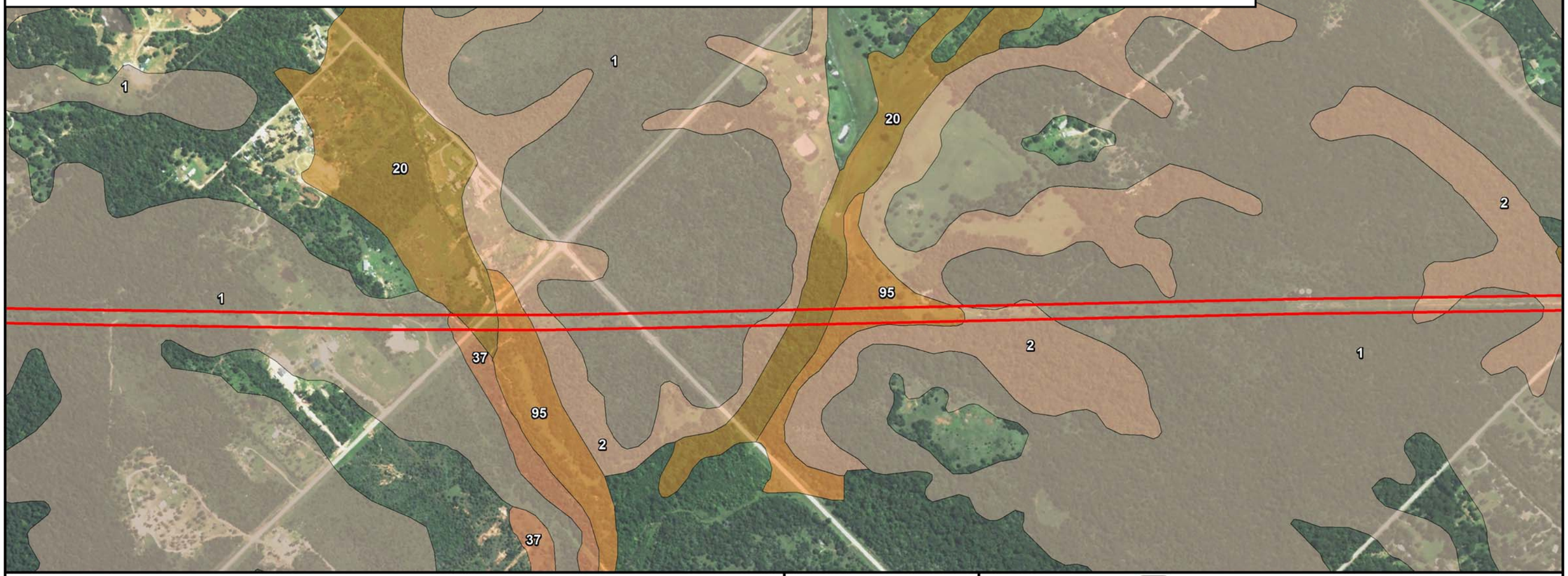
Atoka Water Line Right-of-Way

Pottawatomie County Soil

- 42 - Stephenville fine sandy loam
- 43 - Stephenville-Darnell complex
- 49 - Grainola silty clay loam

Cleveland County Soil

- 1 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes
- 2 - Harrah fine sandy loam, 5 to 8 percent slopes
- 5 - Harrah fine sandy loam, 5 to 8 percent slopes, gullied
- 7 - Stephenville-Darsil complex, 1 to 5 percent slopes
- 8 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, gullied
- 15 - Littleaxe loamy fine sand
- 20 - Tribbey fine sandy loam
- 35 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, eroded
- 36 - Stephenville-Darsil complex, 1 to 5 percent slopes, eroded
- 37 - Harrah fine sandy loam, 5 to 8 percent slopes, eroded
- 67 - Newalla fine sandy loam
- 95 - Pulaski fine sandy loam



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 9, 8 & 5, T9N R1E
Cleveland County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.4: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Cleveland County, Oklahoma; 2015 USDA NAIP

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet

Legend

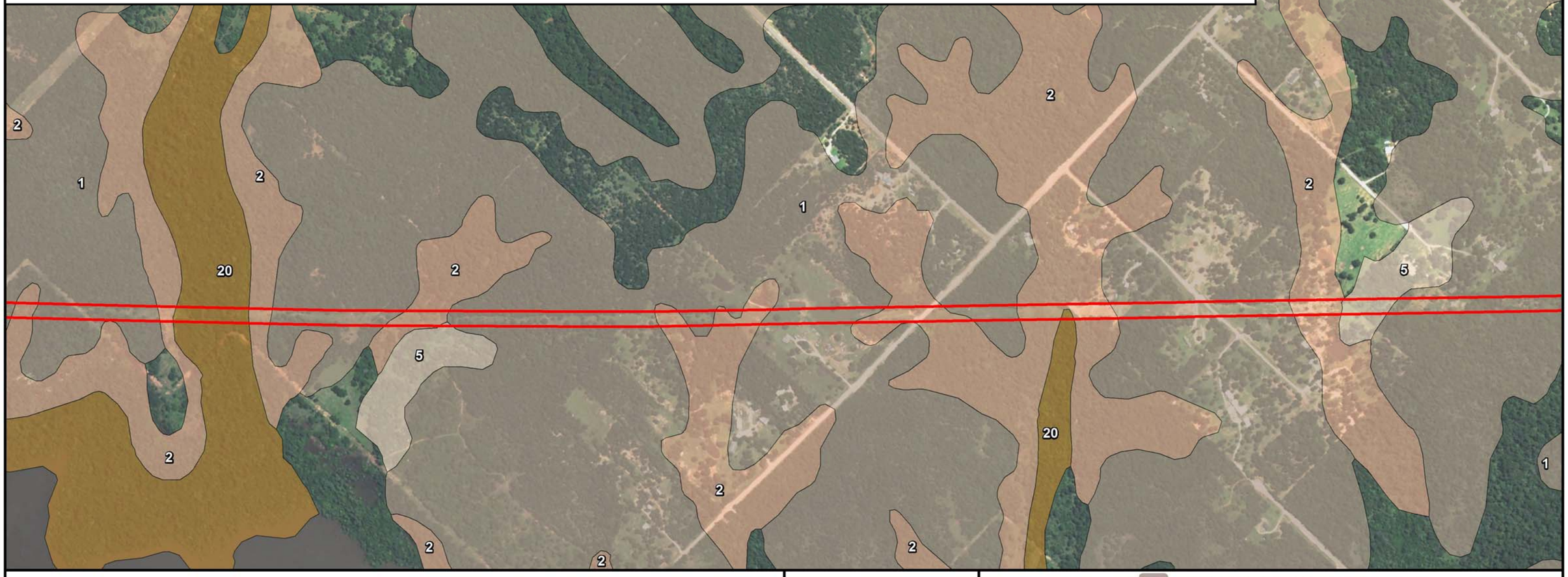
Atoka Water Line Right-of-Way

Pottawatomie County Soil

- 42 - Stephenville fine sandy loam
- 43 - Stephenville-Darnell complex
- 49 - Grainola silty clay loam

Cleveland County Soil

- 1 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes
- 2 - Harrah fine sandy loam, 5 to 8 percent slopes
- 5 - Harrah fine sandy loam, 5 to 8 percent slopes, gullied
- 7 - Stephenville-Darsil complex, 1 to 5 percent slopes
- 8 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, gullied
- 15 - Littleaxe loamy fine sand
- 20 - Tribbey fine sandy loam
- 35 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, eroded
- 36 - Stephenville-Darsil complex, 1 to 5 percent slopes, eroded
- 37 - Harrah fine sandy loam, 5 to 8 percent slopes, eroded
- 67 - Newalla fine sandy loam
- 95 - Pulaski fine sandy loam



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 5 & 6, T9N R1E; Section 31, T10N R1E
Cleveland County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 4.5: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Cleveland County, Oklahoma; 2015 USDA NAIP

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet

Legend

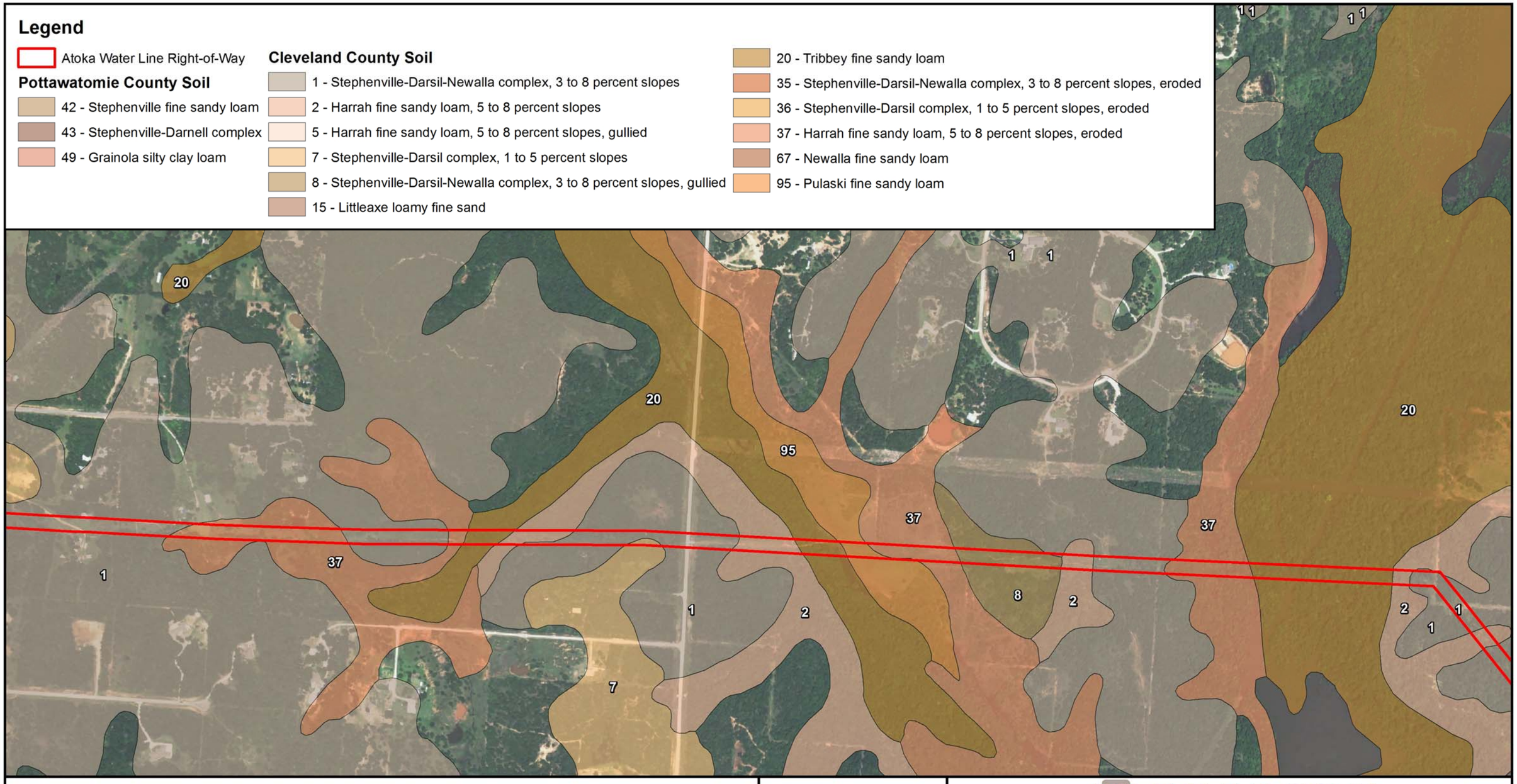
Atoka Water Line Right-of-Way

Pottawatomie County Soil

- 42 - Stephenville fine sandy loam
- 43 - Stephenville-Darnell complex
- 49 - Grainola silty clay loam

Cleveland County Soil

- 1 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes
- 2 - Harrah fine sandy loam, 5 to 8 percent slopes
- 5 - Harrah fine sandy loam, 5 to 8 percent slopes, gullied
- 7 - Stephenville-Darsil complex, 1 to 5 percent slopes
- 8 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, gullied
- 15 - Littleaxe loamy fine sand
- 20 - Tribbey fine sandy loam
- 35 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, eroded
- 36 - Stephenville-Darsil complex, 1 to 5 percent slopes, eroded
- 37 - Harrah fine sandy loam, 5 to 8 percent slopes, eroded
- 67 - Newalla fine sandy loam
- 95 - Pulaski fine sandy loam



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Section 31, T10N R1E; Sections 36 & 35, T10N R1W
Cleveland County, Oklahoma

N
W E
S
1:8,000

ENERCON

Figure 4.6: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Cleveland County, Oklahoma; 2015 USDA NAIP

Prepared by: JL Riggs; July 19, 2016

0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

Pottawatomie County Soil

- 42 - Stephenville fine sandy loam
- 43 - Stephenville-Darnell complex
- 49 - Grainola silty clay loam

Cleveland County Soil

- 1 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes
- 2 - Harrah fine sandy loam, 5 to 8 percent slopes
- 5 - Harrah fine sandy loam, 5 to 8 percent slopes, gullied
- 7 - Stephenville-Darsil complex, 1 to 5 percent slopes
- 8 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, gullied
- 15 - Littleaxe loamy fine sand
- 20 - Tribbey fine sandy loam
- 35 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, eroded
- 36 - Stephenville-Darsil complex, 1 to 5 percent slopes, eroded
- 37 - Harrah fine sandy loam, 5 to 8 percent slopes, eroded
- 67 - Newalla fine sandy loam
- 95 - Pulaski fine sandy loam

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 35, 34, 33 & 28, T10N R1W
Cleveland County, Oklahoma

N
W E
S
1:8,000

ENERCON

Figure 4.7: Soil Survey Map
Source: USDA NRCS Soil Survey Geographic Database
Cleveland County, Oklahoma; 2015 USDA NAIP

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet

Legend

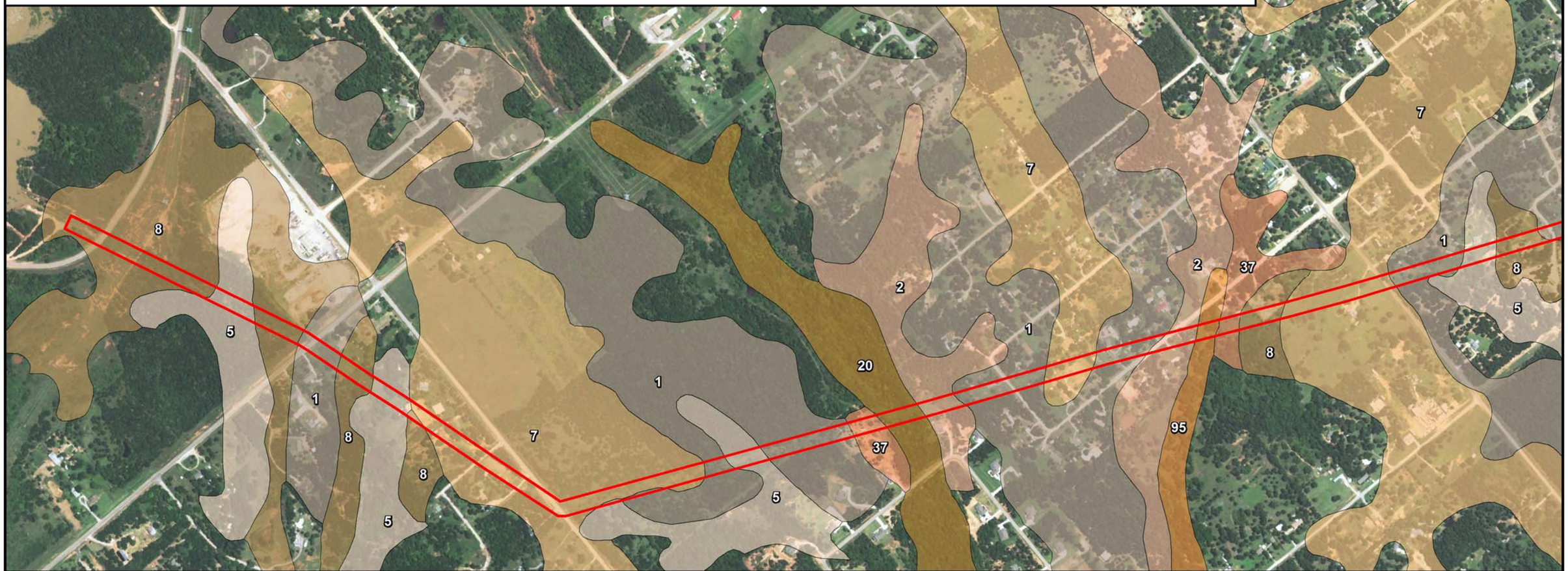
Atoka Water Line Right-of-Way

Pottawatomie County Soil

- 42 - Stephenville fine sandy loam
- 43 - Stephenville-Darnell complex
- 49 - Grainola silty clay loam

Cleveland County Soil

- 1 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes
- 2 - Harrah fine sandy loam, 5 to 8 percent slopes
- 5 - Harrah fine sandy loam, 5 to 8 percent slopes, gullied
- 7 - Stephenville-Darsil complex, 1 to 5 percent slopes
- 8 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, gullied
- 15 - Littleaxe loamy fine sand
- 20 - Tribbey fine sandy loam
- 35 - Stephenville-Darsil-Newalla complex, 3 to 8 percent slopes, eroded
- 36 - Stephenville-Darsil complex, 1 to 5 percent slopes, eroded
- 37 - Harrah fine sandy loam, 5 to 8 percent slopes, eroded
- 67 - Newalla fine sandy loam
- 95 - Pulaski fine sandy loam



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 28, 29, 30 & 19, T10N R1W
Cleveland County, Oklahoma

N E W S

1:8,000

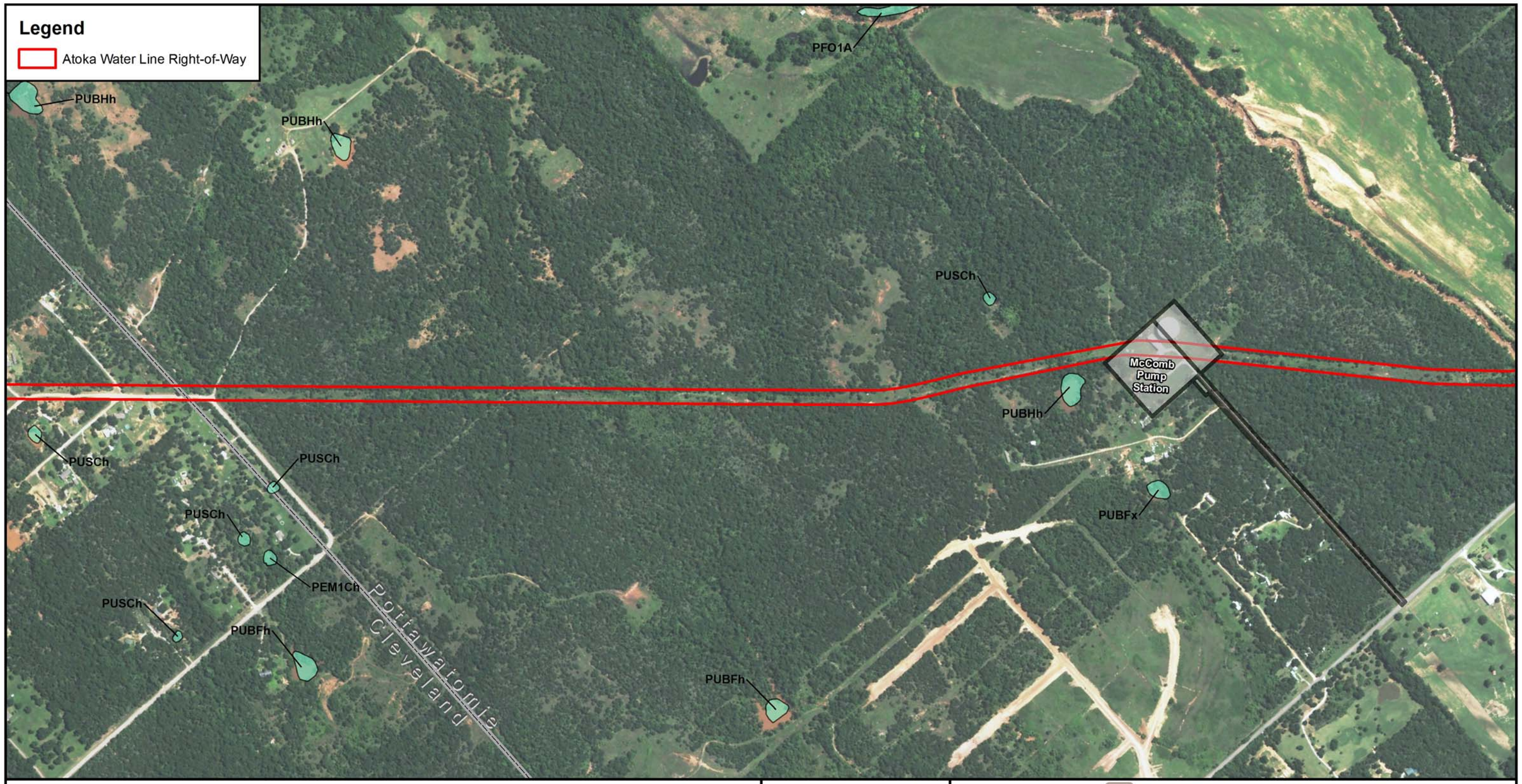
ENERCON

Figure 4.8: Soil Survey Map

Source: USDA NRCS Soil Survey Geographic Database
Cleveland County, Oklahoma; 2015 USDA NAIP

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 32, 31 & 30, T9N R2E; Section 25, T9N R1E
Pottawatomie and Cleveland Counties, Oklahoma

1:8,000

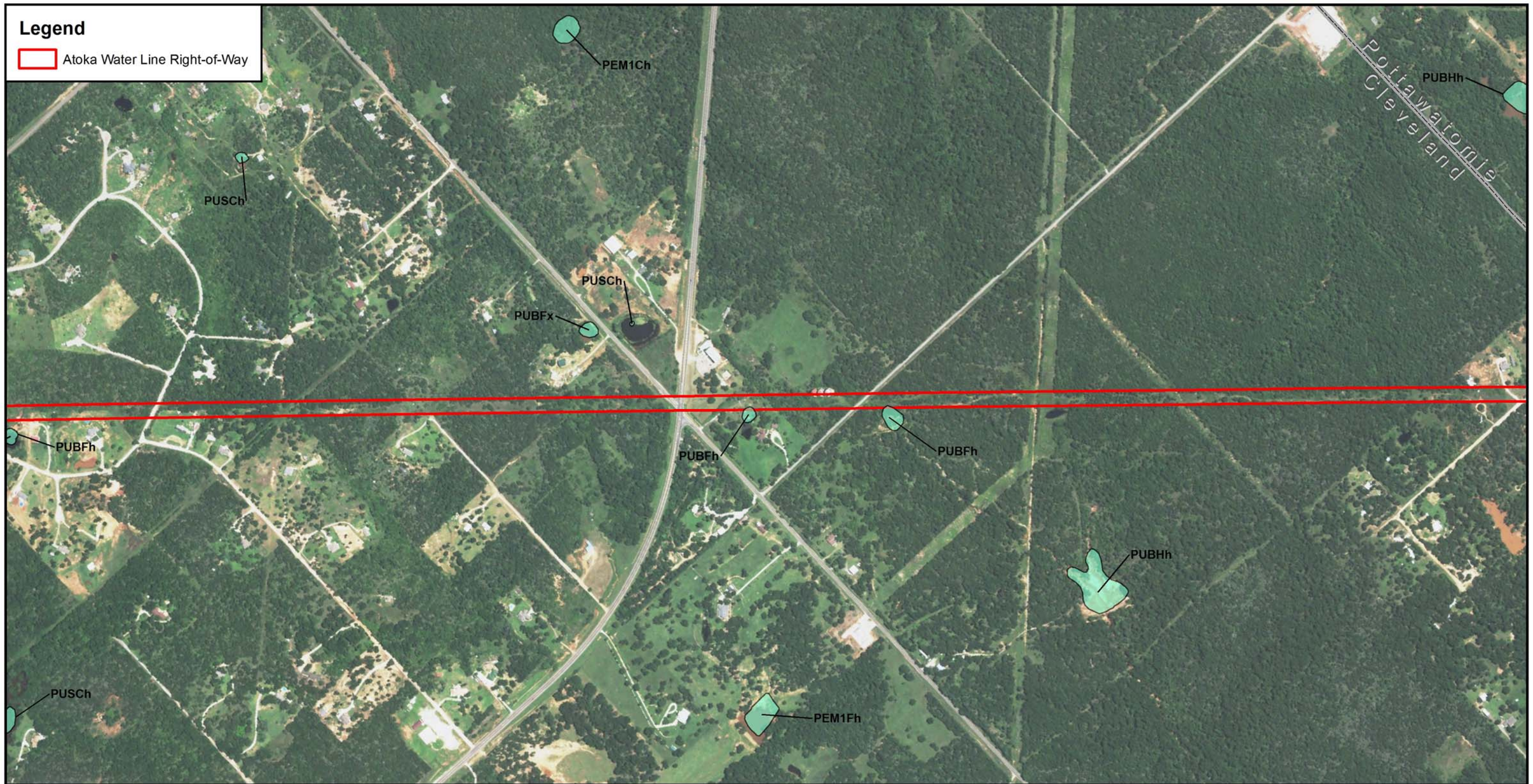
ENERCON

Figure 5.1: NWI Map

Source: US Fish and Wildlife Service - NWI Macomb and Little Axe, OK Quadrangles;
2015 USDA NAIP - Pottawatomie and Cleveland Counties, Oklahoma

Prepared by: JL Riggs; July 15, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 25, 24 & 23, T9N R1E
Cleveland County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 5.2: NWI Map

Source: US Fish and Wildlife Service - NWI Little Axe, OK Quadrangle;
2015 USDA NAIP - Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet

Legend

Atoka Water Line Right-of-Way

PUSCh
PUSCh
PUSCx
PUSCh
PUBFh
PUSCh
PUSCh
PUSCh
PUBFh
PUBFh
PUBFx
PUSCh
PUBFh
PEM1Ch
PFO1Ah
PEM1Ch
PEM1Fh
PUBHh
PUSCh
PUBFh
PUSCh

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 23, 14, 15, 16 & 9, T9N R1E
Cleveland County, Oklahoma

N E W S

1:8,000

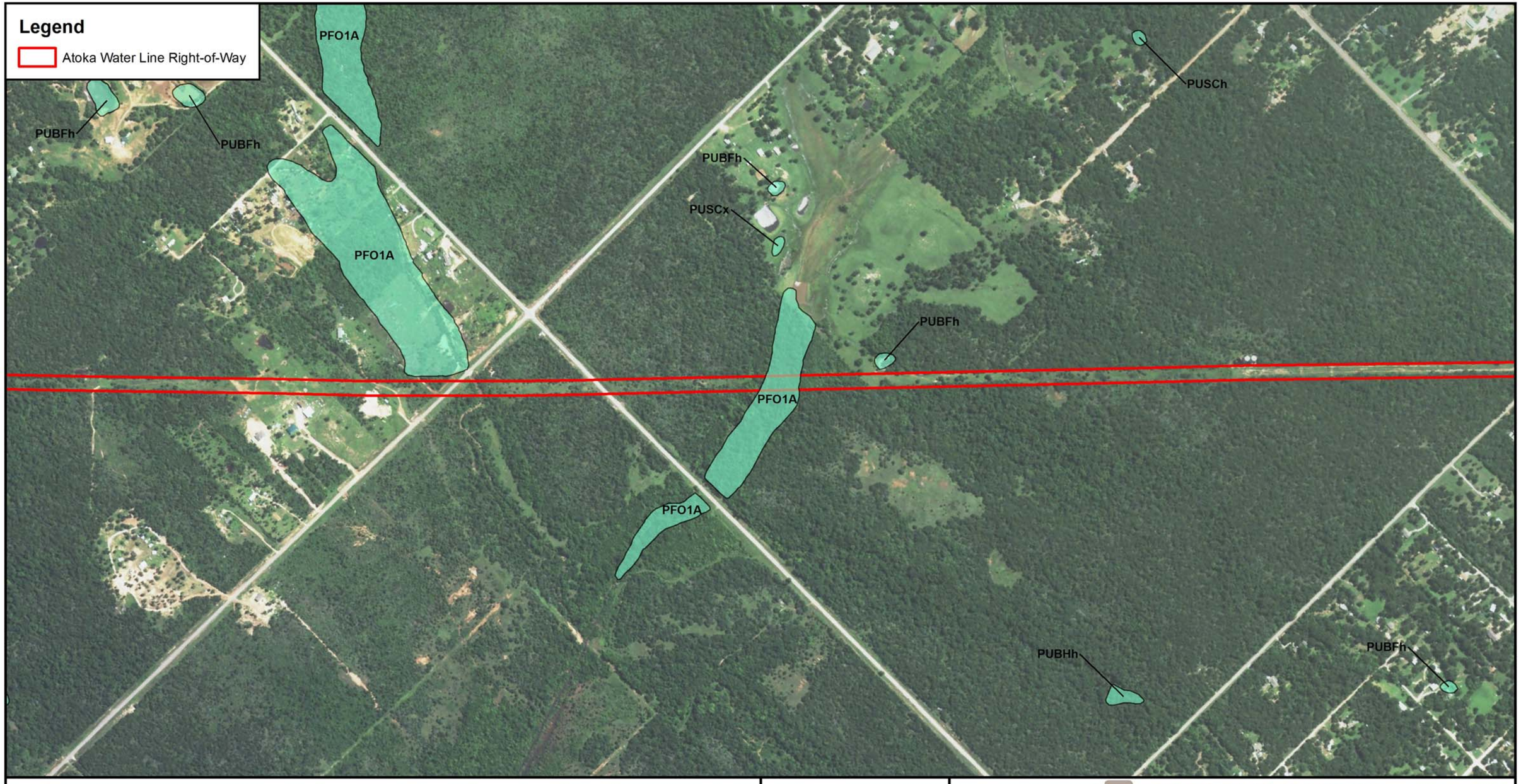
ENERCON

Figure 5.3: NWI Map

Source: US Fish and Wildlife Service - NWI Little Axe and Stella, OK Quadrangles;
2015 USDA NAIP - Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 9, 8 & 5, T9N R1E
Cleveland County, Oklahoma

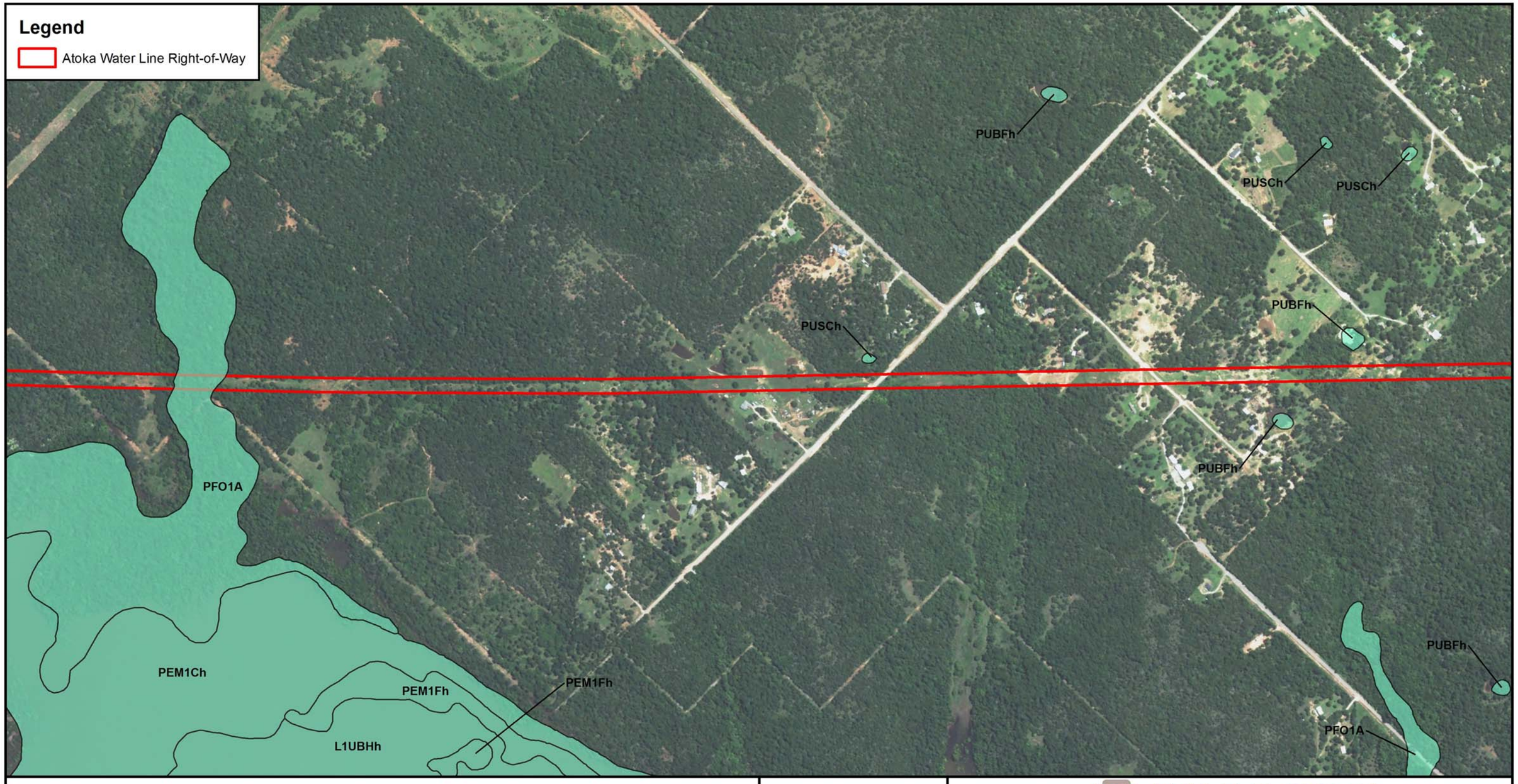
1:8,000

ENERCON

Figure 5.4: NWI Map
Source: US Fish and Wildlife Service - NWI Stella, OK Quadrangle;
2015 USDA NAIP - Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 5 & 6, T9N R1E; Section 31, T10N R1E
Cleveland County, Oklahoma

1:8,000

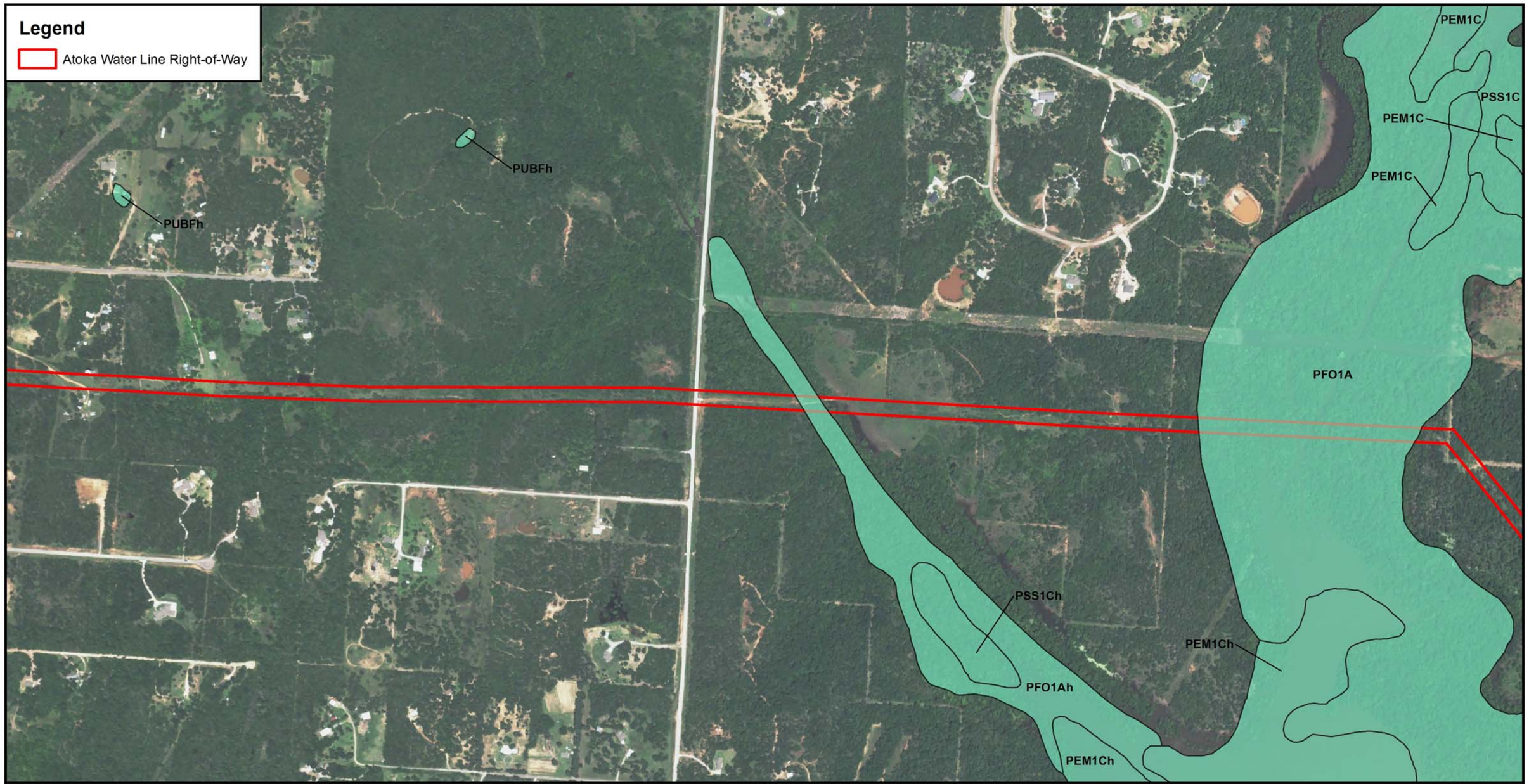
ENERCON

Figure 5.5: NWI Map

Source: US Fish and Wildlife Service - NWI Stella, OK Quadrangle;
2015 USDA NAIP - Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Section 31, T10N R1E; Sections 36 & 35, T10N R1W
Cleveland County, Oklahoma

N
W E
S
1:8,000

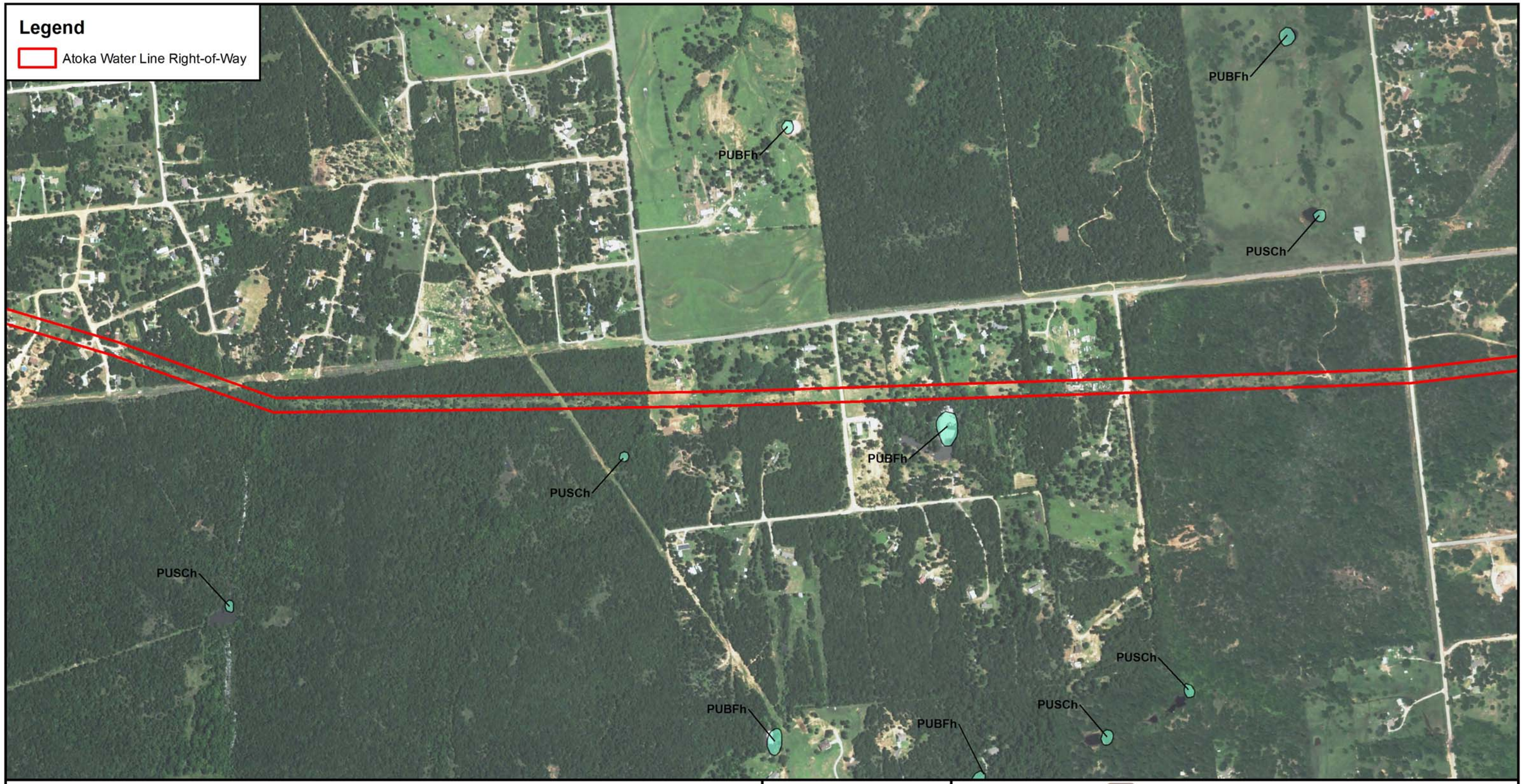
ENERCON

Figure 5.6: NWI Map

Source: US Fish and Wildlife Service - NWI Stella and Franklin, OK Quadrangles;
2015 USDA NAIP - Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 35, 34, 33 & 28, T10N R1W
Cleveland County, Oklahoma

N
W E
S
1:8,000

ENERCON

Figure 5.7: NWI Map
Source: US Fish and Wildlife Service - NWI Franklin, OK Quadrangle;
2015 USDA NAIP - Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 28, 29, 30 & 19, T10N R1W
Cleveland County, Oklahoma

N E W S

1:8,000

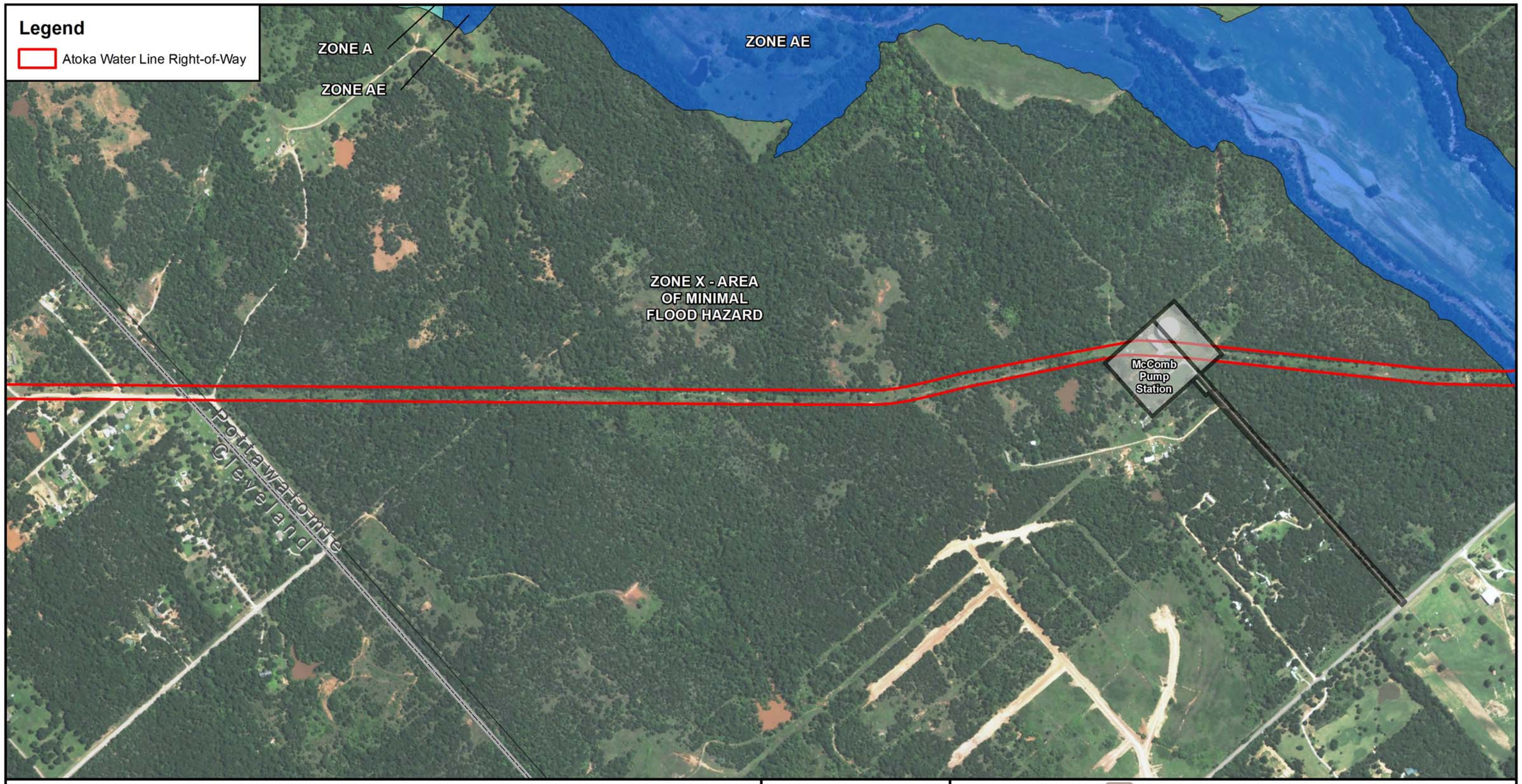
ENERCON

Figure 5.8: NWI Map

Source: US Fish and Wildlife Service - NWI Franklin, OK Quadrangle;
2015 USDA NAIP - Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 32, 31 & 30, T9N R2E; Section 25, T9N R1E
Pottawatomie and Cleveland Counties, Oklahoma

N E W S

1:8,000

ENERCON

Figure 6.1: Flood Insurance Rate Map

Source: Federal Emergency Management Agency; Map #40125C0280H & #40125C0260H - September 3, 2010; #40027C335H - September 26, 2008
2015 USDA NAIP; Pottawatomie and Cleveland Counties, Oklahoma

Prepared by: JL Riggs; July 19, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 25, 24 & 23, T9N R1E
Cleveland County, Oklahoma

N E W S

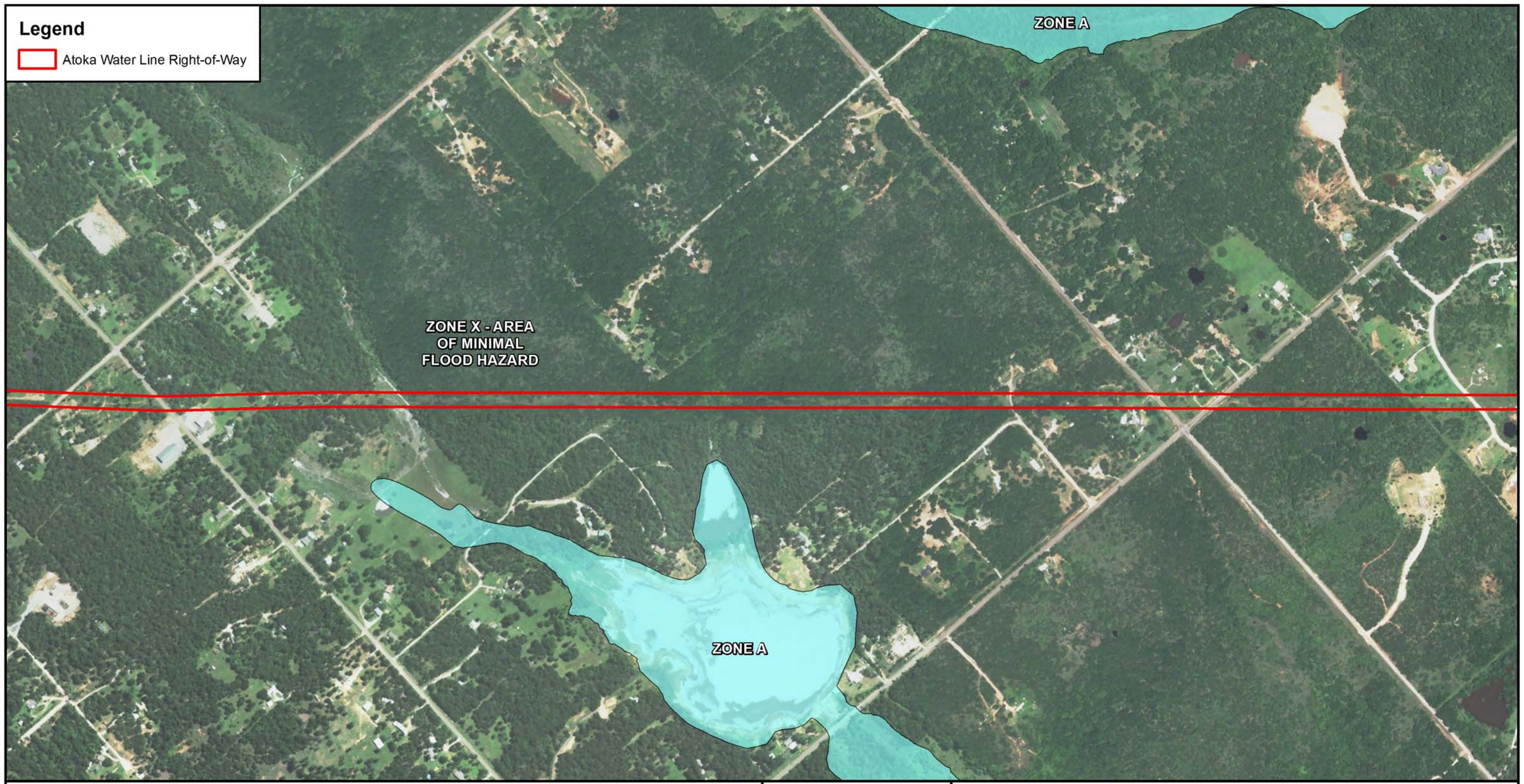
1:8,000

ENERCON

Figure 6.2: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
MAP #40027C0335H - September 26, 2008; 2015 USDA NAIP
Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 23, 14, 15, 16 & 9, T9N R1E
Cleveland County, Oklahoma

N E S W

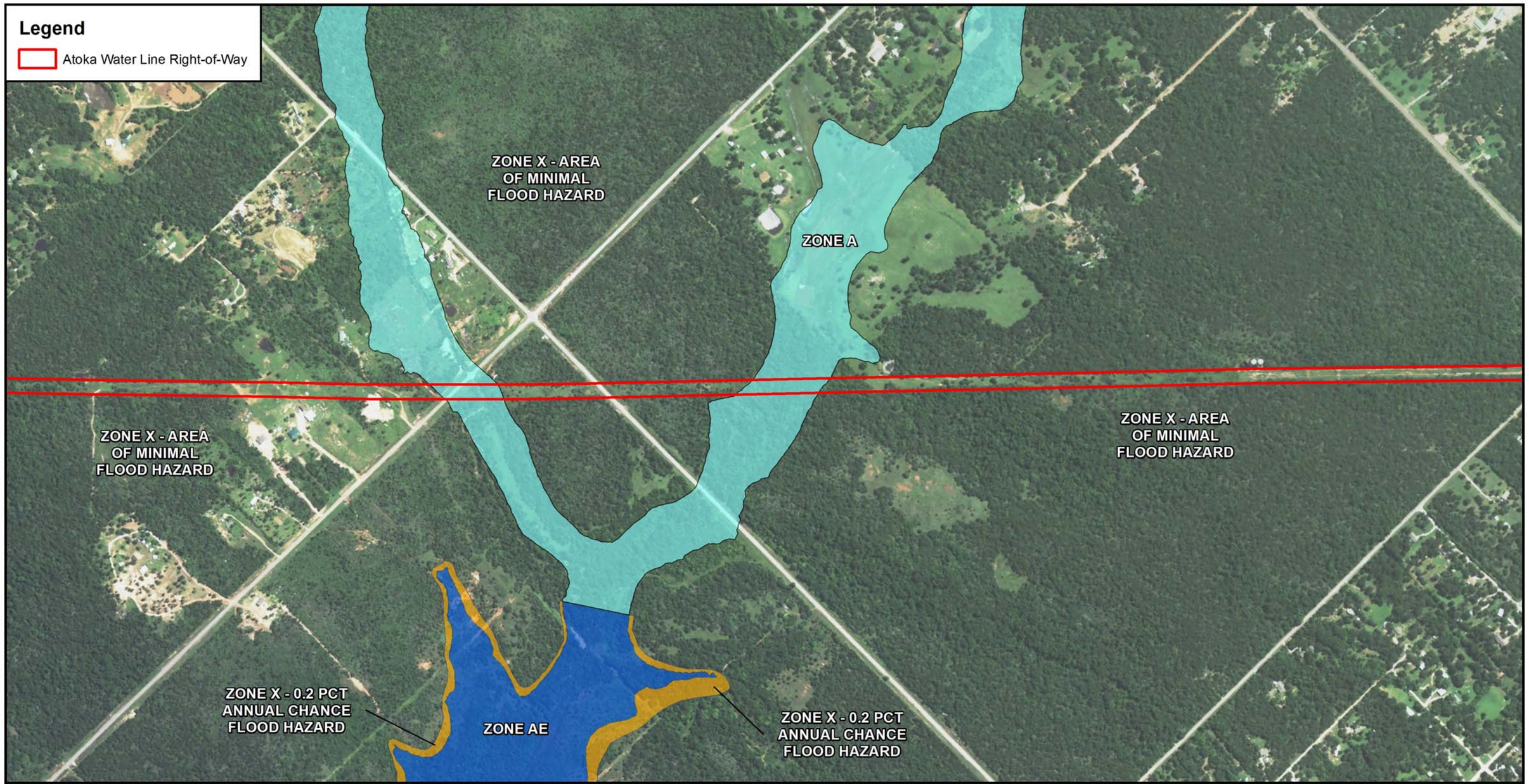
1:8,000

ENERCON

Figure 6.3: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
MAP #40027C335H, #40027C0245H & #40027C0240H - September 26, 2008; 2015 USDA NAIP
Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 9, 8 & 5, T9N R1E
Cleveland County, Oklahoma

N E S W

1:8,000

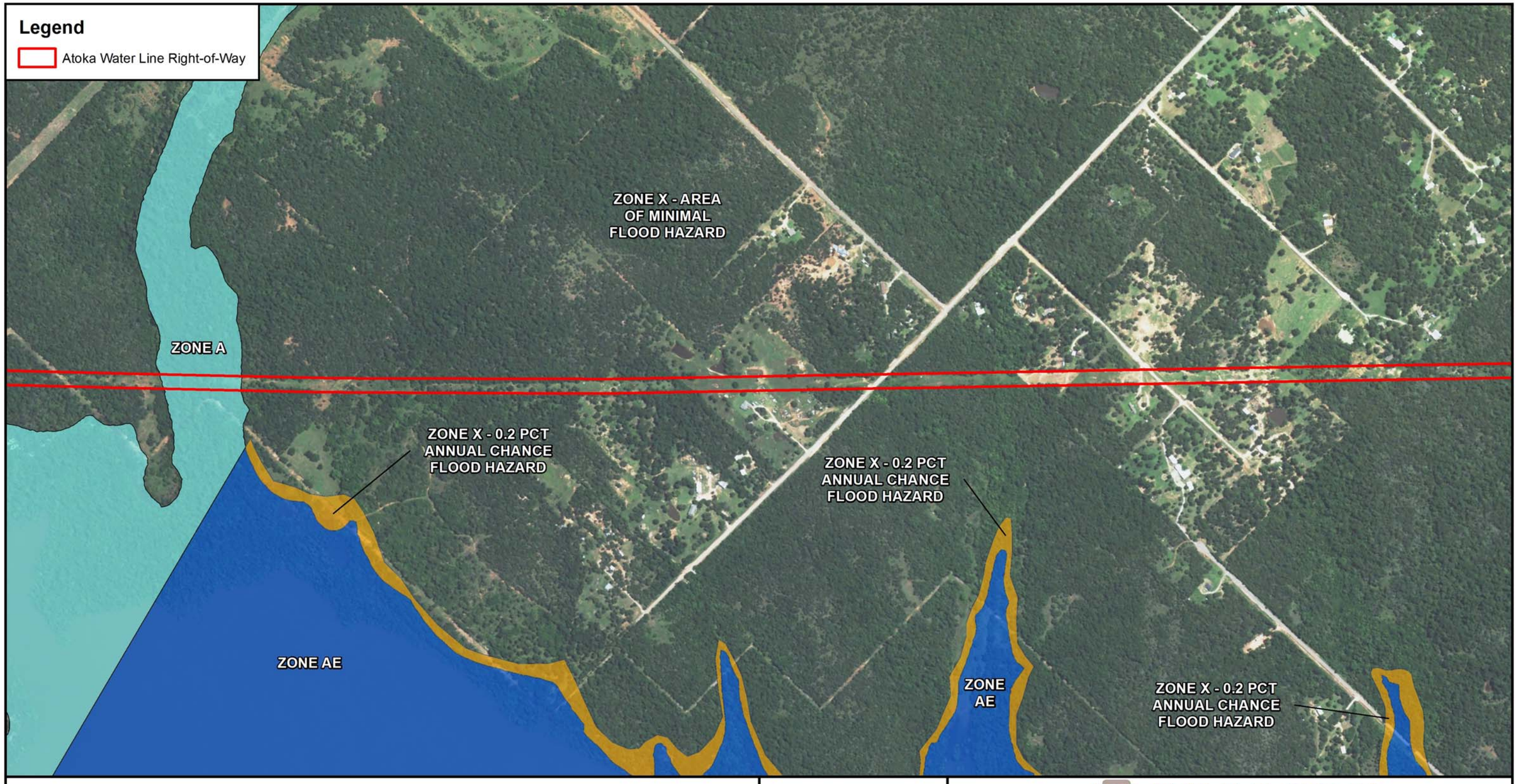
ENERCON

Figure 6.4: Flood Insurance Rate Map

Source: Federal Emergency Management Agency
MAP #40027C0240H - September 26, 2008; 2015 USDA NAIP
Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 5 & 6, T9N R1E; Section 31, T10N R1E
Cleveland County, Oklahoma

N E S W

1:8,000

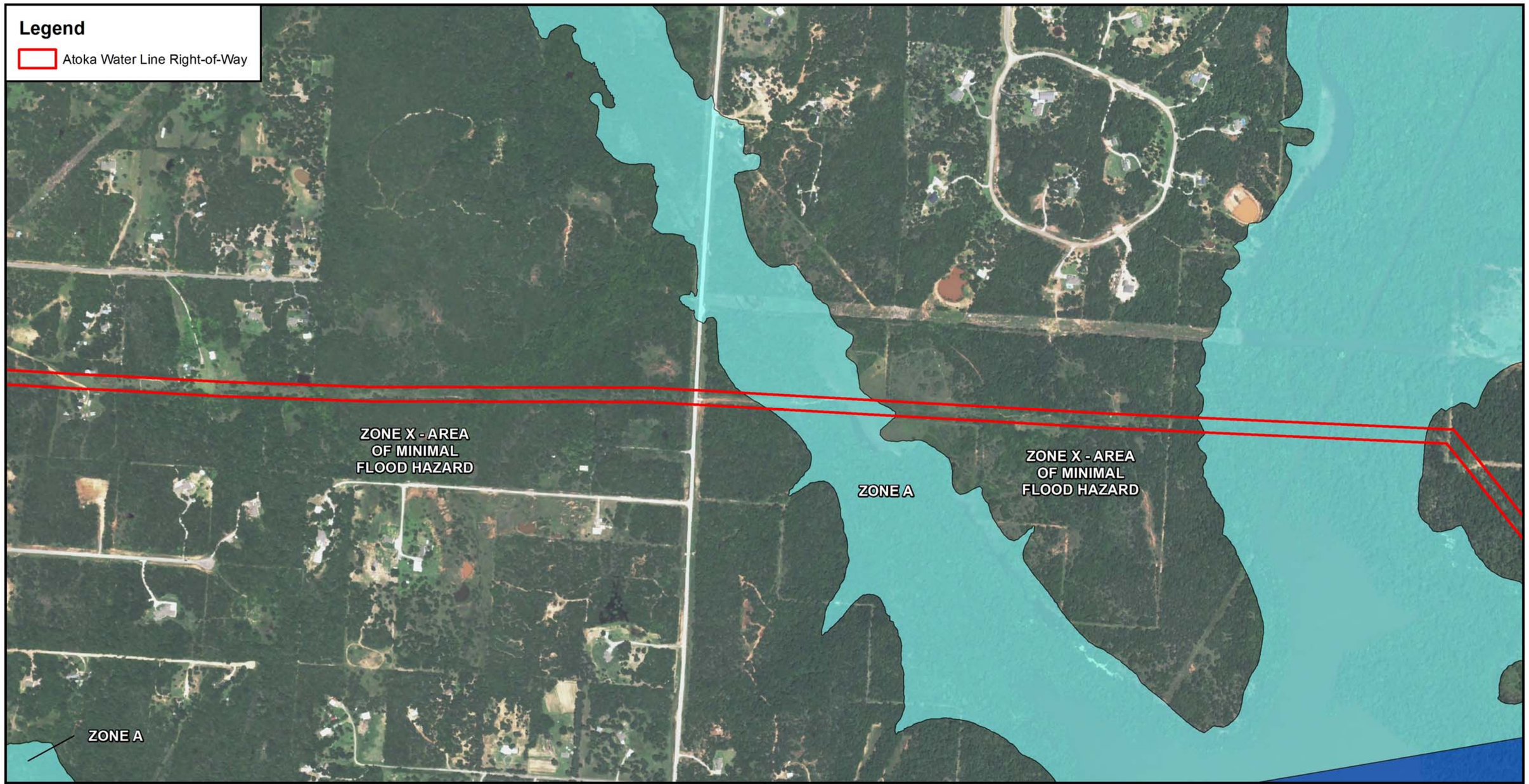
ENERCON

Figure 6.5: Flood Insurance Rate Map

Source: Federal Emergency Management Agency
MAP #40027C0240H - September 26, 2008; 2015 USDA NAIP
Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

Feet
0 600 1,200 2,400



Prepared for: Oklahoma City Water Utilities Trust

Subject Property:

Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Section 31, T10N R1E; Sections 36 & 35, T10N R1W
Cleveland County, Oklahoma

N
W E
S
1:8,000

ENERCON

Figure 6.6: Flood Insurance Rate Map

Source: Federal Emergency Management Agency
MAP #40027C0240H & #40027C0220H - September 26, 2008; 2015 USDA NAIP
Cleveland County, Oklahoma

Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 35, 34, 33 & 28, T10N R1W
Cleveland County, Oklahoma

N
W E
S
1:8,000

ENERCON

Figure 6.7: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
MAP #40027C0220H & #40027C0215H - September 26, 2008; 2015 USDA NAIP
Cleveland County, Oklahoma
Prepared by: JL Riggs; July 15, 2016

0 600 1,200 2,400 Feet

Prepared for: Oklahoma City Water Utilities Trust

Subject Property:
Atoka Water Line Section 6: McComb Pump Station to Lake Stanley Draper
Sections 28, 29, 30 & 19, T10N R1W
Cleveland County, Oklahoma

N E W S

1:8,000

ENERCON

Figure 6.8: Flood Insurance Rate Map
Source: Federal Emergency Management Agency
MAP #40027C0215H & #40027C0205H - September 26, 2008; 2015 USDA NAIP
Cleveland County, Oklahoma
Prepared by: JL Riggs; July 15, 2016

Feet
0 600 1,200 2,400

Table 1: Soils Series within the Atoka Water Line Section 6: Macomb Pump Station to Lake Stanley Draper Pump Station in Pottawatomie and Cleveland Counties, Oklahoma.

Table 1: Soils Series within the Atoka Water Line Section 6: Macomb Pump Station and Lake Stanley Draper in Pottawatomie and Cleveland Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Pottawatomie County					
Eufaula fine sand	13	3 to 8	Somewhat excessively drained	Non-hydric	Stabilized dunes on reworked stream terraces, high to very high water capacity
Stephenville fine sandy loam	42	3 to 5	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately low water capacity
Stephenville-Darnell complex	43	5 to 12	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, moderately high to high water capacity
Grainola silty clay loam	49	5 to 12	Well drained	Non-hydric	Summits and backslopes of low hills, very low to moderately high water capacity
Littleaxe and Stephenville soils, severely eroded	53	3 to 8	Well drained	Non-hydric	Very gently sloping or gently sloping upland ridge crests, moderately low water capacity
Cleveland County					
Stephenville-Darsil-Newalla complex	1	3 to 8	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills and convex ridge crests, moderately low water capacity
Harrah fine sandy loam	2	5 to 8	Well drained	Non-hydric	Backslopes and footslopes of low hills, moderately high to high water capacity
Harrah fine sandy loam, gullied	5	5 to 8	Well drained	Non-hydric	Backslopes and footslopes of low hills, moderately high to high water capacity
Stephenville-Darsil complex	7	1 to 5	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills and convex ridges of low hills, moderately low water capacity
Stephenville-Darsil-Newalla	8	3 to 8	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, convex ridges of low hills, and uplands; moderately high water capacity

Table 1: Soils Series within the Atoka Water Line Section 6: Macomb Pump Station and Lake Stanley Draper in Pottawatomie and Cleveland Counties, Oklahoma.

SERIES NAME	SYMBOLS	% SLOPES	DRAINAGE CLASS	HYDRIC RATING	DESCRIPTION
Littleaxe loamy fine sand	15	1 to 3	Well drained	Non-hydric	Very gently sloping or gently sloping upland ridge crests, moderately high to high water capacity
Tribbey fine sandy loam, frequently flooded	20	0 to 1	Somewhat poorly drained	Non-hydric	Nearly level to very gently sloping soils on narrow floodplains, moderately high to high water capacity
Stephenville-Darsil-Newalla complex, eroded	35	3 to 8	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills, convex ridges of low hills, and uplands; moderately low water capacity
Stephenville-Darsil complex, eroded	36	1 to 5	Well drained	Non-hydric	Very gently sloping to moderately steep side slopes of hills and convex ridges of low hills, moderately low water capacity
Harrah fine sandy loam, eroded	37	5 to 8	Well drained	Non-hydric	Backslopes and footslopes of low hills, moderately high to high water capacity
Newalla fine sandy loam	67	3 to 5	Moderately well drained	Non-hydric	Very gently sloping to steep summits and back slopes of uplands, very low to moderately low water capacity
Pulaski fine sandy loam, occasionally flooded	95	0 to 1	Well drained	Non-hydric	Nearly level to very gently sloping floodplain soils on small tributaries, high water capacity

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 6: Macomb Pump Station to Lake Stanley Draper Pump Station in Pottawatomie and Cleveland Counties, Oklahoma.

Table 2: Summary of wetlands and ponds in the Atoka Water Line Section 6: Macomb Pump Station to Lake Stanley Draper Pump Station in Pottawatomie and Cleveland Counties, Oklahoma.

FEATURE NAME	GENERAL TYPE	COWARDIN CLASSIFICATION	PREDICTED JURISDICTIONAL STATUS*	AREA (ACRES) WITHIN PIPELINE ROW	PCN REQUIRED**
MA6	Emergent wetland	PEM1Ax	No	0.07	No
MA7	Emergent wetland	PEM1D	No	0.06	No
MA10	Pond	PUBFx	No	0.03	No
MA12	Emergent wetland	PEM1D	Yes	0.26	Yes
MA24	Emergent wetland	PEM1A	No	0.03	No
MA27	Emergent wetland	PEM1A	Yes	0.26	Yes
MA28	Forested wetland	PFO1A	Yes	0.21	Yes
MA33	Pond	PUBHx	No	0.02	No
MA37	Pond	PUBCx	No	0.02	No
POTENTIALLY JURISDICTIONAL WETLANDS TOTAL: 0.89-ACRE					
POTENTIALLY JURISDICTIONAL POND TOTAL: 0.07-ACRE					

**Jurisdictional status is subject to Corps approval; ** PCNs are required only if the Corps determines the feature is jurisdictional.*

Table 3: Summary of streams and drainages in the Atoka Water Line Section 6: Macomb Pump Station to Lake Stanley Draper Pump Station in Pottawatomie and Cleveland Counties, Oklahoma.

Table 3: Summary of streams and drainages in the Atoka Water Line Section 6: Macomb Pump Station to Lake Stanley Draper Pump Station in Pottawatomie and Cleveland Counties, Oklahoma.

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
MA1	Ephemeral	No	No	1	97	No
MA2	Ephemeral	No	No	2	92	No
MA3	Ephemeral	No	No	3	76	No
MA4	Ephemeral	Yes	Yes	1	133	No
MA5	Ephemeral	No	No	1	106	No
MA8	Intermittent	Yes	No	NA[1]	0	No
MA9	Ephemeral	No	No	4	106	No
MA11	Ephemeral	No	No	4	381	No
MA13	Ephemeral	Yes	Yes	3	111	No
MA14	Ephemeral	No	No	2	115	No
MA15	Ephemeral	No	No	3	107	No
MA16	Ephemeral	No	No	3	339	No
MA17	Ephemeral	Yes	Yes	5	145	No
MA18	Intermittent	Yes	Yes	15	131	No
MA19	Intermittent	Yes	No	NA[1]	0	No
MA20	Intermittent	Yes	No	NA[1]	0	No
MA21	Ephemeral	Yes	Yes	2	155	No
MA22	Ephemeral	No	No	2	200	No
MA23	Ephemeral	No	No	4	141	No
MA25	Ephemeral	Yes	Yes	2	109	No
MA26	Perennial (Hog Creek)	Yes	Yes	30	103	No
MA29	Ephemeral	No	No	3	108	No
MA30	Ephemeral	No	No	4	97	No

Table 3: Summary of streams and drainages in the Atoka Water Line Section 6: Macomb Pump Station to Lake Stanley Draper Pump Station in Pottawatomie and Cleveland Counties, Oklahoma.

STREAM NAME	GENERAL TYPE	MAPPED ON USGS TOPO	PREDICTED JURISDICTIONAL STATUS*	AVERAGE OHWM WIDTH (feet)	LINEAR FEET WITHIN PIPELINE ROW	PCN REQUIRED**
MA31	Intermittent	Yes	Yes	6	103	No
MA32	Ephemeral	Yes	Yes	2	150	Yes
MA34	Ephemeral	No	No	1	105	No
MA35	Intermittent	Yes	No	NA[1]	0	No
MA36	Intermittent	Yes	No	NA[1]	0	No
MA38	Intermittent	Yes	No	NA[1]	0	No
MA39	Intermittent	Yes	Yes	4	103	No
MA40	Ephemeral	No	No	1	112	No
MA41	Ephemeral	No	No	1	148	No
MA42	Ephemeral	Yes	Yes	1	108	Yes
MA43	Ephemeral	No	No	3	104	No
POTENTIALLY JURISDICTIONAL STREAM TOTAL: 3,785 LINEAR FEET						

**Jurisdictional status is subject to Corps approval; ** PCNs are required only if the Corps determines the feature is jurisdictional; 1- Feature mapped on the USGS topographic map; however no bed and bank was observed within the proposed pipeline ROW*

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 4/27/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS1

Investigator(s): W.A. Ward and C.B. McCoy Section, Township, Range: Section 23, Township 9N, Range 1E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2

Subregion (LRR): LRR J Lat: 35.23764 Long: -97.16387 Datum: NAD83

Soil Map Unit Name: Stephenville-Darsil-Newalla complex, 3-8% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [X]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

IIndicators were not observed for any of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus stellata*	2	[X]	FACU
2.		[ ]	
3.		[ ]	
4.		[ ]	
	2	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Rhus glabara*	40	[X]	NL
2. *Prunus angustifolia*	2	[ ]	NL
3.		[ ]	
4.		[ ]	
5.		[ ]	
	42	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Eragrostis pectinacea*	90	[X]	FAC
2. *Schizachyrium scoparium*	5	[ ]	FACU
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	95	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
		= Total Cover	

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 90	x 3 =	270
FACU species 7	x 4 =	28
UPL species	x 5 =	
Column Totals: 97 (A)		298 (B)

Prevalence Index = B/A = 3.07

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [ ] No [X]

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: MASS1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	5YR 3/2	100					Silt Loam	
3-16	5YR 4/6	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 4/27/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS2

Investigator(s): W.A. Ward and C.B. McCoy Section, Township, Range: Section 23, Township 9N, Range 1E

Landform (hillslope, terrace, etc.): Man made depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR J Lat: 35.23777 Long: -97.16374 Datum: NAD83

Soil Map Unit Name: Stephenville-Darsil-Newalla complex, 3-8% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks:

Indicators for all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Typha latifolia*	35	☒	OBL
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
	35 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum 65%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: MASS2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	6"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 4/27/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS3

Investigator(s): W.A. Ward and C.B. McCoy Section, Township, Range: Section 23, Township 9N, Range 1E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR J Lat: 35.23806 Long: -97.16453 Datum: NAD83

Soil Map Unit Name: Stephenville-Darsil-Newalla complex, 3-8% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [ ] No [X]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators for all three wetland criteria were observed. An underground leak in the water line appears to be the source of hydrology for this wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Salix nigra*	35	[X]	FACW
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	35 = Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Typha latifolia*	90	[X]	OBL
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	90 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 10%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: MASS3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	5YR 2.5/2	100					Silt Loam	
4-16	7.5YR 5/6	94	7.5YR 3/1	3	C	M	Silt Loam	
			5YR 5/8	3	D	M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☒ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Indicators of hydric soil were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	NA
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	1"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 4/27/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS4

Investigator(s): W.A. Ward and C.B. McCoy Section, Township, Range: Section 23, Township 9N, Range 1E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 3

Subregion (LRR): LRR J Lat: 35.23819 Long: -97.16467 Datum: NAD83

Soil Map Unit Name: Stephenville-Darsil-Newalla complex, 3-8% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [X]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Indicators were not observed for any of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus marilandica*	5	[X]	NL
2.		[ ]	
3.		[ ]	
4.		[ ]	
	5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Quercus marilandica*	5	[X]	NL
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	5	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Schizachyrium scoparium*	85	[X]	FACU
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	85	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
		= Total Cover	

% Bare Ground in Herb Stratum 15%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 85	x 4 =	340
UPL species	x 5 =	
Column Totals: 85 (A)		340 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [ ] No [X]

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: MASS4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5YR 3/6	100					Silt Loam	
4-16	2.5YR 5/8	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 4/27/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS5

Investigator(s): W.A. Ward and C.B. McCoy Section, Township, Range: Section 15, Township 9N, Range 1E

Landform (hillslope, terrace, etc.): Creek bottomland Local relief (concave, convex, none): Convex Slope (%): 0

Subregion (LRR): LRR J Lat: 35.25680 Long: -97.19032 Datum: NAD83

Soil Map Unit Name: Tribbey fine sandy loam, 1-3% Slopes, Frequently flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators for all three wetland criteria were observed. An underground leak in the water line appears to be the source of hydrology for this wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Eleocharis palustris*	90	[X]	OBL
2. *Eleocharis compressa*	10	[ ]	FACW
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: MASS5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	5YR 5/1	80	2.5YR 4/8	20	C	M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Indicators of hydric soil were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☒ No ☐ Depth (inches): 2"

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 0"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 4/27/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS6

Investigator(s): W.A. Ward and C.B. McCoy Section, Township, Range: Section 15, Township 9N, Range 1E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-1

Subregion (LRR): LRR J Lat: 35.25677 Long: -97.19024 Datum: NAD83

Soil Map Unit Name: Tribbey fine sandy loam, 0-1% Slopes, Frequently flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [X]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Indicators were not observed for any of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	= Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Cynodon dactylon*	90	[X]	FACU
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	90 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 10%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 90	x 4 =	360
UPL species	x 5 =	
Column Totals: 90 (A)		360 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [ ] No [X]

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: MASS6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	5YR 5/8	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 5/2/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS7

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 15, Township 9N, Range 1E

Landform (hillslope, terrace, etc.): Flat Land Local relief (concave, convex, none): None Slope (%): 1-2

Subregion (LRR): LRR J Lat: 35.25868 Long: -97.19301 Datum: NAD83

Soil Map Unit Name: Tribbey fine sandy loam, 0-1% Slopes, Frequently Flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Indicators for only one of the three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	30	[X]	FAC
2.		[ ]	
3.		[ ]	
4.		[ ]	
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
		= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Eleocharis obtusa*	75	[X]	OBL
2. *Schedonorus arundinaceus*	20	[X]	FACU
3. *Tridens flavus*	5	[ ]	UPL
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
		= Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	75	x 1 =	75
FACW species		x 2 =	
FAC species	30	x 3 =	90
FACU species	20	x 4 =	80
UPL species	5	x 5 =	25
Column Totals:	130 (A)		270 (B)

Prevalence Index = B/A = 2.08

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [X] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: MASS7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	5YR 3/4	100					SCL	
9+	Compact Rock							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed. Could not get past 9 inches in the soil pit.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 4/25/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS8

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 31, Township 10N, Range 1E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2-4

Subregion (LRR): LRR J Lat: 35.30290 Long: -97.24677 Datum: NAD83

Soil Map Unit Name: Stephenville-Darsil-Newalla Complex, 3-8% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks:

Indicators were not observed for any of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus stellata*	20	☒	FACU
2.		☐	
3.		☐	
4.		☐	
	20	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Quercus stellata*	30	☒	FACU
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	30	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Schedonorus arundinaceus*	50	☒	FACU
2. *Bothriochloa saccharoides*	30	☒	NL
3. *Cyperus spp*	5	☐	---
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
	85	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.		☐	
2.		☐	
		= Total Cover	

% Bare Ground in Herb Stratum 15%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species 100	x 4 =	400
UPL species	x 5 =	
Column Totals: 100 (A)		400 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: MASS8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	5YR 4/6	100					SSL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): NA
Water Table Present?	Yes ☐	No ☒	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 4/25/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS9

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 31, Township 10N, Range 1E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): LRR J Lat: 35.30305 Long: -97.24700 Datum: NAD83

Soil Map Unit Name: Stephenville-Darsil-Newalla Complex, 3-8% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [ ] No [X]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators for all three wetland criteria were observed.
A leak in the water line minor surge site appears to be the source of hydrology for this wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Salix nigra*	20	[X]	FACW
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	20 = Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Eleocharis obtusa*	50	[X]	OBL
2. *Cyperus spp.*	10	[ ]	---
3. *Typha latifolia*	5	[ ]	OBL
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	65 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 35%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: MASS9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
	NO PIT DUG							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No soil pit dug due to inundation. Soils are assumed hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☒ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	2"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 4/25/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS10

Investigator(s): B.W. Barnes and C.B. McCoy Section, Township, Range: Section 36, Township 10N, Range 1W

Landform (hillslope, terrace, etc.): Flat Low Woodland Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): LRR J Lat: 35.30328 Long: -97.25029 Datum: NAD83

Soil Map Unit Name: Tribbey Fine Sandy Loam, 0-1% Slopes, Frequently Flooded NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators for only two of the three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	60	[X]	FAC
2. *Ulmus americana*	30	[X]	FAC
3. *Fraxinus pennsylvanica*	10	[ ]	FAC
4. *Celtis occidentalis*	10	[ ]	FACU
	110	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Ulmus americana*	60	[X]	FAC
2. *Fraxinus pennsylvanica*	20	[X]	FAC
3.		[ ]	
4.		[ ]	
5.		[ ]	
	80	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1.		[ ]	
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
		= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Smilax bona-nox*	5	[X]	FACU
2.		[ ]	
	5	= Total Cover	

% Bare Ground in Herb Stratum 100%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: MASS10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	5YR 5/3	100					Sand Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☒ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 5/13/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS11

Investigator(s): B.W. Barnes; C.B. McCoy; E. Ellis Section, Township, Range: Section 36, Township 10N, Range 1W

Landform (hillslope, terrace, etc.): Depression in Floodplain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR J Lat: 35.30341 Long: -97.25164 Datum: NAD83

Soil Map Unit Name: Tribbey fine sandy loam, 0-1% Slopes, Frequently Flooded NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators for all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	10	[X]	FACW
2.		[ ]	
3.		[ ]	
4.		[ ]	
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Fraxinus pennsylvanica*	10	[X]	FAC
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	10	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Persicaria hydropiperoides*	35	[X]	OBL
2. *Carex spp.*	5	[ ]	---
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	40	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
		= Total Cover	

% Bare Ground in Herb Stratum 60%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: MASS11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	5YR 3/2	90	2.5YR 4/6	10	C	M	Sandy Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Indicators of hydric soil were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	2"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	0"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 5/13/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS12

Investigator(s): B.W. Barnes; C.B. McCoy; E. Ellis Section, Township, Range: Section 36, Township 10N, Range 1W

Landform (hillslope, terrace, etc.): Depression in Floodplain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR J Lat: 35.30342 Long: -97.25185 Datum: NAD83

Soil Map Unit Name: Tribbey fine sandy loam, 0-1% Slopes, Frequently Flooded NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [X]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:

Indicators for all three wetland criteria were observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	45	[X]	FAC
2. *Salix nigra*	35	[X]	FACW
3. *Acer negundo*	5	[ ]	FAC
4.		[ ]	
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Fraxinus pennsylvanica*	20	[X]	FAC
2. *Acer negundo*	5	[ ]	FAC
3.		[ ]	
4.		[ ]	
5.		[ ]	
	25 = Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Persicaria hydropiperoides*	5	[X]	OBL
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	5 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
	= Total Cover		

% Bare Ground in Herb Stratum 95%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: MASS12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	5YR 3/2	90	2.5YR 4/6	10	C	M	Sandy Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Indicators of hydric soil were observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☒ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	2"
Water Table Present?	Yes ☐	No ☒	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	0"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 5/13/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS13

Investigator(s): B.W. Barnes; C.B. McCoy; E. Ellis Section, Township, Range: Section 36, Township 10N, Range 1W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 2-3

Subregion (LRR): LRR J Lat: 35.30326 Long: -97.25260 Datum: NAD83

Soil Map Unit Name: Harrah fine sandy loam, 5-8% Slopes, Eroded NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [X]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Indicators were not observed for any of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	70	[X]	FAC
2. *Morus rubra*	10	[ ]	FACU
3.		[ ]	
4.		[ ]	
	80 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Celtis occidentalis*	10	[X]	FACU
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
	10 = Total Cover		
Herb Stratum (Plot size: 5' Radius)			
1. *Chasmanthium latifolium*	60	[X]	FACU
2.		[ ]	
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	60 = Total Cover		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Rubus oklahomus*	5	[X]	FAC
2.		[ ]	
	5 = Total Cover		

% Bare Ground in Herb Stratum 40%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 75	x 3 =	225
FACU species 80	x 4 =	320
UPL species	x 5 =	
Column Totals: 155 (A)		545 (B)

Prevalence Index = B/A = 3.51

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [ ] No [X]

Remarks:

Indicators of hydrophytic vegetation were not observed.

SOIL

Sampling Point: MASS13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	5YR 4/6	100					Sand Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): NA
Water Table Present?	Yes ☐	No ☒	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): NA

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Atoka Water Line City/County: Cleveland County Sampling Date: 5/17/2016

Applicant/Owner: City of Oklahoma City Water Utilities Trust State: OK Sampling Point: MASS14

Investigator(s): B.W. Barnes; C.B. McCoy; E.Ellis Section, Township, Range: Section 35, Township 10N, Range 1W

Landform (hillslope, terrace, etc.): Low terrace near stream Local relief (concave, convex, none): Convex Slope (%): 1-2

Subregion (LRR): LRR J Lat: 35.30304 Long: -97.26997 Datum: NAD83

Soil Map Unit Name: Tribbey fine sandy loam, 0-1% Slopes, Frequently Flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes [ ] No [X]

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Indicators for only one of the three wetland criteria were observed. Recent heavy rain had the area flooded, however the water was flowing out of the area, thus we concluded the area does not retain water long after rain events.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	45	[X]	FAC
2. *Salix nigra*	10	[ ]	FACW
3.		[ ]	
4.		[ ]	
	55	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Ulmus americana*	30	[X]	FAC
2. *Toxicodendron radicans*	20	[X]	FACU
3. *Symphoricarpos orbiculatus*	5	[ ]	FACU
4. *Cephalanthus occidentalis*	5	[ ]	OBL
5.		[ ]	
	60	= Total Cover	
Herb Stratum (Plot size: 5' Radius)			
1. *Carex cherokeensis*	50	[X]	FACW
2. *Persicaria hydropiperoides*	5	[ ]	OBL
3.		[ ]	
4.		[ ]	
5.		[ ]	
6.		[ ]	
7.		[ ]	
8.		[ ]	
9.		[ ]	
10.		[ ]	
	55	= Total Cover	
Woody Vine Stratum (Plot size: 30' Radius)			
1.		[ ]	
2.		[ ]	
		= Total Cover	

% Bare Ground in Herb Stratum 25%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [X] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

Indicators of hydrophytic vegetation were observed.

SOIL

Sampling Point: MASS14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	2.5YR 5/8	100					Sand Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Indicators of hydric soil were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): NA

Water Table Present? Yes ☐ No ☒ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): NA

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology were not observed. Water was present while on site from recent heavy rains, however it appears to flow off and most likely does not stay in the area much after rain events.

Site Photographs

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 6: MACOMB PUMP STATION TO STANLEY DRAPER PUMP STATION

Typical view of habitat types found within the proposed Atoka Water Line Section 6: Macomb Pump Station to Stanley Draper Pump Station.

Photograph 1: Typical view of maintained residential lawn, facing south.

Photograph 2: Typical view of existing pipeline ROW and upland forest habitats, facing northwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 6: MACOMB PUMP STATION TO STANLEY DRAPER PUMP STATION

Photograph 3: Typical view of riparian forest habitat, facing northwest.

Photograph 4: Typical view of upland forest habitat, facing west.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 6: MACOMB PUMP STATION TO STANLEY DRAPER PUMP STATION

Photograph 5: Typical view of end of the proposed Atoka Water Line ROW at the Stanley Draper Pump Station, facing northwest.

Representative Water Features within the Atoka Water Line Section 6: Macomb Pump Station to Stanley Draper Pump Station

Photograph 6: View of MA12, an emergent wetland, facing northwest.

SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 6: MACOMB PUMP STATION TO STANLEY DRAPER PUMP STATION

Photograph 7: View of MA26, a mapped perennial stream (Hog Creek), facing south.

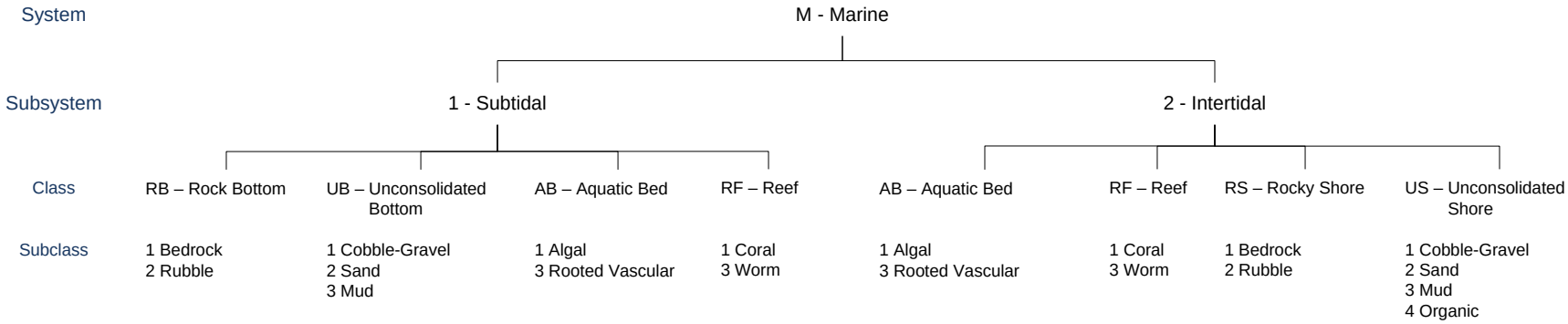
Photograph 8: View of MA27, an emergent wetland, facing east.

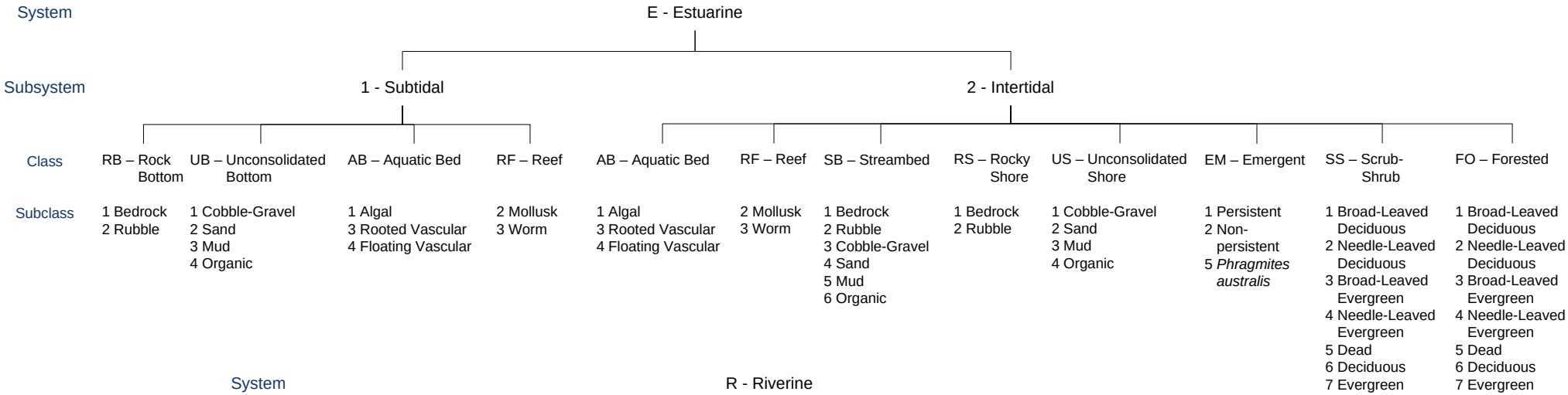
SITE PHOTOGRAPHS: ATOKA WATER LINE SECTION 6: MACOMB PUMP STATION TO STANLEY DRAPER PUMP STATION

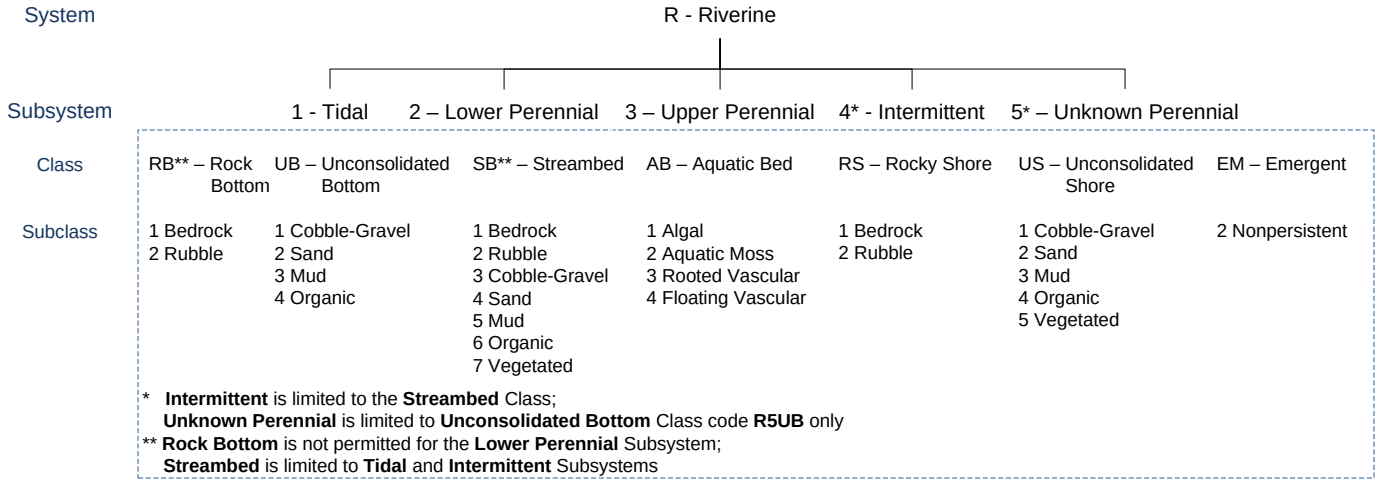
Photograph 9: View of MA28, a forested wetland, facing east.

Appendix G – Cowardin Classification Chart

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



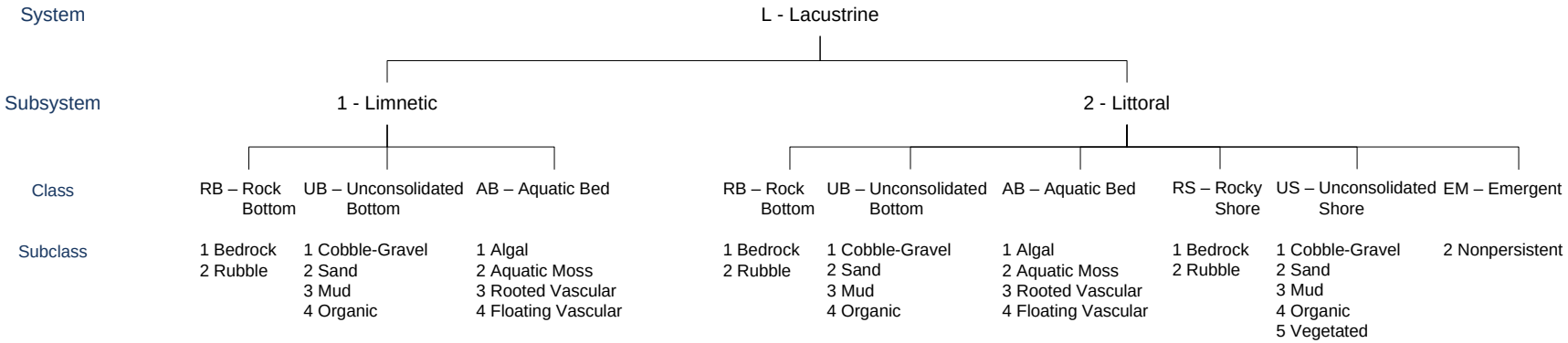


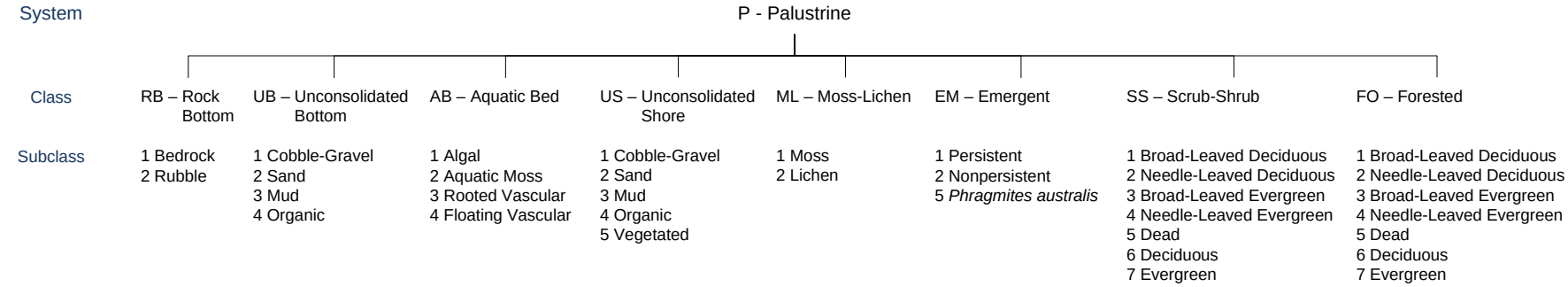


* **Intermittent** is limited to the **Streambed** Class;
Unknown Perennial is limited to **Unconsolidated Bottom** Class code **R5UB** only
** **Rock Bottom** is not permitted for the **Lower Perennial** Subsystem;
Streambed is limited to **Tidal** and **Intermittent** Subsystems

Classification of Wetlands and Deepwater Habitats of the United States, Cowardin *et al*. 1979

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION





MODIFIERS

In order to more adequately describe the wetland and deepwater habitats, one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

Water Regime			Special Modifiers	Water Chemistry			Soil
Nontidal	**Saltwater Tidal**	**Freshwater Tidal**		**Coastal Halinity**	**Inland Salinity**	**pH Modifiers for all Fresh Water**	
A Temporarily Flooded	L Subtidal	S Temporarily Flooded-Tidal	b Beaver	1 Hyperhaline	7 Hypersaline	a Acid	g Organic
B Saturated	M Irregularly Exposed	R Seasonally Flooded-Tidal	d Partly Drained/Ditched	2 Euhaline	8 Eusaline	t Circumneutral	n Mineral
C Seasonally Flooded	N Regularly Flooded	T Semipermanently Flooded-Tidal	f Farmed	3 Mixohaline (Brackish)	9 Mixosaline	i Alkaline	
E Seasonally Flooded/ Saturated	P Irregularly Flooded	V Permanently Flooded-Tidal	h Diked/Impounded	4 Polyhaline	0 Fresh		
F Semipermanently Flooded			r Artificial	5 Mesohaline			
G Intermittently Exposed			s Spoil	6 Oligohaline			
H Permanently Flooded			x Excavated	0 Fresh			
J Intermittently Flooded							
K Artificially Flooded							

Appendix H - Nationwide Permit 12: Utility Line Activities

Nationwide Permit 12
Utility Line Activities

Activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.

Utility lines: This NWP authorizes the construction, maintenance, or repair of utility lines, including outfall and intake structures, and the associated excavation, backfill, or bedding for the utility lines, in all waters of the United States, provided there is no change in pre-construction contours. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication. The term "utility line" does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

Utility line substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a power line or utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

Foundations for overhead utility line towers, poles, and anchors: This NWP authorizes the construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (See 33 CFR Part 322). Overhead utility lines constructed over section 10 waters and utility lines that are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit.

This NWP also authorizes temporary structures, fills, and work necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to or along a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a

distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials. (See general condition 31.) (Sections 10 and 404)
Note 1: Where the proposed utility line is constructed or installed in navigable waters of the United States (i.e., section 10 waters) within the coastal United States, the Great Lakes, and United States territories, copies of the pre-construction notification and NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.
Note 2: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, in accordance with the requirements for temporary fills.
Note 3: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to Section 9 of the Rivers and Harbors Act of 1899. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15).
Note 4: For overhead utility lines authorized by this NWP, a copy of the PCN and NWP verification will be provided to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities.

This NWP is authorized pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 401 et seq) and Section 404 of the Clean Water Act (33 U.S.C. 1344). The effective date for this NWP (33 CFR 330), GCs, and definitions is March 19, 2012, as published in the Federal Register (77 FR 10184). The NWP, GCs, and definitions expire on March 18, 2017.

Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR §§ 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.
(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.
(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.
2.Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.
3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.
4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.
5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.
6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.
8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.
9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).
10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.
11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.
12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.
13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.
14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.
15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.
16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).
17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.
18. Endangered Species.
(a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.
(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.
(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until

Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.
(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.
(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.
(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.
19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.
20. Historic Properties.
(a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.
(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.
(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.
(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.
(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and

provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater

than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.
(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.
(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.
(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.
24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.
25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.
26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.
27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.
28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.
29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____
(Transferee)

_____
(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:
(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;
(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and
(c) The signature of the permittee certifying the completion of the work and mitigation.
31. Pre-Construction Notification.
(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:
(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or
(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).
(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:
(1) Name, address and telephone numbers of the prospective permittee;
(2) Location of the proposed project;
(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s)

used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. For a linear project, this determination will include an evaluation of the individual crossings to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to intermittent or ephemeral streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51 or 52, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in minimal adverse effects. When making minimal effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

2. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

3. If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (a) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (c) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period, with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the

linear feet of stream bed that is filled or excavated. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities eligible for exemptions under Section 404(f) of the Clean Water Act are not considered when calculating the loss of waters of the United States.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. The definition of a wetland can be found at 33 CFR 328.3(b). Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas (see 33 CFR 328.3(e)).

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a

single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a wetland (i.e., water of the United States) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line, which is defined at 33 CFR 328.3(d).

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a jurisdictional wetland is adjacent – meaning bordering, contiguous, or neighboring – to a waterbody determined to be a water of the United States under 33 CFR 328.3(a)(1)-(6), that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

ADDITIONAL INFORMATION

Information about the U.S. Army Corps of Engineers regulatory program, including nationwide permits, may also be accessed at http://www.swt.usace.army.mil/regulatory or http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx