



Managing Flood Control Structure Easements in a Digital Age

Watershed Dam Easement Mapping Initiative

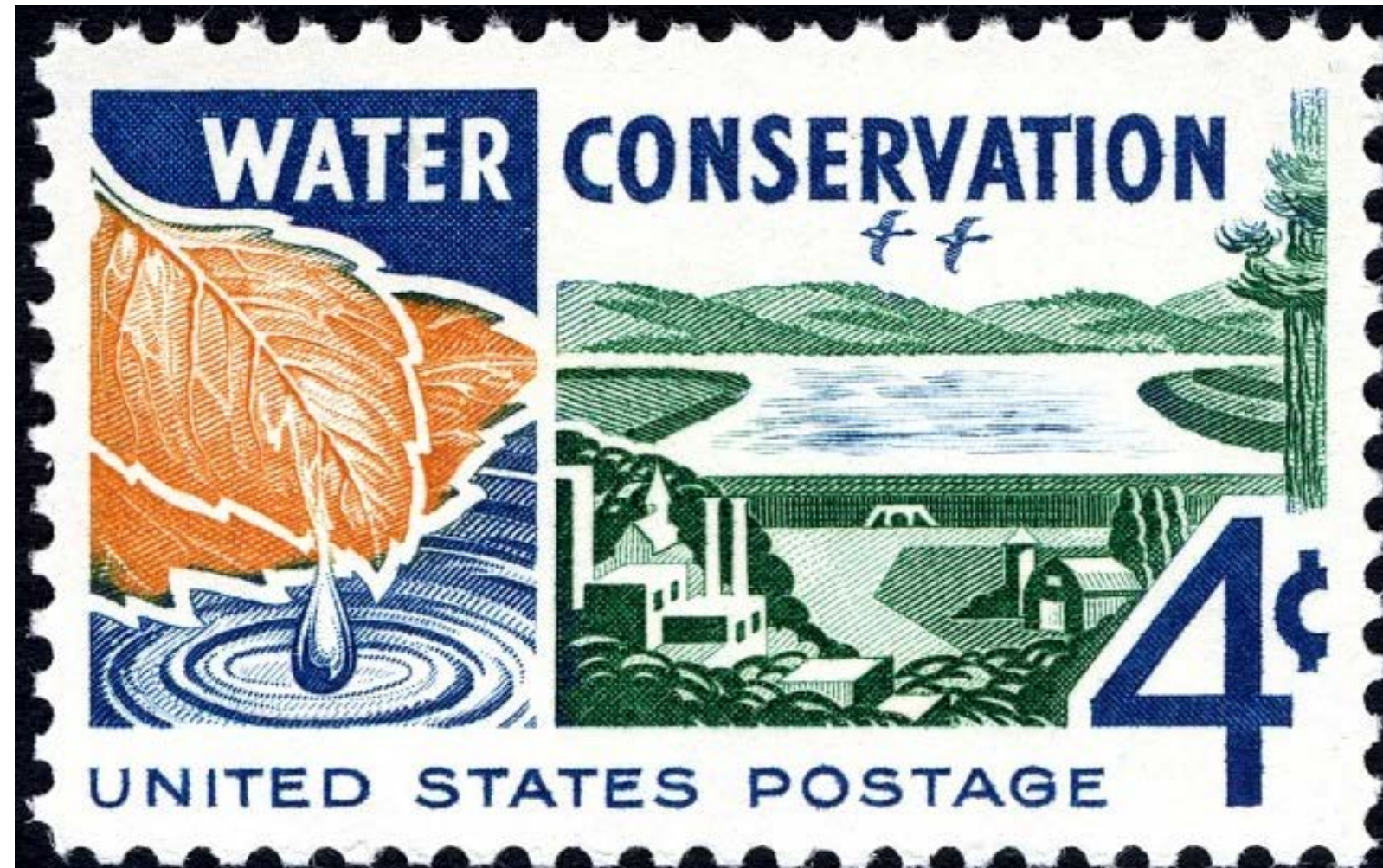
Conservation Programs Division
Wendie Sharp and TJ Hathcock

Overview

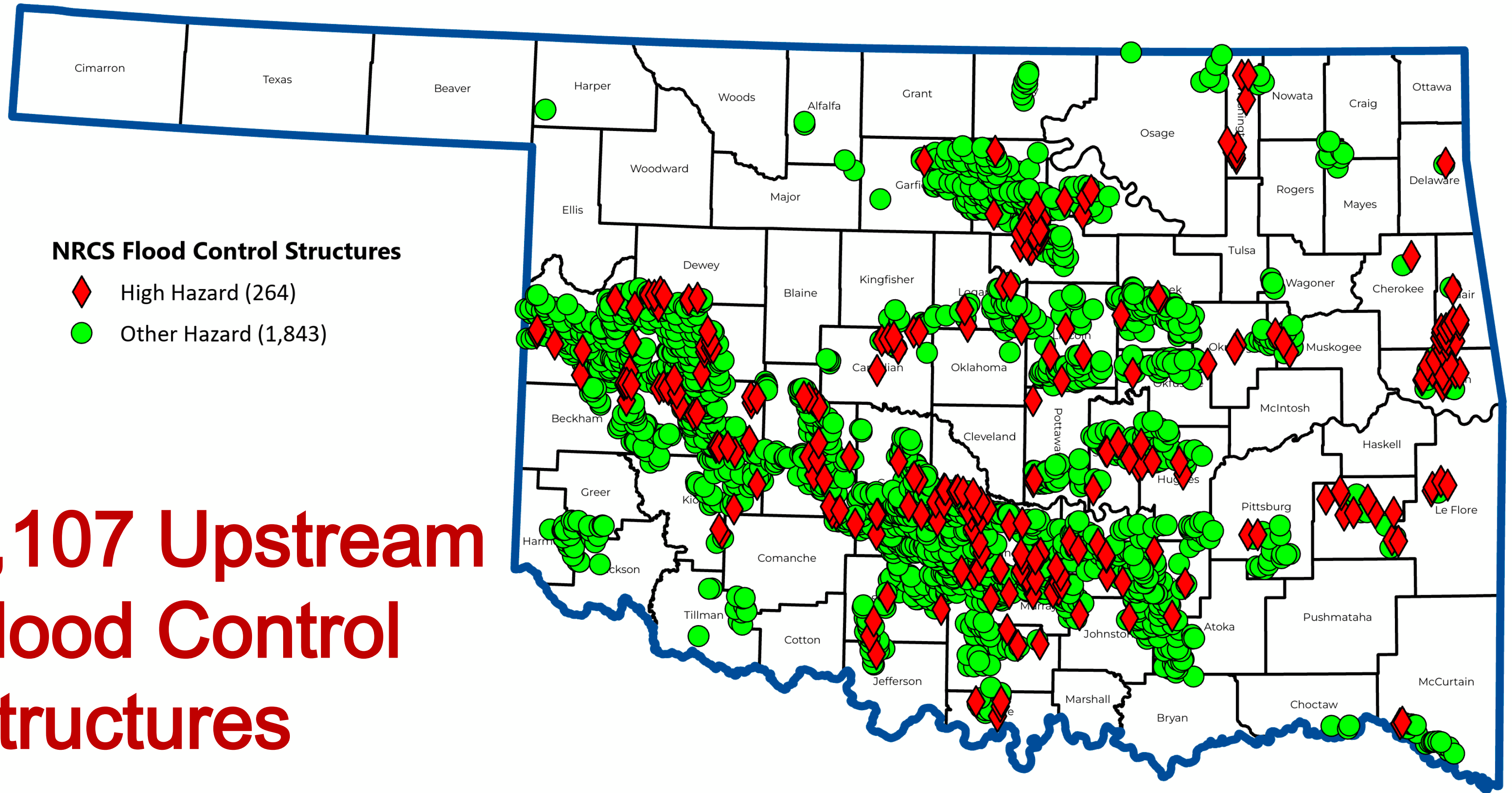
Watershed Dam Easement Mapping Initiative

- Project Overview
- Data Management
- Building the GIS
- Mapping Progress
- Site Tracking Spreadsheet
- Future Outlook
- Flood Pool Elevations
- Live OKMaps Demo/Data Preview

Project Overview



2,107 Upstream Flood Control Structures





Reasons for Project Development

- **Planning**
 - Rehabilitation projects
- **Education**
 - For Landowners & Real Estate
 - High hazard deterrent
 - Visualizing Easements on a web map, [OKMaps](#)
- **Legal Inquires**
 - Encroachment
 - Landowner disputes
- **Data Preservation**

EASEMENT

THIS INDENTURE, made and executed this 27 day of Sept 1961, by and between Willard Adams hereinafter called GRANTOR, and the Oklahoma Department of Wildlife Conservation by and through the Oklahoma Wildlife Conservation Commission, hereinafter called GRANTEE.

WITNESSETH: For and in consideration of the sum of \$1.00 (One dollar and no one-hundredths) and other good and valuable considerations, receipt of which is hereby acknowledged, said Grantor hereby grants and conveys unto said Grantee an easement through, over, upon and across the following described property, situated in Washita County, Oklahoma, to-wit: SE 1/4, SE 1/4, SE 1/4, SW 1/4 of Section #7, Township 8 North, Range 15 West. For The Purposes Hereinafter Expressed, subject to such conditions or restrictions set forth herein, to-wit: 1. Water may be impounded temporarily on a small portion of said land. 2. Grantor will retain his just and rightful control over said premises at all times. 3. The rights and privileges herein granted are subject to prior easements, rights-of-way, mineral reservations or other rights appearing on record. 4. This agreement and all provisions expressed herein shall be binding upon the heirs, executors, successors or assigns of the parties hereto. 5. It is the express intent of said Grantor to limit this easement to the surface of said lands for the purposes herein set forth; that oil, gas or other minerals in or under same are hereby expressly excepted from the operation of this easement.

STATE OF OKLAHOMA, COUNTY OF KIOWA, SS: This instrument was filed record at 9 o'clock A.M. on April 25, 1961 and duly recorded in book 387, page 105, of the record of this office. Witness my hand and official seal. BONNIE DARBY, County Clerk

GRANTOR-GRAZEE-NUMERICAL A-967 By G. Snyder Deputy

Easement

(For Construction and Impoundment Purposes)

For and in consideration of One Dollar (\$1.00) and other good and valuable considerations, the receipt whereof is hereby acknowledged,

C. A. Smelser and Eloise Smelser (wife) of Roosevelt, Oklahoma, Grantor, does hereby grant, bargain, sell, convey and release unto Mountain View Soil Conservation District

of Mountain View, Oklahoma its successors and assigns Grantee, an easement in, over and upon the following described land situated in the County of Kiowa, State of Oklahoma, to wit:

1/2 of SE 1/4 Sec. 16 - 5N - 15W (Site 9)

for the purpose of: For or in connection with the construction, operation, maintenance and inspection of the following described works of improvement to be located on the above described land; for the flowage of any waters in, over, upon or through such works of improvement; and for the permanent storage and temporary detention, either or both, of any waters that are impounded, stored or detained by such works of improvement:

Detention structure on Rainy Mountain Creek

- 1. In the event construction of the above described works of improvement is not commenced within 5 years from the date hereof, the rights and privileges herein granted shall at once revert to and become the property of the Grantor, his heirs and assigns. 2. This easement includes the rights of ingress and egress at any time over and upon the above described land of the Grantor and any other land of the Grantor adjoining said land for the purpose of construction, the checking of operations, and the inspection and maintenance of the structure. 3. There is reserved to the Grantor, his heirs and assigns, the rights and privileges to use the above described land at any time, in any manner and for any purpose that does not interfere with construction, operations, maintenance and inspection of the structure. 4. The rights and privileges herein granted are subject to all easement, rights-of-way, mineral reservations or other rights now outstanding in third parties. 5. The Grantee is responsible for operating and maintaining the above described works of improvement. 6. Special provisions:

TO HAVE AND TO HOLD the aforesaid easement in, over and upon the above described land of the Grantor with all the rights, privileges and appurtenances thereto belonging or in anywise appertaining, unto the Grantee, its successors and assigns for so long as they should use said easement for the purpose described above.

IN WITNESS WHEREOF the Grantor has executed this instrument on the day of APR 3 - '61, 19

Signature of Grantor (SEAL)

Signature of Grantor (SEAL)

ACKNOWLEDGMENT

STATE OF OKLAHOMA COUNTY OF KIOWA } SS.

Before me, the undersigned, a Notary Public in and for said County and State, on this APR 3 - '61 day of 19, personally appeared C. A. Smelser and Eloise Smelser, his wife, husband and wife, to me known to be the identical person(s) who executed the within and foregoing instrument and acknowledged to me that they executed the same as their free and voluntary act and deed, for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereto set my hand and official seal, the date and year last hereinabove written.

Notary Public Signature: John V. Rose My Commission Expires: Nov 4 - 1964

EASEMENT AGREEMENT FOR IMPOUNDING WATER

THIS INDENTURE, made and executed this day of 1953, by and between and his wife, residents of the County of State of Oklahoma, (hereinafter called the "Grantors"), and and his wife, residents of the County of State of Oklahoma, and the Murray County Soil Conservation District, county of Murray, State of Oklahoma, (hereinafter called "Grantees").

WITNESSETH THAT:

1. For and in consideration of the sum of One Dollar (\$1.00), or other good and valuable considerations, in hand paid by the Grantees to the Grantors, the receipt whereof the Grantors hereby acknowledge, the Grantors do hereby grant and convey unto the Grantees, their heirs, executors, administrators, and assigns, the right, privilege, and authority to use the lands hereinafter described, for the storage of waters which may be impounded by a dam to be constructed on other lands;

beginning at the SE corner of the Sec. 16 of the 5N and 15W, two hundred (200) ft. north thence 300' east, thence 2' south, thence 300' east to the point of commencement, Sec. 127, T. 1N, 2E. for flood water use only, not permanent storage as shown on the maps or plats on file in the office of said Grantee, reference to which is made for all purposes.

2. The Grantors herewith permit the Grantees the rights and privileges to enter upon said lands, to patrol and post such reservoirs against use during dangerous flood periods, and the Grantors agree that they will not license or authorize any person or persons to use said reservoirs during said flood periods.

3. This easement shall not pass, nor shall the same be construed to pass, to the Grantees any fee simple interest or title to the above-described lands.

4. The Grantors hereby warrant the title to the aforesaid land; however, the rights, privileges, and authority granted herein shall be subject to any easements, rights-of-way, mineral reservations, or other rights upon, over, across or under said lands now outstanding in third persons; and subject to the right of the Grantors, their heirs, executors, administrators, and assigns to use all or any part of the aforesaid lands at any time for any purpose, provided such does not interfere with the rights and privileges hereby granted.

TO HAVE AND TO HOLD the aforesaid easement unto the Grantees, their heirs, executors, administrators, and assigns for so long as the Grantees, their heirs, executors, administrators, and assigns shall continue to use said easement for the purpose described above. If the Grantees fail to commence the construction of said dam within five years or shall abandon said dam, for a period of five years, the rights and privileges herein granted shall cease and determine.

IN WITNESS WHEREOF, the parties hereto subscribe their names and affix their seal as of the day and year first above written.

Signature of Grantors: Wynne Blanchet Brown, Byron B. Brown

GRANTEES

Murray County Soil Conservation District

By Richard Norton Chairman, Board of Supervisors GRANTEES

Easement

(For Construction and Impoundment Purposes)

For and in consideration of One Dollar (\$1.00) and other good and valuable considerations, the receipt whereof is hereby acknowledged,

Ray M. Watson and Margaret Watson, his wife

of Wynnewood, Grantor, does hereby grant, bargain, sell, convey and release unto

GARVIN SOIL AND WATER CONSERVATION DISTRICT

of Pauls Valley its successors and assigns Grantee, an easement in, over and upon the follow-

ing described land situated in the County of GARVIN, State of Oklahoma, to wit:

SW $\frac{1}{4}$ of SW $\frac{1}{4}$ and that portion of E $\frac{1}{2}$ of SW $\frac{1}{4}$ of SW $\frac{1}{4}$ lying East of Creek in Section 21, Twp. 2 N. Rg. 1 E. of the Indian Base and Meridian in Garvin County, Oklahoma for the purpose of:

For or in connection with the construction, operation, maintenance and inspection of the following described works of improvement to be located on the above described land; for the flowage of any waters in, over, upon or through such works of improvement; and for the permanent storage and temporary detention, either or both, of any waters that are impounded, stored or detained by such works of improvement: An earthen dam and appurtenances

Kickapoo Sandy Creek Watershed Site K-1

1. In the event construction of the above described works of improvement is not commenced within 18 mos. from the date hereof, the rights and privileges herein granted shall at once revert to and become the property of the Grantor, his heirs and assigns.

2. This easement includes the rights of ingress and egress at any time over and upon the above described land of the Grantor and any other land of the Grantor adjoining said land for the purpose of construction, the checking of operations, and the inspection and maintenance of the structure.

3. There is reserved to the Grantor, his heirs and assigns, the rights and privileges to use the above described land at any time, in any manner and for any purpose that does not interfere with construction, operations, maintenance and inspection of the structure.

4. The rights and privileges herein granted are subject to all easement, rights-of-way, mineral reservations or other rights now outstanding in third parties.

5. The Grantee is responsible for operating and maintaining the above described works of improvement.

6. Special provisions: The Grantees herein agree to replace fences and place a port hole in the riser at such point that a 17 foot permanent water level can be maintained if need be at such point specified by grantor. Furthermore, existing pond at east end of dam will be obliterated

TO HAVE AND TO HOLD the aforesaid easement in, over and upon the above described land of the Grantor with all the rights, privileges and appurtenances thereto belonging or in anywise appertaining, unto the Grantee, its successors and assigns for so long as they should use said easement for the purpose described above.

IN WITNESS WHEREOF the Grantor has executed this instrument on the 12th day of October, 1967

STATE OF OKLAHOMA }
GARVIN COUNTY } SS

Filed for record

NOV 16 1967

at 8 o'clock A.M., and recorded

In Book 110 at Page 440

BERNECE DYKEMAN, County Clerk

By Alba Gauer Deputy

Ray M. Watson (SEAL)
Signature of Grantor

Margaret Watson (SEAL)
Signature of Grantor

ACKNOWLEDGMENT

STATE OF OKLAHOMA }
COUNTY OF Garvin } SS.

Before me, the undersigned, a Notary Public in and for said County and State, on this 12th day of October, 1967, personally appeared Ray M. Watson and Margaret Watson, husband and wife, to me known to be the identical person(s) who executed

EASEMENT

(IMPOUNDMENT)

For and in consideration of One Dollar (\$1.00) and other good and valuable considerations, the receipt whereof is hereby acknowledged,

Ray Hestand, a widow,

of Cyril, Oklahoma 73078

release unto South Garvin Soil and Water Conservation District

of Ardmore, Oklahoma

at Pauls Valley

NE SW SE SE NW SE Section 11 SW 10 W

for the purpose of permanent storage and temporary detention, either or both, of any waters that are impounded, stored or detained by such works of improvement:

on other lands designated as site K-1

1. In the event construction of the above described works of improvement is not commenced within 18 mos. from the date hereof, the rights and privileges herein granted shall at once revert to and become the property of the Grantor, his heirs and assigns.

2. This easement includes the rights of ingress and egress at any time over and upon the above described land of the Grantor and any other land of the Grantor adjoining said land for the purpose of construction, the checking of operations, and the inspection and maintenance of the structure.

3. There is reserved to the Grantor, his heirs and assigns, the rights and privileges to use the above described land at any time, in any manner and for any purpose that does not interfere with construction, operations, maintenance and inspection of the structure.

4. The rights and privileges herein granted are subject to all easement, rights-of-way, mineral reservations or other rights now outstanding in third parties.

5. The Grantee is responsible for operating and maintaining the above described works of improvement.

6. Special provisions: The Grantees herein agree to replace fences and place a port hole in the riser at such point that a 17 foot permanent water level can be maintained if need be at such point specified by grantor. Furthermore, existing pond at east end of dam will be obliterated

TO HAVE AND TO HOLD the aforesaid easement in, over and upon the above described land of the Grantor with all the rights, privileges and appurtenances thereto belonging or in anywise appertaining, unto the Grantee, its successors and assigns for so long as they should use said easement for the purpose described above.

IN WITNESS WHEREOF the Grantor has executed this instrument on the 21st day of January, 1965

Easement

(For Construction and Impoundment Purposes)

For and in consideration of One Dollar (\$1.00) and other good and valuable considerations, the receipt whereof is hereby acknowledged,

Margaret Fallon, Jim Fallon, Tom Fallon and Charles Fallon

of Garvin Soil and Water Conservation District

STATE OF OKLAHOMA, GARVIN COUNTY, OK

Filed for record April 14 1965 at 8 o'clock A.M. and recorded

In Book 667 Page 17 BERNICE DYKEMAN, County Clerk, By Alba Gauer Deputy

ing described land situated in the County of GARVIN, State of Oklahoma, to wit: East half (E $\frac{1}{2}$) Southeast quarter (SE $\frac{1}{4}$) Northwest quarter (NW $\frac{1}{4}$) and East half (E $\frac{1}{2}$) Northwest quarter (NW $\frac{1}{4}$) Southwest quarter (SW $\frac{1}{4}$) and Northeast quarter (NE $\frac{1}{4}$) Southwest quarter (SW $\frac{1}{4}$) of Section 4, Township 4 North, Range 4 West.

For or in connection with the construction, operation, maintenance and inspection of the following described works of improvement to be located on the above described land; for the flowage of any waters in, over, upon or through such works of improvement; and for the permanent storage and temporary detention, either or both, of any waters that are impounded, stored or detained by such works of improvement:

Flood retarding structure and appurtenances thereto, as described on plat of structure on file in district office.

1. In the event construction of the above described works of improvement is not commenced within 120 months from the date hereof, the rights and privileges herein granted shall at once revert to and become the property of the Grantor, his heirs and assigns.

2. This easement includes the rights of ingress and egress at any time over and upon the above described land of the Grantor and any other land of the Grantor adjoining said land for the purpose of construction, the checking of operations, and the inspection and maintenance of the structure.

3. There is reserved to the Grantor, his heirs and assigns, the rights and privileges to use the above described land at any time, in any manner and for any purpose that does not interfere with construction, operations, maintenance and inspection of the structure.

4. The rights and privileges herein granted are subject to all easement, rights-of-way, mineral reservations or other rights now outstanding in third parties.

5. The Grantee is responsible for operating and maintaining the above described works of improvement.

6. Special provisions: Dirt for construction of dam to be taken first from area north of dam, then from west of dam and last from east of dam. Grantors herein reserve all water rights herein and the right to manipulate the drawdown valve, except for maintenance purposes, as regards the above described property. Timber is to be removed from permanent water area. Drawdown to contain additional openings to minimize water retention.

TO HAVE AND TO HOLD the aforesaid easement in, over and upon the above described land of the Grantor with all the rights, privileges and appurtenances thereto belonging or in anywise appertaining, unto the Grantee, its successors and assigns for so long as they should use said easement for the purpose described above.

IN WITNESS WHEREOF the Grantor has executed this instrument on the 21st day of January, 1965

Tom Fallon
Signature of Grantor

Margaret Fallon (SEAL)
Signature of Grantor

Jim Fallon
Signature of Grantor

Charles Fallon (SEAL)
Signature of Grantor

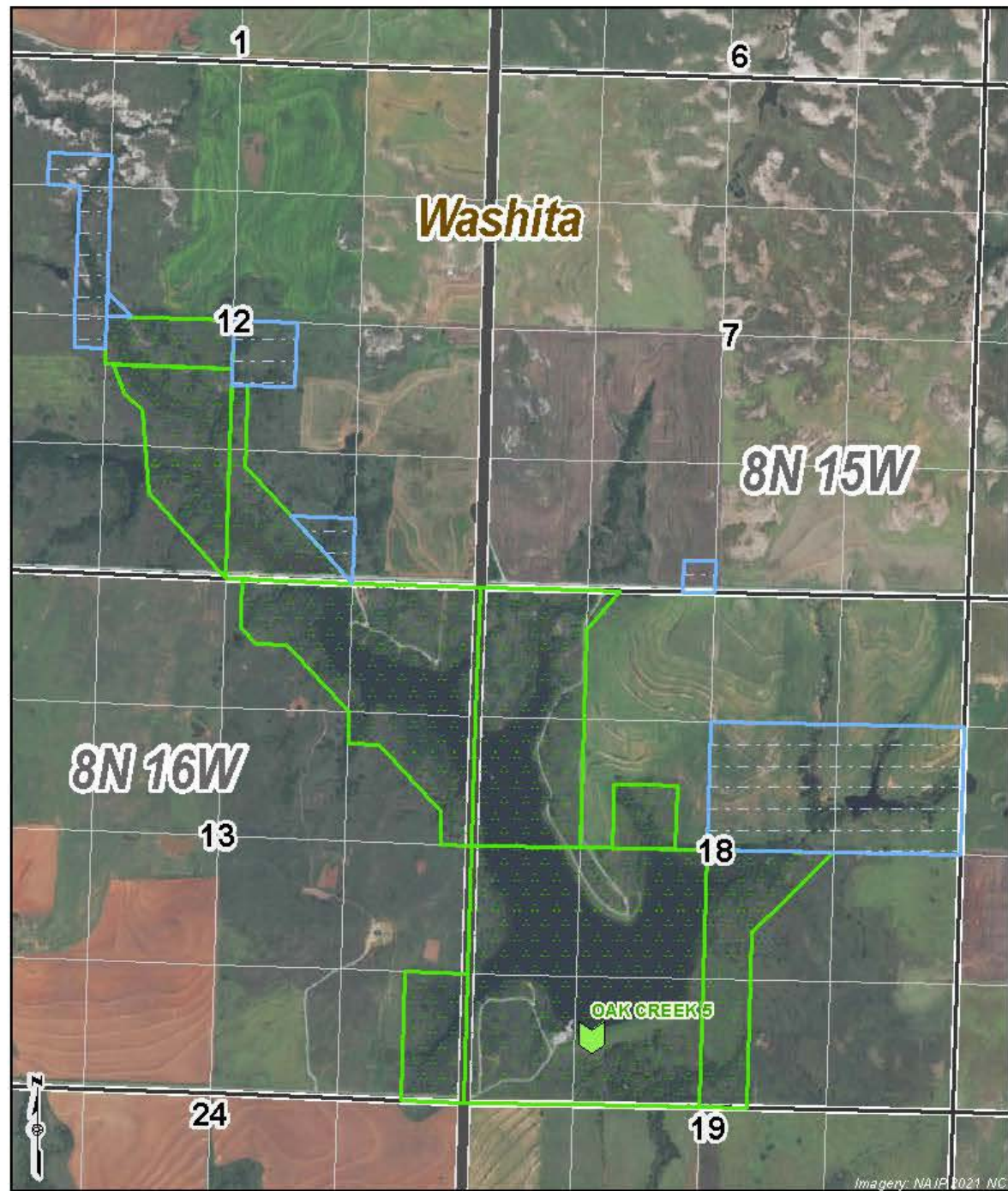
BOOK 667 PAGE 18

ACKNOWLEDGMENT

STATE OF OKLAHOMA }
COUNTY OF Caddo } SS.

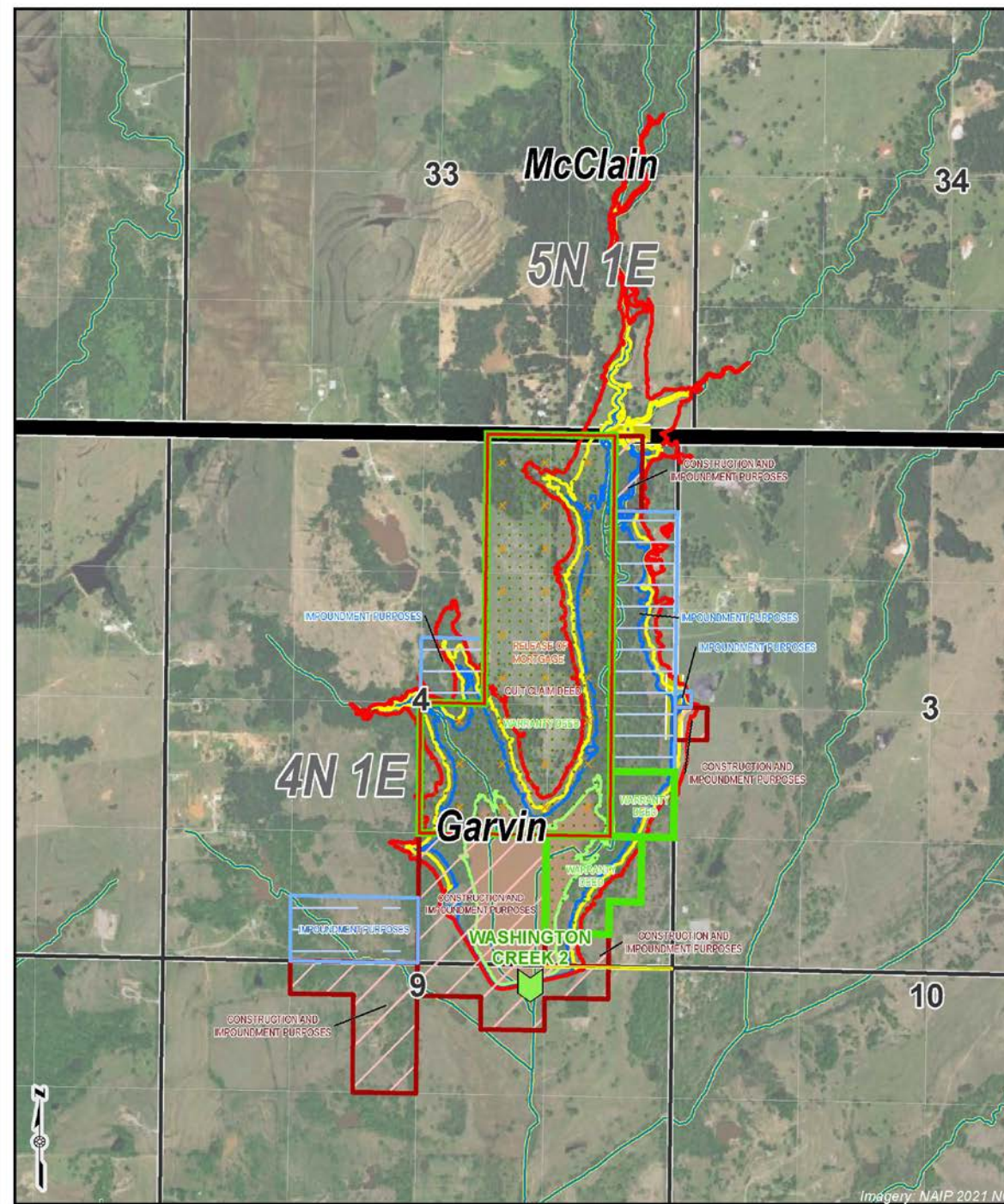
Oak Creek 5 Site

Washita County, Oklahoma



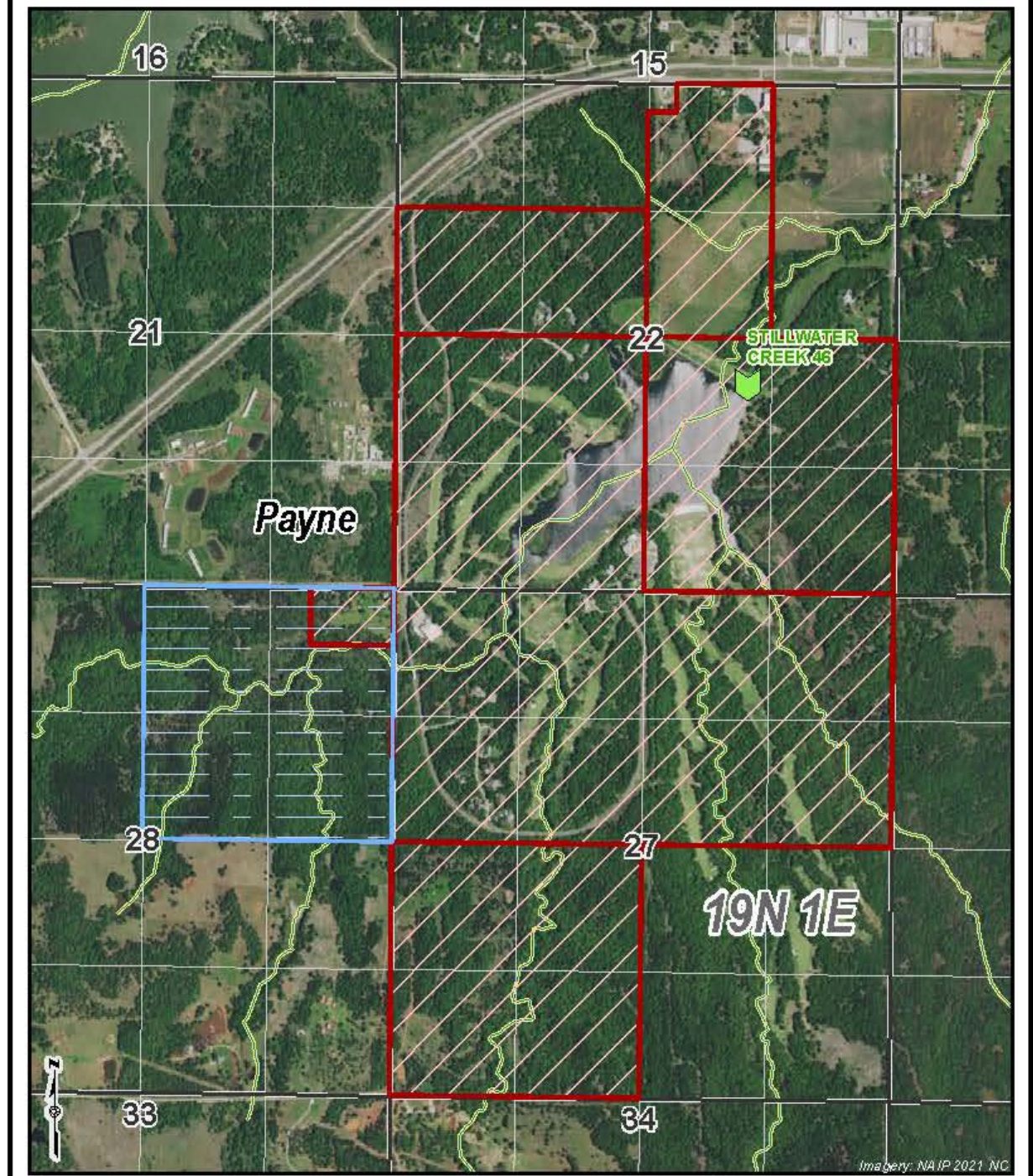
Washington Creek 2 Site

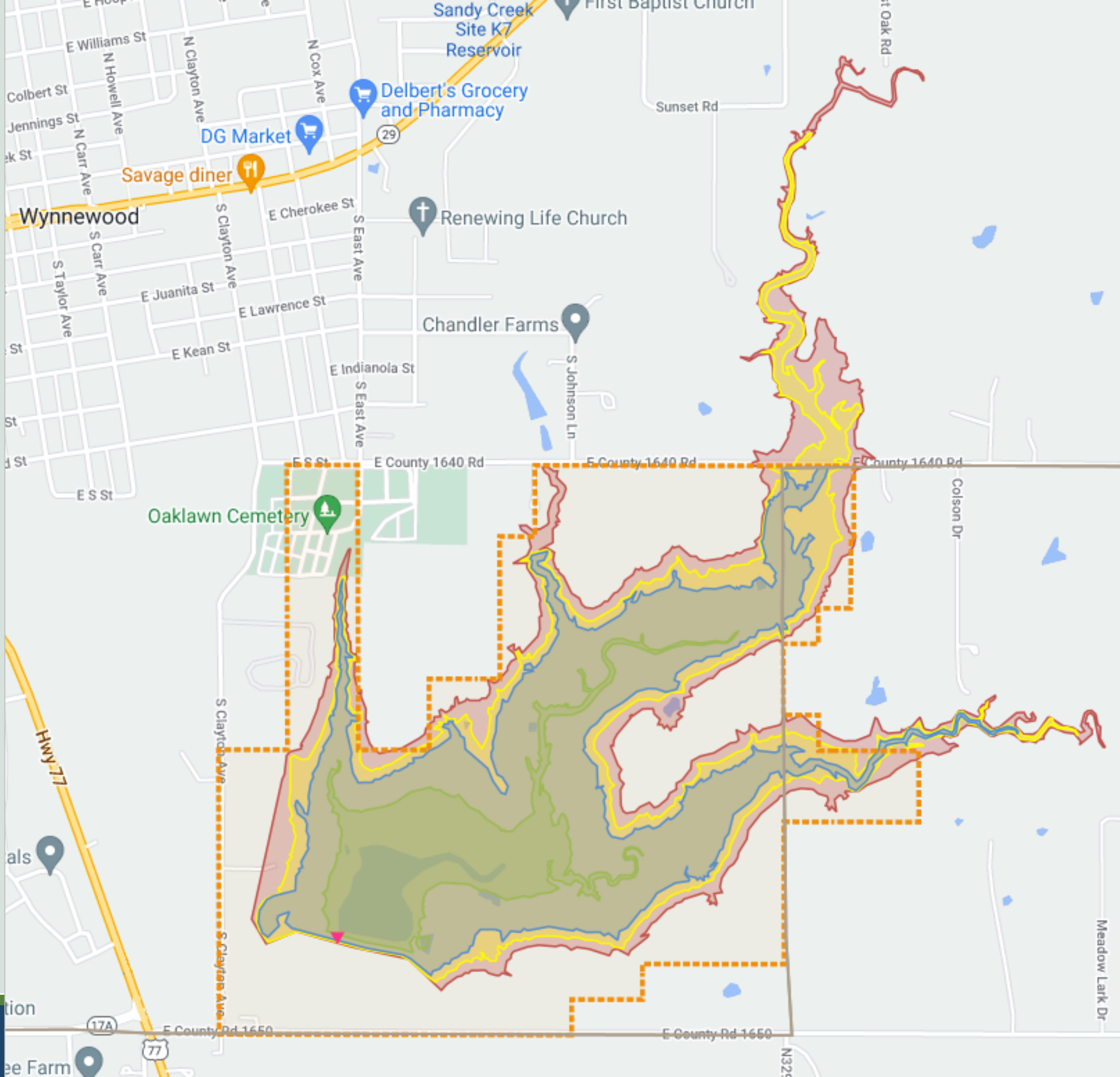
Garvin County, Oklahoma



Stillwater Creek 46 Site

Payne County, Oklahoma





- Google Maps Road Layer
- Google Maps Aerial Layer

- ▲▼×☒+ ⓘ Oklahoma Counties

- ▲▼×☒+ ⓘ Watershed Dams_NRCS

■	0 to 10 Acres
▲	10 to 30
◆	30 to 50
▼	50 to 80
●	Greater than 80

- ▲▼×☒+ ⓘ Current Watershed Dam Easements

☒

- ▲▼×☒+ ⓘ NRCS Dams-Principal Spillway Elevation

▬

- ▲▼×☒+ ⓘ NRCS Dams-Emergency Spillway Elevation

▬

- ▲▼×☒+ ⓘ NRCS Dams-Effective Top of Dam Elevation

▬

- ▲▼×☒+ ⓘ NRCS Dams-Effective Top of Dam Elevation Plus 5 Feet

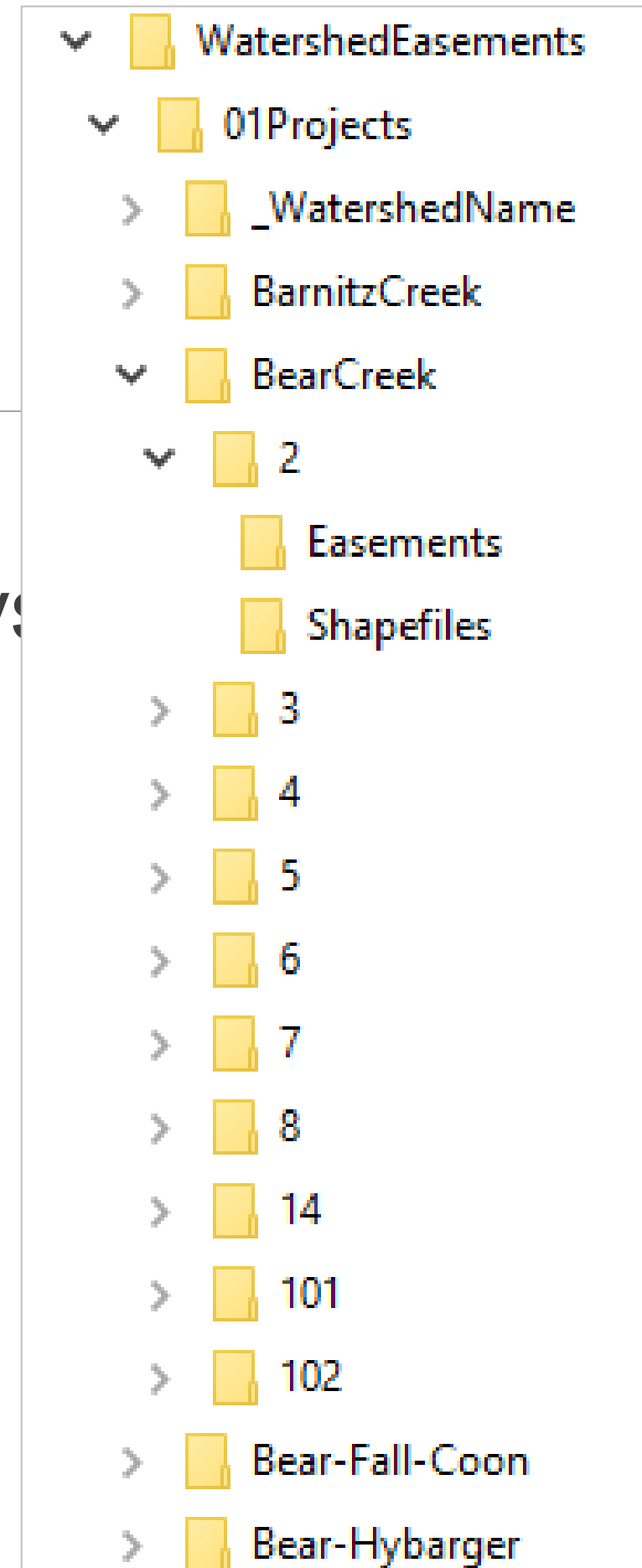
▬

DEV Site

Data Management & GIS

Data Management

- Develop a folder structure
- Review file names
- Determine key attributes to capture from easements
 - Easement Type
 - Legal Description & County
 - Key Dates
 - Special Provisions
- Ingress/Egress
- Standardized keys
 - Federal ID
 - National ID
 - Dam Name



Building the GIS

- Create spatial layers
 - Easements
 - Access Areas
- Map legal descriptions
 - PLSS Quarter calls
 - Metes and bounds
- **TractBuilder**

TractBuilder - Quartering Tool

Description Corner Posts Attributes Settings About

NW4 N2 NE4 And NW2 NE2

W2 All E2 Less SW2 SE2

SW4 S2 SE4

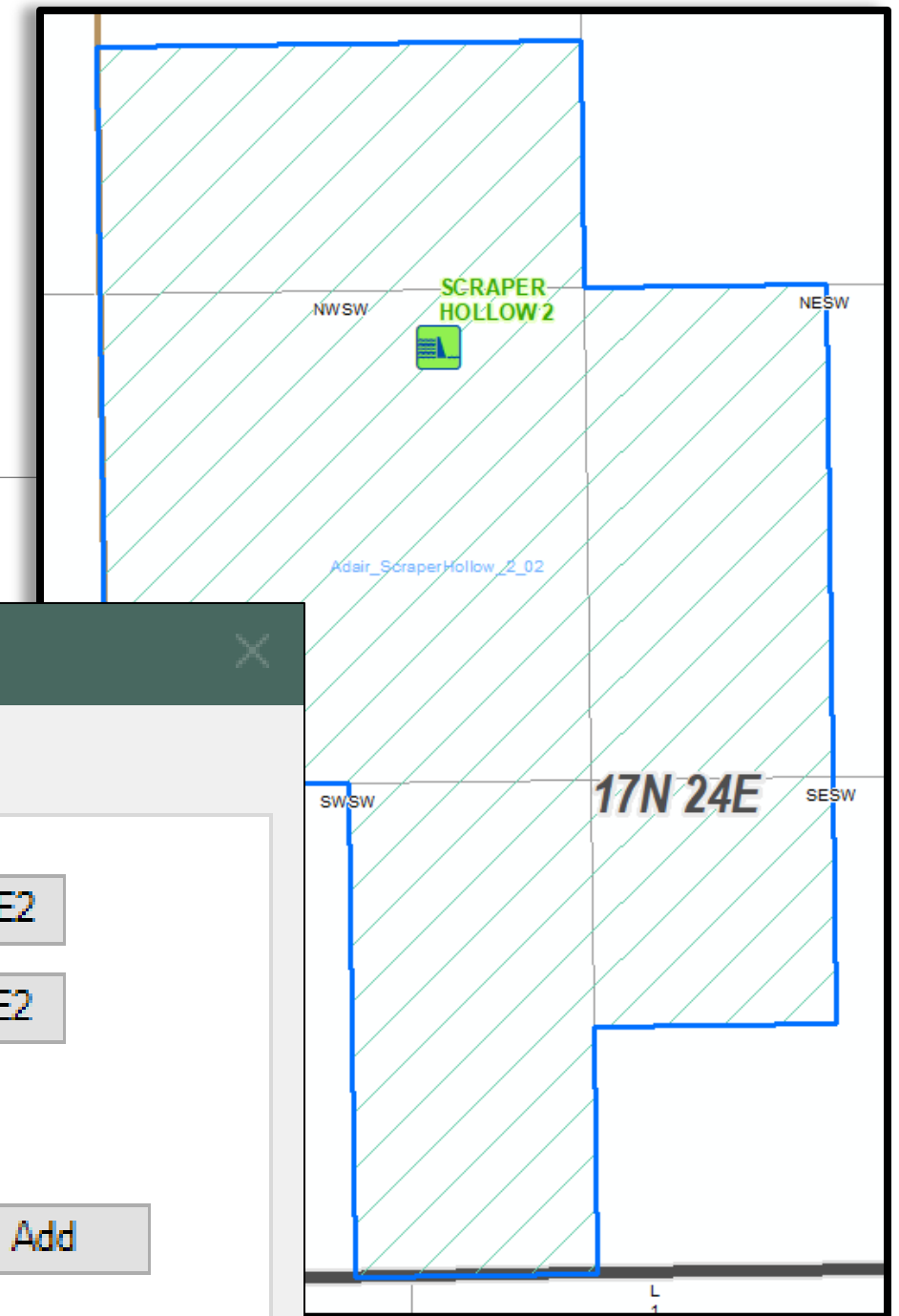
N Acres Add

Description: S2 SW4 NW4 AND NW4 SW4 AND E2 SW4 SW4 AND NW4 SE4 SW4 AND W2 NE4 SW4

Selected Area: 637.57 ac.

Resulting Area: 109.61 ac.

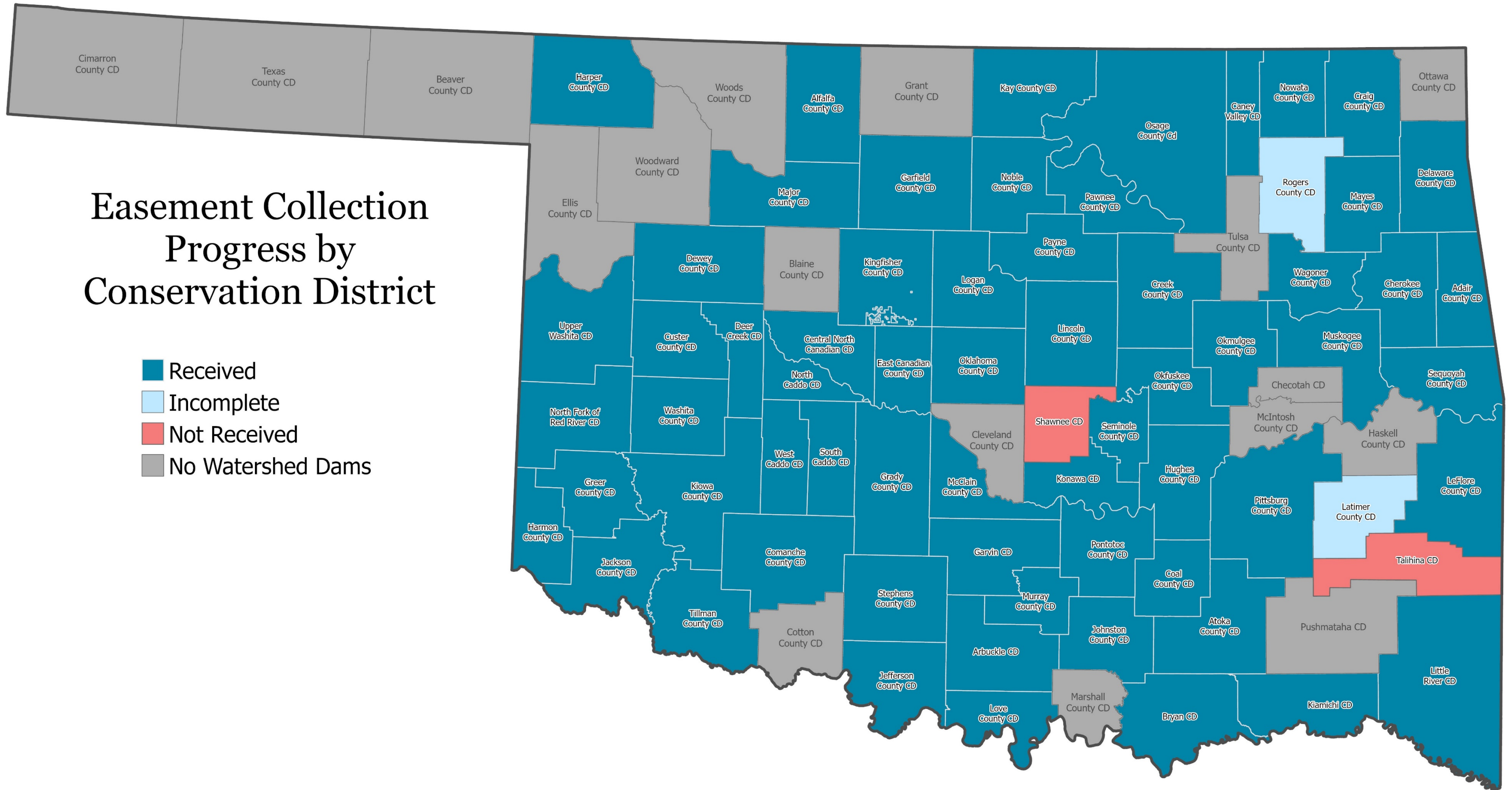
Zoom Selection Create Feature



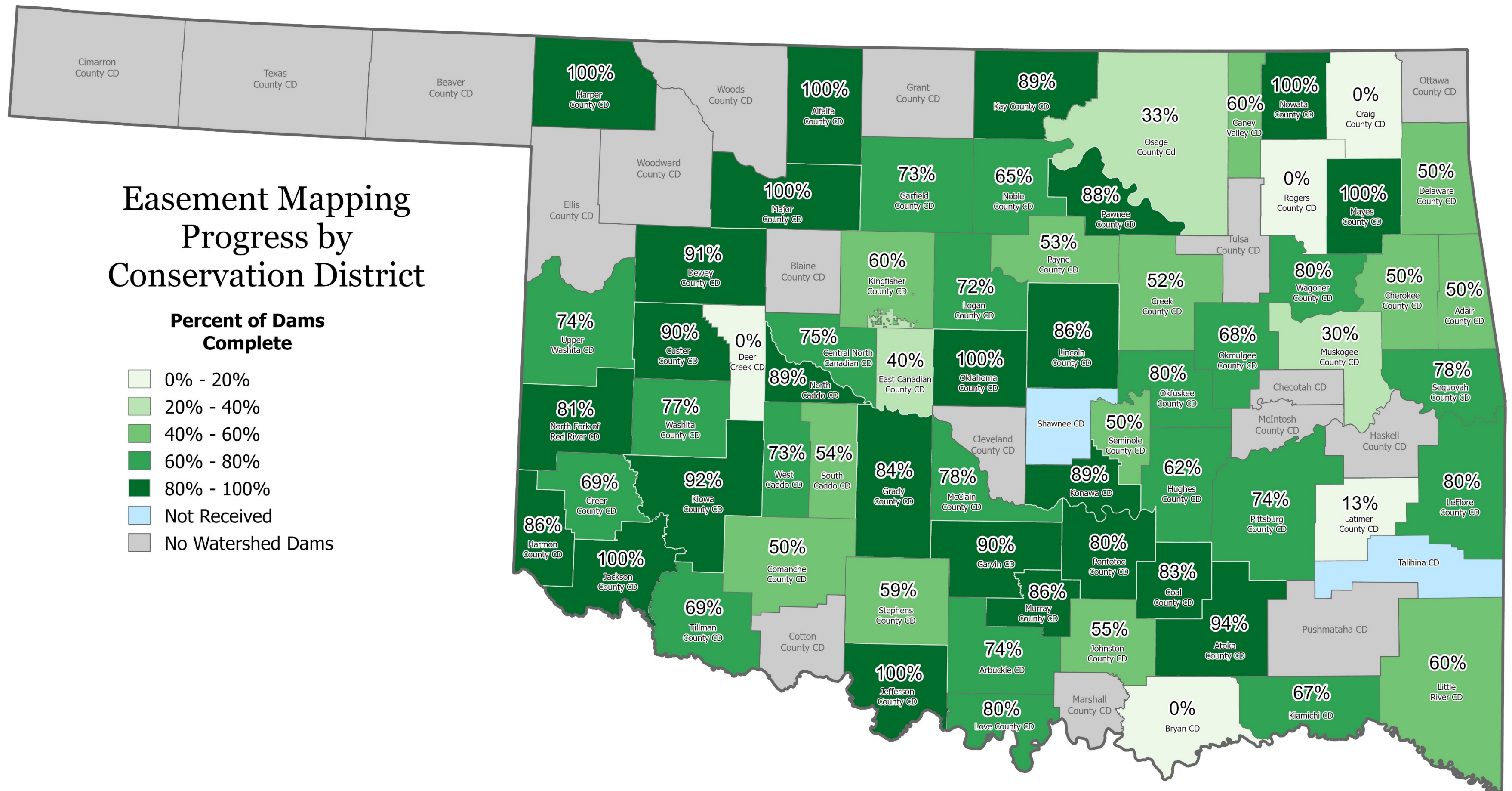
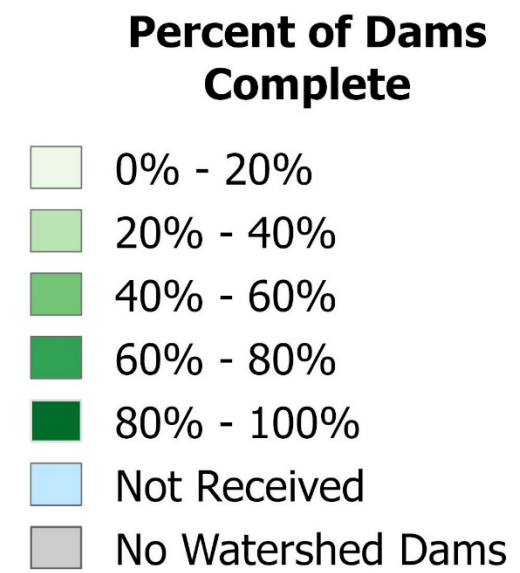
Mapping Progress

Easement Collection Progress by Conservation District

- Received
- Incomplete
- Not Received
- No Watershed Dams

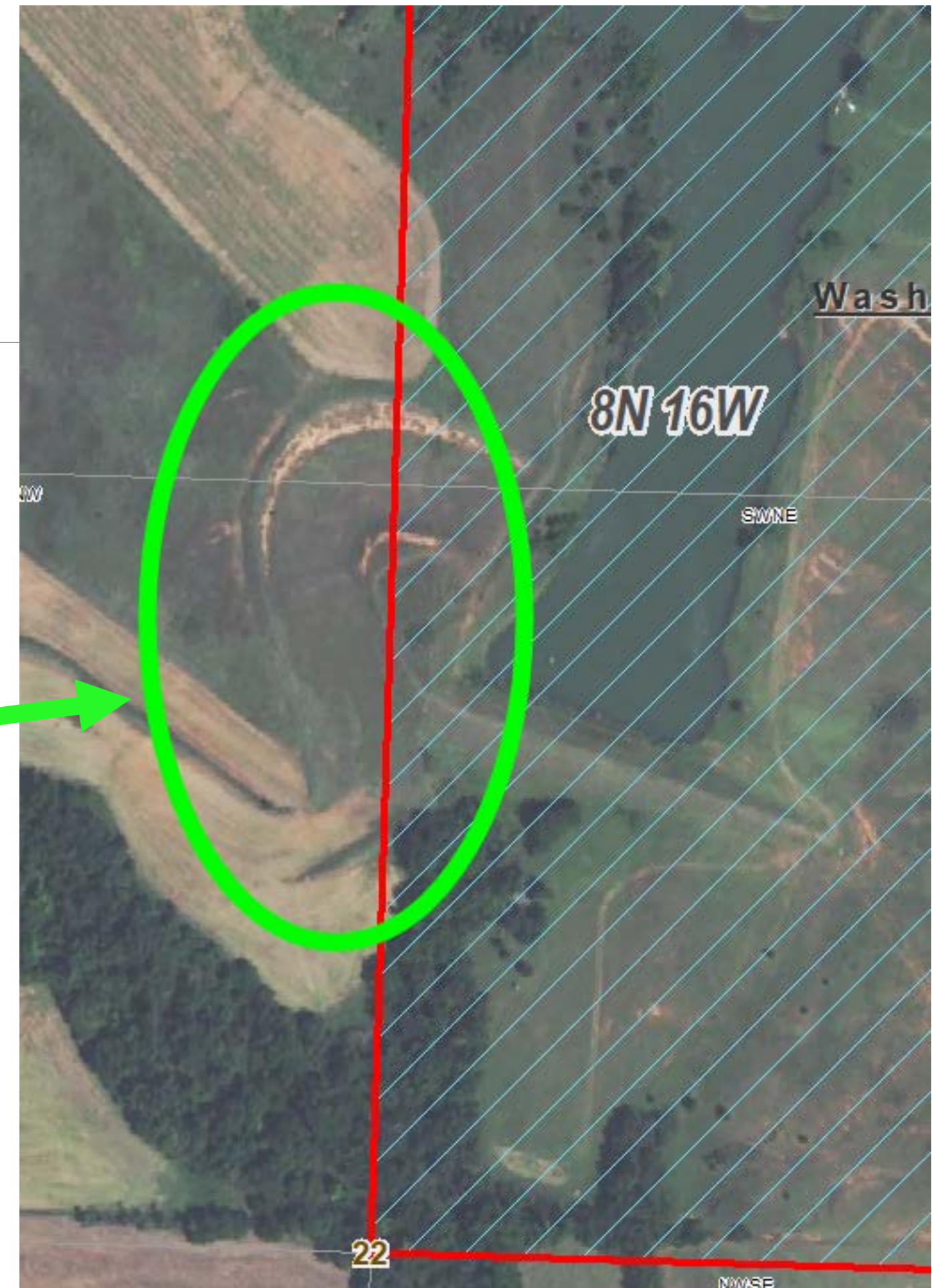


Easement Mapping Progress by Conservation District



Site Tracking Spreadsheets

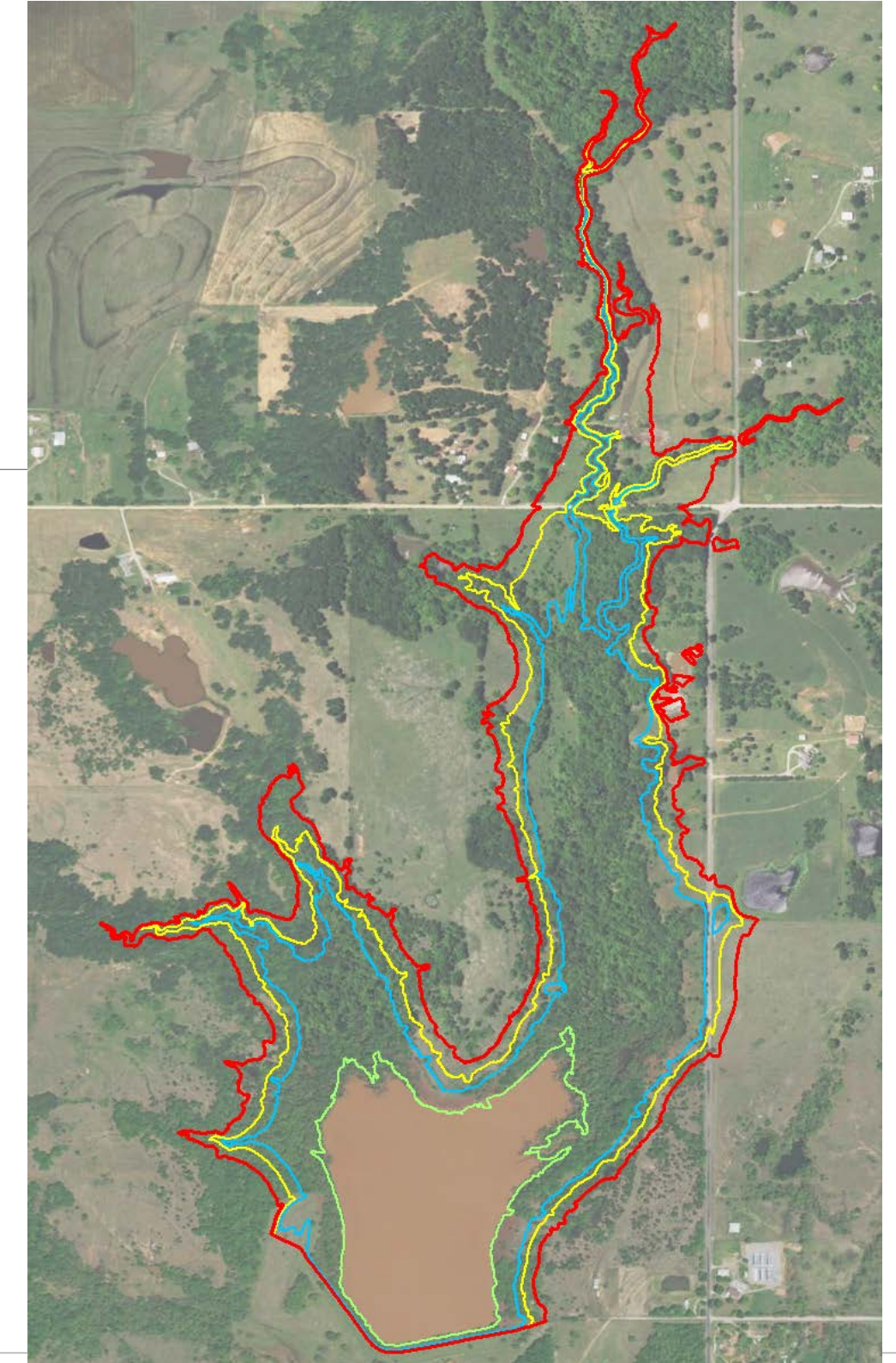
- Capturing additional information for the team
 - Questions
 - Issues
 - Missing easements
 - Notes
 - Status dates



Future Outlook

Flood Pool Elevations

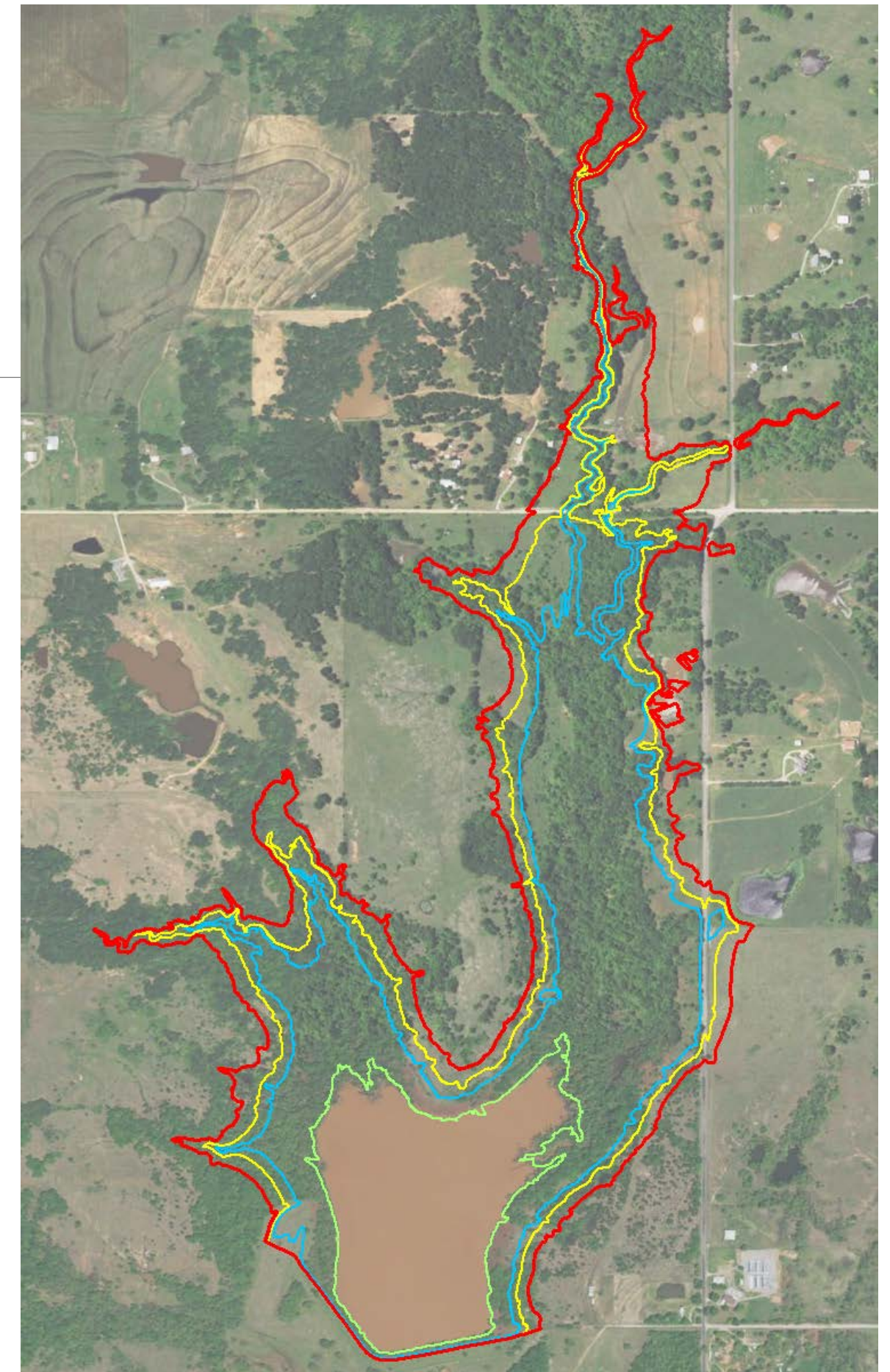
- NRCS Dam Elevations from Construction Drawings
 - Principal Spillway
 - Auxiliary/Emergency Spillway
 - Effective Top of Dam
- Create additional elevation dataset:
Effective Top of Dam +5 feet
- Using LiDAR to build DEMs (digital elevation models)
- Map Flood Pool Elevations using GlobalMapper



Easement File Name	Watershed	Watershed Abbreviation	Dam Number	Original As-Built Data									Rehabilitation As-Built Data							
				Emer. Spillway Width (Ft)	Height of Dam (Ft)	Orig. As-built NGDV Elev.			NGDV to NAVD	Adjusted As-built NAVD Elev.			Drainage Area (Sq. Mi.)	Sediment Pool Surface Area (Ac)	Date Rehab Construction Completed	Emer. Spillway Width (Ft)	Height of Dam (Ft)	REHAB As-built NAVD Elev.		
						Princ. Spwy Elev. NGDV	Auxiliary Spillway Elev. NGDV	Effective Top of Dam Elev. NGDV		Princ. Spwy Elev. NAVD	Auxiliary Spillway Elev. NAVD	Effective Top of Dam Elev. NAVD						Princ. Spwy Elev. NAVD	Auxiliary Spillway Elev. NAVD	Effective Top of Dam Elev. NAVD
OK00574 ESM BAR D16	Barnitz Creek	BAR	16	125	31	1791.0	1806.0	1811.0	0.808	1791.8	1806.8	1811.8	7.22	65	8/24/2014	300	52	1888.7	1903.1	1909.8
OK00575 ESM BAR D17	Barnitz Creek	BAR	17	250	42	1766.0	1786.5	1792.0	0.802	1766.8	1787.3	1792.8								
OK00576 ESM BAR D18	Barnitz Creek	BAR	18	50	26	1772.5	1782.5	1787.5	0.804	1773.3	1783.3	1788.3								
OK00577 ESM BAR D19	Barnitz Creek	BAR	19	40	32	1756.7	1769.2	1774.5	0.804	1757.5	1770.0	1775.3	2.38	24	9/15/2017	125	33	1862.4	1878.5	1855.5

Flood Pool Elevations: LiDAR

- Current LiDAR
 - 2009 – 2012
 - 2 meter spacing
- New LiDAR
 - Office of Geographic Information
 - NRCS Paid / USGS Contracted Fugro
 - State Plane Coordinates
 - December 2022 – January 2023
 - 0.7 meter spacing



Effective Top of Dam +5 feet (Elev 981.9 ft)



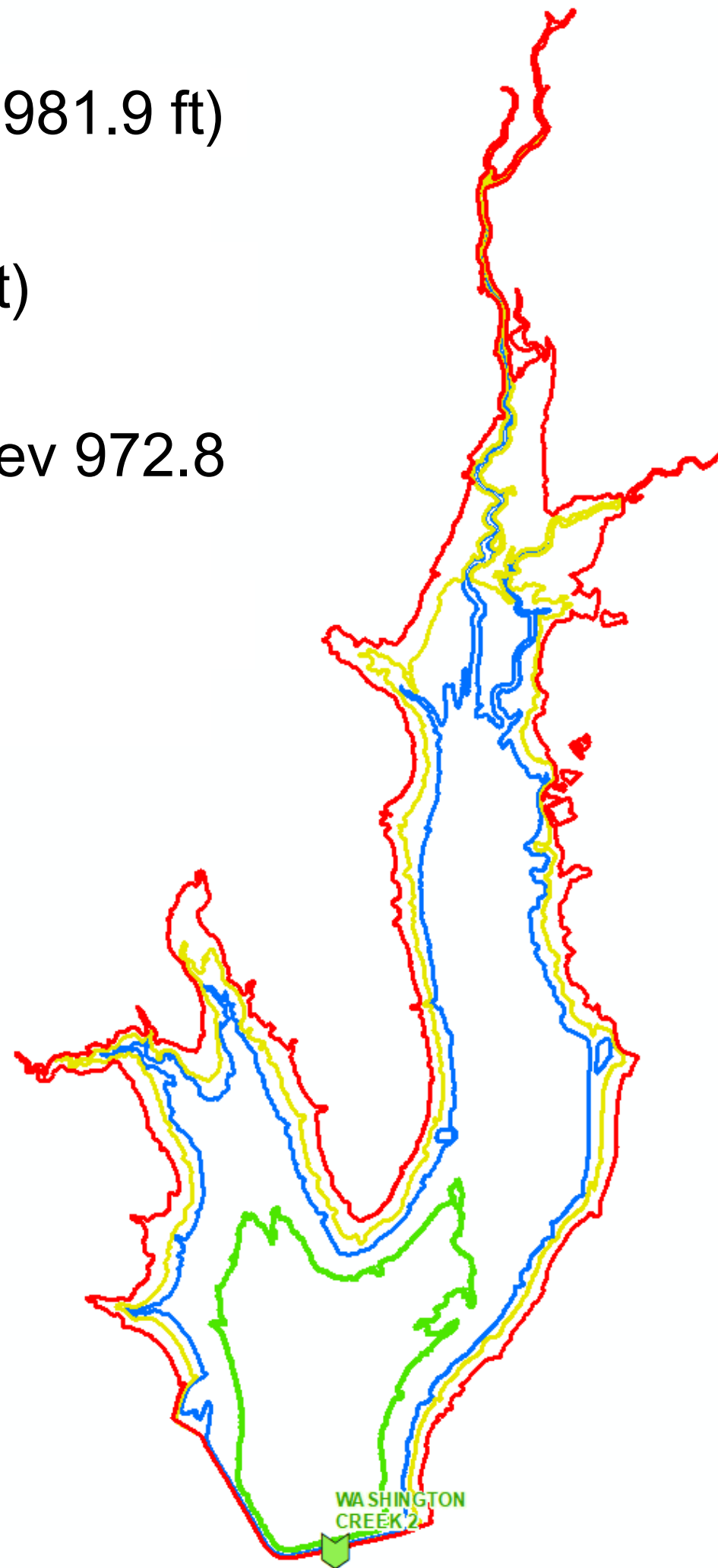
Effective Top of Dam (Elev 976.9 ft)



Auxiliary (Emergency) Spillway (Elev 972.8 ft)



Principal Spillway (Elev 961.3 ft)



Effective Top of Dam +5 feet (Elev 981.9 ft)



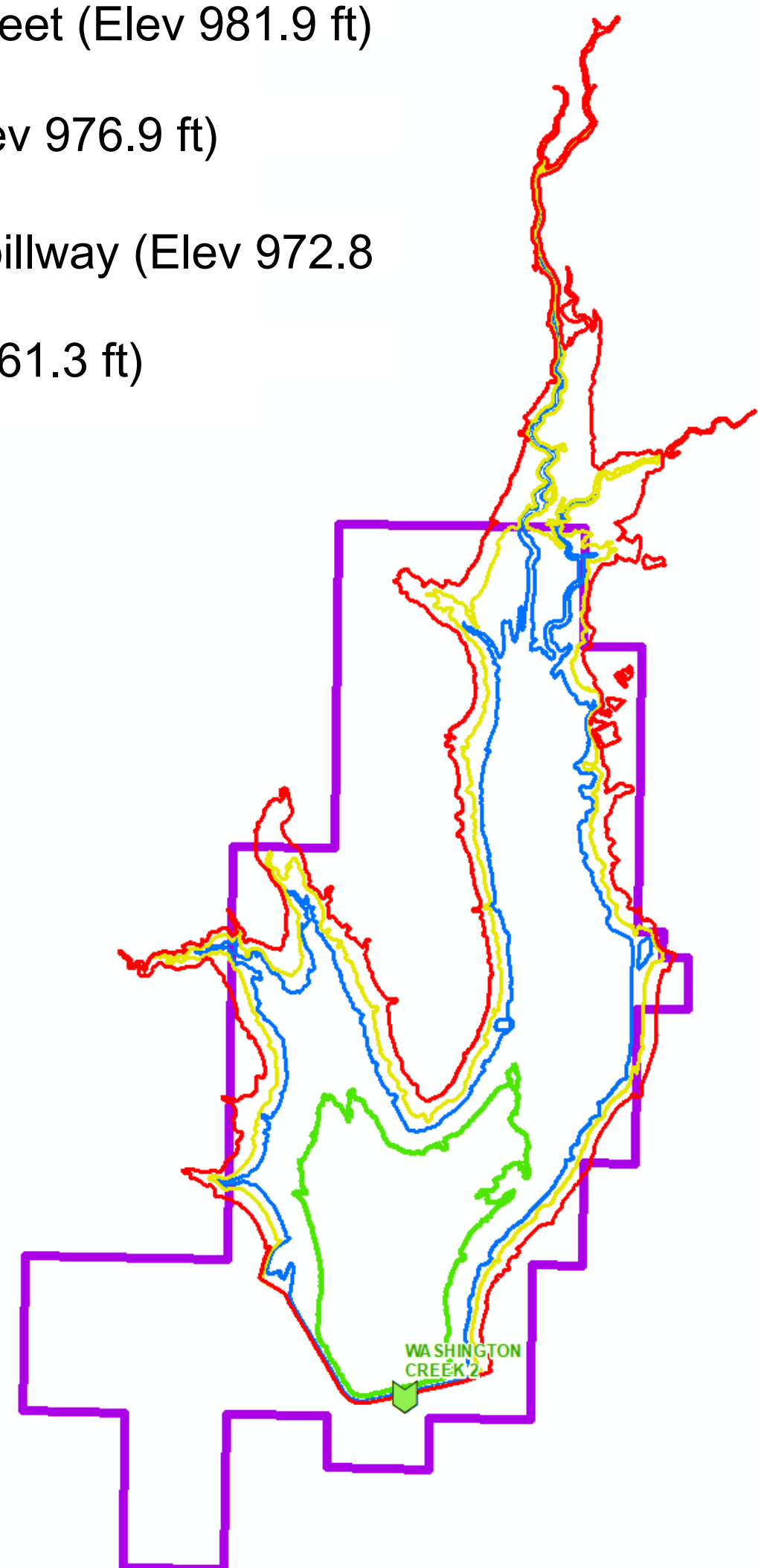
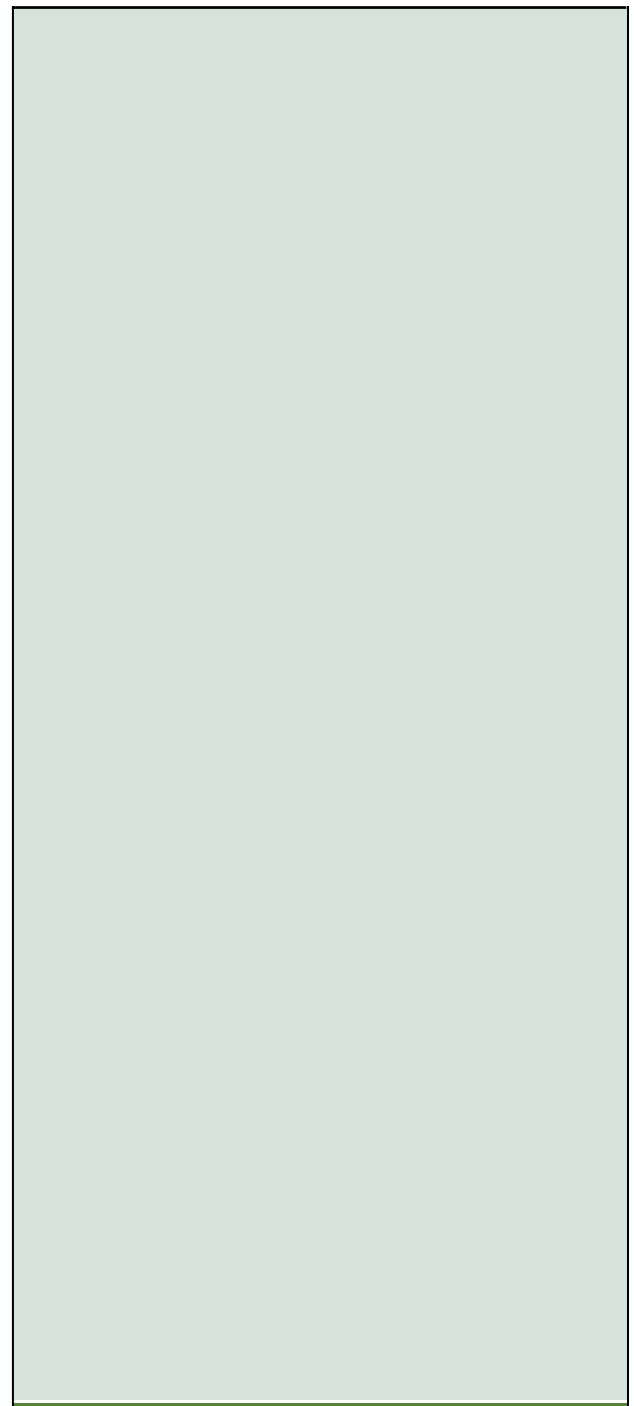
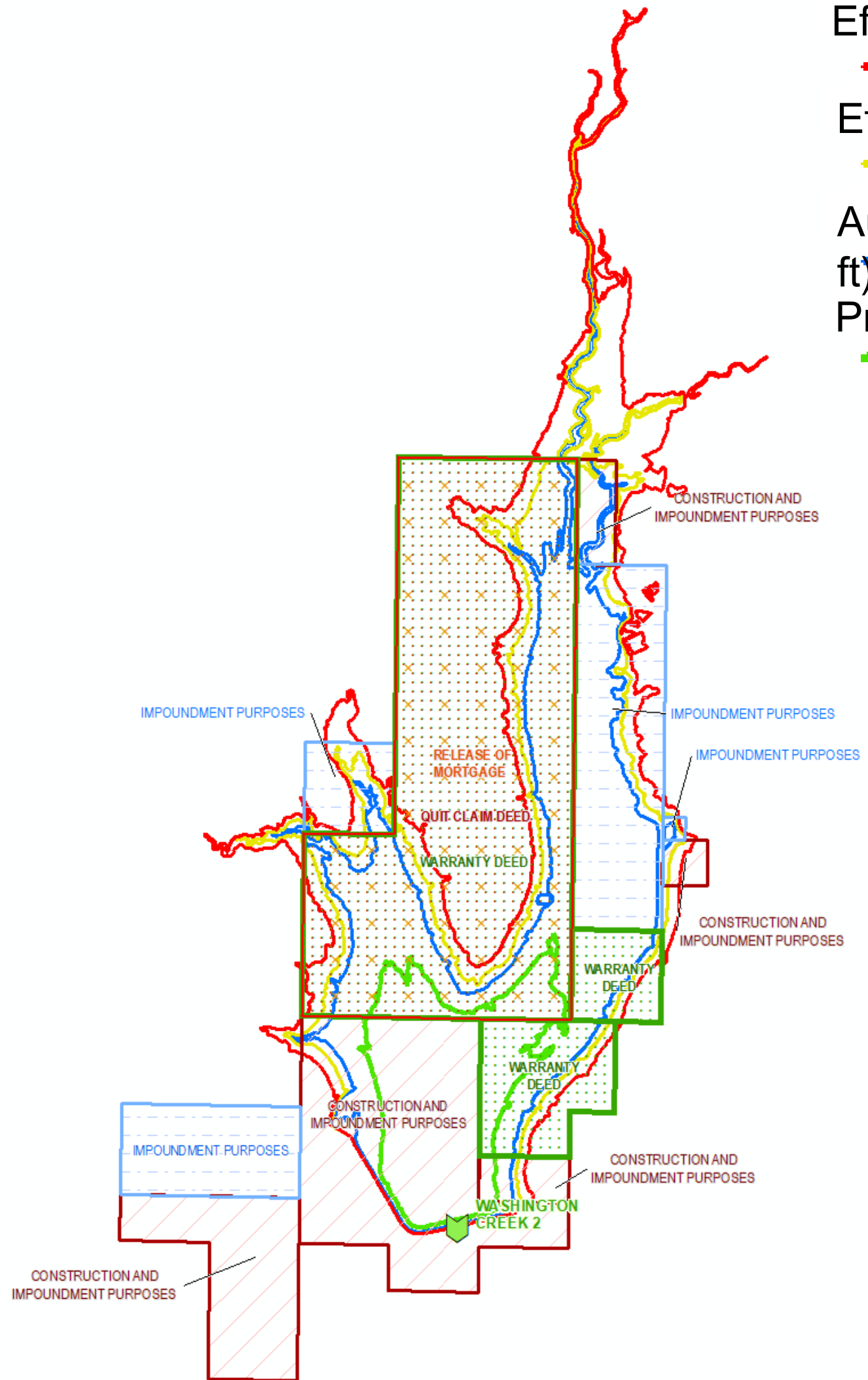
Effective Top of Dam (Elev 976.9 ft)



Auxiliary (Emergency) Spillway (Elev 972.8 ft)



Principal Spillway (Elev 961.3 ft)



OKMaps Demo

- Data will be available to the public in the future.
- We are working on how we will roll data out to OKMaps.



Questions?

Wendie Sharp

Wendie.Sharp@Conservation.ok.gov

TJ Hathcock

TJ.Hathcock@Conservation.ok.gov

conservation.ok.gov/flood-control-program/