

ENGINEER'S PRELIMINARY SURVEY REPORT

KITTSOON COUNTY DITCH NO. 7 IMPROVEMENT

Two Rivers Watershed District

January 31, 2023

Prepared By:

Widseth Smith Nolting & Associates, Inc.
216 South Main Street
Crookston, Minnesota 56176-1028

WSN Project No. 2021-11848

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Prepared By:

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216 South Main Street
Crookston, Minnesota 56176-1028

WSN Project No. 2021-10848

Certification:

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



Blake A. Carlson, PE

1/31/2023

Date

18814

License No.

Introduction

These proceedings were initiated by a petition from landowners requesting an improvement to Kittson County Ditch Number 7 (KCD7). A copy of the original petition with amendment is attached in Appendix A. The petition states that the “Proposed improvement is necessary due to repeated events where inadequate capacity of County Ditch 7 causes waters to breach the ditch system and spill onto ag lands.” It goes on to state that “due to the inadequate capacity, rainfall added to the spilled ditch system waters does not have timely access to the ditch system, adding to the significant financial hardships from crop loss.” The petition requested improvement of the ditch along Sections 19 to 23 of Svea Township.

Present Situation

KCD7 is located in the southwest corner of Kittson County, to the northwest of the City of Donaldson. See Figure 1. The ditch runs east-west with the upstream end of the ditch just to the west of US Highway 75. From, there it runs to the west for 6.2 miles and outlets to Judicial Ditch 10 (JD10). JD10 continues to the north and west for 1.8 miles where it outlets to a natural channel that flows another 6 miles and outlets to the Red River of the North.

The drainage area is shown in Figure 2. There is 17.8 square miles of drainage to the upstream end of the ditch--east of US Hwy 75--and 22.6 square miles total to the downstream end.

The KCD7 system was originally established circa 1905. There is information in the ditch file for proposed improvements that were considered in 1949 and 1957. However, there is no evidence in the record that either of these improvements was established. Therefore, the assumption is that the original profile and cross-section established in 1905 represents the present legal ditch.

The present benefitted area for the KCD7 system is shown in Figure 3. Benefits were redetermined in 2011.

The topography data used for this report was a combination of LiDAR data collected circa 2008 and on the ground surveys conducted by the watershed district staff. The existing data used for the preliminary plan sheets was collected in 2010. The vertical datum for the LiDAR and survey data is NAVD88. The horizontal datum for the survey data is "NAD 1983 HARN Adj MN Kittson Feet".

There are some situations relative to this ditch which that are of note. Two of them pertain to the topography of this area. The first is the slope of the land from east to west. Beginning at the upstream end, the slope of the ditch is nearly 6 feet per mile. Moving downstream on the ditch the slope decreases and for the last 2.8 miles the slope is less than 3 feet per mile. The cross- section of the ditch does not increase significantly moving to the west so the flattening of the slope results in a ditch that has greater capacity on the upstream than it does downstream.

The second situation relative to topography, in combination with the first, exaggerates the capacity discrepancy on this system. The ditch passes through high ground in Section 20. When the capacity of the ditch system is exceeded the fields within a mile to the east of the high ground are most affected. The water in the ditch is too high for any water on the fields in this area to be drained into the legal ditch. In addition, this is one of the first areas that receives overflow from the ditch because of the combined effect of the slope of the ditch and the high ground to the west. The fields to the south of the ditch are most affected. There are presently several locations to the south where the spoil has been overtopped and in some locations is washed out.

One other situation of note. There are two companies that have pipeline crossings in Section 23. See preliminary plans in Attachment B. Viking has two natural gas lines and Enbridge has eight oil lines carrying crude oil, refined products or natural gas. The

reason of note for these pipelines is if they limit the depth the channel can be improved. Lowering these pipelines is not a possibility since the cost to do so would be prohibitive and would likely make an improvement project more costly than the benefits provided.

The lines were located and probed for depth during the Summer of 2022. See Attachment C. The Viking lines were found to be buried deep enough that they are not a problem for the improvement. Unfortunately, this was not the case for all of the Enbridge lines. The three east lines are buried the shallowest. Their depth is such that they present a problem for an improvement that would involve deepening the ditch to provide adequate slope and depth. Enbridge requires a minimum of 2 feet of between the top of the pipe and the bottom of the ditch. These three lines are also the oldest of the group installed in 1950. The newer pipes have permits from the watershed that require the pipeline be lowered at the cost of the company if required by a ditch improvement. The pipes installed in 1950 do not have permits since this was prior to establishment of the watershed district. Therefore, the design of the ditch includes provisions to maintain the minimum required distance between the top of pipes and the bottom of the ditch. These will be detailed later in this report.

Adequacy of Outlet

Even before the start of the recent petition process, there has been concerns about the adequacy of ditches and channels that serve as an outlet for KCD7. Because of this there was an initial analysis and report done of the outlet adequacy for the proposed improvement. A copy of the report is included as Appendix D. The findings of the report were that simply deepening and or widening the existing legal ditch would likely result in additional downstream flooding of agricultural lands, crops for approximately a 5 year 24 hour design event.

To address this several alternatives were proposed that could be used in combination with an improvement to address the increased peak flow. These included adding an

impoundment, using setback levees along KCD7, culvert sizing in the upstream drainage area, overflow sections in south KCD7 berm, damage payments to downstream landowners, flood easements along the outlet or an outlet channel improvement. Some of these alternatives would by themselves totally mitigate for the increased flood potential, some would need to be used in combination with other alternatives.

At a meeting of the petitioners and landowners where the outlet adequacy findings were presented, the consensus of the group was to move forward using setback levees. However, when the modeling was done to evaluate the improvement with setback levees the result was that setback levees would not work to completely mitigate the potential increased downstream flooding for approximately a 5 year 24 hour design event. It is estimated that the increased peak of approximately 105 cubic feet per second will be passed downstream with the proposed project in place. The calculation of this increase is further explained in the following "Hydraulics & Hydrology" section.

The portion of the outlet channel where lands have agricultural crops that are presently flooded by a 5 year 24 hour event which would receive additional flooding is from the point where KCD7 outlets to JD10, to a point 800 feet downstream from the section line between Sections 35 and 36 of South Red River Township. The increase in water level in the channel for 105 cubic feet will be minimal. The additional width of the land that will be flooded will on the average be 5 feet wide on each side of the channel.

For runoff events larger than the approximately a 5 year 24 hour design, the potential for increased downstream flooding will be mitigated by having several overflow sections of the ditch berms. The elevation of the overflow sections will be such that for flows larger than approximately a 5 year 24 hour event water will overflow into the adjacent fields and either pond there until the level in the ditch falls and allows the water back into the ditch or flows via other routes to the outlet as it does now. Doing

this will prevent any increase in peak flows for events larger than approximately a 5 year 24 hour event.

To move this project forward a typical ditch improvement consisting of deepening and widening of the ditch in conjunction with purchasing flood easements along the outlet channel where lands are presently cropped that would be damaged by the increased peak from approximately a 5 year 24 hour event will be developed and presented in this report.

Design Criteria

The petition stated the project should be an “Improvement of grade from high point to low point, eliminating flat sections, and improvement/addition of ditch capacity to handle upstream peak flows.”

Regarding the “Improvement of grade from high point to low point, eliminating flat sections...”, the depth and slope of the ditch was designed such that the level of flow in the ditch for approximately a 5 year 24 hour design event was as close to the adjacent field elevation as practicable. There is a level (flat) portion of the ditch, just under 2000 feet long, that was necessitated by the constraints of the Enbridge pipelines, as described previously. This level portion is considered the least problematic way of crossing the pipelines. The bottom width of the level portion increase from 15 to 40 feet wide to compensate for the lack of fall in this portion of the ditch. This provides for the desired level of flow in the ditch. The disadvantage will be a wetter ditch bottom that will promote greater cattail growth and some additional sediment accumulation. The cattail growth can be addressed with regular chemical application and the sediment with slightly more frequent cleaning of this portion of the ditch. This is the price to pay for having a design that meets the desired objectives.

Details for the ditch design that was arrived at are shown on the preliminary plans in Appendix B. The ditch bottom widths are sections of 10, 15 and 40 feet wide with

variable widths transitioning between the 15 and 40 foot portions. The three existing ditch centerline box pipes will be used as is with the ditch bottom profile matching the box pipe inverts. A transition will be required from the 1905 ditch bottom at Station 71+22 to the improved ditch bottom at Station 80+33 (911 feet). The side slope of the improved ditch will be 3:1.

If this improvement is established, the legal ditch moving forward would be the 1905 depth and cross-section from Station 0+00 to 71+22, and the improved depth and cross-section from Station 71+22 to the outlet of the ditch. It would also include the berm overflows at the elevations included in the design. In addition it would include the rock drop structure that was installed in 2017 to address head cut erosion that was progressing upstream in the ditch. Design sketches for the rock structure that was installed are attached in Appendix E.

Hydraulics and Hydrology

The design event used to analyze the adequacy and peak flow effect is approximately a 5 year 24 hour event. It is based on the criteria in Briefing Paper #3 of the Basin Technical Advisory Committee (BTSAC #3). The BTSAC #3 discharge at Hwy 75 for 17.8 square miles is 290 cubic feet per second.

To get a feel for how a ditch designed to carry this peak discharge would have performed with some of the larger events that have occurred in this area in the past, streamflow measurements that were taken in this area were reviewed. There is a streamflow measurement nearby in the City of Kennedy. The drainage area (42.5 square miles) is larger than that for KCD7, but the other characteristics of the upstream drainage area are similar to that for KCD7. There have been several peaks at the Kennedy gage in the range of 500-600 cubic feet per second. There have only been two peaks significantly over this range. Taking 600 cubic feet per second and proportioning by area to KCD7, this would translate to a peak of 250 cubic feet per second. The

conclusion from this being that KCD 7 improved as being proposed would likely have been adequate to carry all but the largest past events that have been measured without backing out onto the adjacent fields.

Using “Techniques for Estimating the Magnitude and Frequency of Peak Flow on Small Streams in Minnesota Based on Data through Water Year 2005”, USGS Scientific Investigations Report 2009-5250, peak flows for 5, 10, 25 and 50 year events were determined for KCD 7 at Hwy 75 and are given in the following table.

Return Event	Peak Discharge, cfs
5 yr	350
10 yr	520
25 yr	780
50 yr	1000

Comparing the 5 year peak here with the peak derived previously for this, it is significantly greater. To resolve this the stream flow measurements made at Kennedy were again referred to. Measurements have been taken at this location starting in 1997 and continuing to present day, a period of around 25 years. The largest flow measured at this site was 796 cubic feet per second. Proportioning the Kennedy peak for KCD7 based on area, this would be 330 cubic feet per second. With the number and size of events that have occurred in this area in this period of time, you would expect to have at least one event that equaled or exceed that of a 10 year event. Based on this it appears that the peaks from the USGS report are higher than KCD7 is experiencing.

For the purpose of this report, the assumption is that the more appropriate 5 year flow is 290 cubic feet per second. The other return event peak flows used for this project will be proportioned from the USGS values based on the 290 cubic foot per second 5 year flows. The resulting design flows are shown below.

Return Event	Peak Discharge, cfs
5 yr	290
10 yr	431
25 yr	647
50 yr	829

A hydrograph at Hwy 75 was developed from the most recent HEC-HMS model of the Lower Red River Retention Study. The hydrograph was used as a unit hydrograph and proportioned to have a peak of 340 cubic feet per second. This represents the 5 year 24 hour peak flow at the point of the ditch where spoil along the ditch begins to overflow first, Station 216+00. It accounts for inflows to the ditch from the upstream end to this point, the difference between 290 and 340 cubic feet per second.

To account for overflows into the adjacent fields for the design event with the existing conditions an unsteady HEC-RAS model was developed. With the existing conditions the overflows result in a lower peak flow being passed down KCD7 to the outlet channel. The peak discharge at the outlet for the existing conditions was used to determine what if any increased peak charge would be expected from the proposed condition. The peak discharge at the outlet of KCD7 for existing and proposed, respectively is 235 and 340 cubic feet per second. The peak level for the 5 year water surface profile is attached as Appendix F.

Steady state HEC-RAS models were run for the 10, 25 and 50 year events. Profiles for these events are attached in Appendix G.

Environmental and Land Use Criteria

There will be an increase of benefit to private and public entities resulting from the improvement. The private benefits will be in reduced flooding of adjacent agricultural lands. The public benefit will be in reduced stage and duration of water against road embankments. The exact amount of benefits will be determined by viewers as part of

the next steps in the procedure. The probable cost for the project is presented in Appendix H.

The present land use along KCD7 is all agricultural. There is no anticipated change in land use that will result from the proposed improvement. The waters to be drained are the same as what are drained by the present ditch system. There are no effects anticipated on wetlands resulting from the proposed project.

Proper measures to minimize the effect to water quality will be used during construction as part of the Stormwater Pollution Prevention Plan. This will minimize the likelihood of substantial sediment discharge following rainfall events. The project will include provisions to establish adequate vegetative coverage at the conclusion of construction. Once vegetation is established there should be no significant adverse effect on water quality.

The proposed project involves widening and deepening an existing ditch. The lands adjacent to the ditch where excavation will occur is either farmed or planted to grass. There is a Minnesota protected water channel downstream of JD10. The 2 year event is carried by the existing ditch with no overflows from the ditch, therefore there will be no change in the 2 year peak flows. For flows in excess of the 5 year, the spoil overflows will prevent passing higher peak flows downstream than exist now. As a result, there is no significant effect anticipated on fish or wildlife resources.

The proposed improvement should have insignificant to no impact on shallow ground water resources.

All things considered the overall environmental impact of the project is anticipated to be limited to the period of construction, with no long-term adverse impacts.

Permitting

The only anticipated permits for the project will be for a Stormwater Pollution Prevention permit from the Minnesota Pollution Prevention Control Agency, from the Kittson County Highway Department and for a Two Rivers Watershed District permit.

Conclusions and Recommendations

It does appear that the project as presented in this report, requested by the petitioners, has the potential to be feasible to construct. There are water quality grant programs which could potentially be used for portions of the project. This would pertain to the work to install side water inlets, berm area and seeding of the berm area. The potential for these grants should be explored if the project moves forward.

Appendix A

Petition & Amendment

Kittson County Ditch 7 Improvement

PETITION FOR IMPROVEMENTS TO KITTSOON COUNTY DITCH 7

BEFORE THE DRAINAGE AUTHORITY OF TWO RIVERS WATERSHED BOARD

TWO RIVERS WATERSHED DISTRICT, KITTSOON COUNTY

1. That they collectively, represent the majority of the owners of the property of the proposed drainage improvement described herein passes over or that they collectively own at least 60% of the area of the land over which the proposed improvement passes, measured in both cases by 40 acre tracts or government lots.
2. Petitioners propose to improve drainage along a 4.7 mile section of Kittson County Ditch 7 starting at the eastern edge of Svea sections 14\23 and going westward to the western edge of Svea sections 16\20. Improvement of grade from high point to low point, eliminating flat sections, and improvement/addition of ditch capacity to handle upstream peak flows.
3. Proposed improvement is necessary due to repeated events where inadequate capacity of County Ditch 7 causes waters to breach the ditch system and spill onto ag lands. Lands significantly affected by flooding includes Svea sections 14, 21 and 23. Also due to the inadequate capacity, rainfall added to the spilled ditch system waters does not have timely access to the ditch system, adding to the significant financial hardships from crop loss.
4. The proposed improvement will benefit 10 land owners, including one residence by providing more timely run off of heavy rainfalls
5. The petitioners will pay all costs of the proceedings if the proceedings are dismissed or the contract for the improvements to the drainage system is not awarded
6. The petitioners provide herewith a corporate surety bond in the face amount of \$25,000 payable to the drainage authority, said bond conditioned to pay the costs incurred if the proceedings are dismissed or a contract is not awarded to perform the improvements proposed in this petition. Petitioners covenant that they will not allow the costs incurred to exceed the amount of the bond and that they will cause additional bond to be filed if it appears that the costs will exceed the bond submitted herewith.
7. We, the following petitioners, request that the drainage authority proceed as authorized by law toward the construction of the drainage improvement herein.
8. I HAVE BEEN INFORMED, AND I UNDERSTAND THAT I MAY NOT WITHDRAW AS A PETITIONER AT ANY TIME AFTER THIS PETITION HAS BEEN FILED. I ALSO UNDERSTAND THAT IF THE PROPOSED DRAINAGE IMPROVEMENT PROJECT IS NOT CONSTRUCTED, I AM, AND

EACH OTHER PETITIONER IS, LIABLE TO THE DRAINAGE AUTHORITY FOR ALL THE COSTS
INCURRED INCLUDING ENGINEERING, LEGAL, AND AUDITOR'S FEES.

This petition is prepared by:

SCOTT KLEIN

1946 200TH ST.

HALLOCK MN 56128

In re Petition for Improvement of Ditch 7 Svea twp
 Tract description _____
 Ownership (check one) A 1/2 23 Svea & S 1/2 15 Svea twp.
☒ Individual _____
 _____ Partner. Name of Partnership _____
 _____ Co-owner. How many _____
 _____ Corporation. Name of corporation _____
 _____ Trust. Name of Trust _____
 _____ How many trustees _____

<u>Kurt Krandib</u>	<u>owner</u>	<u>3-9-21</u>	_____
signature	title	date	
_____	_____	_____	_____
signature	title	date	
_____	_____	_____	_____
signature	title	date	
_____	_____	_____	_____

In re Petition for _____
 Tract description _____
 ownership (check one)
 _____ Individual _____
 _____ Partner. Name of Partnership _____
 _____ Co-owner. How many _____
 _____ Corporation. Name of corporation _____
 _____ Trust. Name of Trust _____
 _____ How many trustees _____

_____	_____	_____	_____
signature	title	date	
_____	_____	_____	_____
signature	title	date	
_____	_____	_____	_____
signature	title	date	
_____	_____	_____	_____
signature	title	date	

In re Petition for Ditch # 7 Improvement
Tract description _____
Ownership (check one)
☒ Individual
____ Partner. Name of Partnership _____
____ Co-owner. How many _____
____ Corporation. Name of corporation _____
____ Trust. Name of Trust _____
____ How many trustees _____

Martha Joy Roberts 5/10/22
signature title date 3-22-21

signature title date

signature title date

signature title date

In re Petition for Ditch # 7 Improvement
Tract description _____
ownership (check one)
☒ Individual
____ Partner. Name of Partnership _____
____ Co-owner. How many _____
____ Corporation. Name of corporation _____
____ Trust. Name of Trust _____
____ How many trustees _____

Eric C. Anderson 5/10/22
signature title date 3-16-2021

signature title date

signature title date

signature title date

In re Petition for IMPROVEMENT TO KC BIRCH 7

Tract description

Ownership (check one)

☒ Individual

____ Partner. Name of Partnership _____

____ Co-owner. How many _____

____ Corporation. Name of corporation _____

____ Trust. Name of Trust _____

How many trustees _____

SUBA SECTION 21

Tina Blount owner 3-10-2021
signature title date

____ signature title date

____ signature title date

____ signature title date

In re Petition for _____

Tract description

ownership (check one)

____ Individual

____ Partner. Name of Partnership _____

____ Co-owner. How many _____

____ Corporation. Name of corporation _____

____ Trust. Name of Trust _____

How many trustees _____

____ signature title date

____ signature title date

____ signature title date

____ signature title date

In re Petition for IMPROVEMENT TO CRY DITCH 7

Tract description

Ownership (check one) SE 1/4 SUEA 16.

☒ Individual

☐ Partner. Name of Partnership _____

☐ Co-owner. How many _____

☐ Corporation. Name of corporation _____

☐ Trust. Name of Trust _____

☐ How many trustees _____

John OWNER 3-9-21
signature title date

signature title date

signature title date

signature title date

In re Petition for _____

Tract description

ownership (check one)

☐ Individual

☐ Partner. Name of Partnership _____

☐ Co-owner. How many _____

☐ Corporation. Name of corporation _____

☐ Trust. Name of Trust _____

☐ How many trustees _____

signature title date

signature title date

signature title date

signature title date

In re Petition for Improvement Ditch 7
Tract description E 1/2 of Sec 20 & SW of Sec 17
Ownership (check one)
☒ Individual
____ Partner. Name of Partnership _____
____ Co-owner. How many _____
____ Corporation. Name of corporation _____
____ Trust. Name of Trust _____
____ How many trustees _____

Florence Dahlman 3/8/21
signature title date

signature title date

signature title date

signature title date

In re Petition for _____
Tract description _____
ownership (check one)
____ Individual
____ Partner. Name of Partnership _____
____ Co-owner. How many _____
____ Corporation. Name of corporation _____
____ Trust. Name of Trust _____
____ How many trustees _____

signature title date

signature title date

signature title date

signature title date

LICENSE AND PERMIT BOND

Not Valid for Contract, Performance, Maintenance, Subdivision,
Agent to Sell Hunting and Fishing Licenses or Utility Guarantee Bonds.

KNOW ALL MEN BY THESE PRESENTS:

That we, Scott Klein, Kurt Kraulik, Timothy Bloomquist, Cory Grochowski, Brian Anderson, as Principal, and the Auto Owners _____, a corporation duly licensed to do business in the state of Minnesota, as Surety, are held and firmly bound unto Two River Watershed District _____ as Obligee, in the amount of Twenty Five Thousand _____ Dollars (\$25,000), lawful money of the United States of America, to be paid to said Obligee, for which payment well and truly to be made, we bind ourselves and our legal representatives, jointly and severally,

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas, the Principal has been licensed as a _____ Contractor for Ditch Cleaning of County Ditch 7 Kittson County _____ by the Obligee,

NOW, THEREFORE, if the Principal shall faithfully perform the duties and comply with the laws and ordinances (including all amendments) pertaining to the license or permit, then this obligation shall be void; otherwise to remain in full force and effect for a period commencing on the 5th day of May, 2021, and ending on the 5th day of May, 2022, unless renewed by continuation certificate.

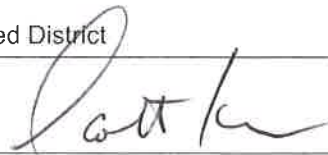
This bond may be terminated at any time by the Surety upon sending notice in writing to the Obligee and to the Principal, in care of the Obligee or at such other address as the Surety deems reasonable, and at the expiration of thirty (30) days from the mailing of notice or as soon thereafter as permitted by applicable law, whichever is later, this bond shall terminate and the Surety shall be relieved from any liability for any subsequent acts or omissions of the Principal.

SIGNED, SEALED and DATED this 5th day of May 2021.

Two River Watershed District

Principal

By Scott Klein



Auto-Owners Insurance Company

Surety

By Daniel Sjostrand



Attorney-in-Fact



STEVEN D SJOSTRAND
Notary Public
Minnesota
My Commission Expires
Jan 31, 2023



DATE AND ATTACH TO ORIGINAL BOND
AUTO-OWNERS INSURANCE COMPANY

LANSING, MICHIGAN
POWER OF ATTORNEY

NO. 66367482

KNOW ALL MEN BY THESE PRESENTS: That the AUTO-OWNERS INSURANCE COMPANY AT LANSING, MICHIGAN, a Michigan Corporation, having its principal office at Lansing, County of Eaton, State of Michigan, adopted the following Resolution by the directors of the Company on January 27, 1971, to wit:

"RESOLVED, That the President or any Vice President or Secretary or Assistant Secretary of the Company shall have the power and authority to appoint Attorneys-in-fact, and to authorize them to execute on behalf of the Company, and attach the seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity, and other writings obligatory in the nature thereof. Signatures of officers and seal of Company imprinted on such powers of attorney by facsimile shall have same force and effect as if manually affixed. Said officers may at any time remove and revoke the authority of any such appointee."

Does hereby constitute and appoint STEVEN D SJOSTRAND

its true and lawful attorney(s)-in-fact, to execute, seal and deliver for and on its behalf as surety, any and all bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof, and the execution of such instrument(s) shall be as binding upon the AUTO-OWNERS INSURANCE COMPANY AT LANSING, MICHIGAN as fully and amply, to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at its principal office.

IN WITNESS WHEREOF, the AUTO-OWNERS INSURANCE COMPANY AT LANSING, MICHIGAN, has caused this to be signed by its authorized officer this 1st day of August, 2016.

Denise Williams

Denise Williams

Senior Vice President

STATE OF MICHIGAN }
COUNTY OF EATON } ss.

On this 1st day of August, 2016, before me personally came Denise Williams, to me known, who being duly sworn, did depose and say that they are Denise Williams, Senior Vice President of AUTO-OWNERS INSURANCE COMPANY, the corporation described in and which executed the above instrument, that they know the seal of said corporation, that the seal affixed to said instrument is such Corporate Seal, and that they received said instrument on behalf of the corporation by authority of their office pursuant to a Resolution of the Board of Directors of said corporation.



My commission expires March 10, 2022

Susan E. Theisen

Susan E. Theisen

Notary Public

STATE OF MICHIGAN }
COUNTY OF EATON } ss.

I, the undersigned First Vice President, Secretary and General Counsel of AUTO-OWNERS INSURANCE COMPANY, do hereby certify that the authority to issue a power of attorney as outlined in the above board of directors resolution remains in full force and effect as written and has not been revoked and the resolution as set forth is now in force.

Signed and sealed at Lansing, Michigan. Dated this 5th day of May, 2021.



William F. Woodbury

William F. Woodbury, First Vice President, Secretary and General Counsel



LIFE • HOME • CAR • BUSINESS

Agency: STEVEN SJOSTRAND AGENCY LLC
PO BOX 844
HALLOCK, MN 56728-0844

EXECUTION REPORT
(Detach and return with a copy of original bond.)

Bond Number 66367482

Agency Code: 06-0265-00
Agency Phone Number: (218) 843-2697

Name of Principal	<u>SCOTT KLEIN, KURT KRAULIK, TIMOTHY BLOOMQUIST, CORY G</u>	Effective Date	<u>05/05/2021</u>
Mailing Address	<u>1946 200TH ST, HALLOCK, MN 56728-423</u>	Premium Charge	<u>\$540.00</u>
Name of Obligor	<u>TWO RIVER WATERSHED DISTRICT</u>	Amount of Bond	<u>\$25,000.00</u>
Address of Obligor	<u>410 5TH ST SE, HALLOCK, MN 56728-4140</u>	Type of Bond	<u>License/Permit</u>

COMPLETE AND ATTACH ALL PAPERS UNDER THIS REPORT THE SAME DAY THE BOND IS SIGNED

NOTICE OF PRIVACY PRACTICES

What We Do To Protect Your Privacy

At Auto-Owners Insurance Group*, we value your business and we want to retain your trust. In the course of providing products and services, we may obtain nonpublic personal information about you. We assure you that such information is used only for the purpose of providing our products and services to you.

Protecting Confidentiality

Our agents and Company associates may have access to nonpublic personal information only for the purpose of providing our products or services to you. We maintain physical, electronic and procedural safeguards against unauthorized use of your nonpublic personal information.

Information We Obtain

To assist in underwriting and servicing your policy, we may obtain nonpublic personal information about you. For example, we routinely obtain information through applications, forms related to our products or services, from visiting www.auto-owners.com, and your transactions with us. We may obtain such information from our affiliates, independent insurance agents, governmental agencies, third parties, or consumer reporting agencies.

The type of information that we collect depends on the product or service requested, but may include your name, address, contact information, social security number, credit history, claims history, information to properly investigate and resolve any claims, or billing information. We may obtain your medical history with your permission. The nature and extent of the information we obtain varies based on the nature of the products and services you receive.

The Internet and Your Information

If you would like to learn about how we gather and protect your information over the Internet, please see our online privacy statement at www.auto-owners.com/privacy.

Generally, Auto-Owners may use cookies, analytics, and other technologies to help us provide users with better service and a more customized web experience. Our business partners may use tracking services, analytics, and other technologies to monitor visits to www.auto-owners.com. The website may use web beacons in addition to cookies. You may choose to not accept cookies by changing the settings in your web browser.

Information obtained on our websites may include IP address, browser and platform types, domain names, access times, referral data, and your activity while using our site; who should use our web site; the security of information over the Internet; and links and co-branded sites.

Limited Disclosure

Auto-Owners Insurance Group companies do not disclose any nonpublic personal information about their customers or former customers except as permitted by law. We do not sell your personal information to anyone. We do not offer an opportunity for you to prevent or "opt out of" information sharing since we only share personal information with others as allowed by law.

When sharing information with third parties to help us conduct our business, we require them to protect your personal information. We do not permit them to use or share your personal information for any purpose other than the work they are doing on our behalf or as required by law.

The types of information disclosed may include personal information we collect as necessary to service your policy or account, investigate and pay claims, comply with state and federal regulatory requests or demands, and process other transactions that you request. Third parties that receive disclosures may include your independent agent, regulators, reinsurance companies, fraud prevention agencies, or insurance adjusters.

How Long We Retain Your Information

We generally retain your information as long as reasonably necessary to provide you services or to comply with applicable law and in accordance with our document retention policy. We may retain copies of information about you and any transactions or services you have used for a period of time that is consistent with applicable law, applicable statute of limitations or as we believe is reasonably necessary to comply with applicable law, regulation, legal process or governmental request, to detect or prevent fraud, to collect fees owed, to resolve disputes, to address problems with our services, to assist with investigations, to enforce other applicable agreements or policies or to take any other actions consistent with applicable law.

In some circumstances we may anonymize your personal information (so that it can no longer be associated with you) for research or statistical purposes, in which case we may use this information indefinitely without further notice to you. This allows the specific information collected (name, email, address, phone number, etc.) to become anonymous, but allows Auto-Owners to keep the transaction or engagement data.

Changes to the Privacy Policy

We will provide a notice of our privacy policy as required by law. This policy may change from time to time, but you can always review our current policy by visiting our website at www.auto-owners.com/privacy or by contacting us.

Contact Us

Auto-Owners Insurance Company
Phone: 844-359-4595 (toll free)
Email: privacyrequest@aoins.com

*Auto-Owners Insurance Group includes, Auto-Owners Insurance Company, Auto-Owners Life Insurance Company, Home-Owners Insurance Company, Owners Insurance Company, Property-Owners Insurance Company and Southern-Owners Insurance Company.

AMMENDMENT TO "PETITION FOR IMPROVEMETNS TO KITTSOON COUNTY DITCH 7

BEFORE THE BOARD OF MANAGERS OF THE TWO RIVERS WATERSHED DISTRICT (DRAINAGE AUTHORITY)

Whereas, the 'Petition For Improvements To Kittson County Ditch #7' was presented to the Two Rivers Watershed District on May 6, 2021, and

Whereas, the Board of Managers of the Two Rivers Watershed District accepted and approved the petition pending formal review by the District Attorney, Jeff Hane, and

Whereas, Mr. Hane identified a discrepancy in item #2 in the petition that identifies a 4.7 mile long project but describes it to be only 3 miles, and

Whereas, it is in the best interest of both the project petitioners and the Two Rivers Watershed District to accurately describe the extent of the project.

Now, Therefore, the project petitioners agree to strike the language from item number 2 of the original petition and replace it with the following:

2. Petitioners propose to improve drainage along a 4.7 mile section of Kittson County Ditch 7 starting at the eastern edge of Svea Township, sections 14/23 and going westward to the outlet of the ditch at the junction of Judicial Ditch #10 in the NW ¼, NE ¼, NW ¼ Section 19 Svea Township, Kittson County, MN. The project proposes to improve the grade of the ditch from high point to low point, ellminating flat sections, and improvement / addition of ditch capacity to handle upstream peak flows.

Be it also resolved that each of the original petitioners approve of this change by signing below:

Kurt Kraulik
Kurt Kraulik, Landowner N ½ Svea 23 and S ½ Svea 15

5/24/21
Date

Martha Joy Roberts
Martha Joy Roberts, Landowner Svea Section 22

5-29-21
Date

Brian C. Anderson
Brian C. Anderson, Landowner Svea Section 22

5-24-2021
Date



Tim Bloomquist, Landowner Svea Section 21

5-29-21

Date



Scott Klein, Landowner SE ¼ Svea 16

6-1-21

Date



Florence Dahl, Landowner E1/2 of Svea 20 and of Svea 17

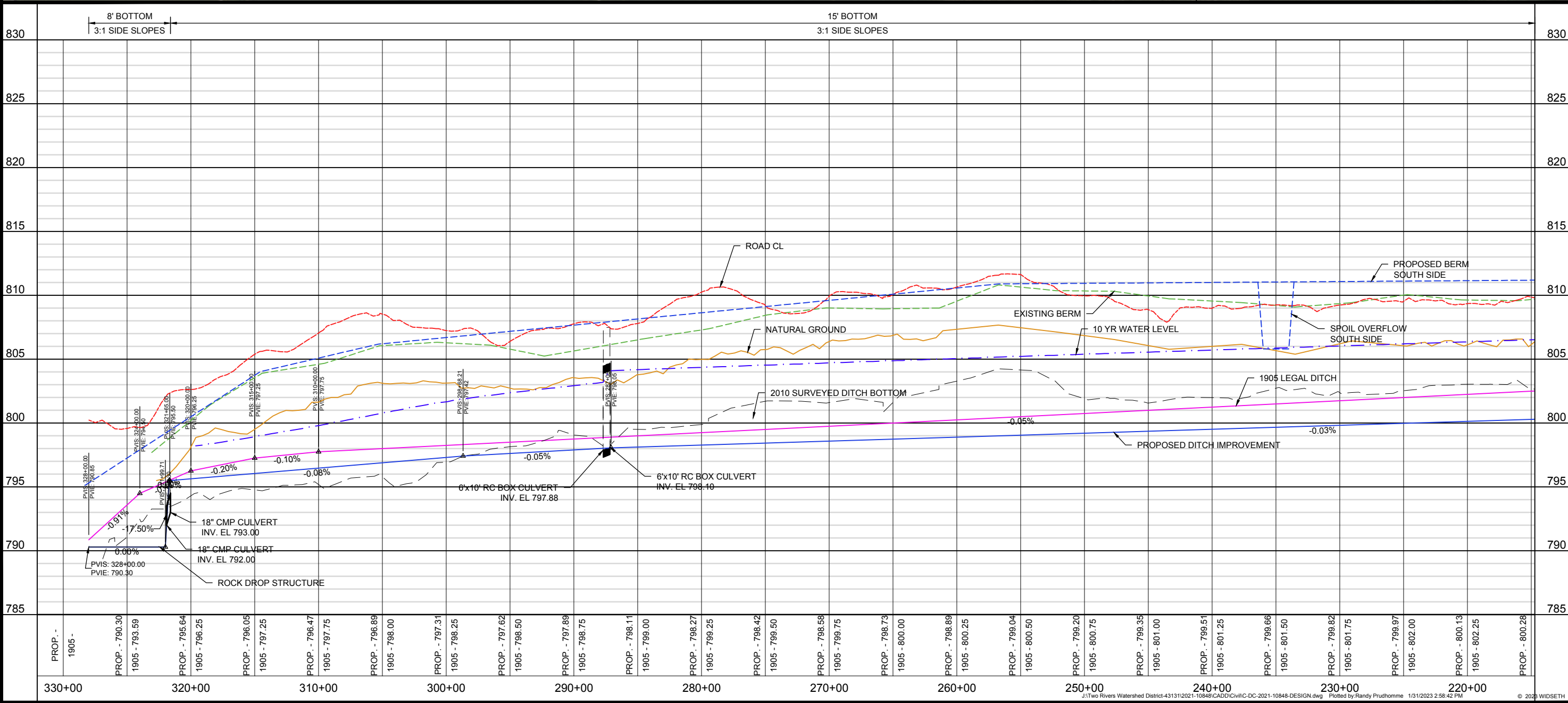
6/9/21

Date

Appendix B

Preliminary Plans

Kittson County Ditch 7 Improvement



WIDSETH
ARCHITECTS • ENGINEERS • SCIENTISTS • SURVEYORS

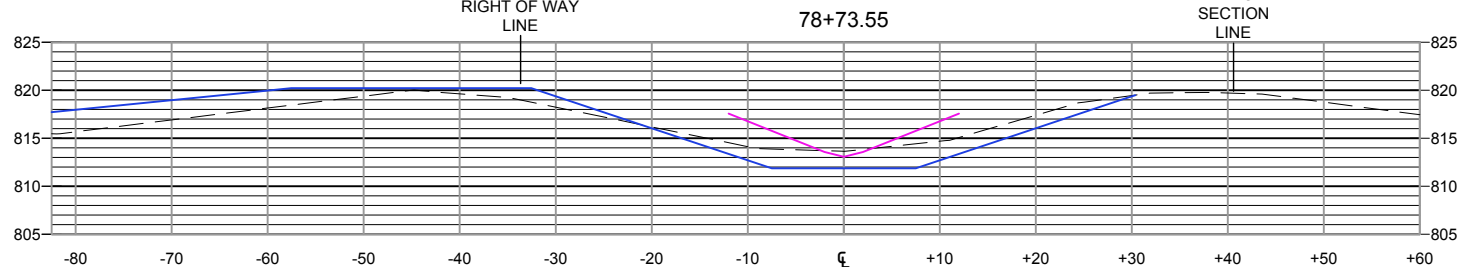
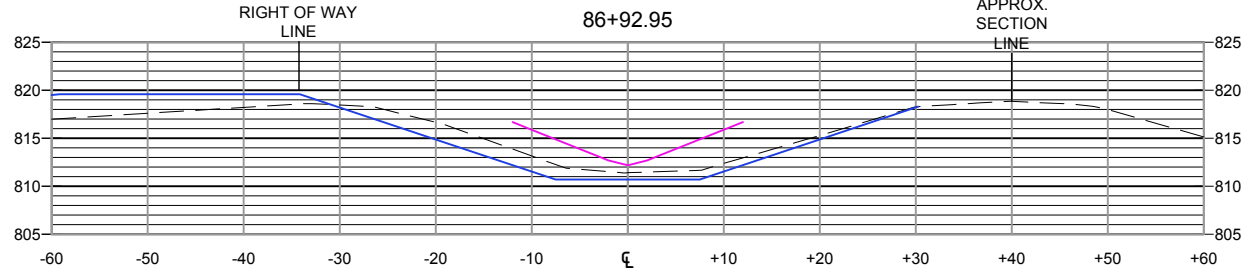
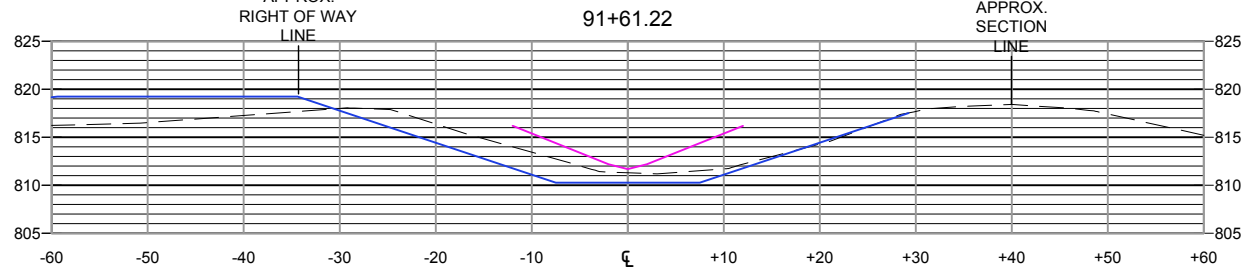
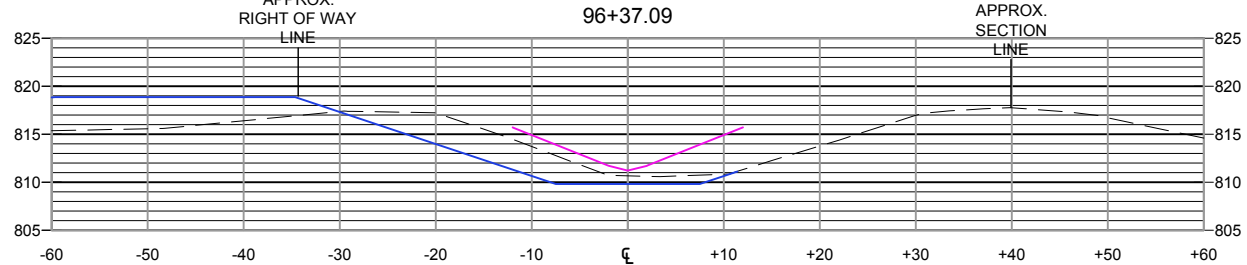
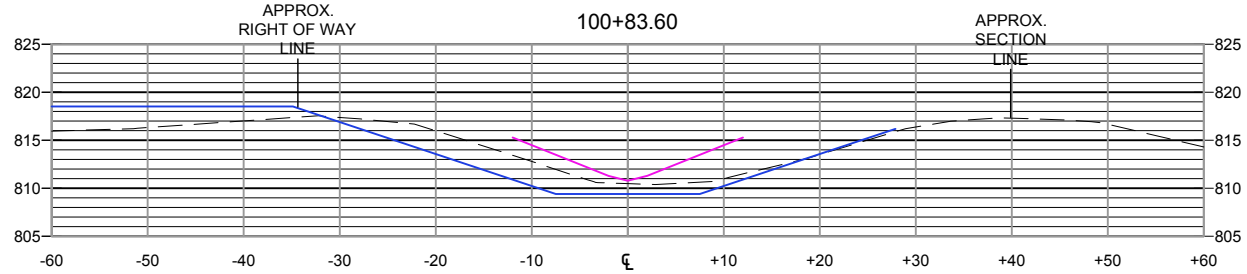
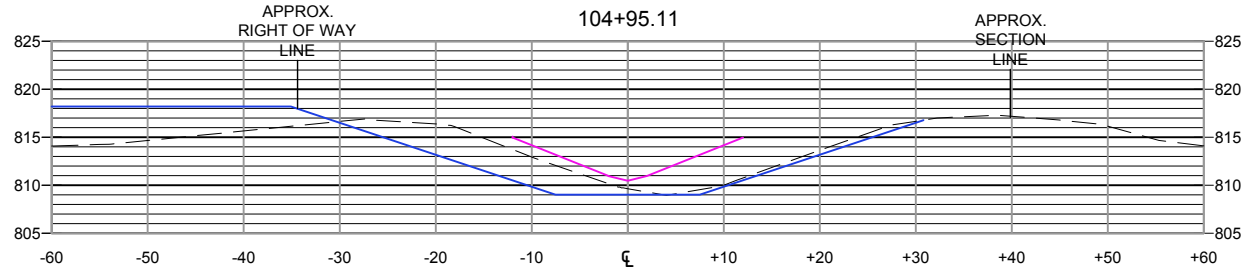
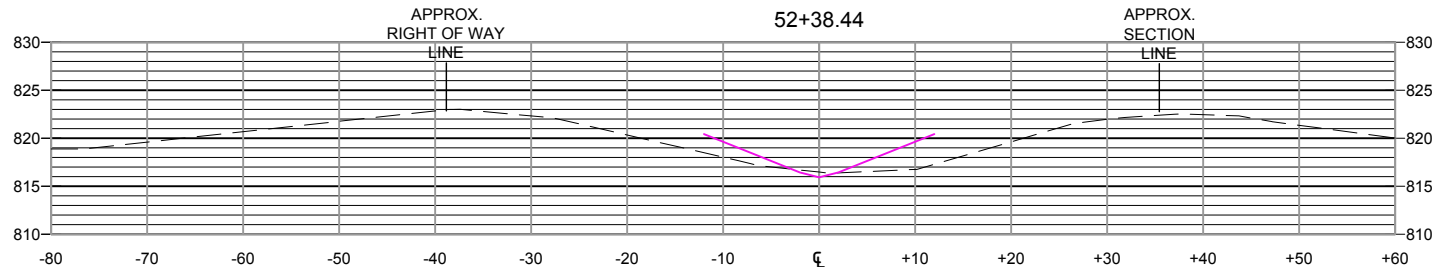
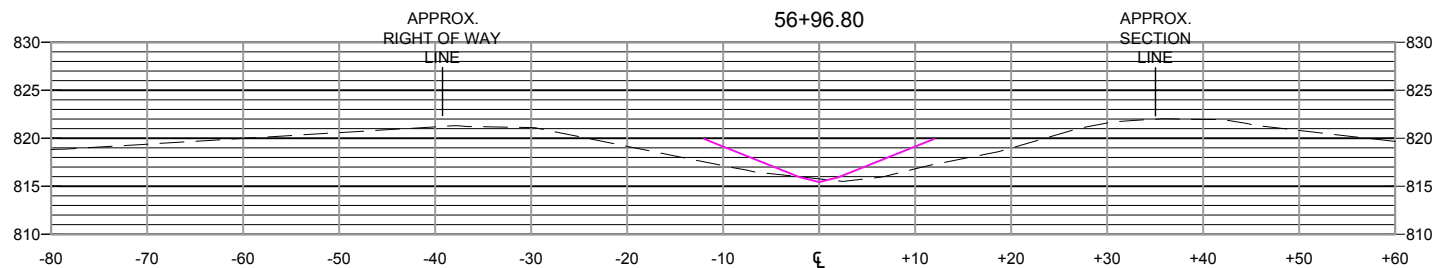
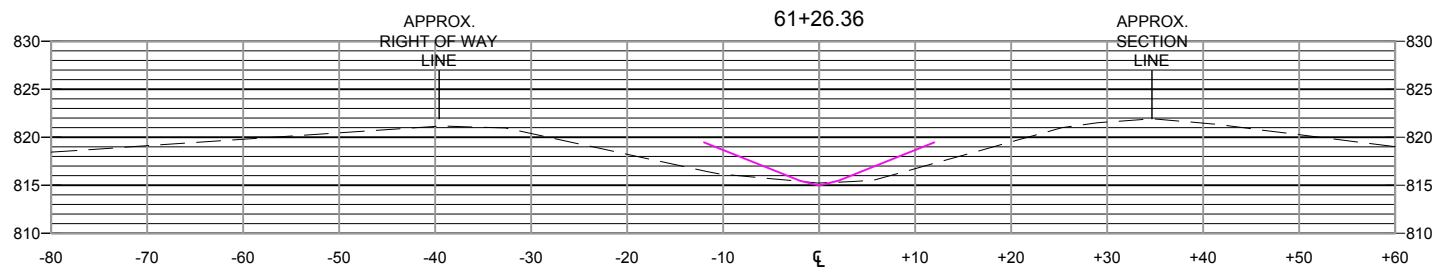
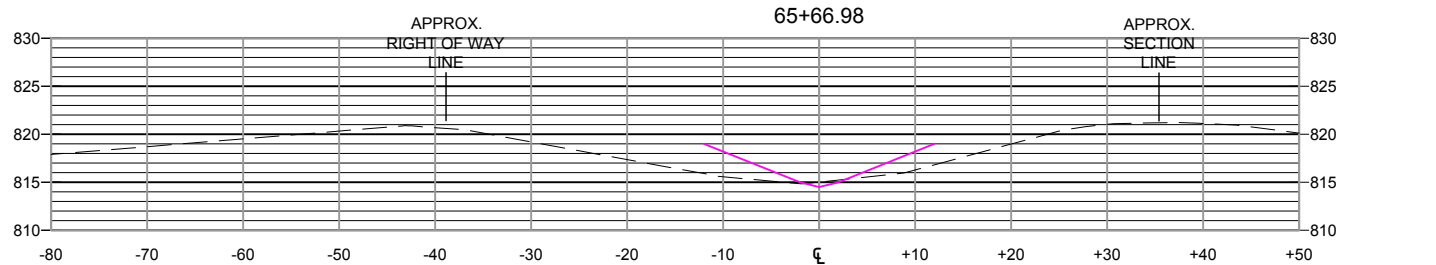
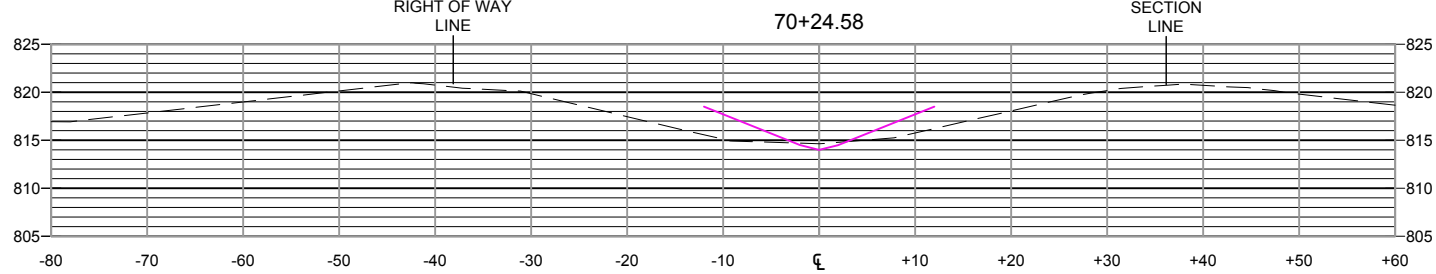
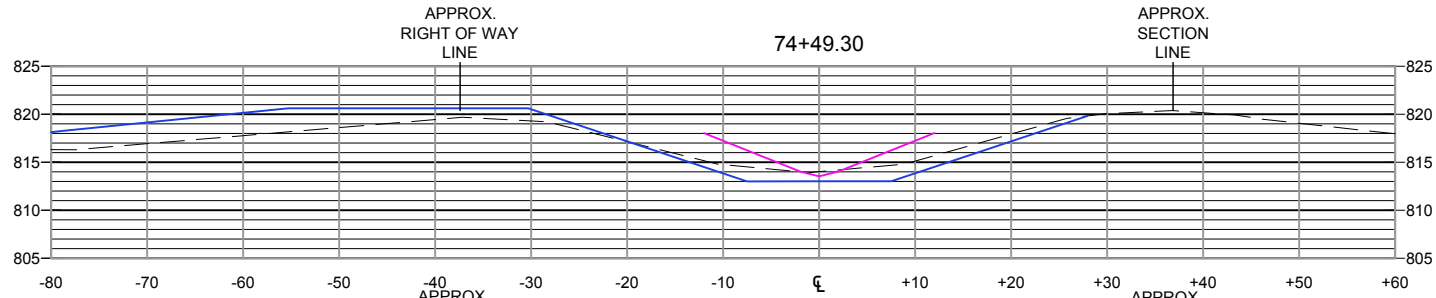
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BY: [Signature]
CHECKED BY: BAC
JOB NUMBER: 2021-10848

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BY: [Signature]
CHECKED BY: BAC
JOB NUMBER: 2021-10848

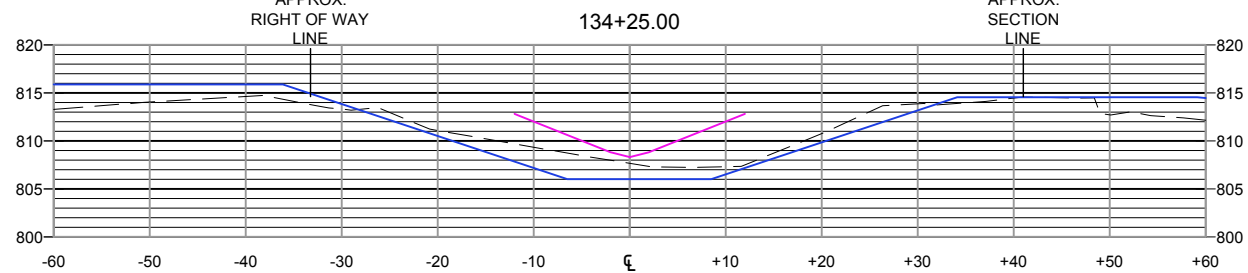
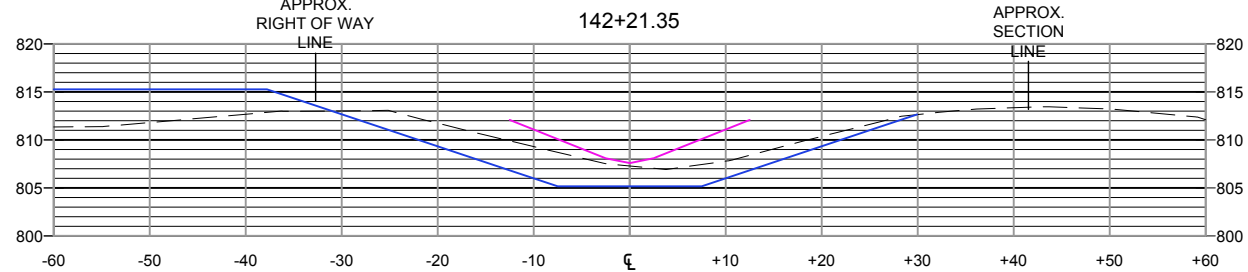
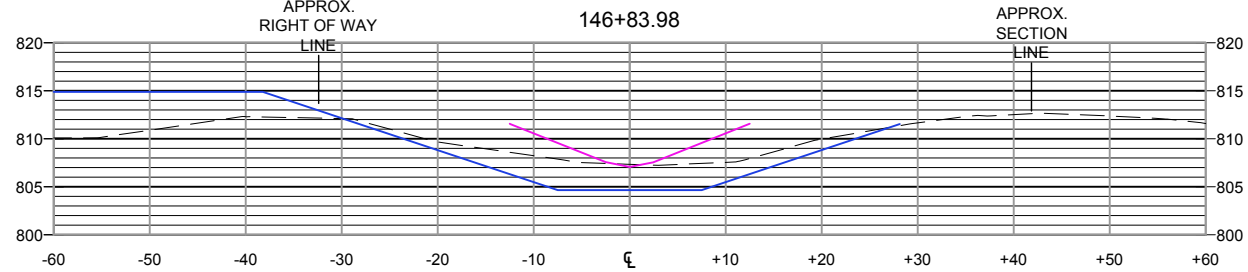
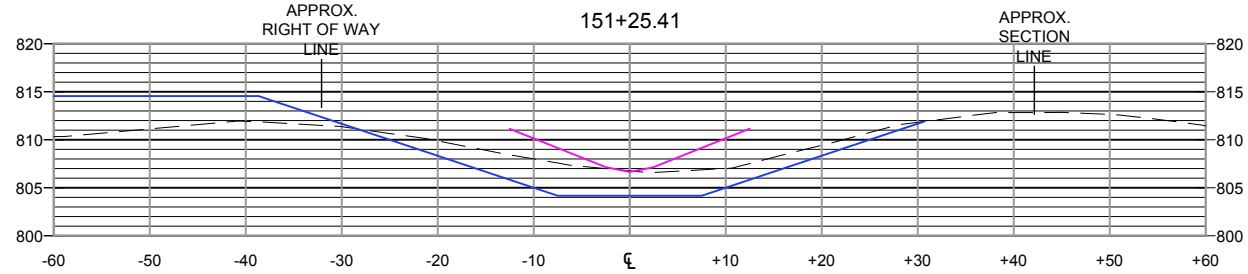
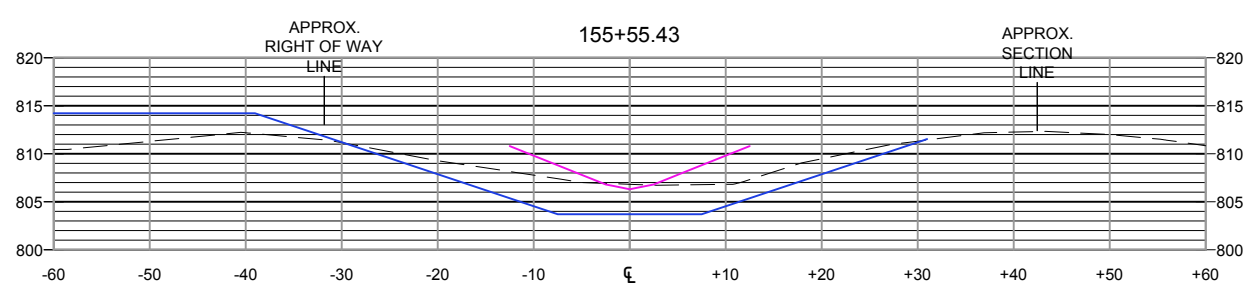
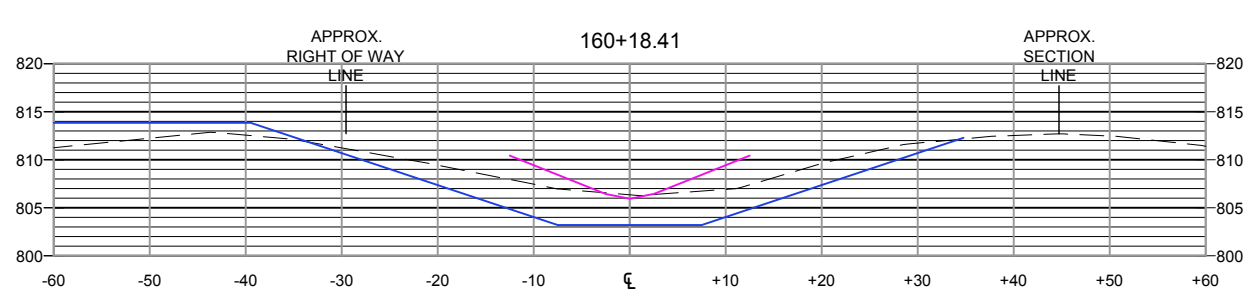
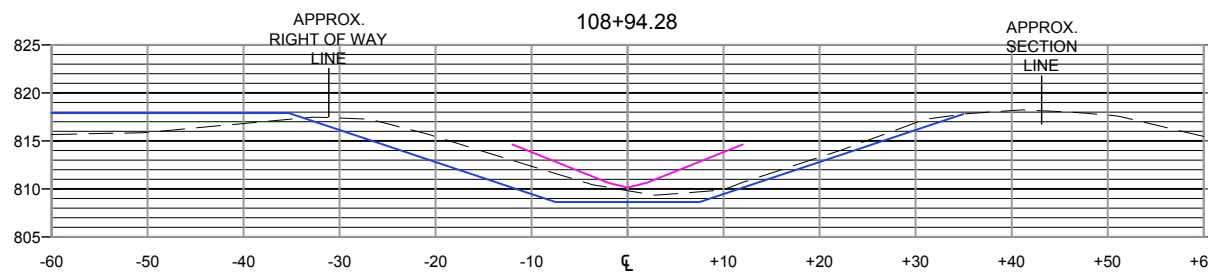
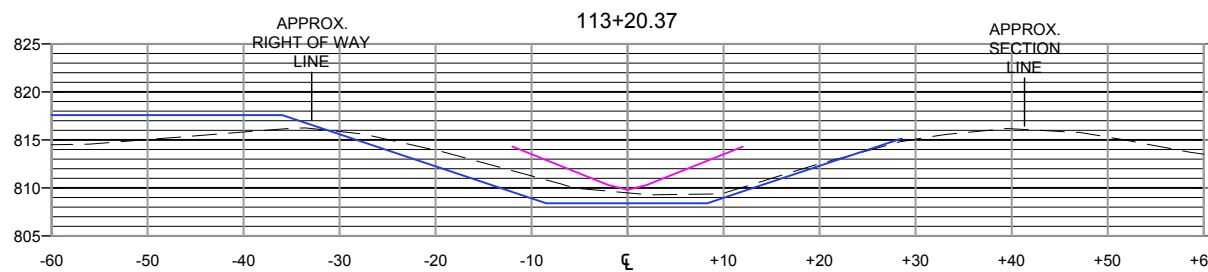
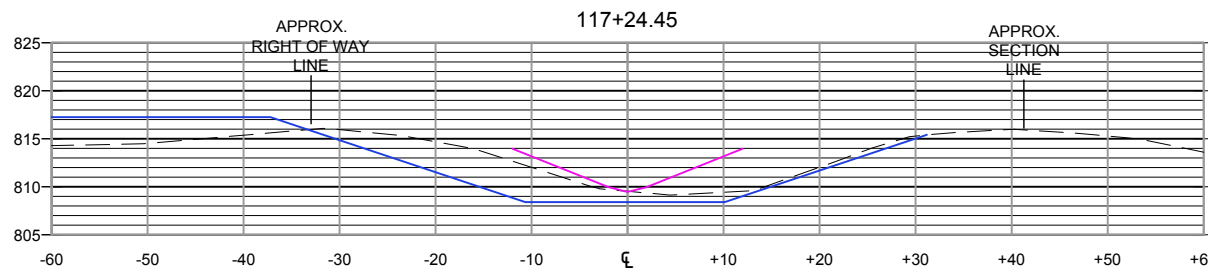
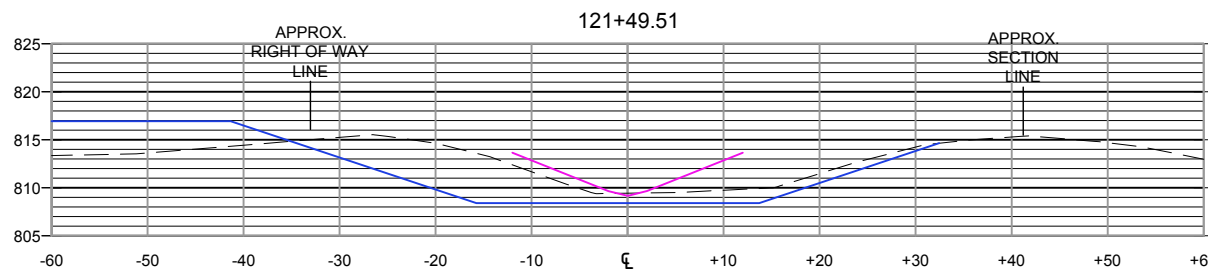
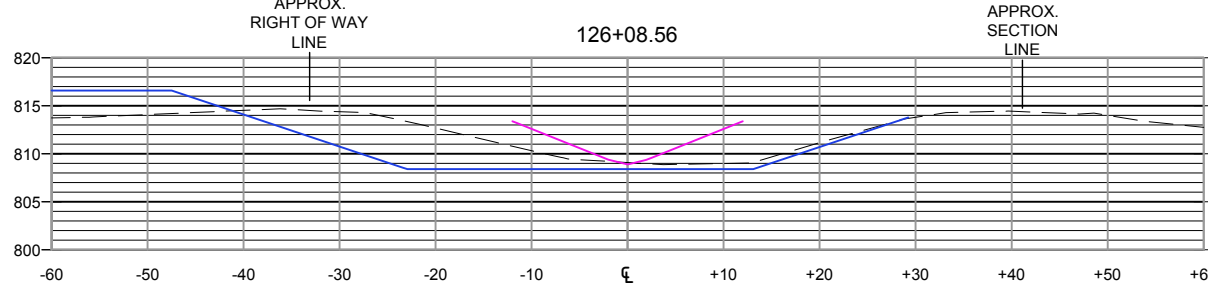
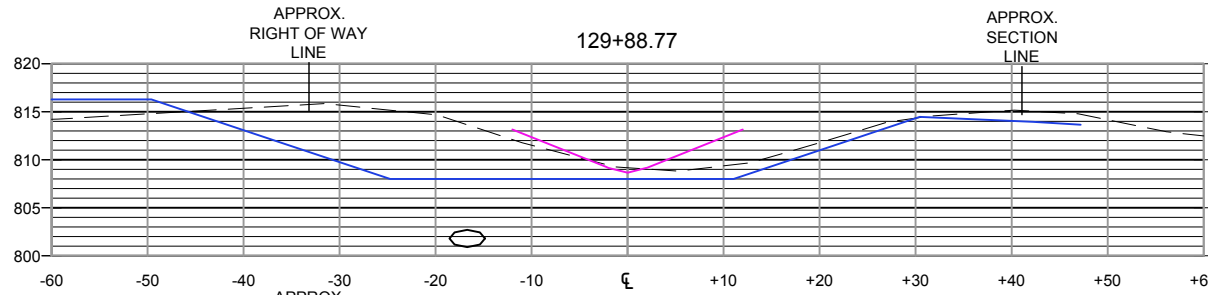
KITSON COUNTY DITCH #7
TWO RIVERS WATER SHED DISTRICT
KITSON COUNTY

SHEET NO. 03
SHEET 03 OF 10

--- 2010 SURVEY
--- 1905 LEGAL DITCH
--- PROPOSED DITCH IMPROVEMENT



--- 2010 SURVEY
--- 1905 LEGAL DITCH
--- PROPOSED DITCH IMPROVEMENT



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT
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THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER
THE LAWS OF THE STATE OF MINNESOTA

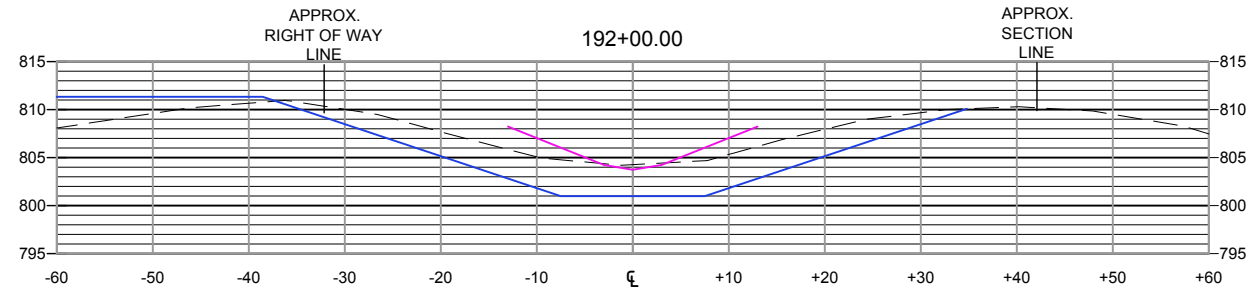
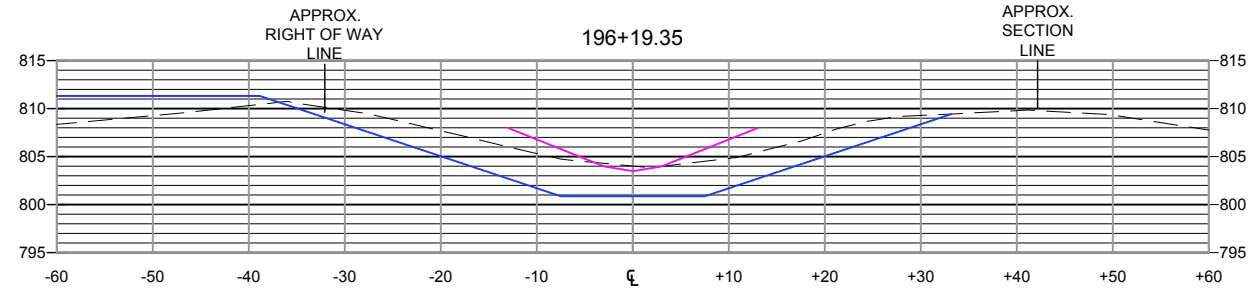
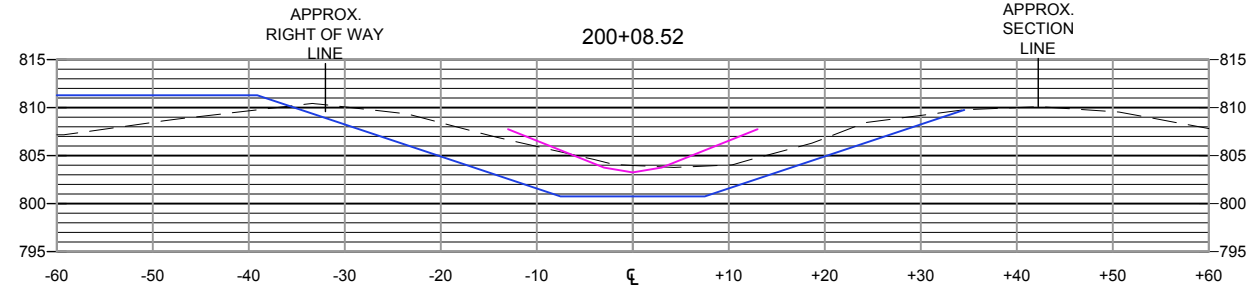
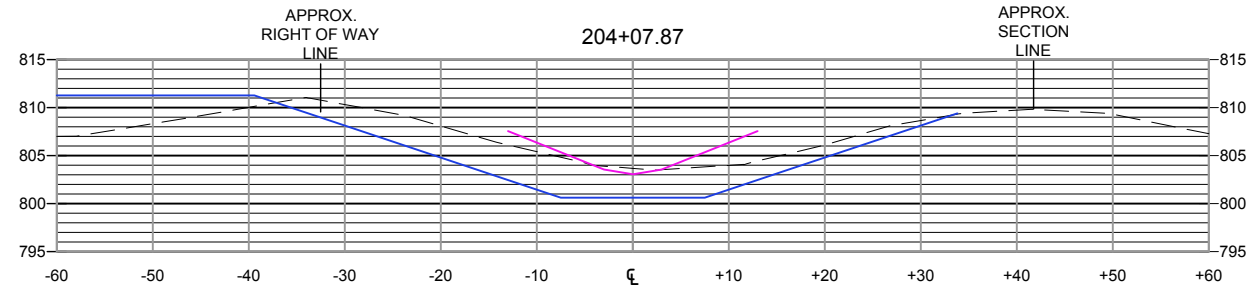
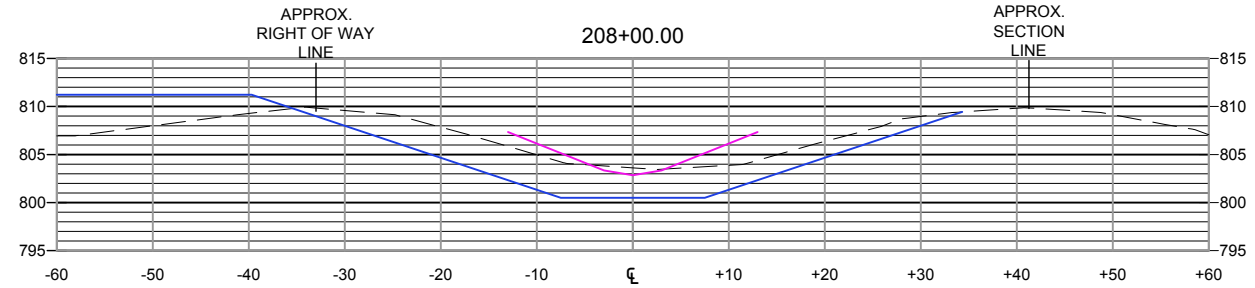
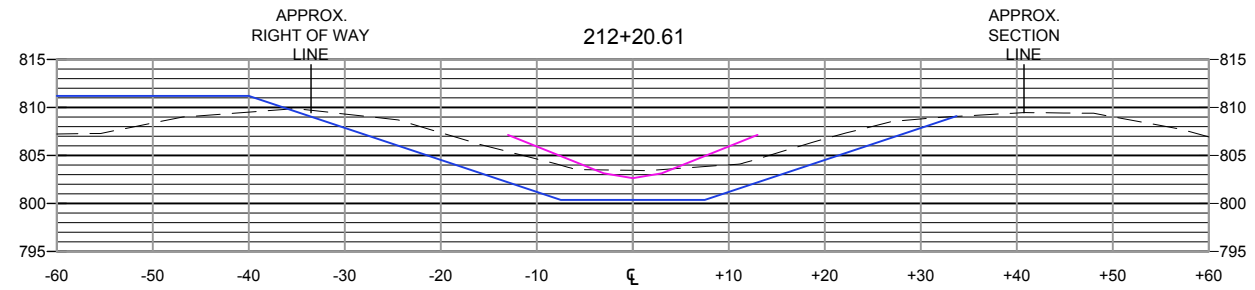
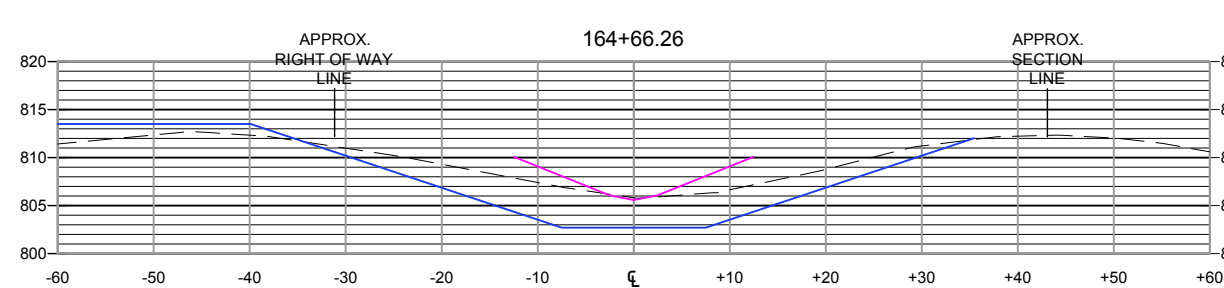
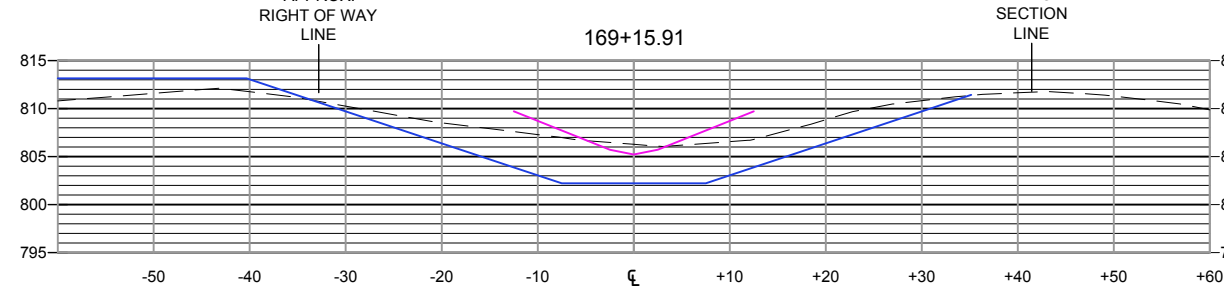
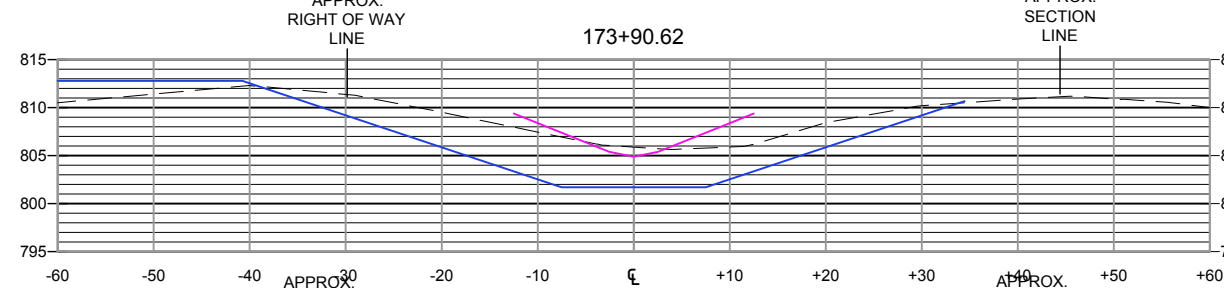
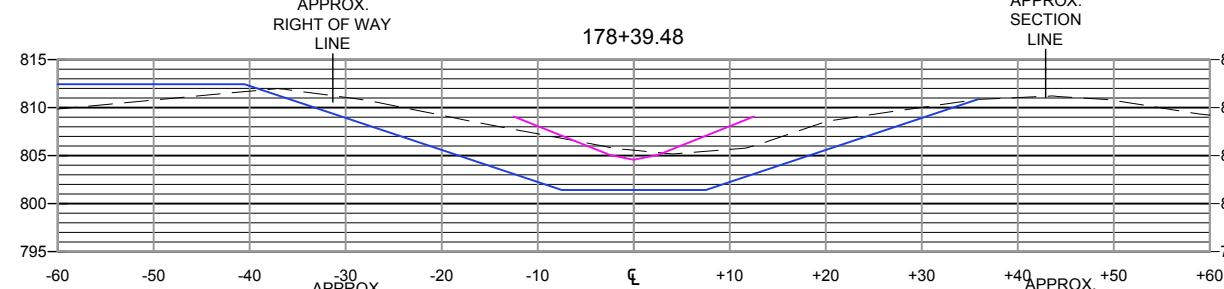
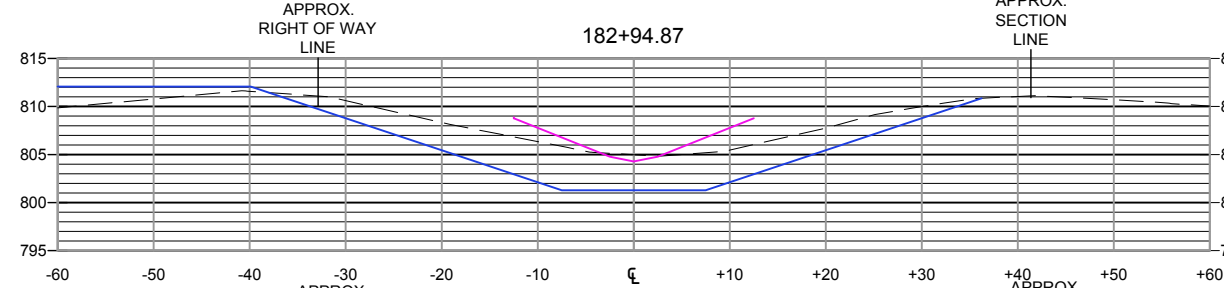
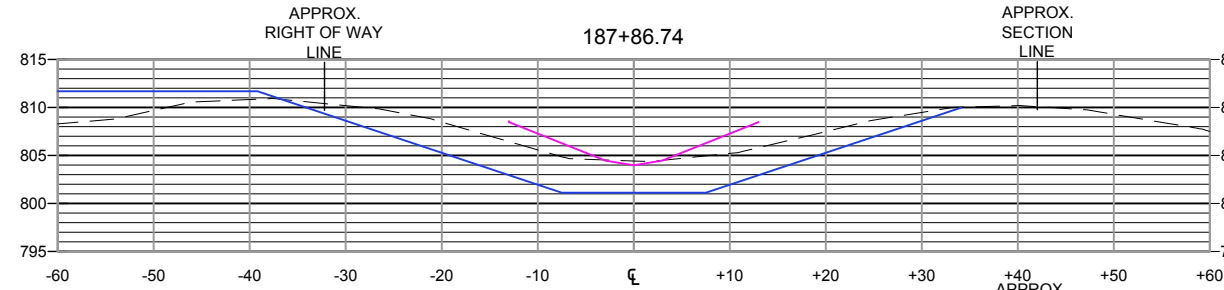
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BLAKE A. CARLSON

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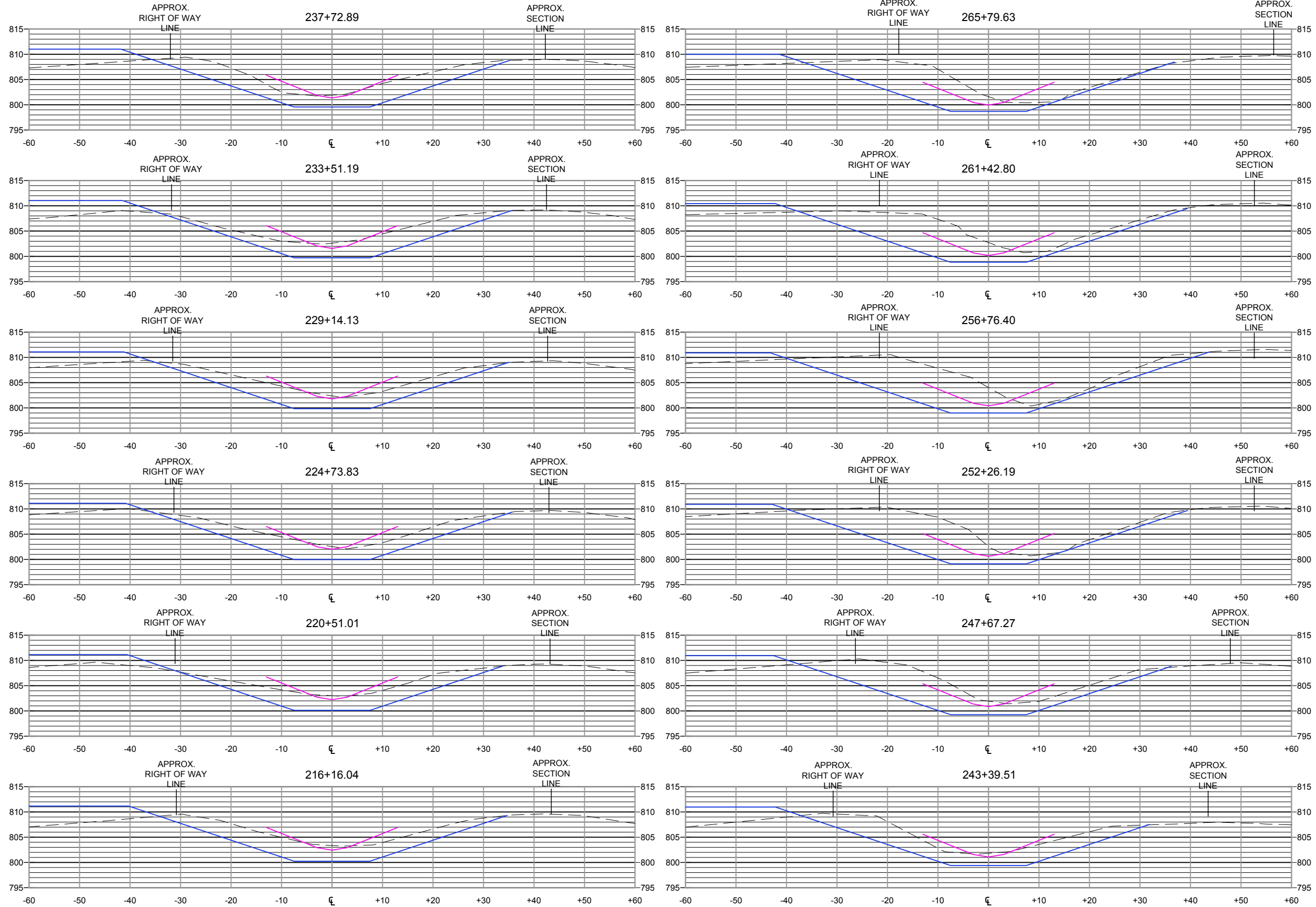
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CHECKED BY: BAC

KITSON COUNTY DITCH #7
TWO RIVERS WATER SHED DISTRICT
KITSON COUNTY
PLAND AND PRFILE

--- 2010 SURVEY
--- 1905 LEGAL DITCH
--- PROPOSED DITCH IMPROVEMENT



--- 2010 SURVEY
--- 1905 LEGAL DITCH
--- PROPOSED DITCH IMPROVEMENT



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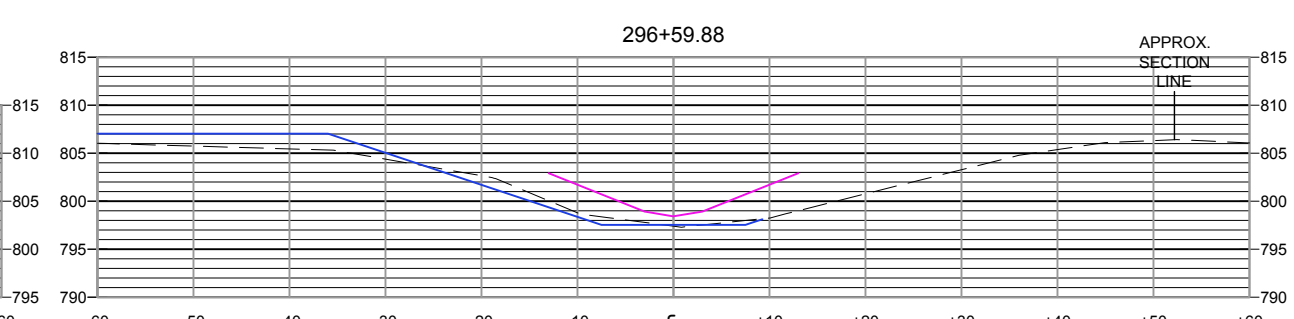
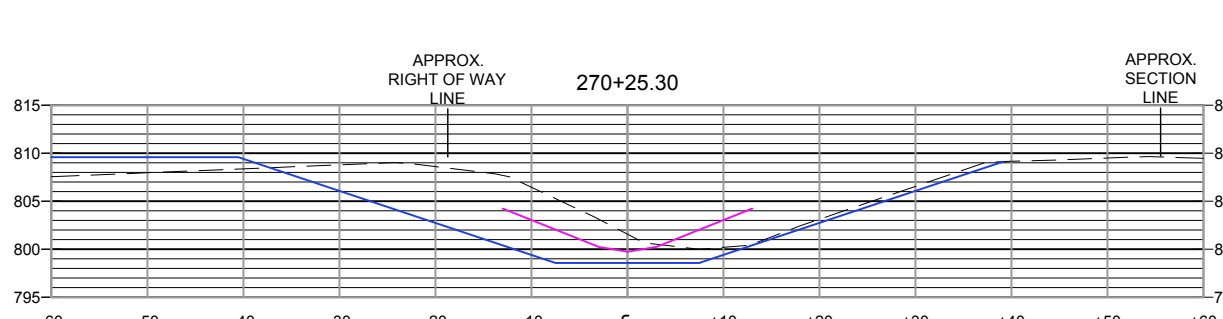
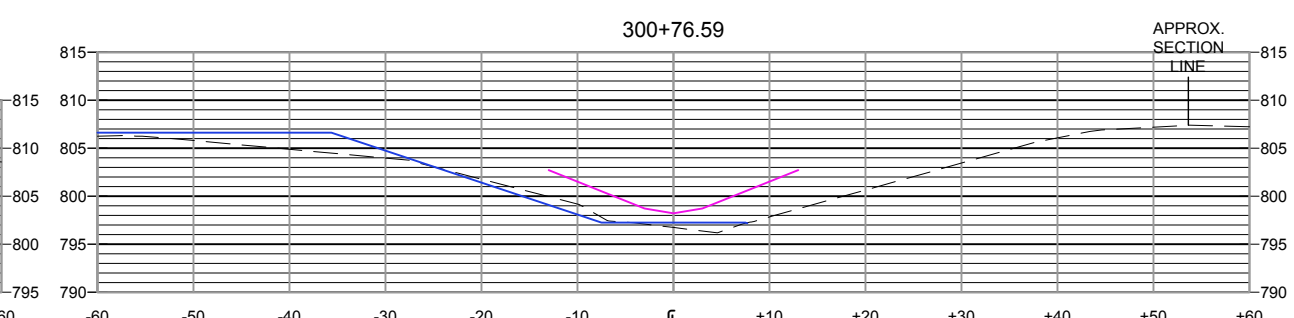
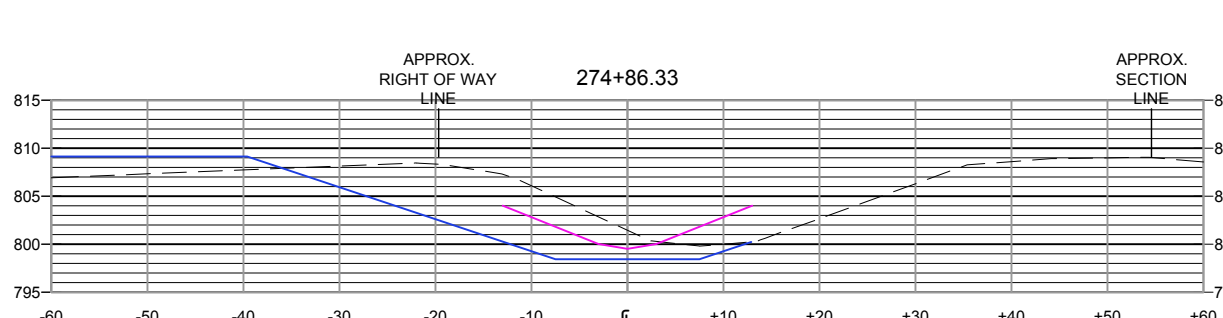
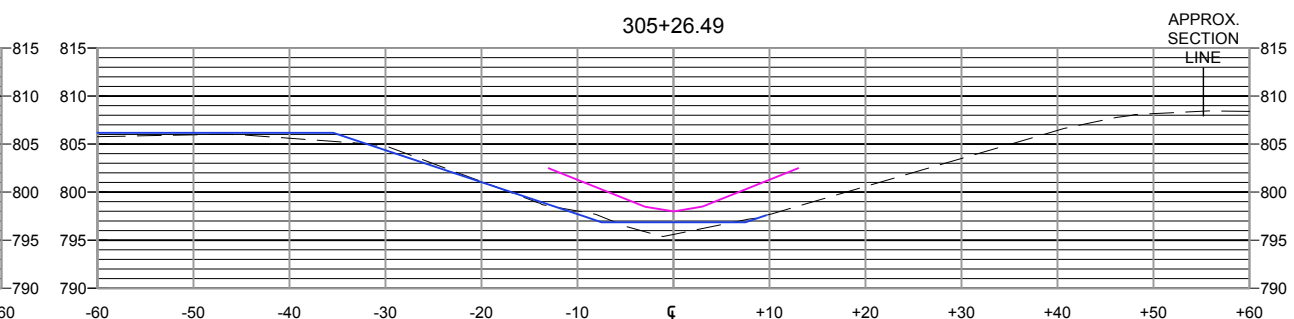
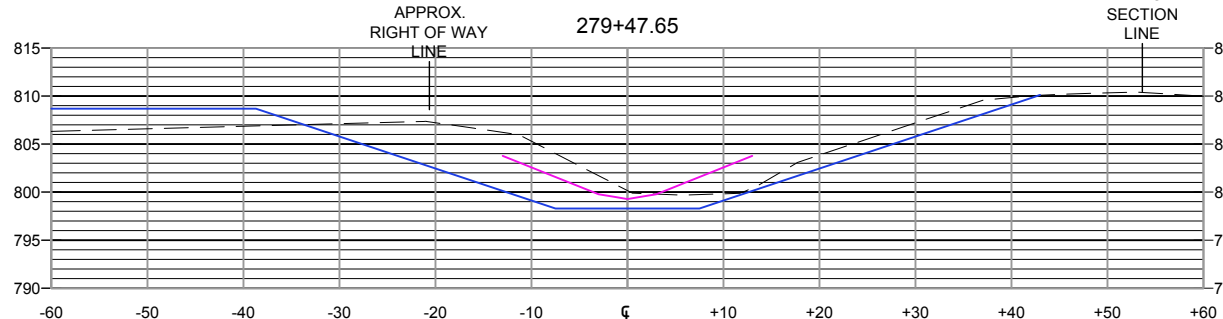
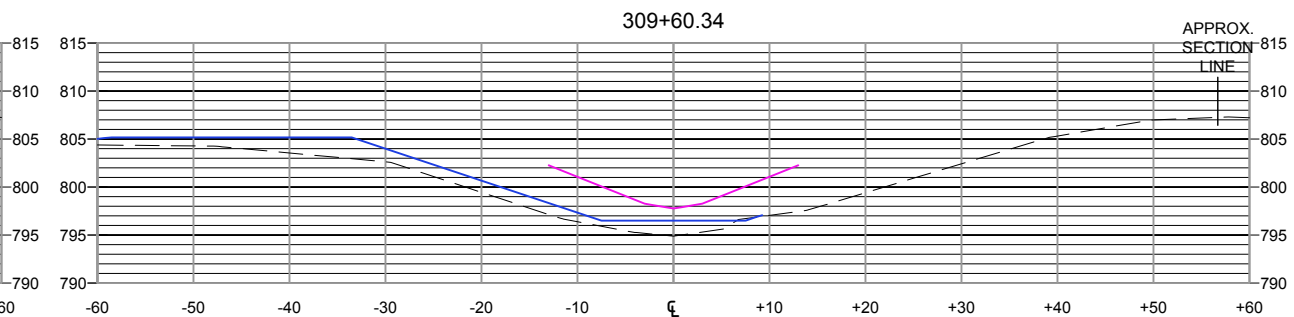
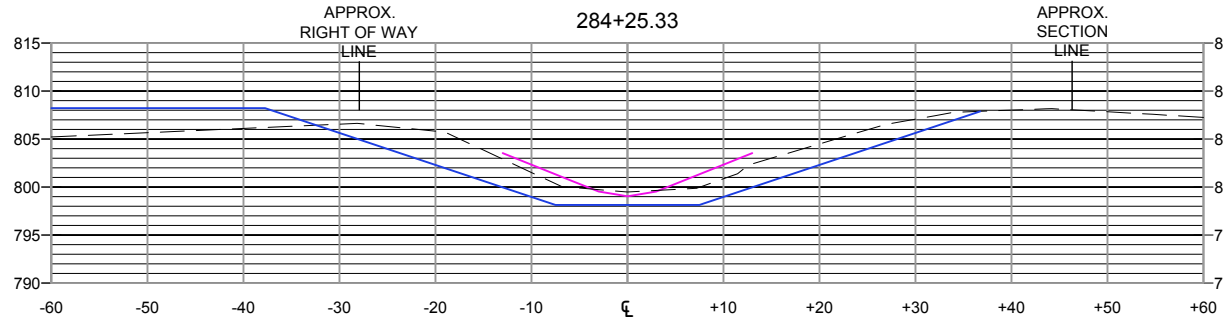
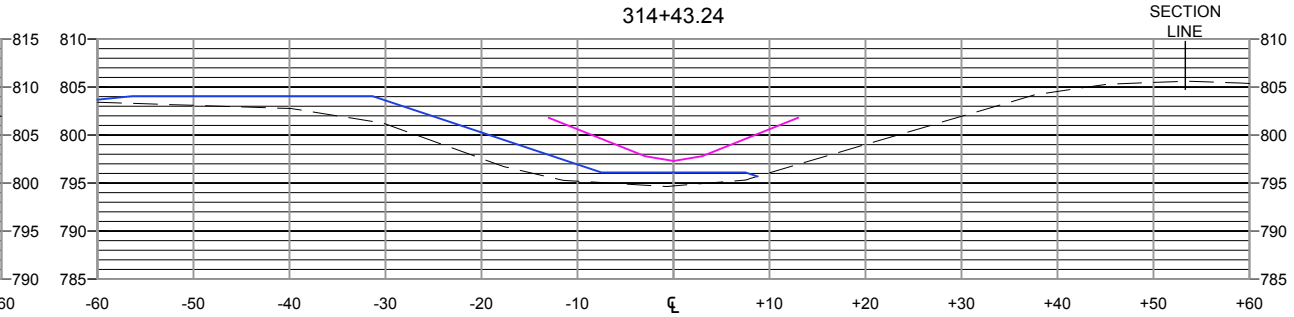
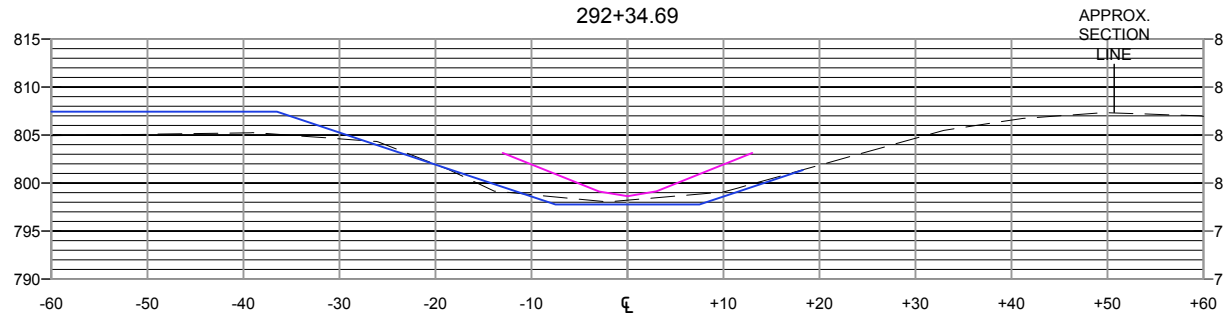
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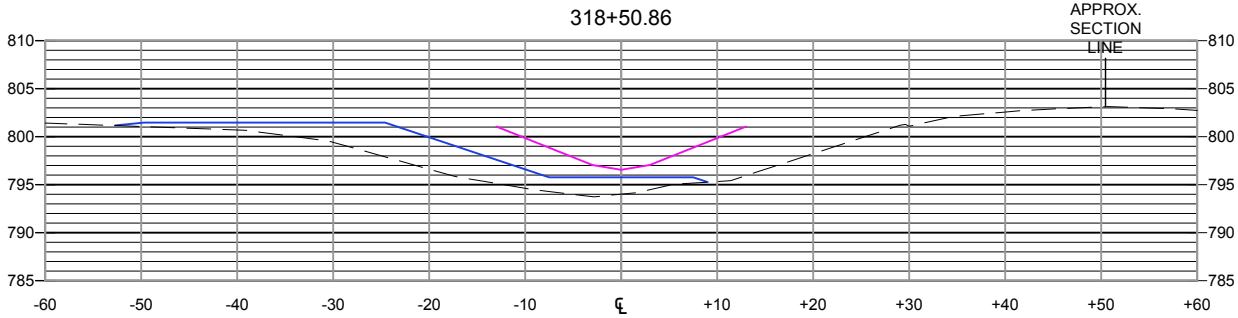
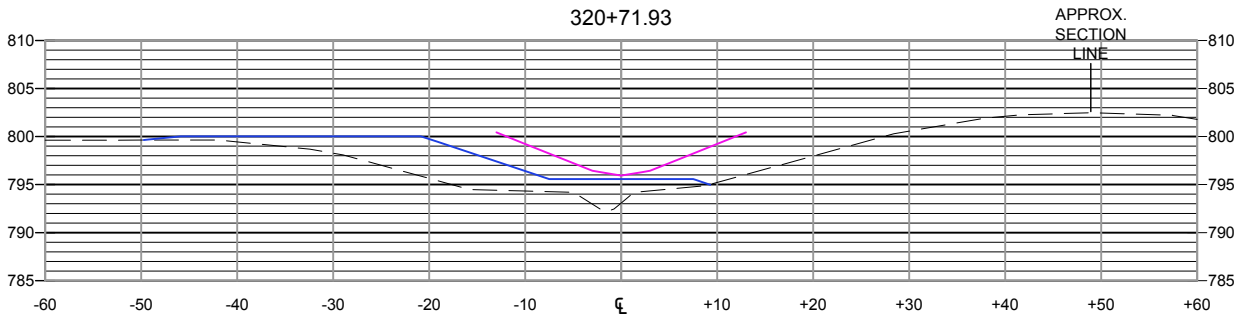
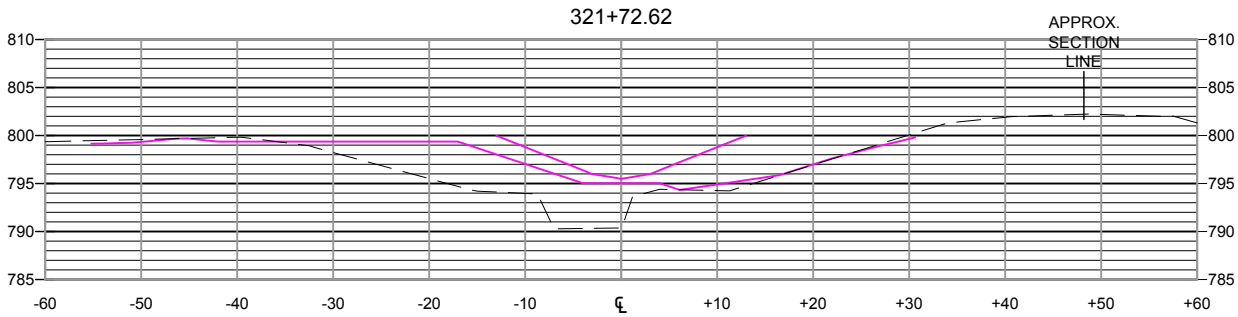
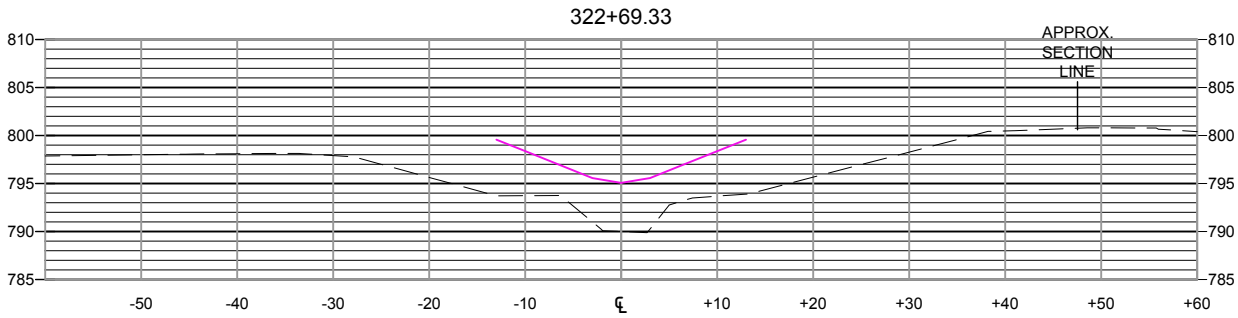
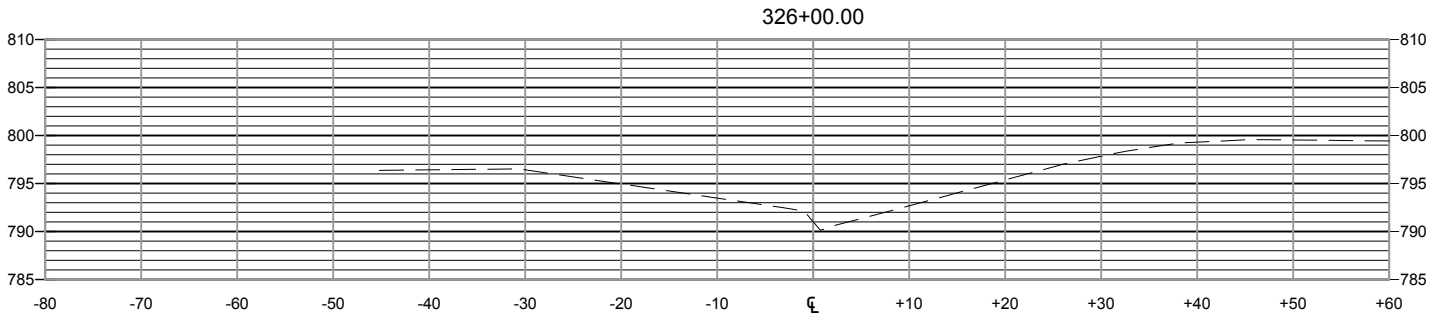
KITSON COUNTY DITCH #7
TWO RIVERS WATER SHED DISTRICT
KITSON COUNTY

CROSS SECTIONS

--- 2010 SURVEY
--- 1905 LEGAL DITCH
--- PROPOSED DITCH IMPROVEMENT



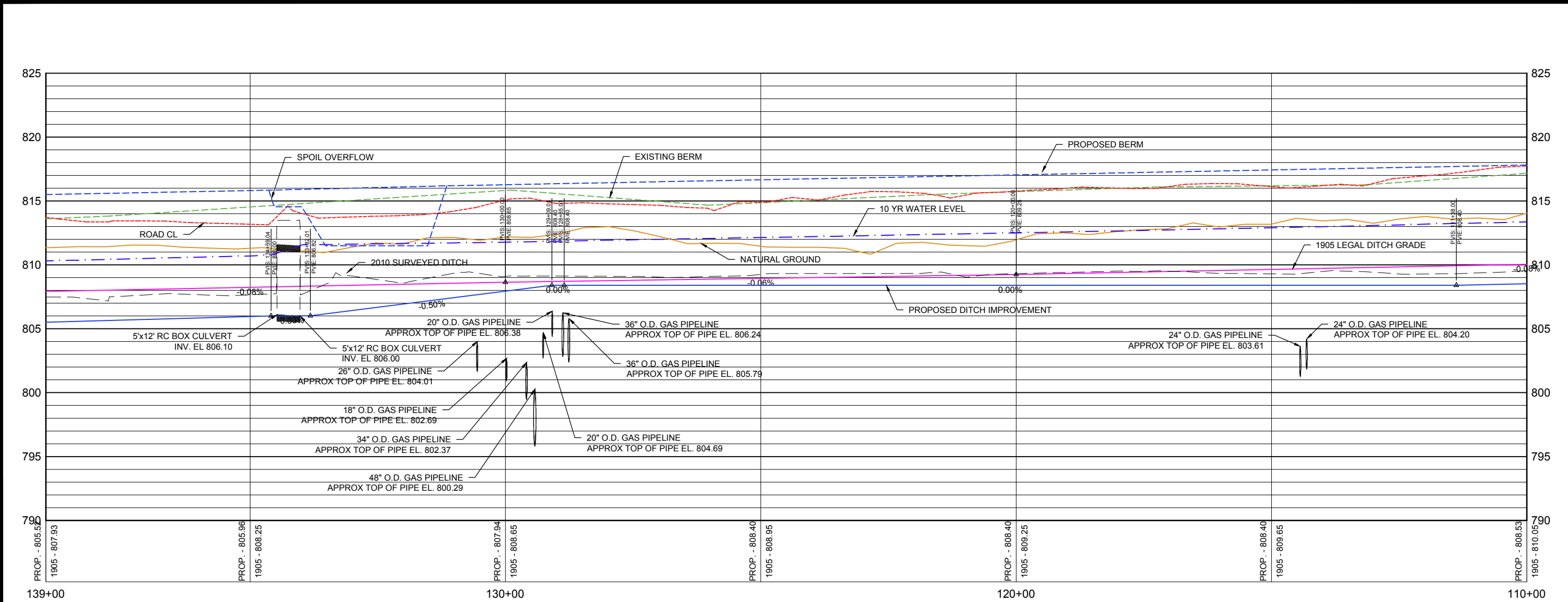
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--- 1905 LEGAL DITCH
--- PROPOSED DITCH IMPROVEMENT



Appendix C

Plan Profile Pipeline Crossings

Kittson County Ditch 7 Improvement



WIDSETH
ARCHITECTS • ENGINEERS • SCIENTISTS • SURVEYORS

HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE: 11/01/2021
BY: BLAKE A. CARLSON
LIC. NO. 111111

NO.	DATE	REVISIONS	DESCRIPTION
1	NOV. 2021	AS SHOWN	NOV. 2021
2		DRAWN BY: RRP	
3		CHECKED BY: BAC	
4		JOB NUMBER: 2021-10848	

KITTSON COUNTY DITCH #7 IMPROVEMENT
TWO RIVERS WATERSHED DISTRICT
KITTSON COUNTY

PRELIMINARY SURVEY REPORT PIPELINE CROSSING PLAN & PROFILE

SHEET NO. 1
SHEET 1 OF 1

Appendix D

Letter Report on Adequacy of Outlet

Kittson County Ditch 7 Improvement

December 1, 2021

Two Rivers Watershed District
410 5th St., Suite 112
Hallock, MN 56728

Re: Kittson County Ditch #7 - 2021 Improvement

I have completed an evaluation of the adequacy of the outlet for an improvement to the existing Kittson County Ditch #7 (KCD #7). KCD #7 outlets to Judicial Ditch #10 (JD #10) which flows into a natural channel that outlets to the Red River. The total outlet channel length is approximately 8.8 miles, 1.8 miles of JD #10 and 7.0 miles of natural channel. See attached map. Essentially, all of the outlet for KCD #7 passes through cropped farmland. The total drainage area of KCD #7 is 22.6 square miles, see attached map.

In this situation there are two methods that were used to determine if the outlet would be adequate for an improvement to the capacity of the KCD #7 ditch. One way that the outlet can be deemed adequate is if the timing of peak flows from KCD #7 are such that they occur either before or after peak flows occur on the outlet channel. An existing hydrologic model (HEC_HMS) was used to evaluate timing. What was found is that the timing of peak flows from KCD #7 coincide almost exactly with peak flows on the outlet channel. In other words, increasing the capacity of KCD #7 would most likely increase the level of flooding along the outlet channel. Based on the timing alone, the outlet would not be adequate for an improvement.

The other method used to evaluate adequacy of the outlet was to look at the level of flood events in the outlet channel, in particular the 10-year 24-hour event. This event is typically used as the event that agricultural lands should be protected to. A hydraulic model (HEC-RAS) was developed to determine the depth of flow in the outlet channel for a 10-year 24-hour event. The results of the modeling show that agricultural lands along the upstream 4.1 miles of the outlet channel would be flooded with the existing conditions. Therefore, since the timing of peak flows from KCD #7 coincide with the peak flows on the outlet channel, any increase in flow resulting from increased capacity in KCD #7 would likely add to flooding of agricultural lands along the outlet ditch.

There are building sites and roads that could also be adversely affected by increases in peak flows. Since it was found that agricultural lands would be adversely affected by increased flows from KCD #7, there was no need to look at potential impacts to building sites and roads. However, the evaluation of any plan to improve KCD #7 would need to also consider potential adverse impacts to building sites and roads.

In order to address flooding that is presently experienced along KCD #7, some method in addition to simply increasing the size (capacity) of the existing ditch would need to be considered. Potential additional alternatives are listed below. Depending on the alternative, some by themselves or a combination of the alternatives could be used to address the current flooding problems.

The potential alternatives, in no particular order are:

Impoundment – A relatively small volume impoundment could be constructed that would eliminate any increase in peak flows. There are several potential sites in the upstream portion of the KCD #7 drainage area which have the location and topography to provide for the construction of an impoundment. One location that could be utilized is an area along the ditch, in west half of Section 21 of Svea which is an area that currently floods as a result of the inadequate capacity of KCD #7.

Set back levees – Move the south berm of the ditch to the south to limit the extent of land that is flooded and or to provide storage that would be used keep peak discharges the same or less than they are presently.

Culvert sizing – Pursue having all culverts within the KCD #7 drainage area sized to the watershed culvert sizing policy. The area of primary concern would be the portion upstream from the upstream end of KCD #7.

Overflow Sections in KCD #7 South Berm – The berm on the south side of KCD #7 is nearly as high, if not higher, than the road and 2 to 4 feet higher than the adjacent field elevation. This combined with the fact that the upstream 3 miles having twice the slope means that the upstream 3 miles has significantly more capacity than the downstream 3.2 miles. In fact, the upstream 3 miles with the berm acting as a levee has greater than a 10-year 24-hour event capacity. In other words, with the present situation, the upstream 3 miles of ditch gets the water to the downstream portion faster than it can handle it. Overflow sections on the east side of every section line, where there is an elevated road section, would allow water to flow into the field when flows exceeded the 10-year 24-hour event. It would be held there until the ditch could handle it.

Damage payments – Keep the KCD #7 as it is and when flooding and crop damages occur from a 10-year 24-hour flood, the ditch system could make payments to compensate landowners/renters for their losses. To my knowledge an arrangement like this has not been used on a legal ditch system. The legalities of using this would need to be determined.

Flood Easements – In conjunction with an improvement to increase the capacity of KCD #7, ditch system could purchase flood easements where flooding would be increased along the outlet channel.

Outlet Channel Improvement – The capacity of the outlet channel could be increased to handle the increased peak flows from a channel improvement on KCD #7. This alternative would be complicated by the fact that a portion of the outlet channel is a Minnesota Public Water.

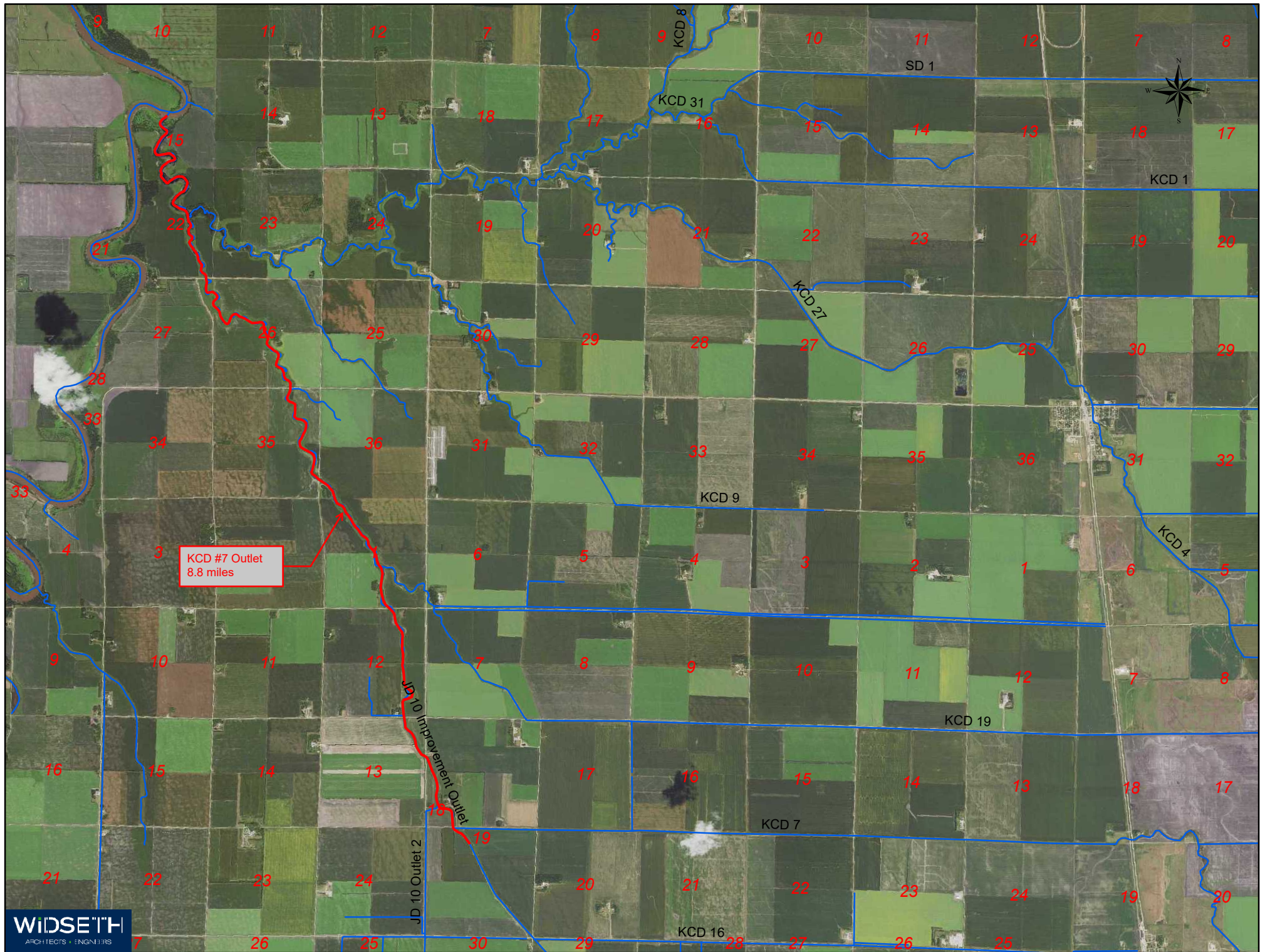
These alternatives would need to be investigated further to determine how they would actually address the problems presently associated with KCD #7. At this point I am looking for direction from the board. I would suggest that having a meeting with the petitioners to discuss the preliminary findings and potential alternatives would be the next logical step.

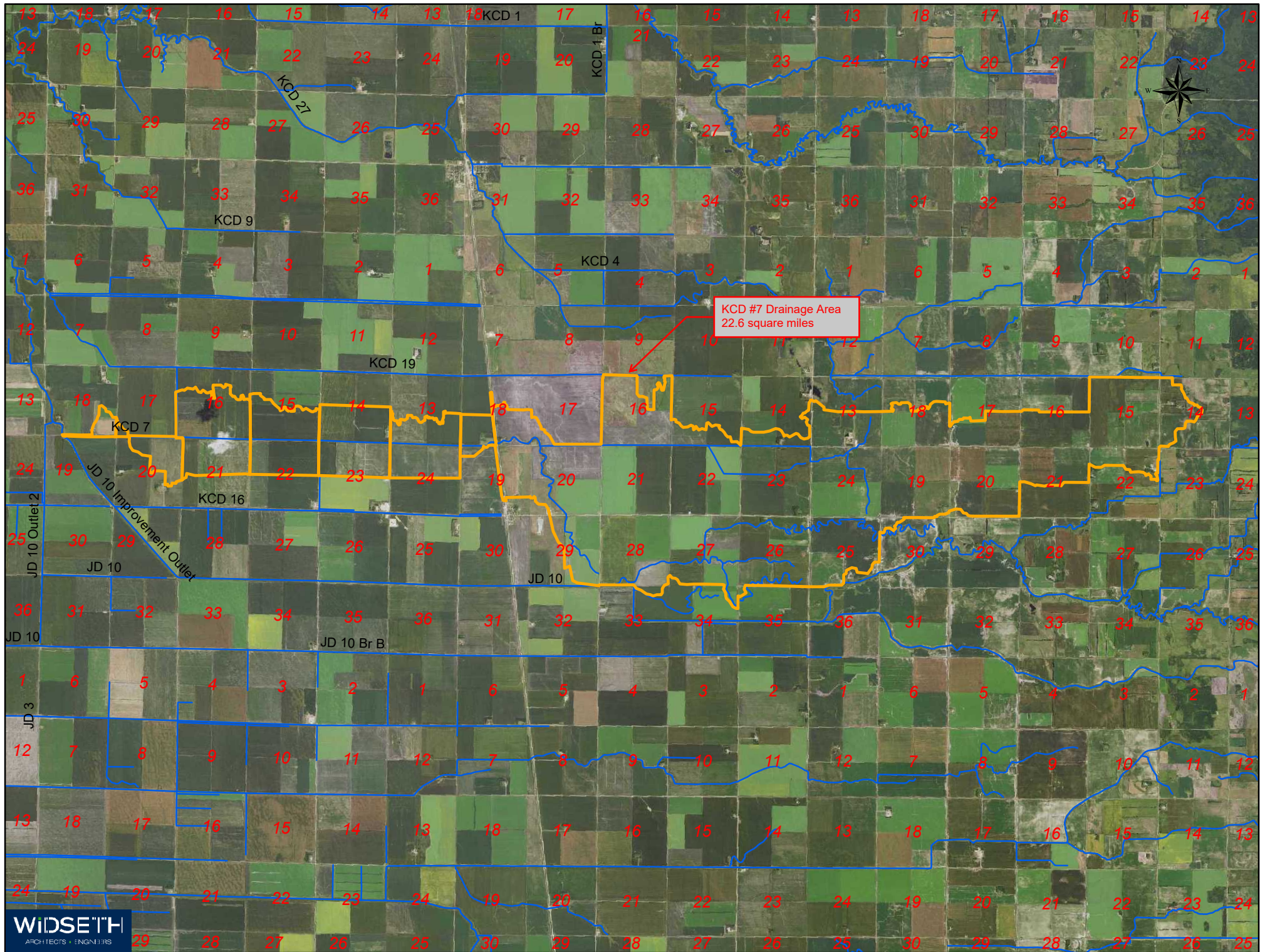
Sincerely,
Widseth Smith Nolting & Associates, Inc.



Blake Carlson, P.E.
Water Resources Engineer

Attachments

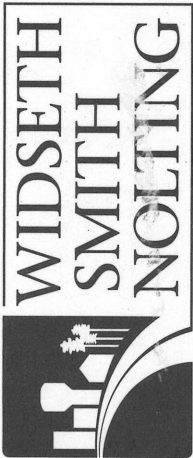




Appendix E

Rock Drop Structure

Kittson County Ditch 7 Improvement

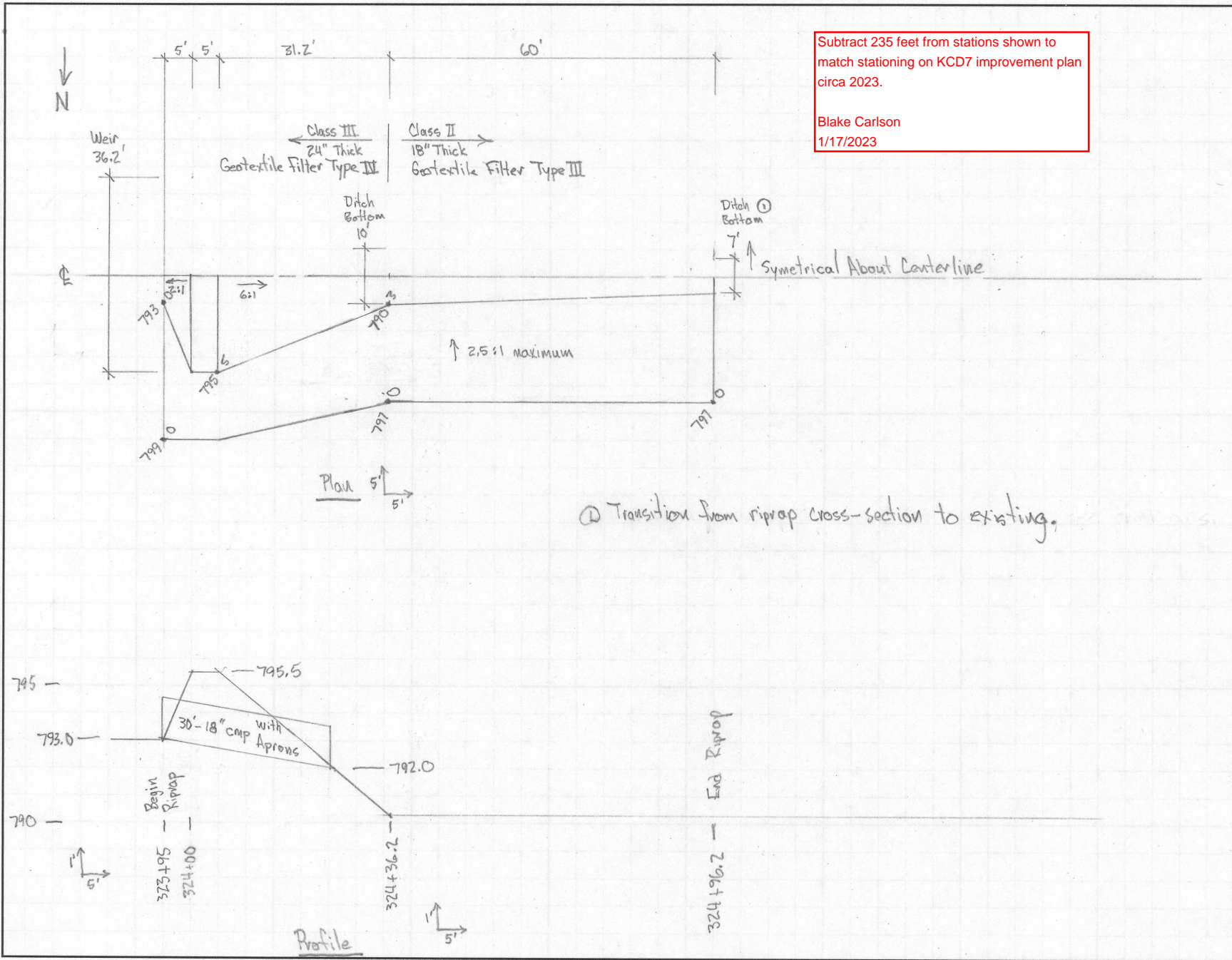


JOB TWD - KCD7 / Spring Flood Repairs

JOB NO. _____

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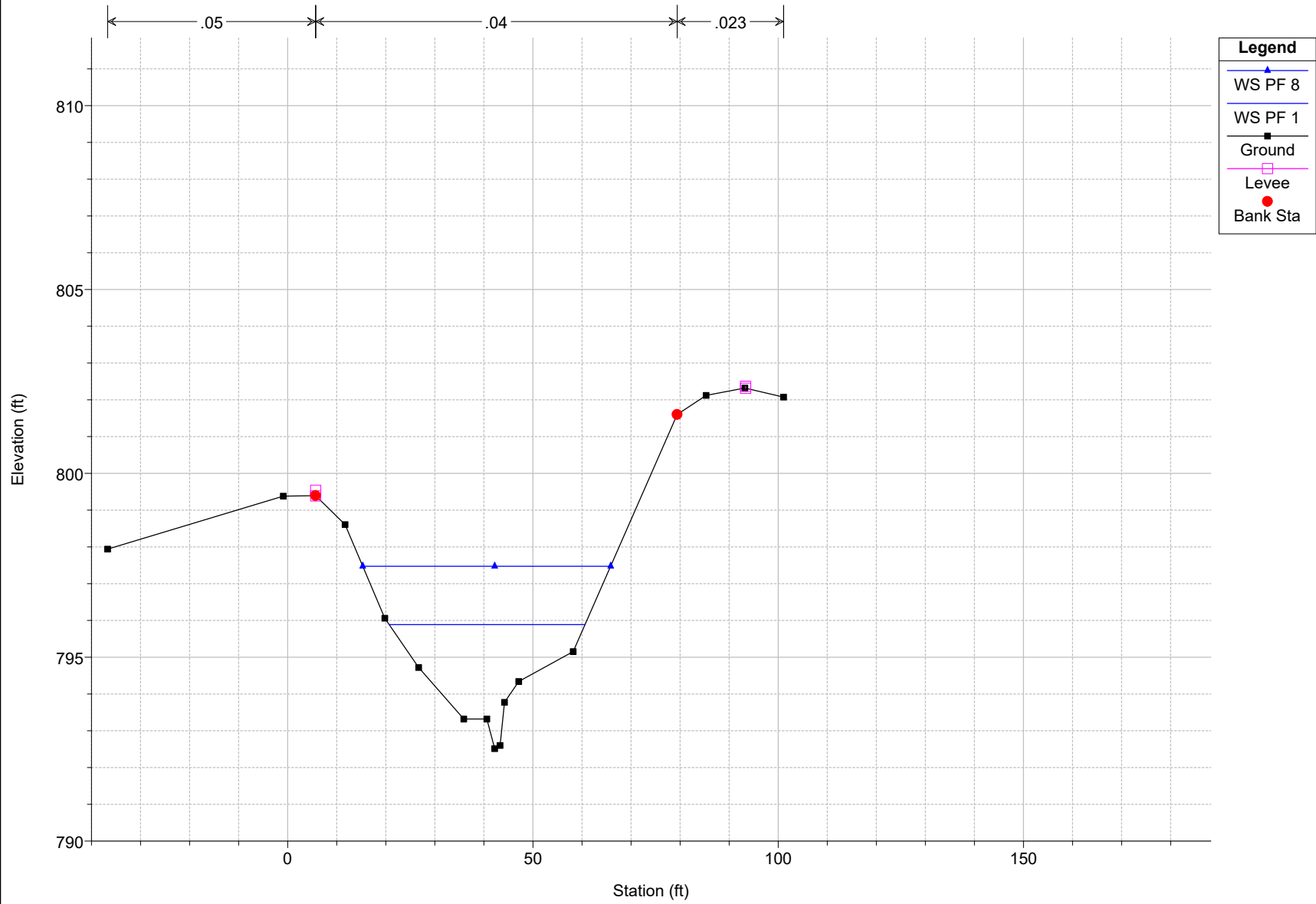
CHECKED BY _____ DATE _____



KCD7 2017 Spring Flood Project

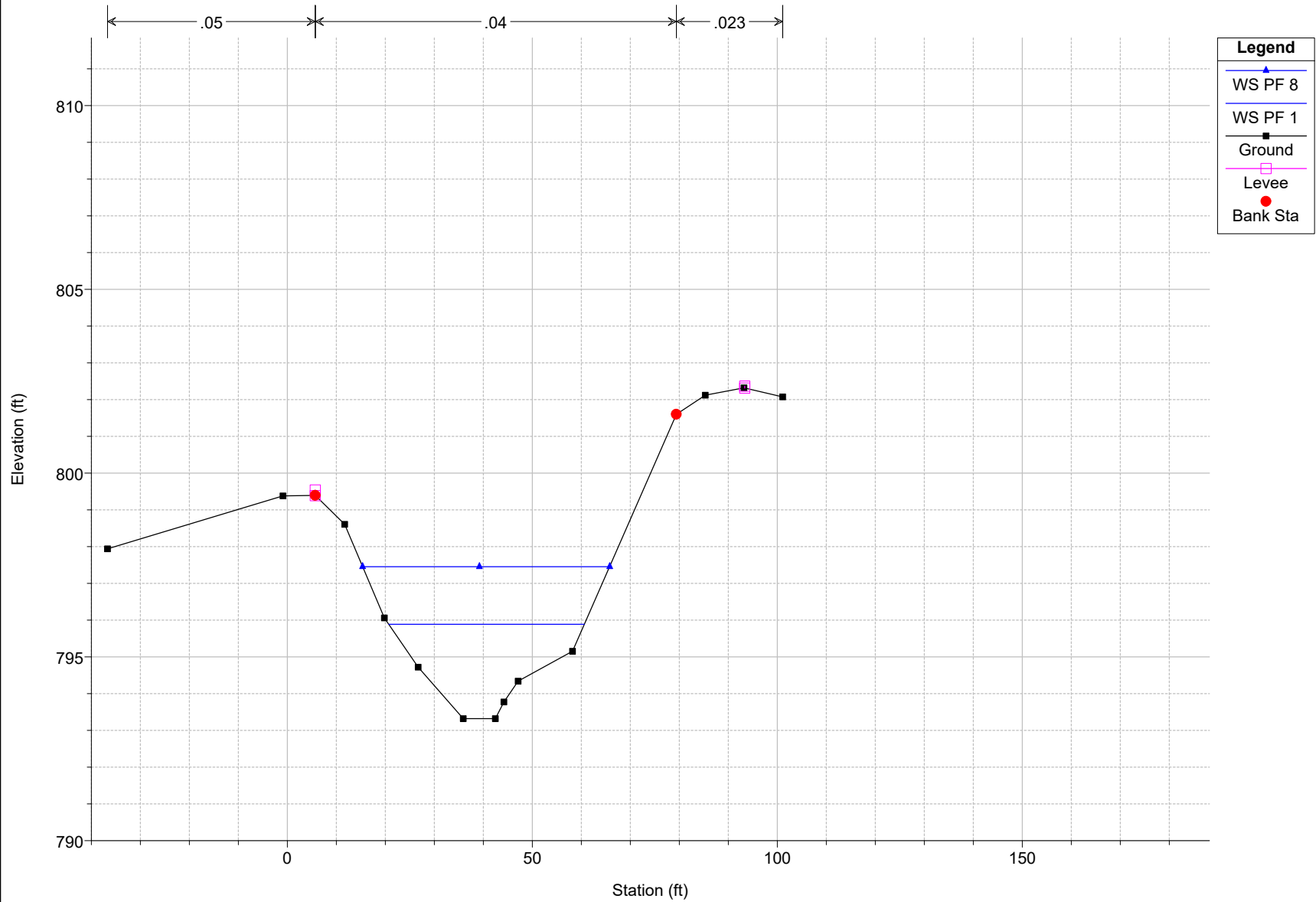
Plan: Block Culvert Design Rev 5.2 9/5/2017

RS = -.32388



1 in Horiz. = 30 ft 1 in Vert. = 4 ft

KCD7 2017 Spring Flood Project Plan: Block Culvert Design Rev 5.2 9/5/2017
 RS = -32395.6

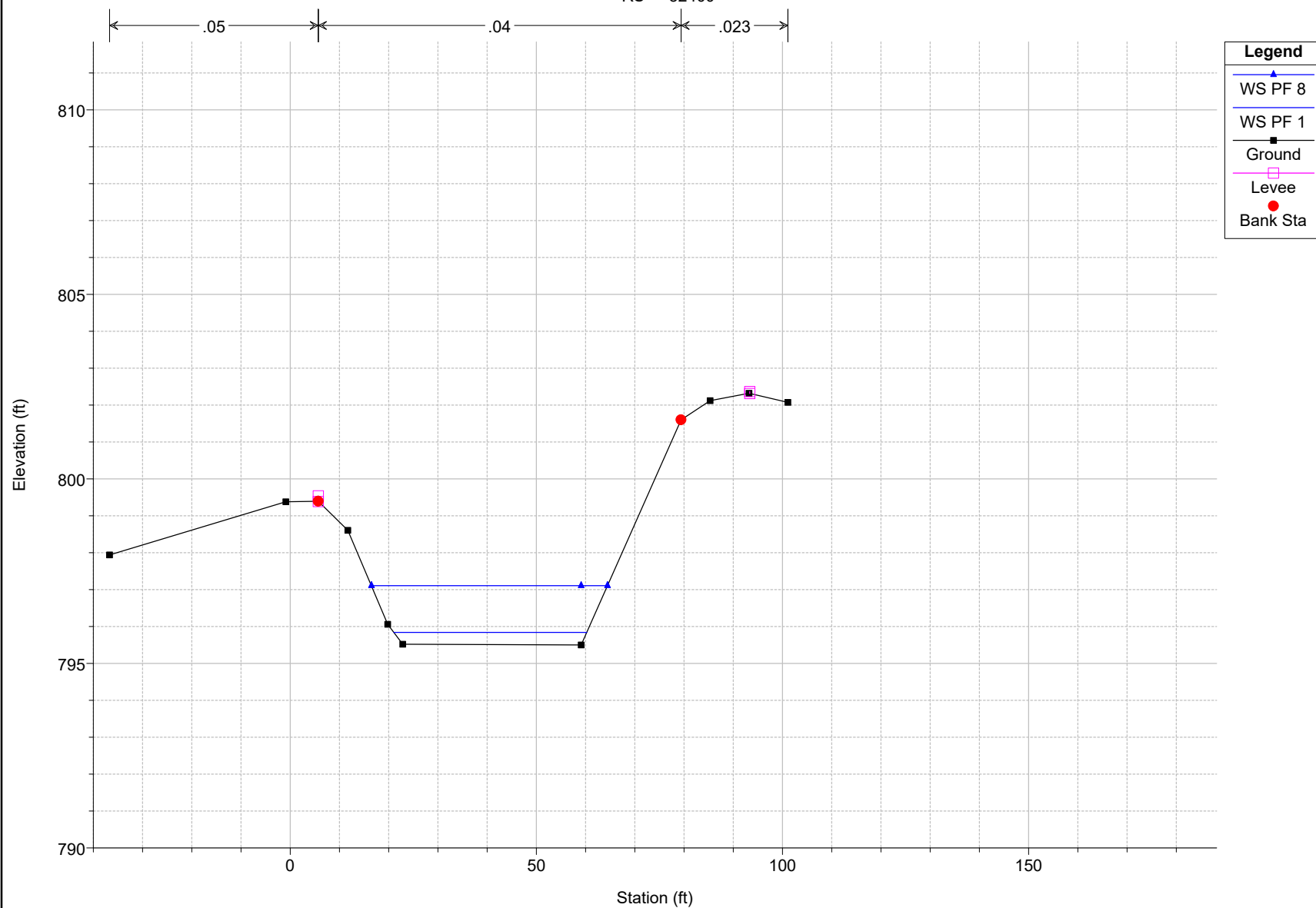


1 in Horiz. = 30 ft 1 in Vert. = 4 ft

KCD7 2017 Spring Flood Project

Plan: Block Culvert Design Rev 5.2 9/5/2017

RS = -.32400

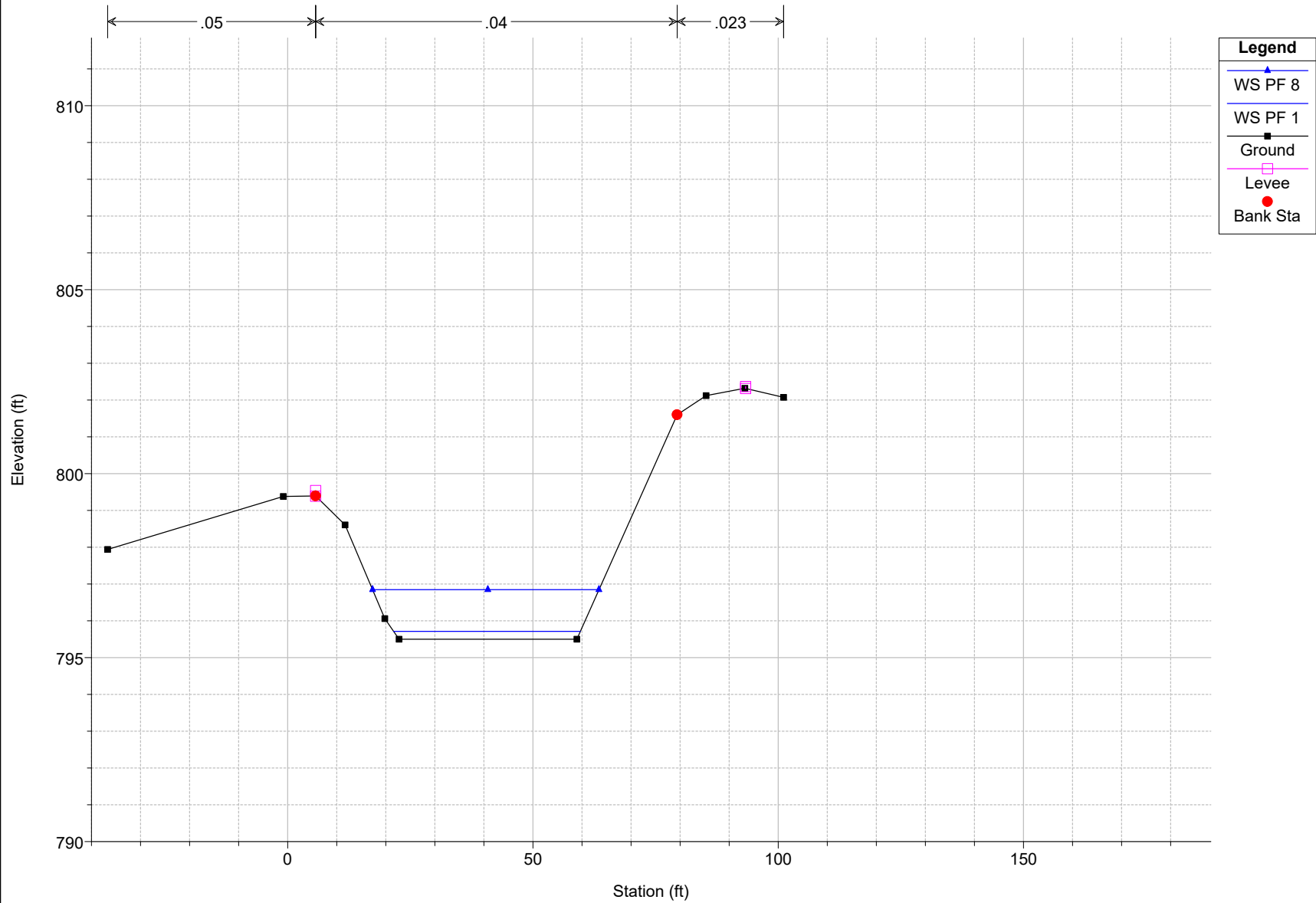


1 in Horiz. = 30 ft 1 in Vert. = 4 ft

KCD7 2017 Spring Flood Project

Plan: Block Culvert Design Rev 5.2 9/5/2017

RS = -.32405

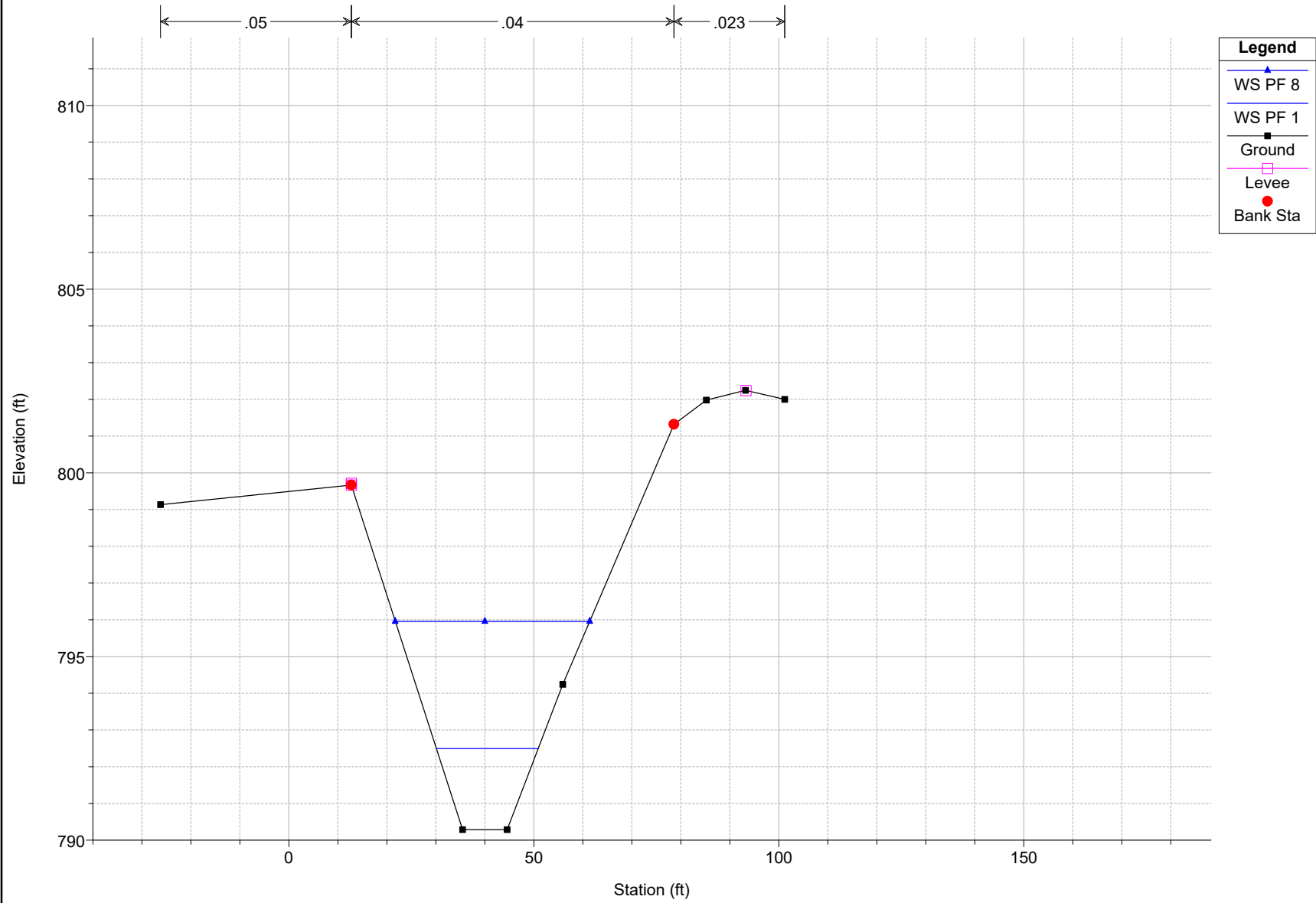


1 in Horiz. = 30 ft 1 in Vert. = 4 ft

KCD7 2017 Spring Flood Project

Plan: Block Culvert Design Rev 5.2 9/5/2017

RS = -32436.2

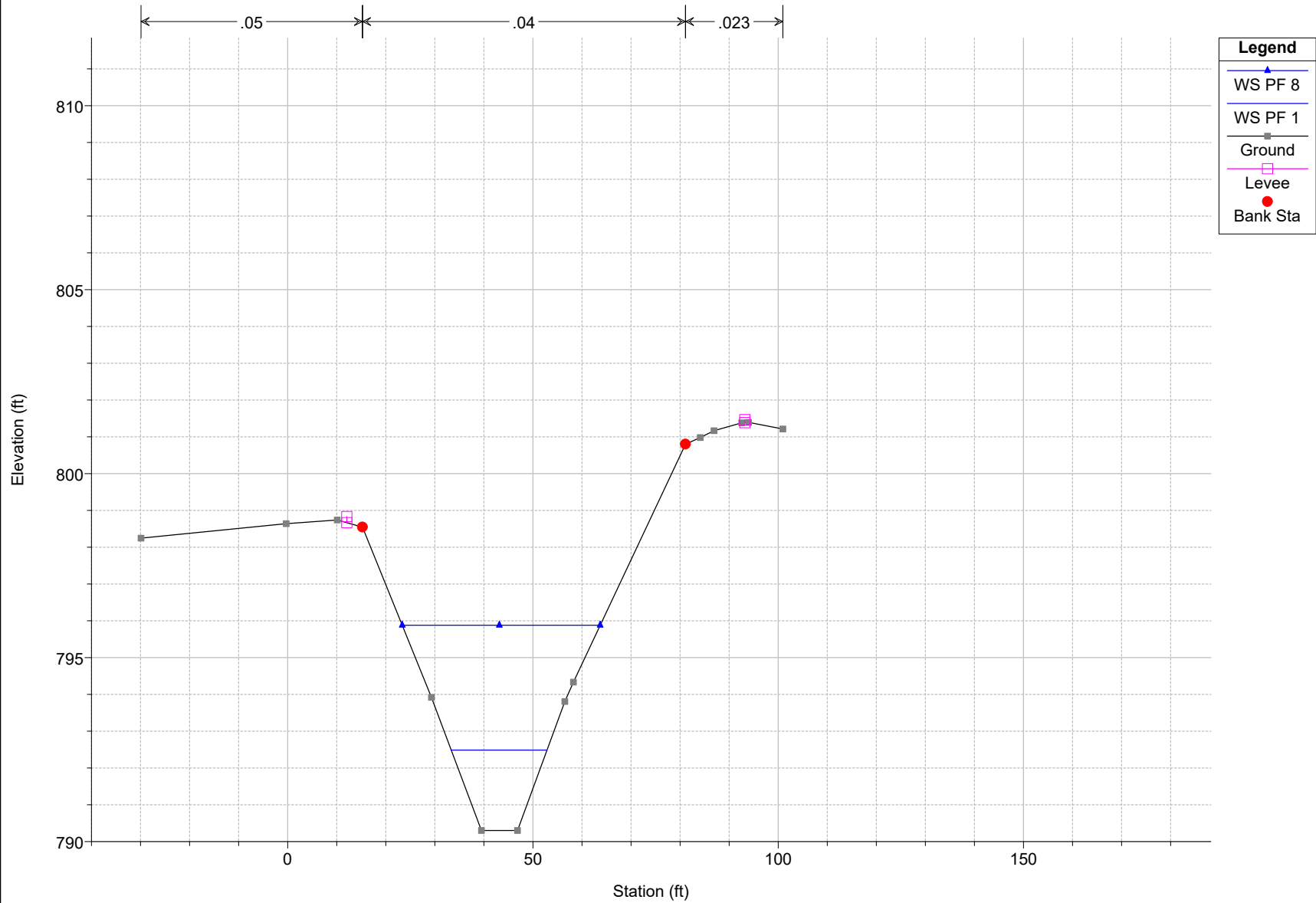


1 in Horiz. = 30 ft 1 in Vert. = 4 ft

KCD7 2017 Spring Flood Project

Plan: Block Culvert Design Rev 5.2 9/5/2017

RS = -32496.*



1 in Horiz. = 30 ft 1 in Vert. = 4 ft

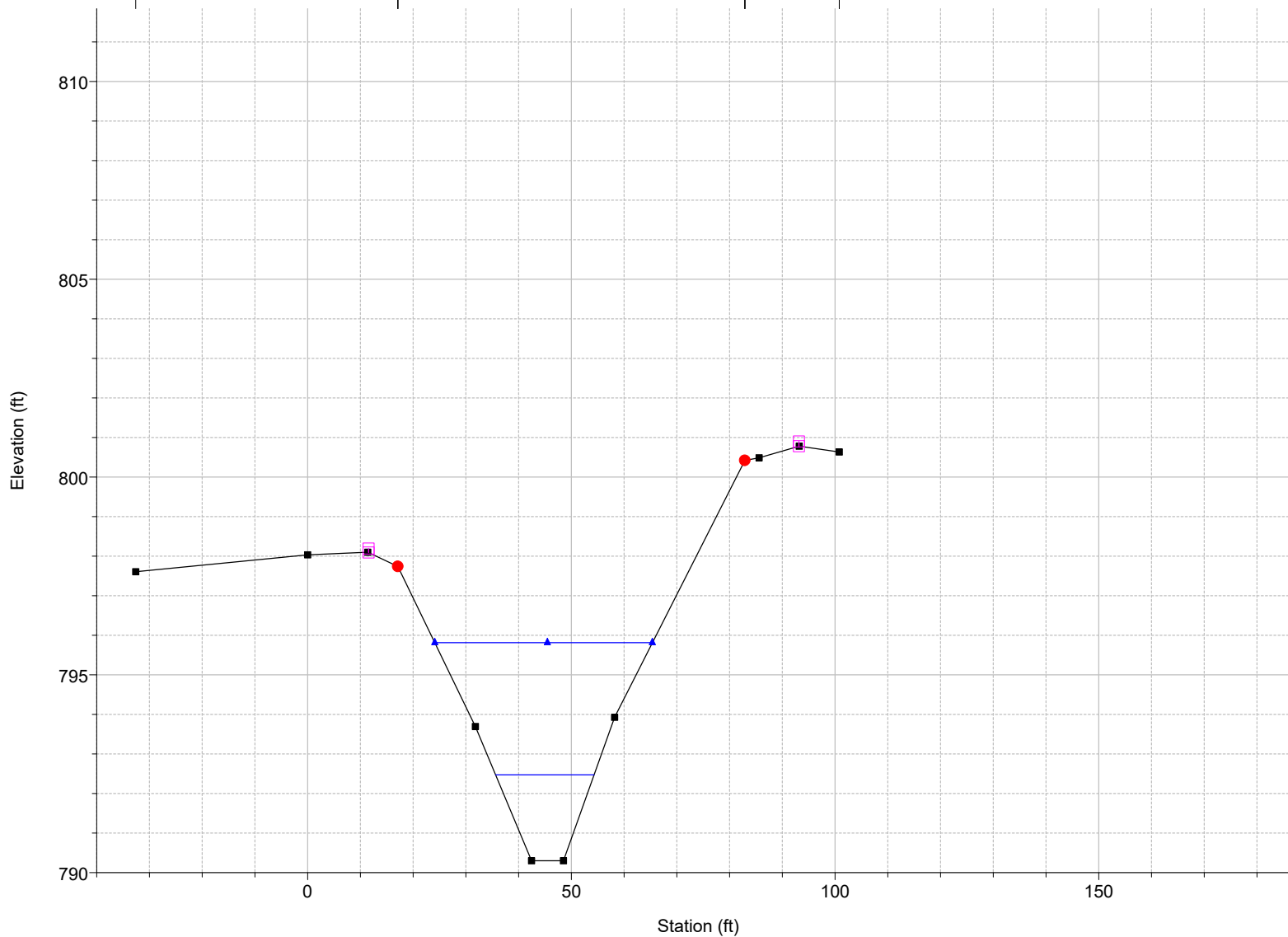
KCD7 2017 Spring Flood Project

Plan: Block Culvert Design Rev 5.2 9/5/2017

RS = -.32540

← .05 → ← .04 → ← .023 →

Legend	
WS PF 8	▲
WS PF 1	▲
Ground	■
Levee	□
Bank Sta	●

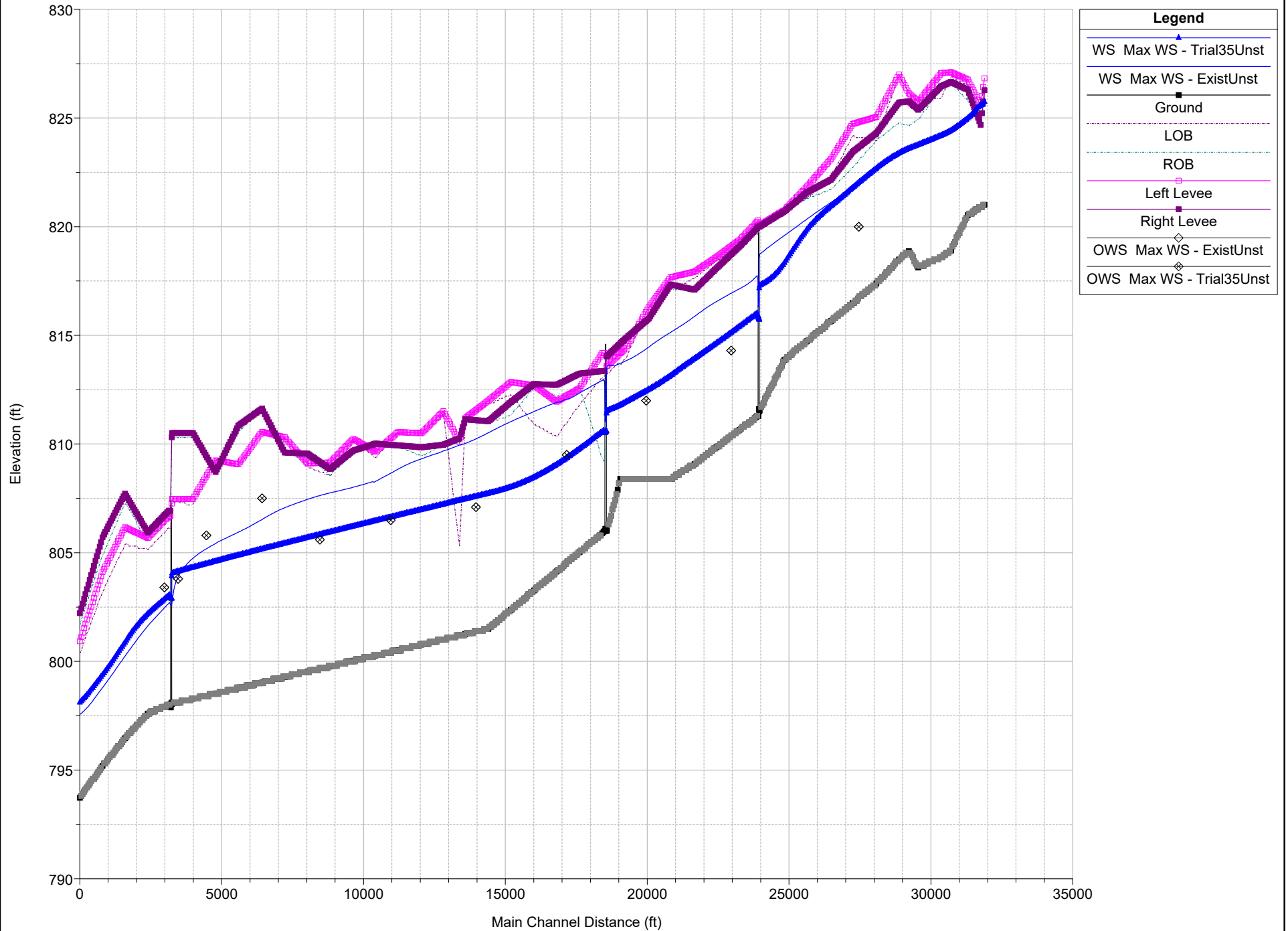


1 in Horiz. = 30 ft 1 in Vert. = 4 ft

Appendix F

5 Year Water Surface Profile

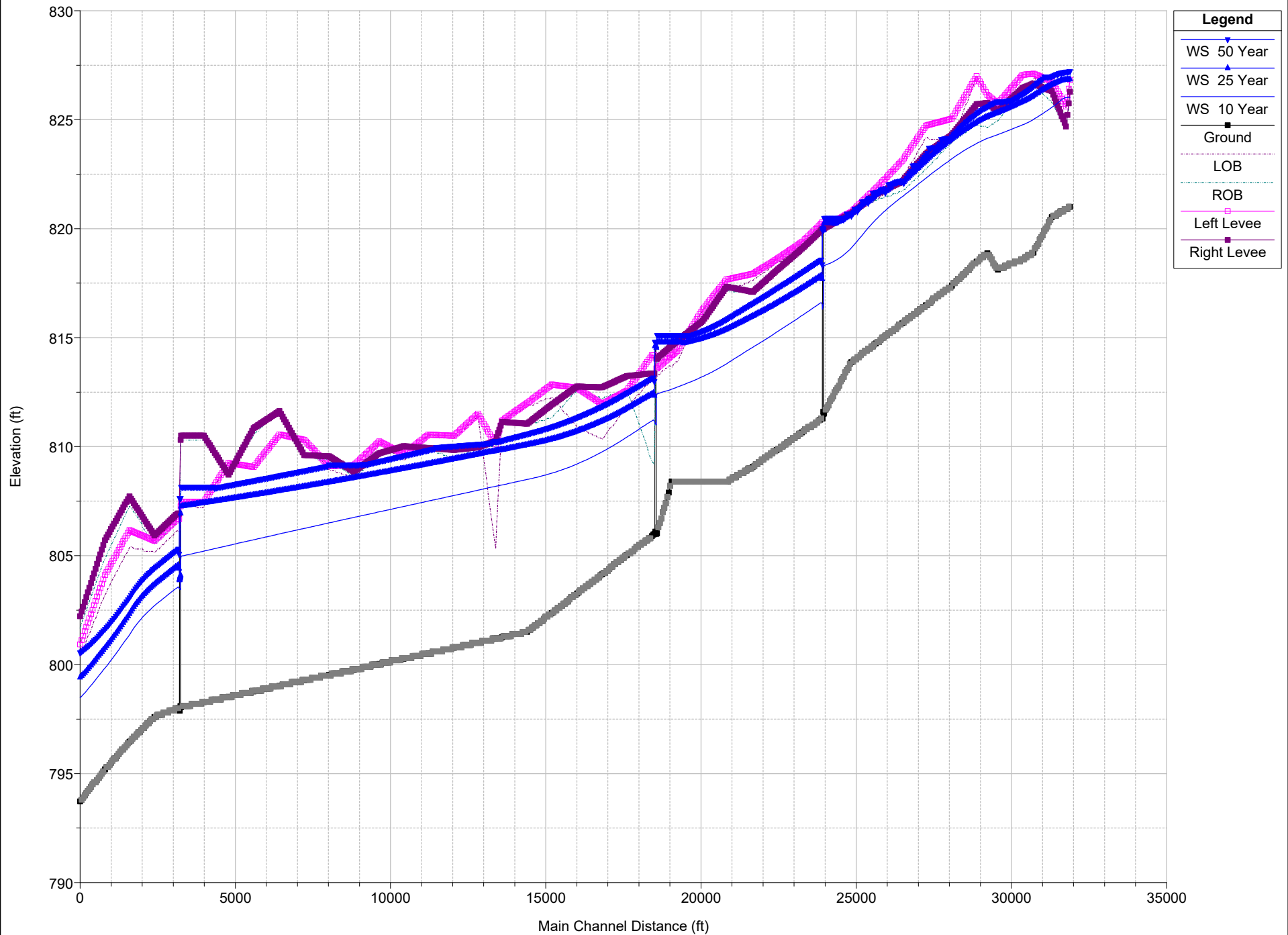
Kittson County Ditch 7 Improvement



Appendix G

10, 25, & 50 Year Water Surface Profile

Kittson County Ditch 7 Improvement



Appendix H

Probable Cost

Kittson County Ditch 7 Improvement

Two Rivers Watershed District
Kittson County Ditch #7 Improvement
Preliminary Engineer's Estimated Cost
1/31/2023

Item	Quantity	Units	Unit Price	Cost
Excavation	125,000.0	CY	3.20	\$400,000
Side Inlets	18.0	EA	4,300.00	\$77,400
Riprap Culvert Ends	170.0	CY	75.00	\$12,750
Fert, Seed, Mulch	50.0	AC	750.00	\$37,500
Additional Permanent Ditch ROW	45.0	AC	4,000.00	\$180,000
Temp Ditch ROW	55.0	AC	180.00	\$9,900
Outlet Channel Flood Easement	5.0	AC	4,000.00	\$20,000

Contingencies	25%	\$184,388
Engineering	15%	\$138,291
Legal Administrative	5%	\$33,011
Viewing	1%	\$6,158
		\$1,099,398

Figures

Kittson County Ditch 7 Improvement

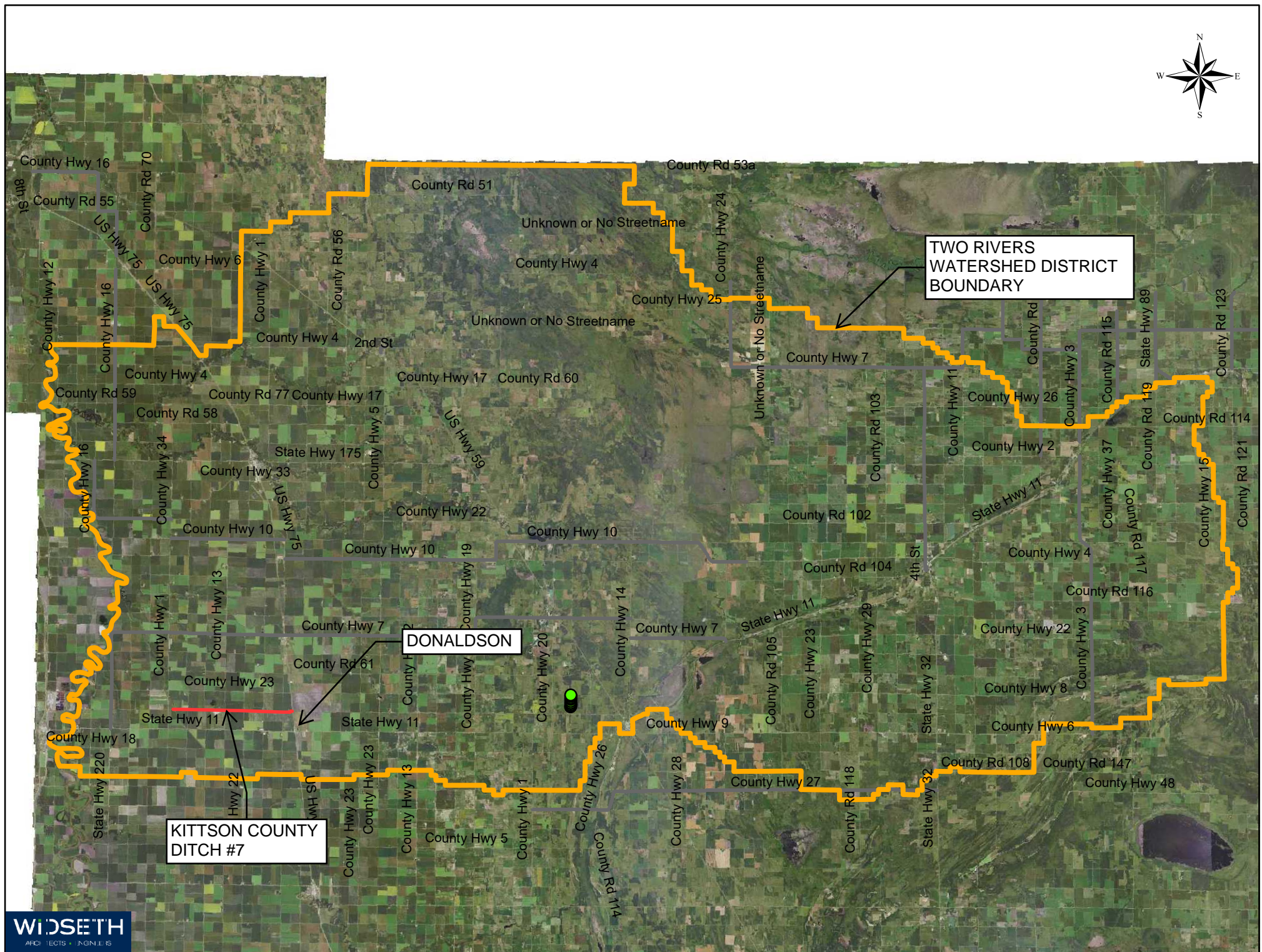


Figure 1 - Vicinity Map

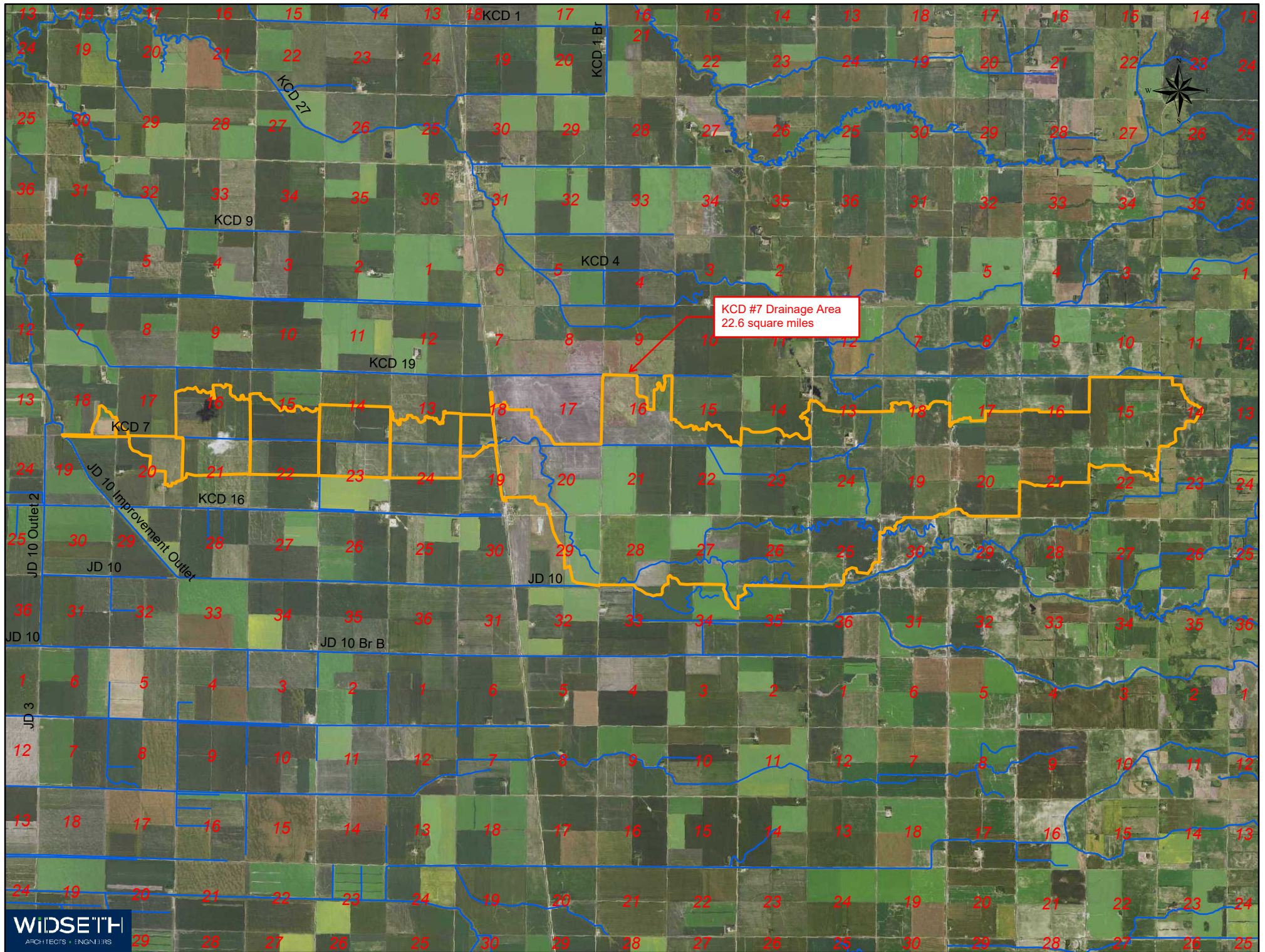
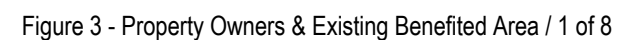
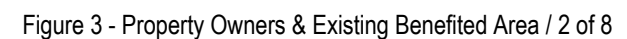
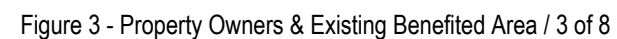


Figure 2 - Drain Area







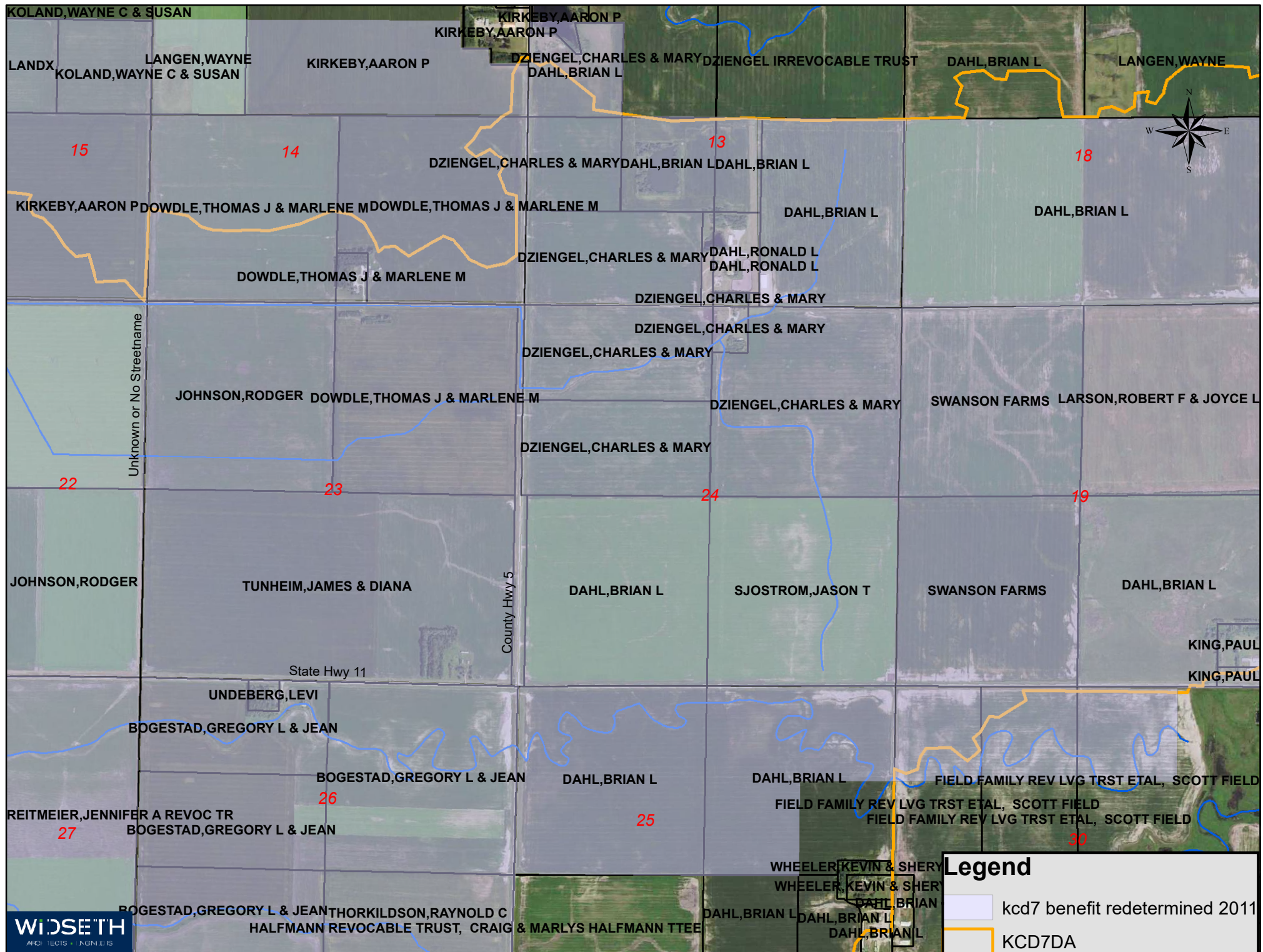


Figure 3 - Property Owners & Existing Benefited Area / 4 of 8

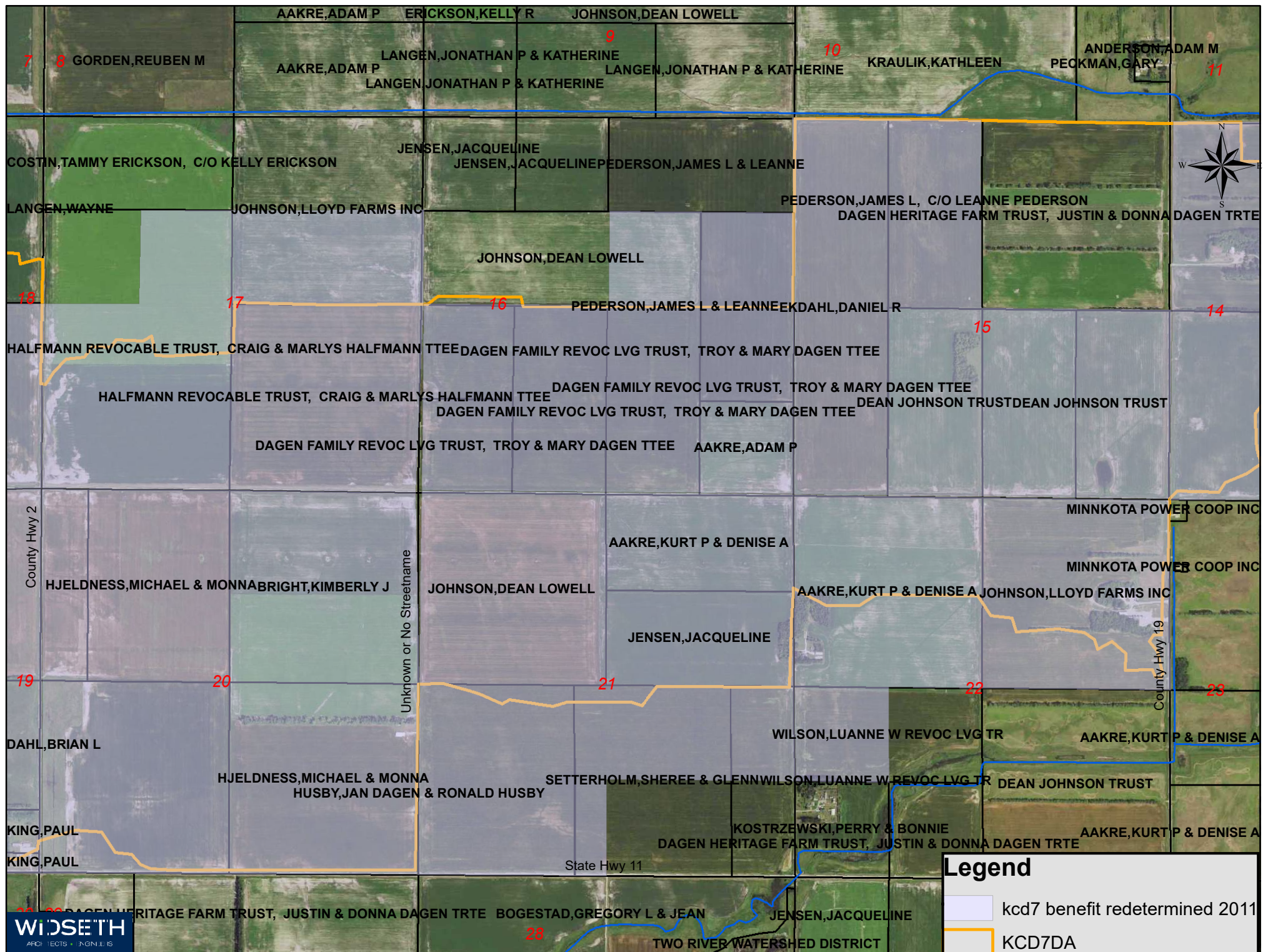


Figure 3 - Property Owners & Existing Benefited Area / 5 of 8

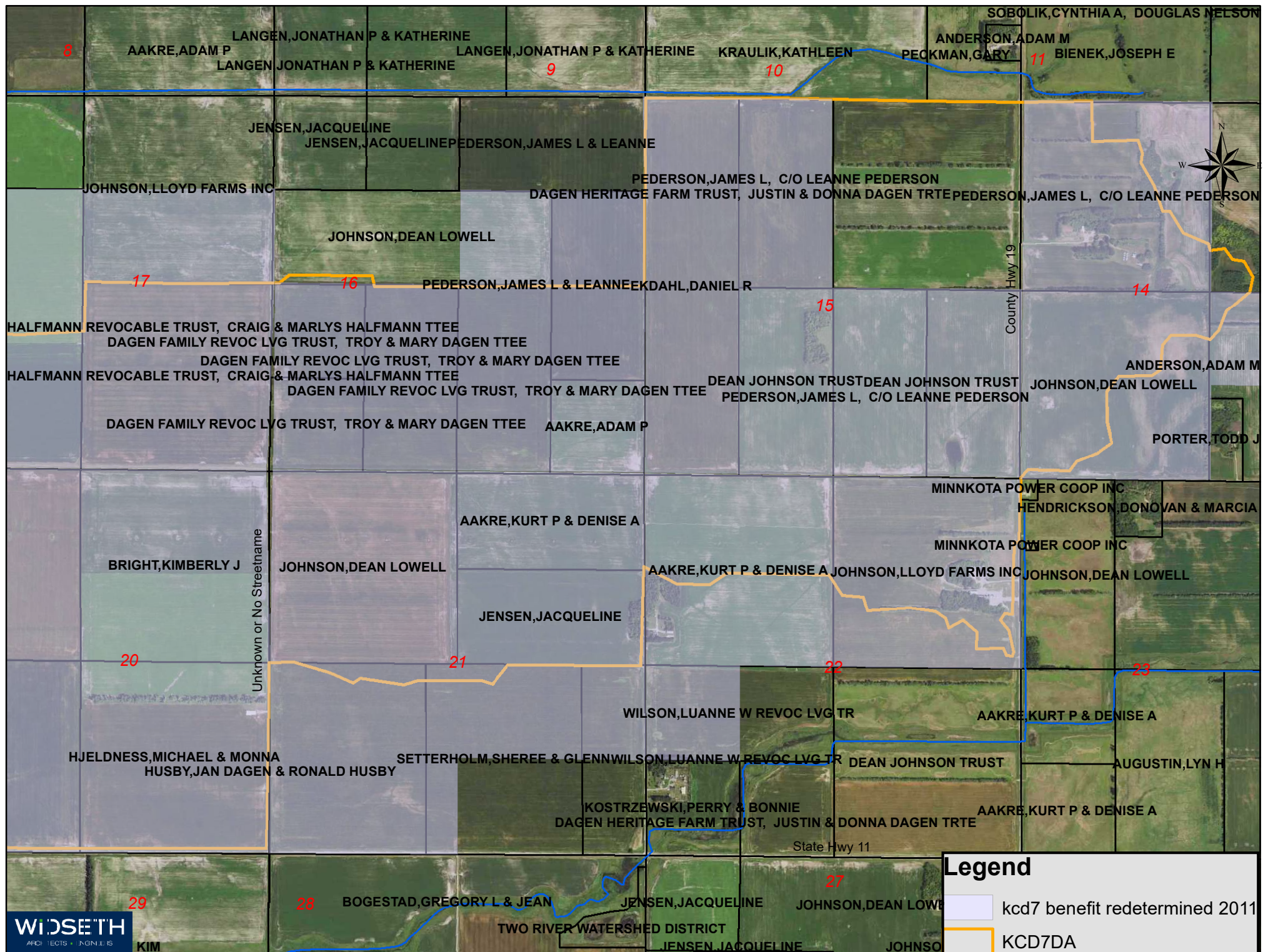


Figure 3 - Property Owners & Existing Benefited Area / 6 of 8

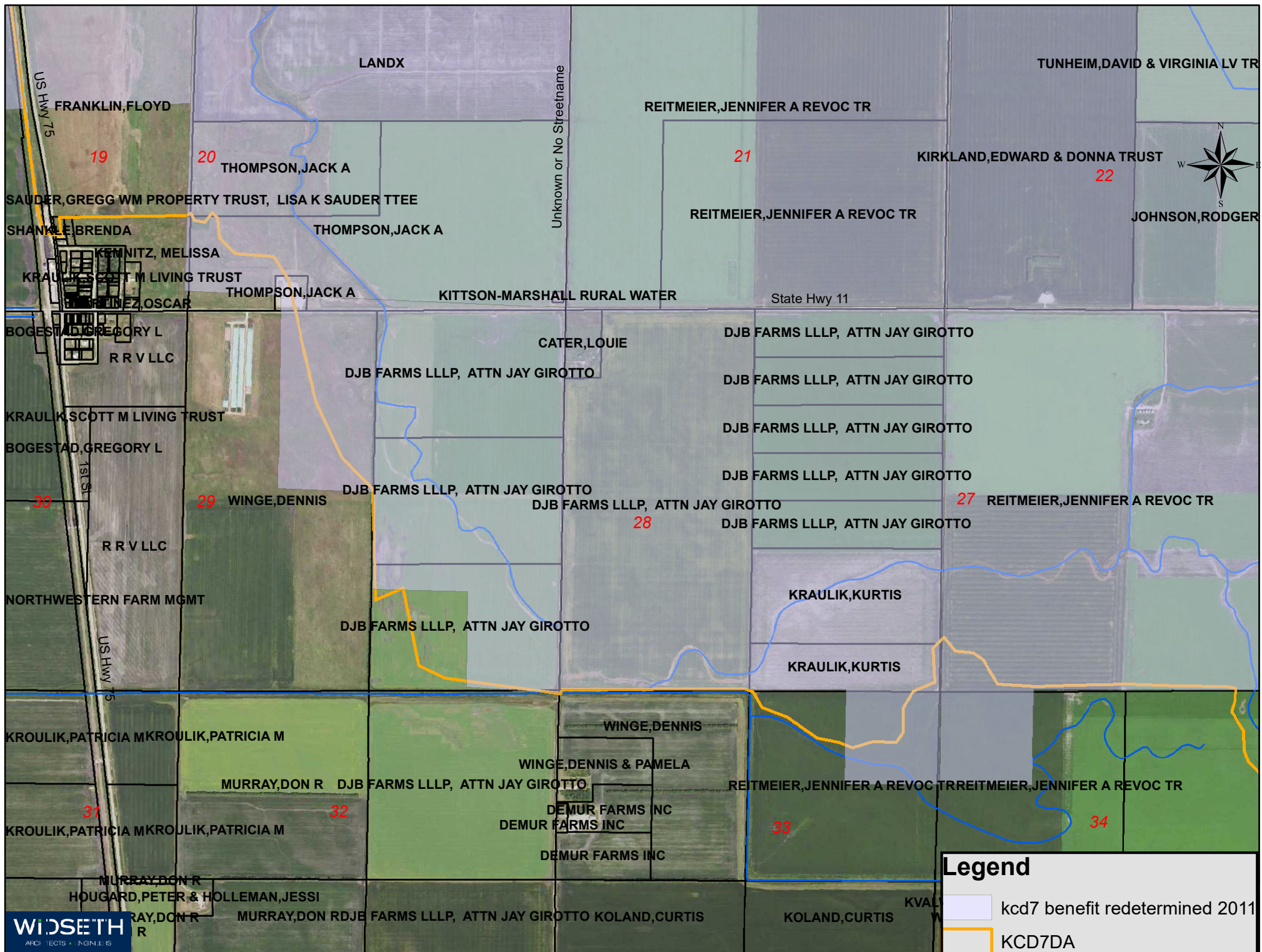


Figure 3 - Property Owners & Existing Benefited Area / 7 of 8

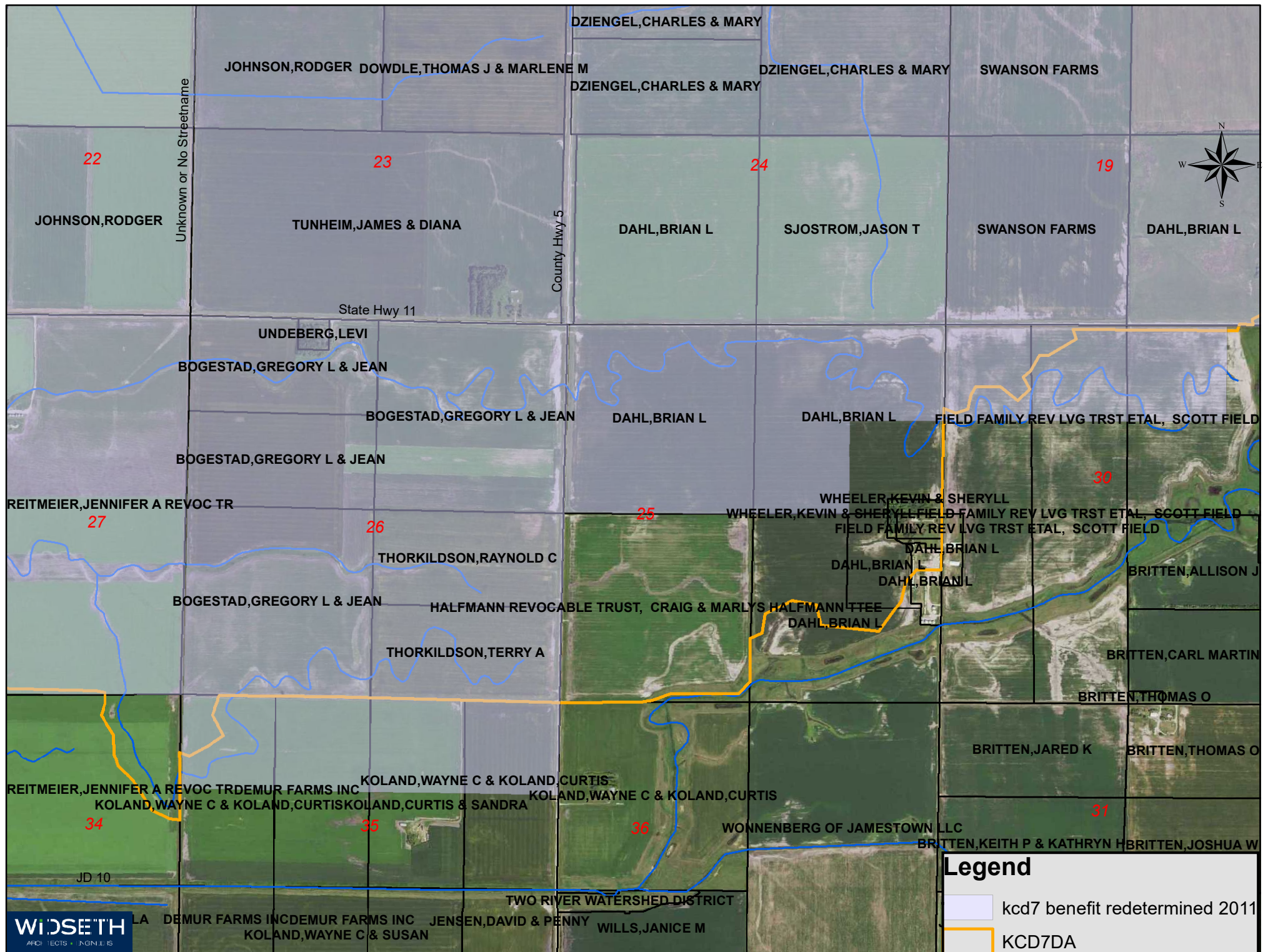


Figure 3 - Property Owners & Existing Benefited Area / 8 of 8