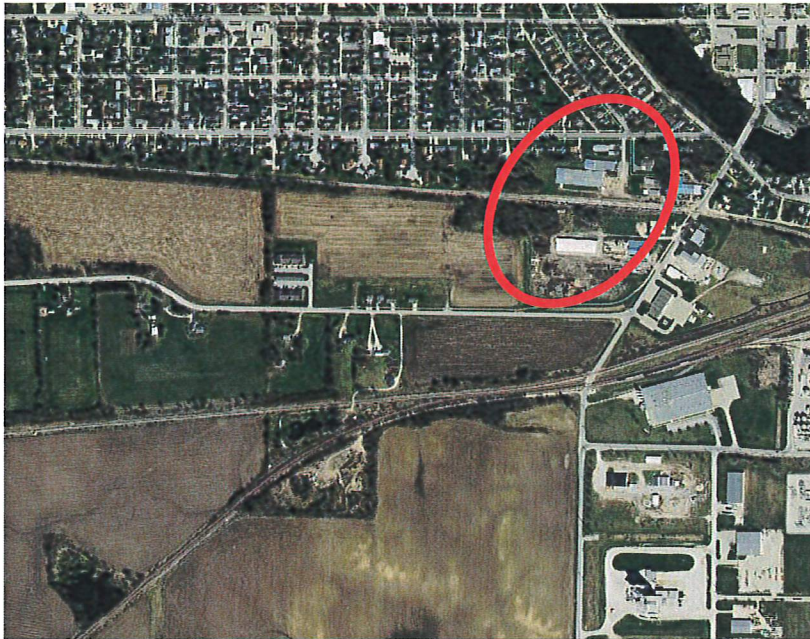


HARDIN COUNTY, IOWA

2025



**UPDATED
ENGINEER'S REPORT
ON REPAIRS
TO MAIN TILE
DRAINAGE DISTRICT
NO. 86
HARDIN COUNTY,
IOWA**



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA

LEE O. GALLENTINE, P.E.

DATE

LICENSE NUMBER: 15745
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2026
PAGES OR SHEETS COVERED BY THIS SEAL:
SHOWN ON TABLE OF CONTENTS



CLAPSADDLE-GARBER ASSOCIATES OFFICE LOCATIONS

16 East Main Street, PO Box 754 | Marshalltown, IA 50158
5106 Nordic Drive | Cedar Falls, IA 50613
739 Park Avenue | Ackley, IA 50601

Project Office
739 Park Avenue
Ackley, IA. 50601
Phone: 641-847-3273
Fax: 641-847-2303

Updated Engineer's Report on Repairs to Main Tile, Drainage District No. 86 Hardin County, Iowa

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Updated Engineer's Report on Repairs to Main Tile, Drainage District No. 86 Hardin County, Iowa

1.0 INTRODUCTION

- **SCOPE OF WORK** – The Hardin County Board of Supervisors, acting as District Trustees, requested Clapsaddle-Garber Associates to investigate and report concerning repairs to the Main tile of Drainage District No. 86. This report will summarize the history of repairs, investigate the necessity and feasibility of said repairs, and present opinions of probable construction costs associated with said repairs. At the Landowner Meeting held on July 17, 2019, the preliminary results of the investigation for Work Order #252 were discussed and reviewed by the District Trustees. For reference, a copy of the meeting minutes is included in Appendix A and a copy of the Investigation Summary for Work Order #252 (as discussed at the July 17, 2019 Landowner Meeting) is included in Appendix B. As a result of this meeting, the District Trustees requested Clapsaddle-Garber Associates to move ahead with an investigation and report concerning repairs to the Main tile. Since then, Iowa Code was clarified relative to the apportionment of costs related to drainage district facilities on railroad property. As a result, the District Trustees requested that this report be updated.
- **LOCATION** – The area of investigation for Work Order #252 was the portion of the Main tile downstream from Dago Lake. After said Landowner Meeting, additional detailed investigation was performed on the very lower portion of the Main tile. Said lower portion is located in Section 13, Township 89 North (T89N), Range 21 West (R21W), Hardin County, Iowa. Specifically, the downstream limit of the detailed investigation was at the current outlet of Main tile, approximately 100 feet south of Ellis Avenue and approximately 100 feet east of Sarah Avenue. Going upstream, the tile proceeds west generally paralleling Ellis Avenue for approximately 800 feet. It then turns south and goes south for approximately 200 feet where it crosses the former C&NW railroad. It then continues south, with the upstream limit of the investigation ending approximately 300 feet south of said railroad. For reference, a map showing the limits of detailed investigation is included in Appendix D and a map showing the limits of investigation for said Investigation Summary is included in Appendix C.

2.0 PARTIAL DISTRICT HISTORY – The following is a summary of the partial history of Drainage District No. 86 as obtained from the Hardin County Auditor’s drainage minutes and records.

1909, Aug. 30	Application for establishment of Drainage District.
1915, Dec. 15	Petition for Drainage District.
1916, Apr. 6	Preliminary Engineer’s Report by J.H. Farrington calling for the Main tile. This route included the Main tile crossing the Chicago & Northwestern Railway Company property at the natural waterway at the location provided by Chicago & Northwestern Railway Company.
1916, May 16	Publication of Notice for hearing on establishment of Drainage District.
1916, Jun. 5	Claim for damages by Chicago & Northwestern Railway Company.
No Date	Memorandum agreement between Illinois Central Railroad Company and District Trustees.
1916, Jun. 20	Supplementary Engineer’s Report by J.H. Farrington.
1916, Jun. 27	Agreement with Chicago & Northwestern Railway Company and District Trustees.
1916, Jun. 30	Publication of Notice to Contractors for construction of Drainage District facilities.
1916, Jul. 25	Contract for tile bond with Eldora Pipe and Tile Co. for \$1,869.95
1916, Jul. 27	Contract for Construction of Drains with Ole Johnson for \$2,335.00
1916, Oct. 7	Appointment of Commission to inspect and classify lands within Drainage District.
1917, May 9	Termination of J.H. Farrington.
1917, Jun. 4	Report by landowner that “the intake at upper end of main is too high and allows “Dago Lake” to overflow mainly as had as before tile was laid”.
1917, Jul. 30	Letter by Drainage Engineer W.S. Porter concerning the investigation of Drainage District facilities. It recommends extending tile from the east side of lake an additional 75 feet and making elevation of new tile the same as what drains into lake.
1917, Oct. 29	Resignation of one of the members of the Commissioners to assessment of benefits.
1917, Oct. 29	Appointment of Commission to inspect and classify land within Drainage District.
1918, Jan. 2	Appraisers report on assessments of benefits was filed.
1918, Jan. 24	Publication of Assessments of Benefits.
1918, Jun. 18	Objections in behalf of Chicago & Northwestern Railway Company “to the location and establishment of drainage district”.
1953, Oct. 19	Bill of indebtedness for repair located in NW¼ Section 24, T89N, R21W.
1953, Nov. 12	Bill of indebtedness for repair located in NW¼ Section 24, T89N, R21W.

1954, Jan. 13	Bill of indebtedness for repair located in NW¼ Section 24, T89N, R21W.
1954, May 12	Request for repair located in Section 13, T89N, R21W – “Outlet should be extended and Rock channel filled. Probably a joint Project check up with Mr. King”.
1960, Jun. 6	Bill of indebtedness for inspection of outlet.
1963, Oct. 22	Request for repair located Section 23, T89N, R21W – “north of Rock island railroad east of small lake” – “inlet need possible work”.
1965, Dec. 7	Bill of indebtedness for repair.
1966, Apr. 4	Bill of indebtedness for “Re-lay county drain above bulkhead on McClure Property in Iowa falls south of Ellis Ave. per agreement” in Section 13, T89N, R21W.
1967, Apr. 25	Request for repairs located NW¼ NW¼ Section 24, T89N, R21W.
1967, May 2	Bill of indebtedness for repair.
1967, May 9-11	Bill of indebtedness for repair.
1973, Jun. 13	Request for repair of 3 blowouts.
1973, Jun. 27	Bill of indebtedness for repair.
1973, Nov. 29	Bill of indebtedness for repair.
1974, Feb. 28	Request of repair of 3 broken tile located in Section 23, T89N, R21W.
1974, Aug. 1	Bill of indebtedness for repair.
1974, Oct. 21	Request for repair – “Haul dirt on ... repaired last spring” located in Section 23, T89N, R21W.
1974, Oct. 21-22	Bill of indebtedness for repair.
1976, Nov. 15	Request for repair – “Fix blow out” located Section 23, T89N, R21W.
1979, Jul. 30	Request for repair – “Repair tile between tracks” located in Section 24, T89N, R21W.
1979, Aug. 6	Bill of indebtedness for repair.
1979, Oct. 18-19	Bill of indebtedness for repair.
1984, Jun. 9	Request for repair – “Outlet of Dago Lake is tipped on east side of Pond” located in Section 23, T89N, R21W.
1984, Sept. 12	Request for repair – “Main line tile is broken in road ditch @ intersection at NW Cor. Sec. 35”
1984, Dec. 4	Bill of indebtedness for repair of broken tile located in Section 23, T89N, R21W.
1992, Oct. 28	Approval of repair of tile that is exposed located in Section 23, T89N, R21W.
1993, Nov. 10	Approval of request for repair tile “blowout” located in NE¼ NE¼ Section 23, T89N, R21W.
1994, Apr. 13	Approval of request for repair of broken tile.

1997, Jun. 29	Request for repair “Main Tile blocked” Section 13, T89N, R21W.
1997, Jul. 16	Approval of request for repair “Tile plugged with roots south of railroad”.
1998, Oct. 28	Approval of request for repair “approx. 5 breaks in this tile line” located in Section 23, T89N, R21W.
1999, Jun. 25	Request for repair – “Main line is plugged” Section 13, T89N, R21W.
1999, Jul. 2	Bill from Hydro-Klean – “Jet cleaned 16” field tile line approx. 600’ ”
2007, Apr. 4	Request for repair “plugged 16” county tile on the south side of Georgetown Rd.” located in Section 24, T89N, R21W.
2008, May 7	Request for repair – “2 blowouts” located in NE¼ Section 23, T89N, R21W.
2008, Jun. 18	Request for repair – “large pond in middle of property” located in Section 23, T89N, R21W.
2017, Feb. 27	Request for repair – “tile area has progressively turned into a stream” due to tree roots plugging tile located in Section 24, T89N, R21W.

- 3.0 INVESTIGATION –A field investigation for the detailed investigation area was performed. Said investigation was limited to locating Main tile (including GPS survey), noting the general condition of the tile, and noting the extent that tree roots had invaded the tile and are restricting drainage. For reference, a copy of the Project Diary with pictures is included in Appendix E.

A field investigation was also performed for the portion of the Main tile downstream of Dago Lake, including the detailed investigation area. Said investigation was limited to noting the existence of trees along the assumed Main tile route. For reference, a copy of the Investigation Summary for Work Order #252 is included in Appendix B.

The remaining investigation was limited to review of the district history. Said review shows that there have been several repairs since the district was originally constructed. Some of the noteworthy ones include:

- In 1997 and 1999, landowners reported that the Main tile was plugged and full of tree roots.
- In 1966, the Main tile upstream of the bulkhead south of Ellis Avenue was relaid per “the agreement”.

- 4.0 DISCUSSION AND CONCLUSIONS – Based on the above, it is obvious that the Main tile has a history of tree roots invading the tile. This is especially true in or near areas that haven’t been actively maintained by private landowners, such as railroad right of way. This has a detrimental impact on the drainage capacity of the Main tile as the tree roots not only reduce the cross-sectional area of the tile, they also cause drainage to slow, which encourages siltation of the tile.

Also, the following key items from the investigation should be noted:

- It appears that the Main tile south of the former C&NW railroad tracks is severely plugged with trees roots for approximately 260 feet and is not draining. Instead, this area is relying solely on overland drainage by exiting the Main tile through an existing beehive intake when the Main tile becomes surcharged.
- It appears that the Main tile under the former C&NW railroad tracks is not severely plugged with tree roots as it is draining.
- There are over 200 trees within 50 feet of the assumed Main tile route downstream of Dago Lake.
- The 1966 “agreement” was not investigated as to ownership of the resulting pipe or the current users of the same as it appears to be draining.

If repairs are not performed, the Main tile will not properly drain any of the land upstream of the former C&NW railroad tracks due to its current tree root infested state. In addition, there are several locations downstream of Dago Lake that have trees close enough to the Main tile to likely impede drainage. When combined, these issues will prevent or hinder historical drainage capacities and crop production on a portion of the upstream area which is the majority of the district.

5.0 REPAIR METHODS – To repair the existing Main tile, the following options are the most straightforward available:

Partial Tree Removal, Root Cutting, and Tile Lining

- For the portion of the Main tile south of the former C&NW railroad tracks that is severely plugged with tree roots, remove trees as needed to access the Main tile.
- For the portion of the Main tile south of the former C&NW railroad tracks that is severely plugged with tree roots, remove tree roots from the existing Main tile by either jetting cleaning or mechanical cutting.
- For the portion of the Main tile south of the former C&NW railroad tracks that is severely plugged with tree roots, prevent roots from infiltrating the Main tile again by installing a CIPP liner. Typically, existing private and district tile could be reinstated after the lining has been completed.
- For reference, the detailed location of the proposed work near the C&NW railroad tracks is shown on the map included in Appendix F.
- For the remainder of the Main tile between Dago Lake and the former C&NW railroad tracks, verify the Main tile route and remove any trees within 50' of the Main tile.
- For reference, the assumed Main tile route is shown on the map included in Appendix C and further information concerning these trees is included in the copy of the Investigation Summary for Work Order #252 included in Appendix A.

Full Tree Removal and Partial Tile Replacement

- For the portion of the Main tile south of the former C&NW railroad tracks that is severely plugged with tree roots, remove trees within 50' of the Main tile.
- For the portion of the Main tile south of the former C&NW railroad tracks that is severely plugged with tree roots, remove and replace the existing Main tile with replacement Main tile of equal or comparable size. Typically, the replacement Main tile would be in the same location as the existing Main tile in order to locate and reconnect private and district tile.
- For reference, the detailed location of the proposed work near the C&NW railroad tracks is shown on the map included in Appendix F.
- For the remainder of the Main tile between Dago Lake and the former C&NW railroad tracks, verify the Main tile route and remove any trees within 50' of the Main tile.
- For reference, the assumed Main tile route is shown on the map included in Appendix C and further information concerning these trees is included in the copy of the Investigation Summary for Work Order #252 included in Appendix A.

With the above-mentioned repair methods, the following should be noted:

- Due to history of trees in the vicinity, the Full Tree Removal and Partial Tile Replacement option would use gasketed pipe to slow future root infiltration.
- The Full Tree Removal and Partial Tile Replacement option would use rock bedding and backfill for strength due to soil cover and soil characteristics.
- In the area of work, the Full Tree Removal and Partial Tile Replacement option would require future monitoring for additional tree growth and root infiltration.
- It is assumed that for the Full Tree Removal and Partial Tile Replacement option, the existing tile is in good enough physical condition to withstand jetting and root cutting and no spot repairs are needed.

- In the area of pipe lining, the Partial Tree Removal, Root Cutting, and Tile Lining option would not allow drainage of the adjacent soil.
- The Partial Tree Removal, Root Cutting, and Tile Lining option would require installation of 2 access manholes in the area of repair.
- The Partial Tree Removal, Root Cutting, and Tile Lining option would only require removal of trees to allow installation of the access manholes.
- For the Full Tree Removal and Partial Tile Replacement option, the pipe sizes used are those that are currently manufactured that most closely meet or exceed the current Main tile size.
- All of the above options would only remove obstructions in the Main tile at locations of proposed tile replacement or tile lining. Any obstructions at other locations would remain in the existing Main tile.
- Repairs have historically been viewed as not having an impact on jurisdictional wetlands. As such, individual landowners should consult with applicable staff at the Hardin County NRCS office to verify the existence of said jurisdictional wetlands and that there will be no impact on them.

Per Iowa Code Chapter 468.126, any of the above actions that do not increase capacity would be considered a repair. Per Iowa Code Chapter 468.126.1.g, the right of remonstrance does not apply to the proposed repairs.

6.0 **OPINIONS OF PROBABLE CONSTRUCTION COSTS** – Using the above methods of repair, itemized lists of project quantities and associated opinions of probable construction cost for each option were compiled and are included in Appendices G and H of this report. A summary of said costs are as follows:

REPAIR METHOD	DISTRICT CONSTRUCTION COST	RAILROAD RIGHT OF WAY CONSTRUCTION COST
Partial Tree Removal, Root Cutting, and Tile Lining	\$113,562.50	\$87,400.00
Full Tree Removal and Partial Tile Replacement	\$107,525.00	\$107,295.00

It should be noted that said costs include materials, labor, and equipment supplied by the contractor to complete the necessary repair and include applicable engineering, construction observation, and project administration fees by Clapsaddle-Garber Associates. However, said costs do not include any interest, legal fees, county administrative fees, crop damages, other damages, previous repairs, fees to date, wetland mitigation fees, or reclassification fees (if applicable). As always, all costs shown are opinions of Clapsaddle-Garber Associates based on previous lettings on other projects. Said costs are just a guideline and are not a guarantee of actual costs.

7.0 OWNERSHIP AND CLASSIFICATIONS – Any and all information concerning ownership of lands and classifications of said lands within Drainage District No. 86 can be obtained from the Hardin County Auditor's office.

It should be noted that Iowa Code Chapter 468.65 states "When, after a drainage . . . district has been established . . ." and "... a repair . . . has become necessary, the board may consider whether the existing assessments are equitable as a basis for payment of the expense of . . . making the repair . . ." and "If they find the same to be inequitable in any particular . . . they shall . . . order a reclassification . . ." Based on this, it is our opinion that a reclassification may be required if the repair were to move forward.

8.0 RECOMMENDATIONS – There is a definite need to perform one of the above-mentioned actions. The repair would remove the identified current and future restrictions and impediments to the Main tile and extend the serviceable lifespan of the same. Therefore, it is recommended that the Hardin County Board of Supervisors, acting as District Trustees, should take action to accomplish the following:

- Approve the Updated Engineer's Report as prepared by Clapsaddle-Garber Associates.
- Hold the required hearing on the proposed repairs.
- Adopt one of the recommendations of the Updated Engineer's Report.
- Direct plans and specifications for the proposed repairs be prepared by Clapsaddle-Garber Associates.
- Consult legal counsel to properly notify the railroad to proceed with their construction per Iowa Code 468.109 and 468.110.
- Notify the railroad to proceed with their construction per Iowa Code 468.109 and 468.110.
- Proceed with receiving bids from interested contractors for necessary portions by Clapsaddle-Garber Associates.
- Award contract to the lowest responsible contractor.

DD 86 LANDOWNER MEETING MINUTES

JULY 17, 2019

7/17/2019 - Minutes

1. Open Meeting

Hardin County Board of Supervisors Chairperson, Renee McClellan, opened the meeting. Also present were Supervisors Lance Granzow and BJ Hoffman; Landowner John Nissley; Lee Gallentine and Zeb Stanbrough with Clapsaddle-Garber Associates (CGA); Drainage Clerk, Becca Junker.

2. Approve Agenda

Granzow moved, Hoffman seconded to approve the agenda as provided. All ayes. Motion carried.

3. Approve Claims For Payment

Hoffman moved, Granzow seconded to approve the claims for payment with pay date of Friday, July 19, 2019. All ayes. Motion carried.

DD 22- Construction Phase Clapsaddle-Garber Assoc 456.7

DD 78 - Investigation of ponding Clapsaddle-Garber Assoc 365.2

DD 86 - Inv. outlet structure, trees and siltation Clapsaddle-Garber Assoc 352.2

DD 9 - Hearing for Eng Rpt & Supp Eng Rpt for Main Clapsaddle-Garber Assoc 1118.8

DD 38 - Finalization of repair to lat 4 Clapsaddle-Garber Assoc 308.7

DD 52 - Communicating with Shawn Piel The Davis Brown Law Firm 40

DD HF 5-75 - Notice of Public Hearing Times Citizen 97.76

4. Introductions/Attendance

Introductions were made and attendance verified.

5. Explanation Of Investigation Report

Nissley explained he was representing Grove Revocable Trust, he went on to say that there was work done in this district a few years ago and he is concerned with the talk of another project. He went on to express his concerns over the investigation report saying, "friend of Monarch pond landowner reported", Granzow clarified that although the friend spoke, the owner was also present at the meeting. The meeting was turned over to Gallentine who explained his findings from the investigation report. Gallentine explained that there is already restricted drainage in the Main tile because of the trees. CGA's suggestion is to have all the trees within 50' of the Main tile downstream of Dago Lake be removed, following the removal of trees it is recommended to find out the condition of the tile. He went on to explain that his estimated cost for tree removal is between \$25,000- \$40,000, which is low enough that neither a hearing nor an engineer's report would be required.

Granzow then asked what it would cost to cut and dig the trees and replace the tile. Gallentine explained that it is in the railroad right of way so by the time the trees are removed, and the pipe is replaced it could easily be \$80-\$100 per foot plus the fees from the railroad. McClellan asked if Canadian National was easier to deal with and Gallentine explained that they have a new point of contact that he has not worked with yet. He further went on to say that there is no way to give a firm estimated cost without doing an engineer's report.

6. Comments/Discussion

None.

7. Possible Action

Hoffman moved, McClellan seconded to instruct CGA to further investigate and create an engineers report, prioritizing areas for concern by televising in reverse. All ayes. Motion carried.

8. Other Business

None.

9. Adjourn Meeting

Hoffman moved, Granzow seconded to adjourn the meeting. All ayes. Motion carried.



Drainage Work Order Request For Repair Hardin County

Date: 4/29/2019

Work Order #: WO00000252

Drainage District: DDs\DD 86 (51114)

Sec-Twp-Rge: _____ Qtr Sec: _____

Location/GIS: _____

Requested By: Aaron Matthews

Contact Phone: _____

Contact Email: _____

Landowner (if different): _____

Description: DD 86 - Outlet structure on Matthews property is becoming washed out with ponding
probelms

Repair labor, materials and equipment: _____

Repaired By: _____ Date: _____

Please reference work order # and send statement for services to:

Hardin County Auditor's Office
Attn: Drainage Clerk
1215 Edgington Ave, Suite 1
Eldora, IA 50627
Phone (641) 939-8111
Fax (641) 939-8245

For Office Use Only

Approved: _____ Date: _____

Drainage District:

86

Investigation Report:

- Friend of Monarch pond landowner reported erosion around Monarch pond outlet structure and siltation from adjoining properties located in NW¼ of Section 24, Township 89 North, Range 21 West.
- Met with friend, visually observed Monarch pond area, and found the following:
 - Erosion of Monarch pond outlet/district tile inlet appears to be solely affecting decorative field stone in area and does not appear to be endangering district facility.
 - Sand washing onto Monarch pond property is from surface water south of railroad tracks and from field to the west (both are within district boundaries).
- Visually searched area along Main tile route downstream (to end of mapped Main tile) and upstream (to Dago Lake) and found the following trees to be within approximately 50' of assumed Main tile route.
 - 20 - Maples (less than 6"Ø)
 - 1 - Maple (5'Ø or larger)
 - 40 - Box Elders and Mulberries (less than 12"Ø) in Railroad Right of way
 - 3 - Cottonwood (30"Ø or larger)
 - 1 - Elm (12"Ø)
 - 5 - Elms and Ash (less than 12"Ø)
 - 14 - Box Elders and Honeysuckle Brush (less than 15"Ø)
 - 31 - Box Elders (20"Ø)
 - 15 - Box Elders and Elderberry Brush (less than 6"Ø)
 - 24 - Box Elders and Ash (20"Ø)
 - 50 - Box Elders and Ash (less than 15"Ø)

Said trees appear to be impeding drainage as there are intakes downstream of Georgetown Road that are full of stagnant water and surrounded by siltation (evidence of overflow).

Contractor Time and Materials (spent while CGA was on-site):

None as only investigation was performed

Additional Actions Recommended:

All the trees listed above are the species that typically have major negative impacts on the capacity of district tile. It is CGA's opinion that they already have restricted the drainage the Main Tile and will fully plug it if allowed to continue to grow. Therefore, it is our recommendation that the Main tile route be verified, all trees within 50' of the Main tile downstream of Dago Lake be removed, and the drainage capacity of the Main tile reinstated. It is our opinion that the cost of verifying the Main tile route and removing these trees would be between \$25,000-\$40,000. This cost is low enough that neither a hearing nor an engineer's report would not be required. However, the extent of restriction in the Main tile and appropriate corrective actions cannot be identified until the trees are removed. Therefore, an opinion of probable construction cost cannot be generated for this portion of the recommended work.

Also based on the above, the siltation of concern is carried by surface water between private landowners and is not a district issue.



DATE:

4/25/19

DAYS OF WEEK:

S	M	T	W	T	F	S
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SHEET NO.

_____ OF _____

MONARCH LAKE

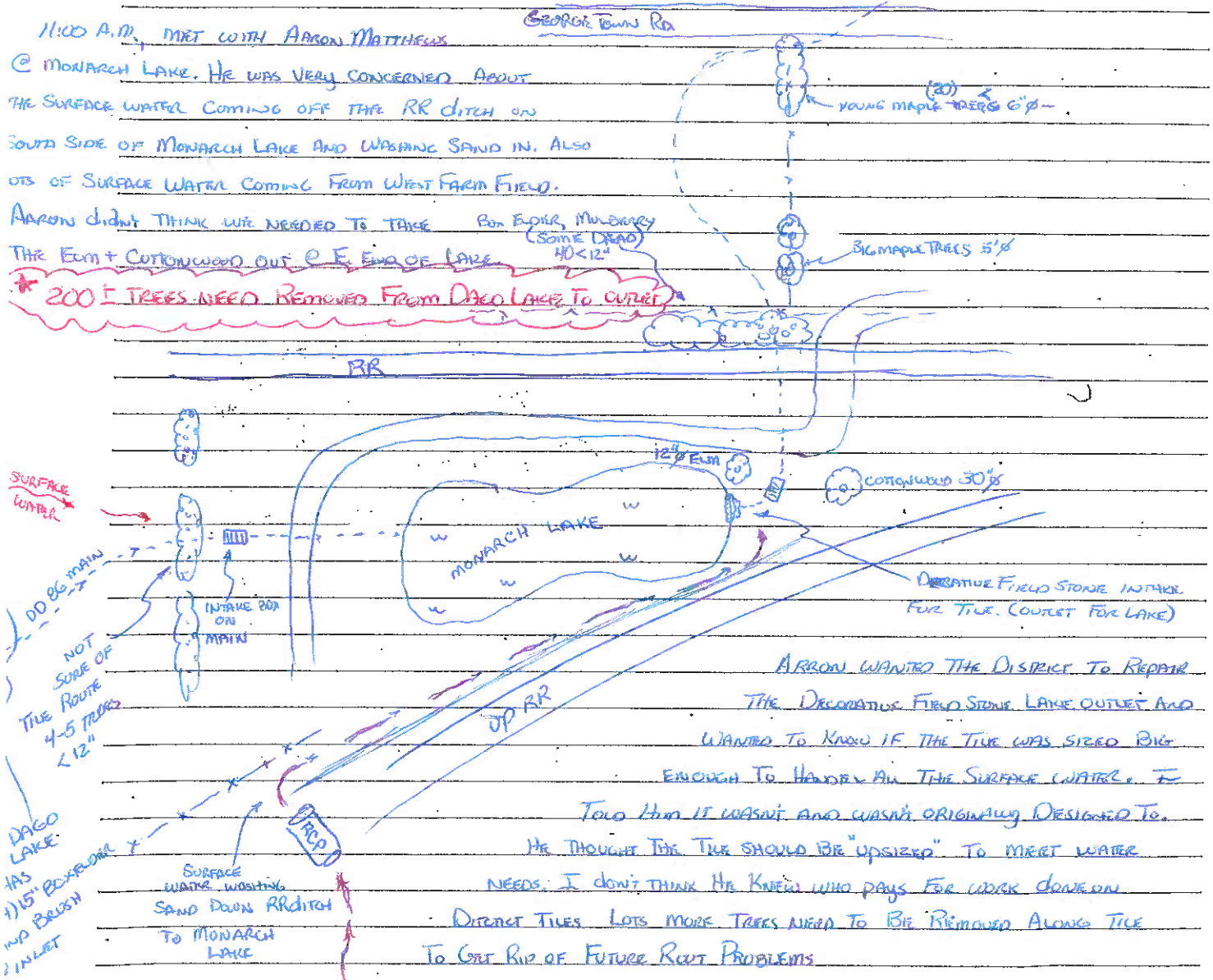
RAIN, 60°, WIND FROM NW.

11:00 A.M., MET WITH ARON MATTHEWS
 @ MONARCH LAKE. HE WAS VERY CONCERNED ABOUT
 THE SURFACE WATER COMING OFF THE RR DITCH ON
 SOUTH SIDE OF MONARCH LAKE AND WASHING SAND IN. ALSO
 OTS OF SURFACE WATER COMING FROM WEST FARM FIELD.

The Elm + Cottonwood out @ E End of Lake

* 200 ± TREES NEED REMOVED FROM DRAIN LAKES TO CURB

(Some Dead)
HO < 12"



ARROW WANTED THE DISTRICT TO REPAIR THE DECORATIVE FIELD STONE LAKE OUTFLET AND WANTED TO KNOW IF THE TUE WAS SIZED BIG ENOUGH TO HANDLE AN TIE SURFACE WATER. IF NOT IT WASN'T AND WASN'T ORIGINALLY DESIGNED TO. THE TUE SHOULD BE "UPSIZED" TO MEET WATER. THINK HE KNEW WHO PAYS FOR WORK DONE ON MORE TREES AHEAD TO BE REMOVED ALONG THE ROOT PROBLEMS

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature: _____

Date Prepared:

4/25/19

Reviewed by:

Engineer

Date Reviewed

CONSTRUCTION ENGINEERING
OBSERVATION REPORT

DATE:

DAYS OF WEEK:

S M T W T F S

SHEET NO.

2 OF 2

PROJECT NUMBER:

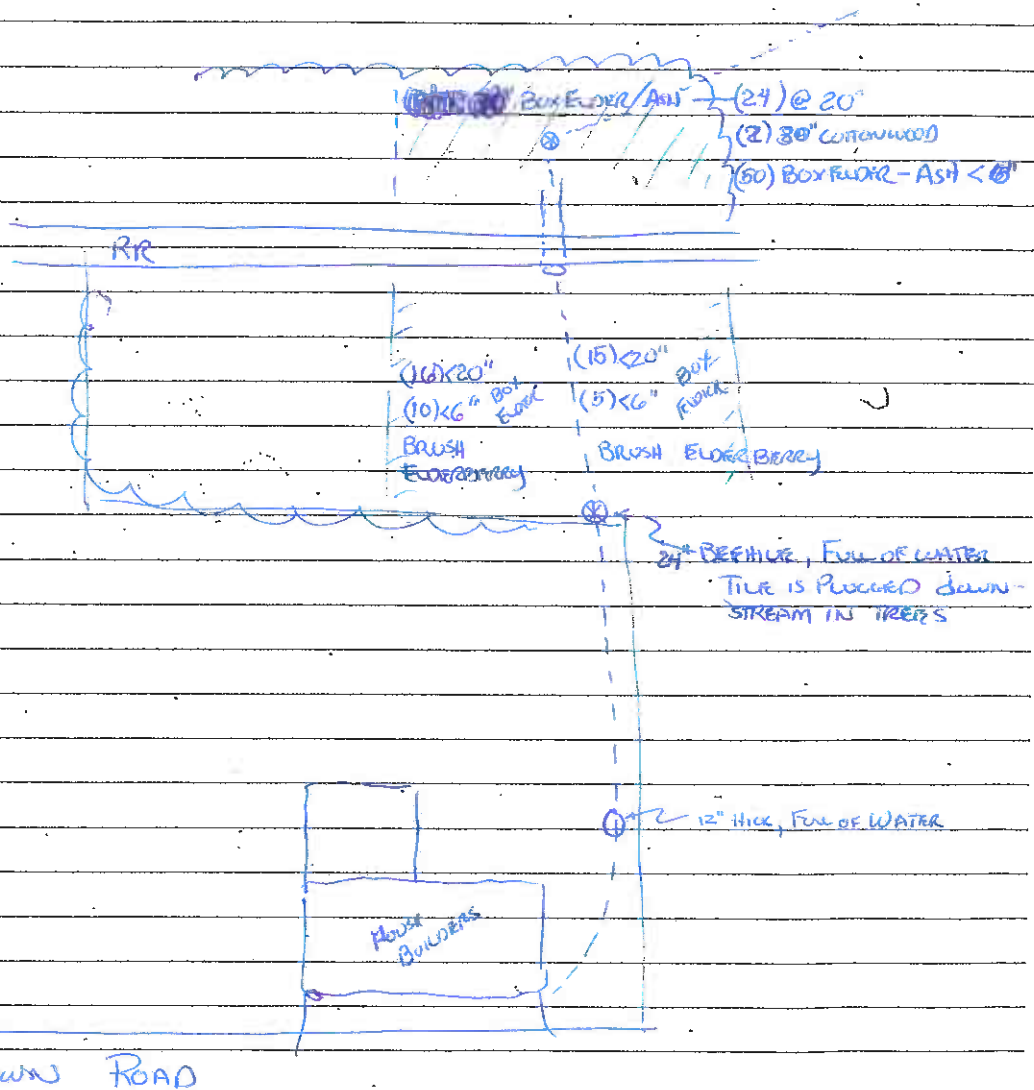
67893

COUNTY, ROUTE, ROAD:

DD 86

LOCATION:

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB
NAME, ITEM NO. AND LOCATION



I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature:

[Signature]

Date Prepared:

4/25/13

Reviewed by:

☐ Engineer

Date Reviewed

DAGO LAKE INLET (DD86 OLD MAIN) (14) 15" BOX ELDER AND HONEYSUCKLE BRUSH NEEDS REMOVED



LOOKING WEST FROM MONARCH TO DAGO LAKE



Looking East @ Monarch Lake Tule Route (5) Trees Need Removed (Not Cedar Trees)



INTAKE ON TILE @ E. END OF MONARCH LAKE



Looking W. From INTAKE



SURFACE DRAINAGE From S. RR @ MONARCH LAKE



LOOKING E. ON N. R/W RR @ S. EDGE MONARCH PROP.



Looking upstream From Georgetown Road



11E ROUTE 1



Looking upstream From S. Side RR To Georgetown Road



Looking downstream @ RR mainline, surface Turb drains into DD86 tile



Looking upstream @ Tile Route towards Georgetown, Bee Hive is @ the Turn to East



Looking Easterly From BEEHIVE TO OUTLET IN CITY STORM SEWER



CITY STORM SEWER OUTLET



Looking upstream from City Storm Sewer Outlet



BEEHIVE INTAKE IS IN TREES SOMEWHERE 90+ TREES IN THE R/W N. OF RR



Looking downstream from trees



TILE ROUTE
↓

Looking upstream From where Surface water Dumps into TIE (in Standing on it)



Looking upstream towards Georgetown Rd.



Looking downstream From S R/w spur RR



TILE ROUTE MARKED WITH BROKEN TILE



TILE ROUTE WITH CHARDS IN TREE ROOTS



TILE CHADS THRU ELDERBERRY BRUSH



TILE REPAIR PIECES DISCARDED



BREEZIE OVERFLOWING @ NE COR OF GEORGETOWN ADD.



TILE HAS BEEN PARTIALLY PLUGGED FOR SOME TIME
LOOKING DOWN STREAM, NOTE ALL SEDIMENT SAND BLOWN OUT OF INTAKE



LOOKING @ NEW TILE UPSTREAM TOWARDS GEORGETOWN RO.



Looking downstream @ NE cor. of Georgetown AOD.



12" HICK INTAKE FULL OF WATER, SWIRLING



Looking downstream From SE Cor Georgetown AOD.



LOOKING W. @ TILE ROUTE ON N. SIDE GEORGETOWN RD.



Looking upstream @ RR @ N. Side Monarch Lake, 40± <12"Ø trees in RR R/W



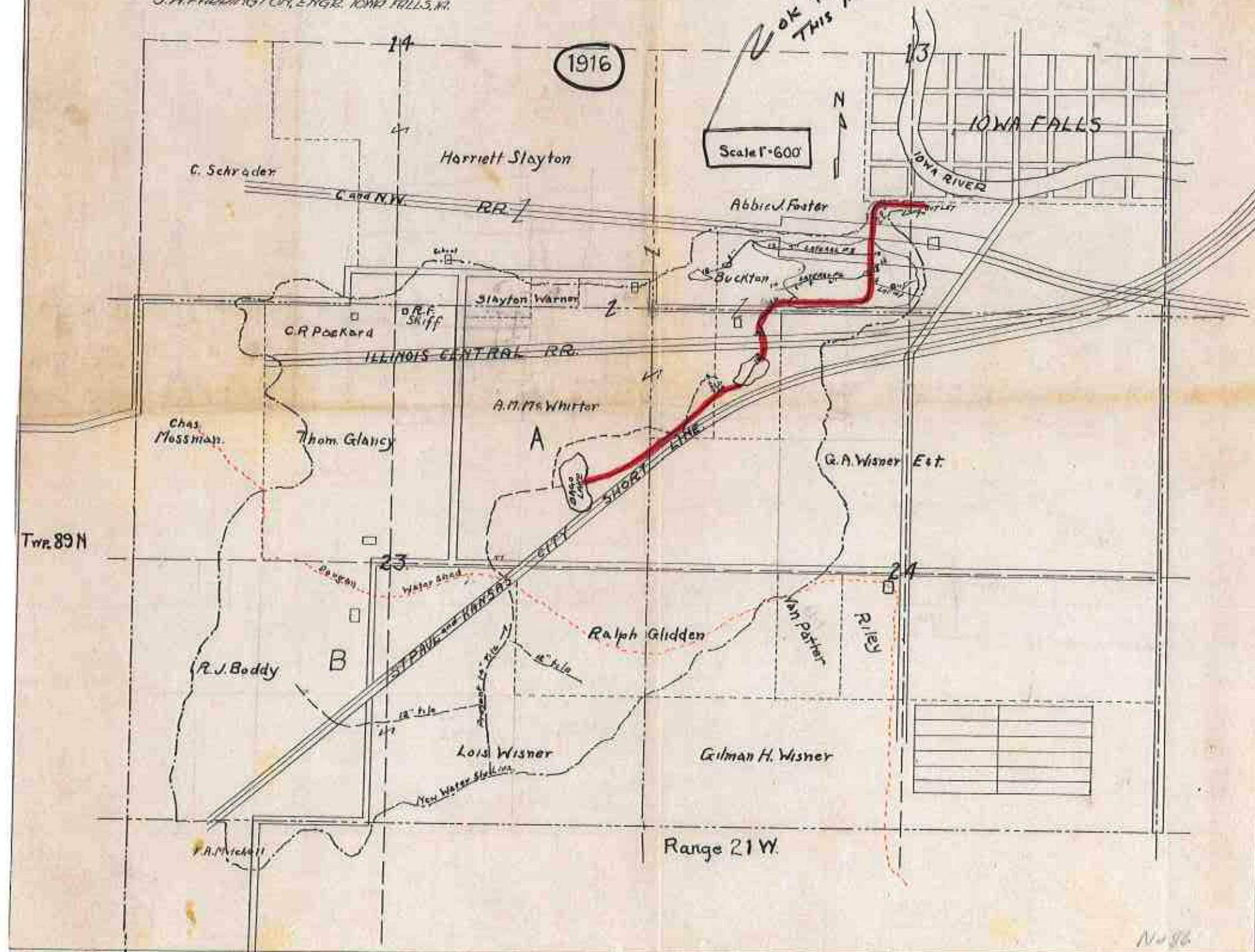
TREES IN RR R/W

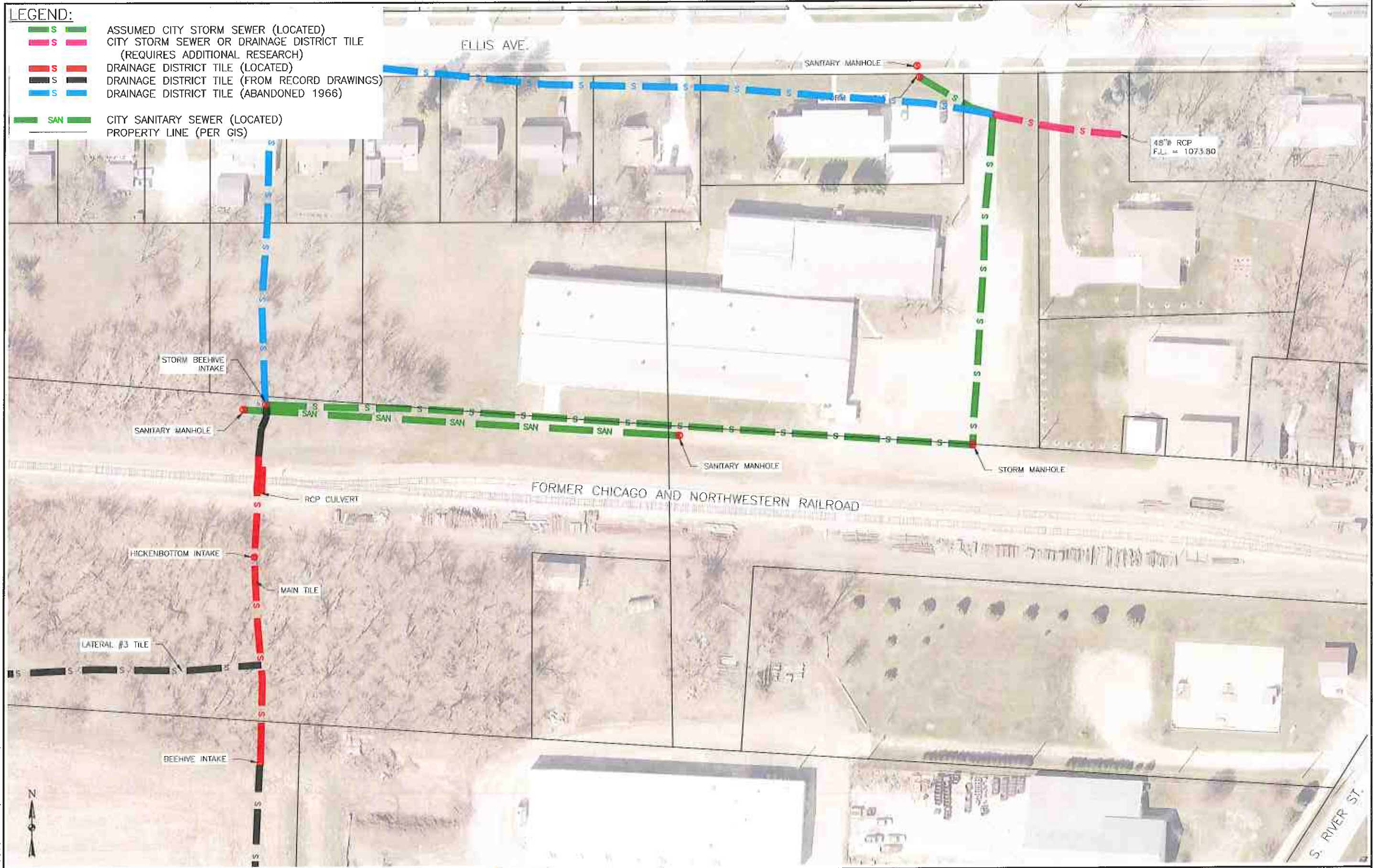


Looking downstream with 5' Ø maple that needs removed



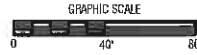
**PLAT OF
BUCKTON**
DRAINAGE DISTRICT NO. 86
HARDY COUNTY, IA.
J. H. FARRINGTON, ENGR. IOWA FALLS, IA.





- LEGEND:**
- S— ASSUMED CITY STORM SEWER (LOCATED)
 - S— CITY STORM SEWER OR DRAINAGE DISTRICT TILE (REQUIRES ADDITIONAL RESEARCH)
 - S— DRAINAGE DISTRICT TILE (LOCATED)
 - S— DRAINAGE DISTRICT TILE (FROM RECORD DRAWINGS)
 - S— DRAINAGE DISTRICT TILE (ABANDONED 1966)
 - SAN— CITY SANITARY SEWER (LOCATED)
 - PROPERTY LINE (PER GIS)

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NO.	REVISION	BY	DATE	NO.	REVISION	BY	DATE



Chapdelo-Garber Associates, Inc.
Toll Free (800) 942-7081
www.cgaconsultants.com

DESIGNED: ZJS DATE: 2019-11-04
DRAWN: ZJS DATE: 2019-11-04
CHECKED: JLG DATE: 2019-11-04
APPROVED: JLG DATE: 2019-11-04

DRAINAGE DISTRICT #86
HARDIN, IOWA

DETAILED INVESTIGATION MAP

PROJECT NO.
6789.3
SHEET NO.
1

Project Diary

Project: Main Tile Repairs Drainage District No.			
CGA PN: <u>6789.3</u>	Days Charged: <u>NA</u>	Report No. <u>1</u>	Proj. Mgr. <input checked="" type="checkbox"/> <u>LEE GALINTINE</u>
Contractor: <u>NA</u>		Date: <u>9/26/19</u>	
Superintendent: <u>NA</u>	Weather Conditions: <u>CLEAR</u>	Precip.: <u>0"</u>	Temp. Hi: <u>48</u> ° Temp. Low: <u>75</u> °
INSPECTOR: Time Arrived: <u>8:30</u> Time Left: <u>2:00</u>		Contractor: Time Arrived: Time Left:	
<p>1. General Remarks and Work Accomplished: <u>SET X ON CPT # 3380, INTO SEC. COR. 3414. WENT TO OUTLET @ 48" RCP #3478. PUT IN TILE LOCATOR UPSTREAM TOWARDS MH 3475. GOT WITH GPS TO #3474, WENT NEXT TO BEEHIVE #3487. PUT IN LOCATOR DOWNSTREAM (E.) TO #3485. FOUND WHERE TILE CAME IN ON W. SIDE OF RR CASING 8' S. OF MH #3487. TRIED TO LOCATE UP TILE LINE, COULD ONLY GET 2' ±, MUST BE ELBOW. WENT NEXT TO HIGH INTAKE ON CLAY TILE @ 3491, LOCATED WITH CABLE N. + S. AND ALSO PROBED TILE TO BEEHIVE McDOWELL SET @ #3503 E. WENT NEXT TO MH #3513, LOCATED W. + N. TO CONNECTION (BLIND) @ 3512 WITH 48" RCP. GOT MAG READING @ POSSIBLE MH LID @ 3512. (UNDER NEW HMA ROAD) FOR AG PRODUCTS. TILE @ MH 3487 IS RUNNING 8" DEEP TO OUTLET. BEEHIVE INTAKE @ 3503 IS FULL TO GROUND EL.</u></p> <p>ACTION: <u>1) TV RCP FROM 3487 DOWNSTREAM (CABLE RAN INTO BLOCKAGE @ 3485)</u> <u>2) CLEAN AND, OR REPLACE TILE FROM 3495 - 3503</u> <u>3) REMOVE ALL TREES IN TILE ROUTE.</u></p>			
<p>2. Changes or Extra Work Ordered:</p> <p><u>4) CLEAN MH #3513, STICKS AND LOGS IN MH BLOCKING FLOW</u> <u>5) NEED SURFACE INTAKE TO PICK UP WATER ALONG SURFACE SWALE ROUTE. (CITY)? ESPECIALLY IN PARKING LOT AREA</u></p>			
3. Test Samples Taken:			
4. Visitors to Site:			
5. Other Work Crews or Project (utilities, subcontractors, etc.) and Work Done:			
6. Attachments (total sheets attached <u>0</u>):			

RANDY B, CRIS S.

By: [Signature]
Inspector
Distribution: Project Mgr. (Original), Inspector (Copy)
Form 9753

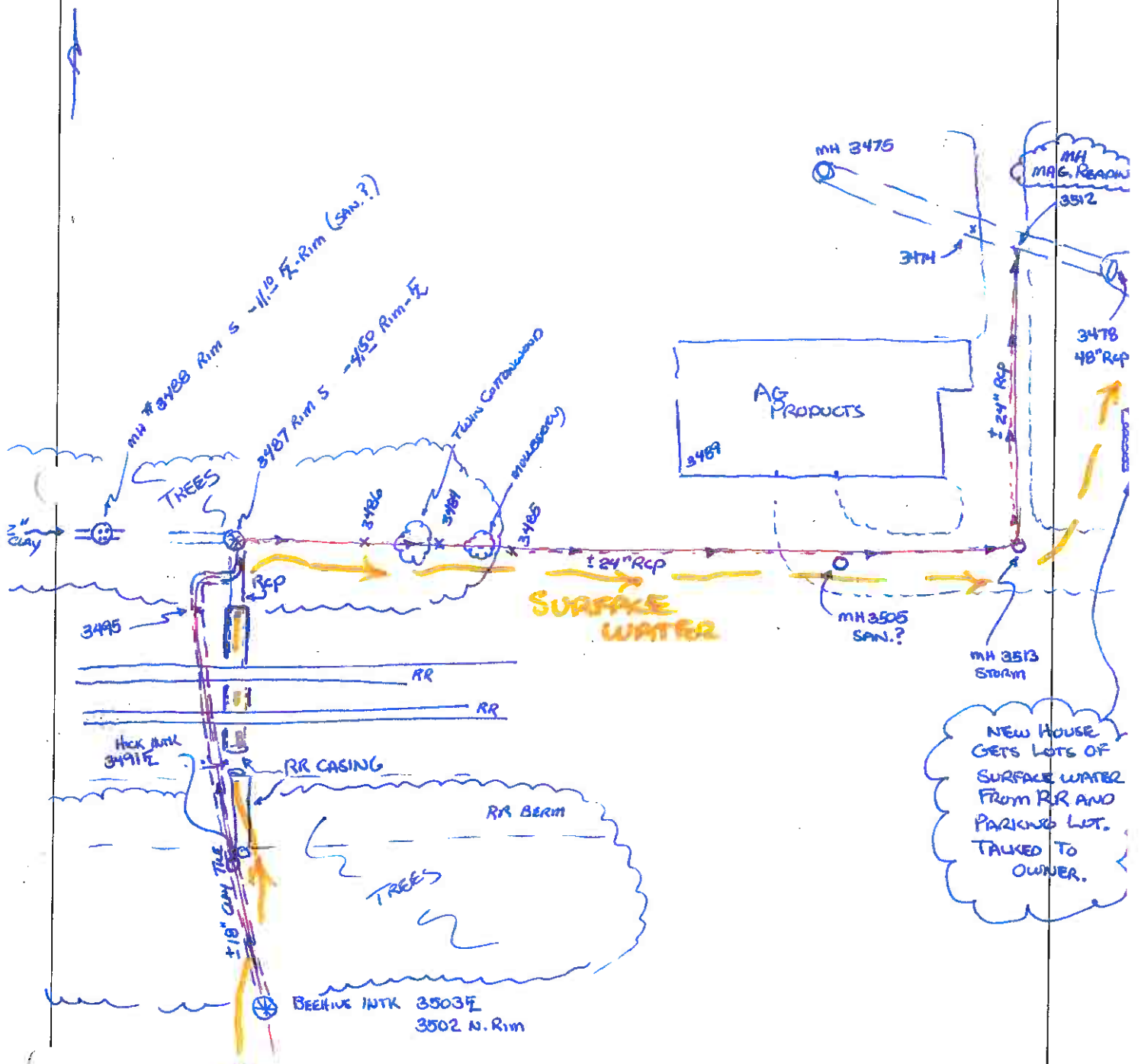
Project Diary (continued)

CGA PN: 6789.3

Report
No. 1

Date: 9/26/19

1. General Remarks and Work Accomplished (Continued):



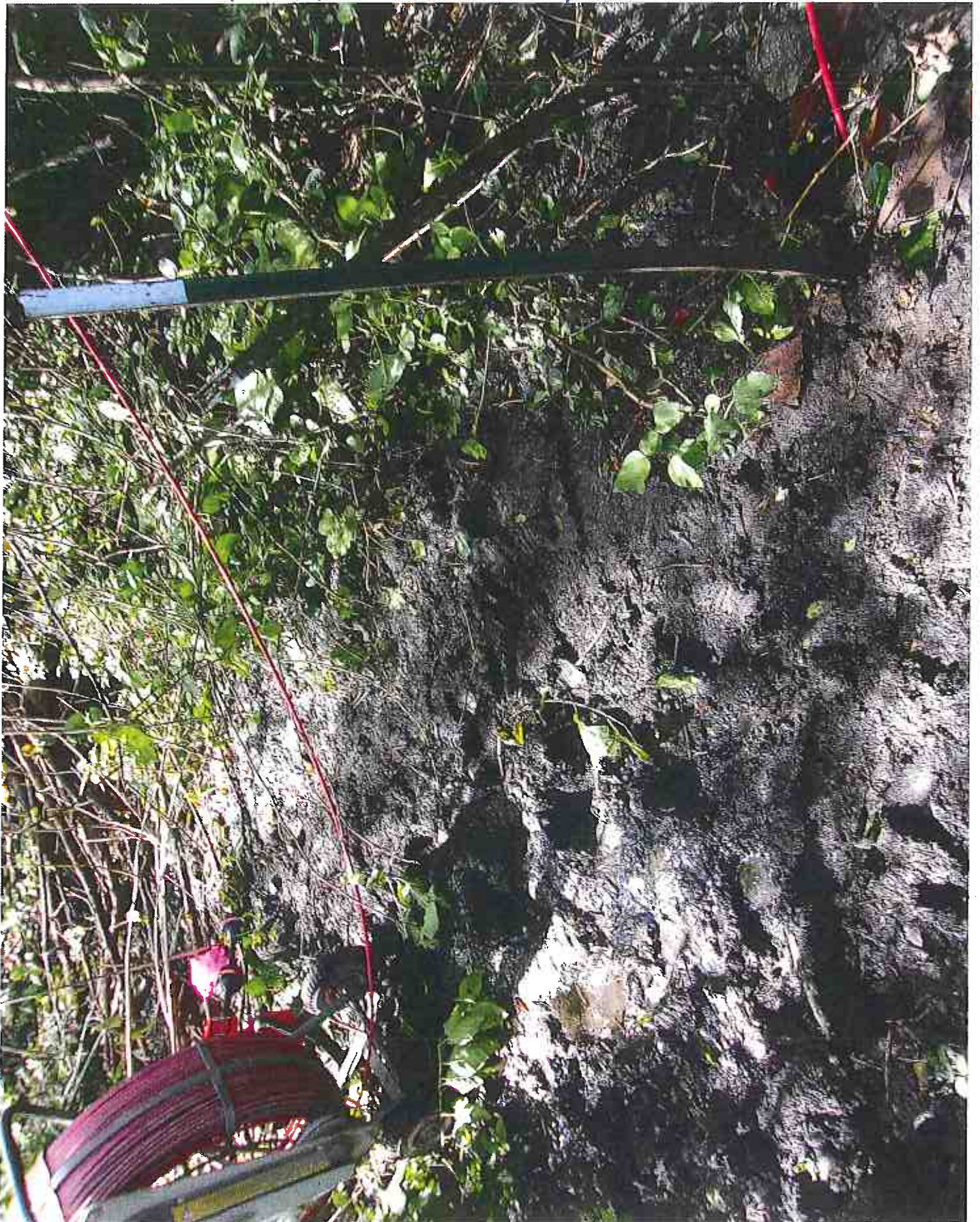
6789 dd86 9-26-19RB

3477,3651680.440,4983104.455,1078.355,TOP RCP OUTLET
3478,3651680.313,4983105.608,1073.799,FL RCP
3479,3651354.081,4982314.182,1086.545,FL CASING
3480,3651355.160,4982314.183,1089.612,TOP CASING
3481,3651364.616,4982315.482,1091.678,TOP RR RAIL
3482,3651369.515,4982315.581,1091.676,TOP RR RAIL
3483,3651379.609,4982315.031,1089.631,TOP RCP
3484,3651433.008,4982441.711,1088.871,GS STORM LOCATE
3485,3651431.455,4982473.316,1089.120,GS STORM LOCATE
3486,3651433.578,4982388.504,1088.327,GS STORM LOCATE
3487,3651436.488,4982317.765,1087.828,S RIM BEEHIVE
3488,3651431.921,4982296.898,1088.592,S RIM MH
3489,3651456.960,4982549.944,1088.684,BLDG COR E-N
3490,3651297.162,4982307.748,1087.020,GS 1'E OF HICK INTK/TILE
3491,3651297.027,4982307.497,1085.007,FL CLAYTILE
3492,3651360.122,4982309.657,1090.503,GS TILE LOCATE
3493,3651347.395,4982310.398,1086.973,GS TILE LOCATE
3494,3651376.522,4982311.324,1089.935,EOG TILE LOCATE
3495,3651389.767,4982311.278,1089.232,GS TILE LOCATE
3496,3651275.255,4982308.771,1088.404,GS TILE LOCATE
3497,3651275.184,4982308.284,1088.482,GS PROBED TILE
3498,3651249.013,4982309.842,1089.084,GS PROBED TILE -3.0
3499,3651235.237,4982310.759,1089.114,GS PROBED TILE -3.0
3500,3651212.757,4982312.685,1088.970,GS PROBED TILE -3.0
3501,3651184.503,4982315.255,1088.984,GS PROBED TILE -3.0
3502,3651109.137,4982314.245,1088.881,N RIM BEEHIVE
3503,3651108.629,4982313.740,1085.078,FL TILE
3504,3651101.068,4982315.033,1089.399,GS TREELN
3505,3651407.060,4982698.344,1088.055,N RIM MH -11.5FL
3506,3651420.308,4982970.309,1084.316,GRAV STORMLOCATE
3507,3651463.129,4982973.477,1084.120,GRAV STORMLOCATE
3508,3651510.313,4982976.162,1085.181,EOA STORMLOCATE
3509,3651565.740,4982979.843,1085.831,HMA STORMLOCATE
3510,3651610.135,4982981.047,1085.829,HMA STORMLOCATE
3511,3651650.538,4982985.129,1085.340,HMA STORMLOCATE
3512,3651694.518,4982988.143,1084.778,HMA STORMLOCATE
3513,3651397.016,4982969.243,1085.472,N RIM MH-5.4FL

San. Sewer @ *3488



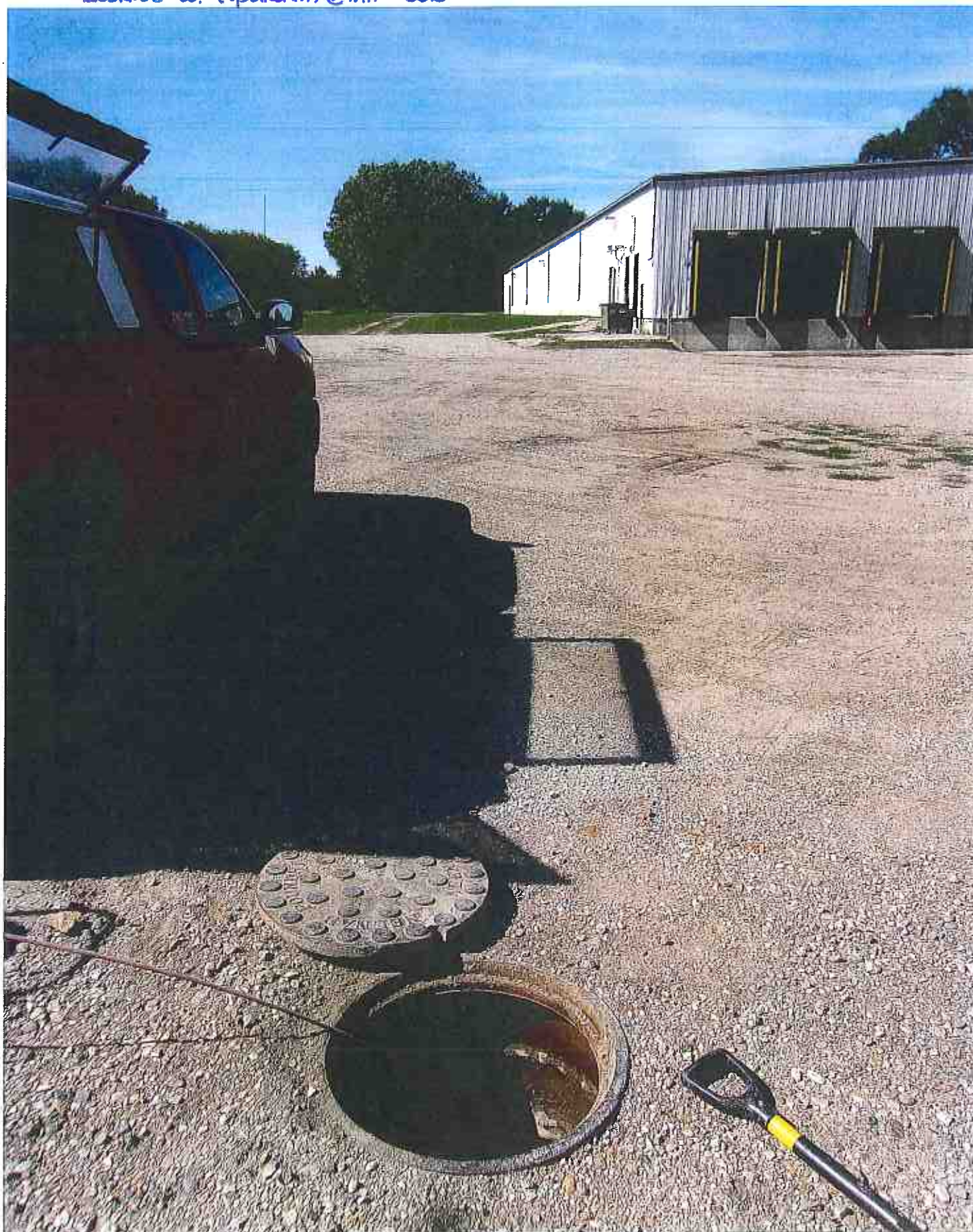
Looking S. (upstream) @ Hicc Intake on Clay Tive @ #3491



Looking N. (upstream) @ Hick Intake on Clay Twp #8491



Looking W. (upstream) @ MH # 3513



Looking N. (downstream) @ MH. #3513



Looking E. on RCP Route (Outlet @ Reel)



Looking upstream on RCP Route



LOOKING E. (downSTREAM) IN MH #3487



LOOKING @ DD68 OUTLET @ SIDE OF RR CASING



Looking WEST From MH#3487



MA # 3487 DD 68 OUTLET



Looking South (upstream) @ MH #3487. Note: Our Tile Outlet on Rt. Side.

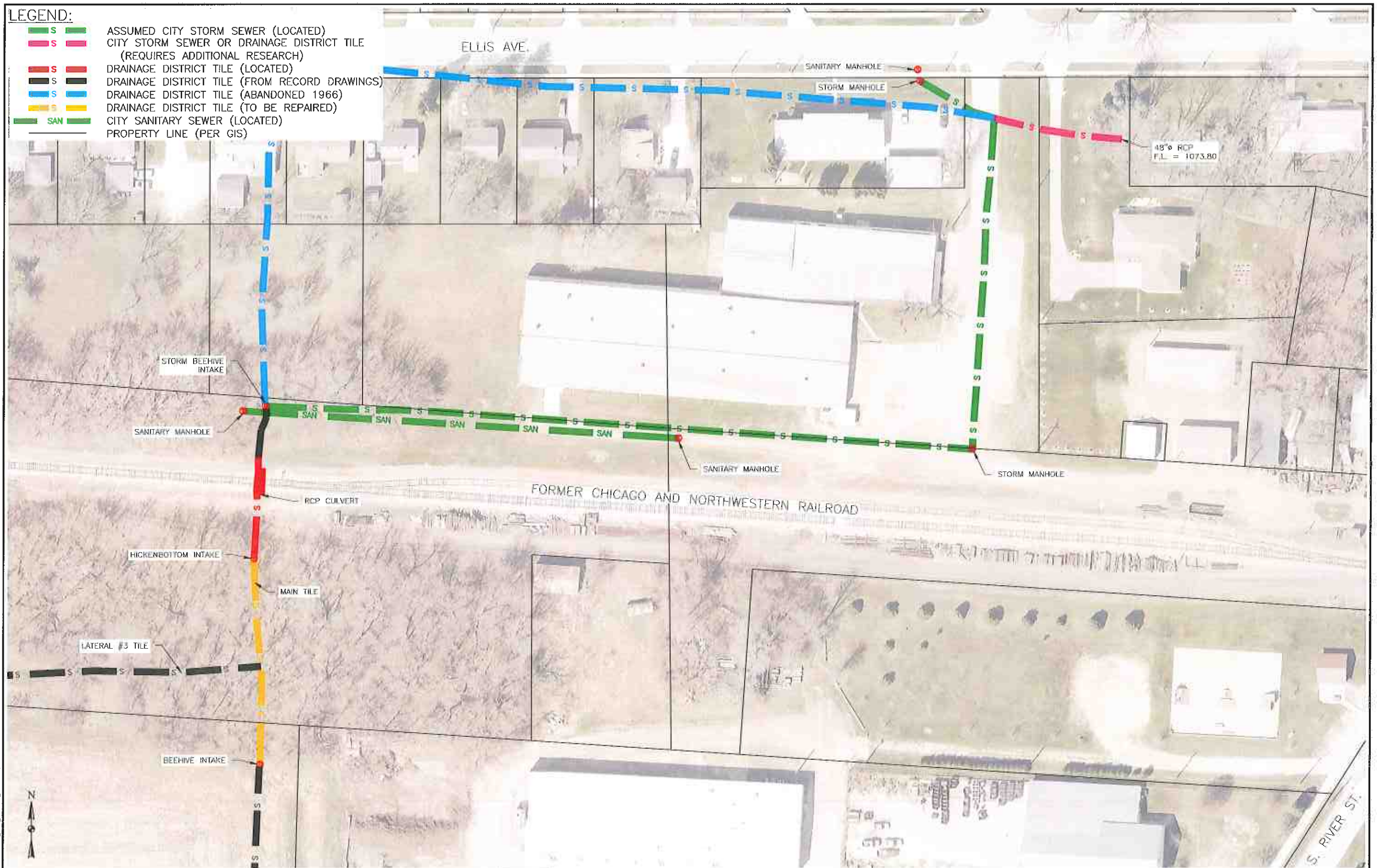


MH. #3488 SAN.?



LEGEND:

- S— ASSUMED CITY STORM SEWER (LOCATED)
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NO.	REVISION	BY	DATE	NO.	REVISION	BY	DATE



DESIGNED: ZJS DATE: 2019-11-04
 DRAWN: ZJS DATE: 2019-11-04
 CHECKED: JLG DATE: 2019-11-04
 APPROVED: JLG DATE: 2019-11-04

DRAINAGE DISTRICT #86 HARDIN, IOWA

DETAILED REPAIR MAP
 PROJECT NO. 6789.3
 SHEET NO. 1



By: Z.J.S.

Date: 11/8/2019

Checked By: L.O.G.

Date: 12/2/2019

Updated By: L.O.G.

Date: 1/17/2025

Updated Engineer's Opinion of Probable Construction Cost

Project: Main Tile **Repair** for D.D. #86

Location: Section 13, T89N, R21W Hardin County, Iowa

PARTIAL TREE REMOVAL, ROOT CUTTING, AND TILE LINING

ITEM #	DESCRIPTION	Unit Cost	Units	Quantity	Units	Total Cost
DISTRICT CONSTRUCTION COSTS						
1	ROOT CUTTING (18")	\$ 50.00	LF	80	LF	\$ 4,000.00
2	CIPP TILE LINING (18")	\$ 200.00	LF	80	LF	\$ 16,000.00
3	PRIVATE TILE REINSTATEMENT	\$ 1,000.00	EA	2	EA	\$ 2,000.00
4	INTAKE STRUCTURE (ACCESS FOR LINING)	\$ 6,000.00	EA	1	EA	\$ 6,000.00
5	INTAKE REMOVAL	\$ 1,000.00	EA	1	EA	\$ 1,000.00
6	SEEDING	\$ 2,000.00	LS	1	LS	\$ 2,000.00
7	TILE LOCATE (FROM DAGO LAKE TO START OF LINING)	\$ 8,000.00	LS	1	LS	\$ 8,000.00
8	TREE REMOVAL (FROM DAGO LAKE TO START OF LINING)	\$ 40,000.00	LS	1	LS	\$ 40,000.00
DISTRICT CONSTRUCTION SUBTOTAL						\$ 79,000.00
Contingency (15%)						\$ 11,850.00
DISTRICT CONSTRUCTION TOTAL						\$ 90,850.00
Engr. & Const. Observation (25%)						\$ 22,712.50
DISTRICT TOTAL COST						\$ 113,562.50
INSIDE RAILROAD RIGHT OF WAY CONSTRUCTION COSTS						
RR1	ROOT CUTTING (18")	\$ 50.00	LF	180	LF	\$ 9,000.00
RR2	CIPP TILE LINING (18")	\$ 200.00	LF	180	LF	\$ 36,000.00
RR3	LATERAL 3 REINSTATEMENT	\$ 1,000.00	EA	1	EA	\$ 1,000.00
RR4	INTAKE STRUCTURE (ACCESS FOR LINING)	\$ 6,000.00	EA	2	EA	\$ 12,000.00
RR5	INTAKE REMOVAL	\$ 1,000.00	EA	1	EA	\$ 1,000.00
RR6	SEEDING	\$ 2,000.00	LS	1	LS	\$ 2,000.00
RR7	TREE REMOVAL (FOR ACCESS)	\$ 15,000.00	LS	1	LS	\$ 15,000.00
RAILROAD CONSTRUCTION SUBTOTAL						\$ 76,000.00
Contingency (15%)						\$ 11,400.00
RAILROAD CONSTRUCTION TOTAL						\$ 87,400.00

Note: Per Iowa Code 468.111, railroad crossings (highlighted pink) are not typically a district expense at locations agreed to by the railroad or at the location of natural waterways.



Updated Engineer's Opinion of Probable Construction Cost

Project: Main Tile **Repair** for D.D. #86

Location: Section 13, T89N, R21W Hardin County, Iowa

By: Z.J.S.

Date: 11/8/2019

Checked By: L.O.G.

Date: 12/2/2019

Updated By: L.O.G.

Date: 1/17/2025

FULL TREE REMOVAL AND PARTIAL TILE REPLACEMENT

ITEM #	DESCRIPTION	Unit Cost	Units	Quantity	Units	Total Cost
DISTRICT CONSTRUCTION COSTS						
101	18" PPE OR RCP TILE WITH ROCK BEDDING	\$ 100.00	LF	80	LF	\$ 8,000.00
102	PRIVATE TILE CONNECTION	\$ 1,500.00	EA	2	EA	\$ 3,000.00
103	INTAKE STRUCTURE	\$ 6,000.00	EA	1	EA	\$ 6,000.00
104	TILE REMOVAL	\$ 10.00	LF	80	LF	\$ 800.00
105	INTAKE REMOVAL	\$ 1,000.00	EA	1	EA	\$ 1,000.00
106	TREE REMOVAL (FOR 100' AT REPLACEMENT)	\$ 5,000.00	LS	1	LS	\$ 5,000.00
107	SEEDING	\$ 3,000.00	LS	1	LS	\$ 3,000.00
108	TILE LOCATE (FROM DAGO LAKE TO START OF REPLACEMENT)	\$ 8,000.00	LS	1	LS	\$ 8,000.00
109	TREE REMOVAL (FROM DAGO LAKE TO START OF REPLACEMENT)	\$ 40,000.00	LS	1	LS	\$ 40,000.00
DISTRICT CONSTRUCTION SUBTOTAL						\$ 74,800.00
Contingency (15%)						\$ 11,220.00
DISTRICT CONSTRUCTION TOTAL						\$ 86,020.00
Engr. & Const. Observation (25%)						\$ 21,505.00
DISTRICT TOTAL COST						\$ 107,525.00
INSIDE RAILROAD RIGHT OF WAY CONSTRUCTION COSTS						
RR1	18" PPE OR RCP TILE WITH ROCK BEDDING	\$ 100.00	LF	180	LF	\$ 18,000.00
RR2	LATERAL 3 CONNECTION	\$ 1,500.00	EA	1	EA	\$ 1,500.00
RR3	INTAKE STRUCTURE	\$ 6,000.00	EA	1	EA	\$ 6,000.00
RR4	TILE REMOVAL	\$ 10.00	LF	180	LF	\$ 1,800.00
RR5	INTAKE REMOVAL	\$ 1,000.00	EA	1	EA	\$ 1,000.00
RR6	SEEDING	\$ 5,000.00	LS	1	LS	\$ 5,000.00
RR7	TREE REMOVAL (FOR 100' AT REPLACEMENT)	\$ 60,000.00	LS	1	LS	\$ 60,000.00
RAILROAD CONSTRUCTION SUBTOTAL						\$ 93,300.00
Contingency (15%)						\$ 13,995.00
RAILROAD CONSTRUCTION TOTAL						\$ 107,295.00

Note: Per Iowa Code 468.111, railroad crossings (highlighted pink) are not typically a district expense at locations agreed to by the railroad or at the location of natural waterways.