UTILITY COMMISSION AGENDA
Wednesday, December 7, 2016
5:30 p.m.

1. **Meeting Called to Order**

2. **Roll Call**

3. **Consent Agenda**
The following items are considered non-controversial by staff and are recommended to be read and passed in one motion. Any commission member, staff, citizen or meeting attendee can request one or more items be pulled from the consent agenda and the item will be pulled and addressed immediately after the passage of the consent agenda. Otherwise, the following will be passed in one motion:

   A) Approval of Meeting Minutes from November 2, 2016 (pp. 5 - 26).

Agenda

4. Central Lakes Crossing Junior Box Retail Developers Agreement (pp. 27 - 37). **A full copy will be available at the meeting.
**Staff recommends the Utilities Commission make a motion to City Council to approve the Central Lakes Crossing Junior Box Retail Developers Agreement.*

5. WSB Elder Drive and Glory Road Feasibility Study for the HJ Junior Box and Multi-Tenant Developments (pp. 38 – 47).
**Staff recommends the Utilities Commission make a motion to City Council to approve the WSB Elder Drive and Glory Road Feasibility Study for the HJ Junior Box and Multi-Tenant Developments.*

6. 100% Petition for Turn Lane Improvements (pp. 48 – 49). **A full copy will be available at the meeting.
**Staff recommends the Utilities Commission make a motion to City Council to adopt Resolution No. XX-XX accepting the 100% Petition for turn lane improvements to the Central Lakes Crossing Junior Box Retail Development Project.*

7. Assessment Agreement for Central Lakes Crossing Junior Box Retail (pp. 50 – 52). **A full copy will be available at the meeting.

**Staff recommends the Utilities Commission make a motion to City Council to approve the Assessment Agreement for Central Lakes Crossing Junior Box Retail Development Project.*

8. WSB Professional Engineering Services Contract for the 2017 Elder Drive Improvements Project (pp. 53 – 70).
   **Staff recommends the Utilities Commission make a motion to City Council to approve the WSB Professional Engineering Services Contract for the 2017 Elder Drive Improvements Project in the not to exceed amount of $42,800.00.*

9. Northwoods Crossing Development Agreement (Enclosed in packet). **A full copy will be available at the meeting.
   **Staff recommends the Utilities Commission make a motion to City Council to approve the Northwoods Crossing Development Agreement.*

10. WSB Professional Engineering Services Contract for the 2016 Excelsior Road, Fairview Road and Edgewood Drive Improvements Project (pp. 71 – 84).
    **Staff recommends the Utilities Commission make a motion to City Council to approve the WSB Professional Engineering Services Contract for the 2016 Excelsior Road/Fairview Road/Edgewood Drive Improvements Project in the not to exceed amount of $835,269.00.*

11. 2018 Cypress Drive Improvements Project Monthly Status Report (Enclosed in packet).
    **Information only.*

12. 2018 Cypress Drive Improvements Project Geometric Layout (Enclosed in packet).
    **Staff recommends the Utilities Commission make a motion to City Council to approve the 2018 Cypress Drive Improvements Project Geometric Layout.*

13. 2018 Cypress Drive Improvements Project Traffic Study (Enclosed in packet)
    **Staff recommends the Utilities Commission make a motion to City Council to accept the 2018 Cypress Drive Improvements Project Traffic Study.*

14. Intersection Control Evaluation Report for Cypress Drive at College Road and Industrial Park Road (Enclosed in packet).
    **Staff recommends the Utilities Commission make a motion to City Council to approve the Intersection Control Evaluation Report for Cypress Drive at College Road and Industrial Park Road for the 2018 Cypress Drive Improvements Project.*

15. 2018 Cypress Drive Improvements Modified Phase I Environmental Site Assessment (Enclosed in packet).

**Staff recommends the Utilities Commission make a motion to City Council to approve the 2018 Cypress Drive Improvements Project Modified Phase I Environmental Site Assessment.*

16. Quotes for Televising Sanitary Sewer for the 2018 Cypress Drive Improvements Project (Enclosed in packet).
**Staff recommends the Utilities Commission make a motion to City Council to approve the Hydro-Klean, LLC Quote in the estimated amount of $16,988.70.*

17. SEH Contract for the FHWA Environmental Review and Documentation Process for the 2018 Cypress Drive Improvements Project (Enclosed in packet).
**Staff recommends the Utilities Commission make a motion to City Council to approve the SEH Contract to begin FHWA Environmental Review and Documentation Process for the 2018 Cypress Drive Improvements Project in the not to exceed amount of $22,420.00.*

18. Bolton & Menk Agreement for Professional Engineering Services – Fee Amendment Request for the 2016 Golf Course Drive Improvements Project (pp. 85 - 86).
**Staff recommends the Utilities Commission make a motion to City Council to approve the Bolton & Menk Agreement for Professional Engineering Services – Fee Amendment Request for the 2016 Golf Course Drive Improvements Project in the increased amount of $1,200.00.*

19. 2016 Golf Course Drive Improvements Project Change Order No. 4 (pg. 87).
**Staff recommends the Utilities Commission make a motion to City Council to approve the Anderson Brothers Change Order No. 4 revising the final completion date to June 30, 2017.*

20. 2015 Dellwood Drive and Novotny Road, Inglewood Drive and Independence Road Improvements Project Monthly Update (pg. 88).
**Information only.*

21. WSN County State Aid Highway 48 Silent Railroad Crossings Improvements Feasibility Report (Enclosed in packet).

22. Limited Use Agreement for the Second Addition to Johnson Centre Plat (pp. 89 – 93).
**Staff recommends the Utilities Commission make a motion to City Council to approve the Limited Use Agreement for the Second Addition to Johnson Centre Plat.*

23. Dakota Supply Group Fixed Network Water Meter Replacement Project Change Order No. 2 (pp. 94 – 95).

**Staff recommends the Utilities Commission make a motion to City Council to approve the Dakota Supply Group Change Order No. 2 in the increased amount of $32,857.50 for the 2016 Fixed Network Water Meter Replacement Project.*

24. Dakota Supply Group Fixed Network Water Meter Replacement Project Partial Pay Estimate No. 4 (pp. 96 - 115).
    **Staff recommends the Utilities Commission make a motion to City Council to approve the Dakota Supply Group Partial Pay Estimate No. 4 in the amount of $65,360.47 for the 2016 Fixed Network Water Meter Replacement Project*

25. Wastewater Treatment Plant Charges for October (pp. 116 – 119).
    **Information only.*

26. Wastewater Treatment Plant Annexation Petition from the City of Brainerd (pg. 120).
    **Information only.*

27. 2017 Utilities Commission Deadline & meeting Dates (pg. 121).
    **Information only.*

28. Adjourn.

UTILITIES COMMISSION
November 2, 2016

The regular meeting of the Baxter Utilities Commission was called to order at 5:30 p.m. by Chairman Rock Yliniemi.

MEMBERS PRESENT: Commissioners Jack Christofferson, Shawn Crochet, Dave Franzen, Doug Wolf, Chairman Rock Yliniemi and Council Liaison Mark Cross.

MEMBERS ABSENT: None.

STAFF PRESENT: Public Works Director/City Engineer Trevor Walter and Administrative Assistant Mary Haugen.

OTHERS PRESENT: WSN Consulting Engineer Kevin Wernberg, SEH Consulting Engineer Scott Hedlund, WSB Consulting Engineer Chuck Rickart and Bolton & Menk Consulting Engineer Mike Rardin.

APPROVAL OF MINUTES
MOTION by Commissioner Wolf, seconded by Commissioner Christofferson to approve the Utilities Commission minutes of October 5, 2016. Motion carried unanimously.

2016 – 2018 SNOW PLOW CONTRACT
Public Works Director/City Engineer Walter reviewed the DeChantal Excavating snow plow contract for 2016 – 2018. Staff had solicited quotes from several contractors around the area and only one submitted a quote back to the City.

The quote is for two years and not just one year. The 2016-2017 snow season has the same rates as what DeChantal's contract was for in 2015-2016 snow season with a very slight inflationary increase for the 2017-2018 snow season.

Public Works Director/City Engineer Walter has no issues with the quote and recommends approving the two year quote for snow removal on City streets.

MOTION by Commissioner Wolf, seconded by Commissioner Franzen to recommend City Council approve the DeChantal Excavating Two Year Snow Removal Contract. Motion carried unanimously.

INSITE DEVELOPMENT PROJECT
Public Works Director/City Engineer Walter informed the commission the final inspection has been completed and all items on the punch list have been addressed. The as-built drawings are to be submitted to the City before the end of next week. Public Works Director/City Engineer Walter recommends accepting the Mattress Firm Development Project and releasing the InSite Development Bond No. 1137924.

MOTION by Commissioner Franzen, seconded by Commissioner Christofferson to recommend City Council accept the Mattress Firm Development Project and release the InSite Development Bond No. 1137924 contingent on submittal of the as-built drawings. Motion carried unanimously.

PRELIMINARY PLAT OF MILLS ADDITION TO BAXTER

Public Works Director/City Engineer Walter reviewed the plat of Mills Addition to Baxter. Discussion was held on the street right of ways, limited use agreement and storm sewer pipe that runs under the floor of the Mills Fleet Farm Store.

MOTION by Commissioner Wolf, seconded by Commissioner Franzen to advise the Planning and Zoning Commission that the Utilities Commission has no concerns with the Mills Addition Plat contingent on the following:

- Dedicate 7 feet of additional right-of-way on Golf Course Drive.
- Dedicate 7 feet of additional right-of-way on Excelsior Road.
- Waive additional right-of-way as per City ordinance on Design Road.
- Require a Limited Use Agreement for landscaping, parking lot and signage on Dellwood Drive, Golf Course Drive and Excelsior Road right of ways.
- Require a formal storm water agreement for maintenance and liability on the underground storm water pipe under the existing building and the entire site.
- Dedicate the existing 11-feet roadway and utility easement for road right-of-way on Dellwood Drive.

Motion carried unanimously.

NORTHWOODS CROSSING DEVELOPMENT TRAFFIC STUDY

WSB Consulting Engineer Rickart reviewed the Northwoods Development Traffic Study with the commission. The study covered the site plan review, existing conditions, traffic impact analysis and conclusions and recommendations for the area. WSB Consulting Engineer Rickart presented a PowerPoint presentation of the study report and answered all questions of the commissioners.

Based on the conclusions of the traffic analysis the following items were recommended by WSB Consulting Engineer Rickart:

- Restripe Dellwood Drive to provide a center left turn lane from Woida Road to north of Menards south access/Culvers access with the proposed Northwoods Crossing Development plan.

- As traffic continues to increase with future development, review the operations and roadway geometric needs at the Woida Road and Dellwood Drive intersection.

- As traffic continues to increase with future development, work with MnDOT to extend the left turn lanes on T.H. 371 at the Woida Road intersection.

MOTION by Commissioner Crochet, seconded by Commissioner Franzen to recommend City Council approve the Northwoods Drive Development Traffic Study. Motion carried unanimously.

CONDITIONAL USE PERMIT FOR NORTHWOODS CROSSING

Public Works Director/City Engineer Walter reviewed the conditional use permit for the proposed Northwoods Crossing.

The commission held an extensive discussion on the internal traffic flow and directional signage within the development. Council Liaison Cross asked if the site could be reconfigured since there is enough property to move the development back to the east to allow stormwater ponding on both the front and back side of the property while still keeping the alignment.

WSN Surveyor Chad Conner stated the development site was challenging to design with the two drive through lanes for takeout food. This is still a work in progress and the site could be modified if needed. Public Works Director/City Engineer Walter, Community Development Director Doty, Mr. Conner and the property owner have spent an extensive amount of time discussing the configuration of the lot and reviewed several designs.

Mr. Conner stated the developer is looking at an underground storm water chamber system in order to add more parking stalls and be able to have more flexibility on the site design but the cost may be prohibited.

Public Works Director/City Engineer Walter stated the City ordinance requires a ten car stacking distance from the drive up window anything less would require a variance to the ordinance. The City ordinance also requires an escape lane so it makes it very challenging to design this site. The property owner would like to do less stacking due to the type of small restaurant being proposed which does not need the distance of ten cars stacking.

Community Development Director Doty has reviewed the layouts in the metro area and has not found any existing restaurants with side by side drive through windows.

The commission felt that a reconfiguration of the T intersection with the two way and one way on the north end of the site should be reviewed and some modifications need to be made.

MOTION by Commissioner Wolf, seconded by Commissioner Franzen to advise the Planning and Zoning Commission that the Utilities Commission has no concerns with the Conditional Use Permit for Northwoods Crossing contingent on the following:

- Require a Developer's Agreement for the watermain installation be in place before the building permit is issued.
- Require a 100 year storm water design requirements for both lots.
- Require a reconfiguration of the T intersections on the north end of the site.

Motion carried unanimously.

FRUTH PROPERTY DEVELOPMENT SITE PLAN TRAFFIC REVIEW

Public Works Director/City Engineer Walter informed the commission a developer is once again looking at the site and proposing a Phase I project on the site. The consensus of the City Council at the capital improvements plan meeting was to do the project in its entirety with the roundabout and directed staff to move forward and see if it could be possible to construct in 2017.

WSB Consulting Engineer Rickart reviewed the project site plans, alternative access and traffic operations on Excelsior Road and site access through Frandsen Bank. The traffic review determined what interim improvements would be needed on Excelsior Road to accommodate a level of development before the full buildout of the roundabout on Excelsior Road at Fairview Drive would be required.

Based on the review of the two site plans, which would consist of the 4,000 square foot specific restaurant and a 3,000 square foot specific retail store, it is recommended that access through the Frandsen Bank site be provided at the furthest most point to the west moving the traffic away from the front of the bank building entrance.

Public Works Director/City Engineer Walter stated it is critical to the project that the developer and the bank have access to Excelsior Road when construction of the proposed roundabout begins and that the bank has access through the development to the south after the roundabout is complete.

MOTION by Commissioner Crochet, seconded by Commissioner Christofferson to recommend City Council approve the Fruth Property Site Plan Traffic Review as an amendment to the Excelsior Road Transportation Supplemental Traffic Analysis No. 2. Motion carried unanimously.

DAKAR ROAD OFFICIAL MAPPING

The commission reviewed the official mapping certificate of survey of Dakar Road and felt the road right-of-way needs to be preserved for the future.

MOTION by Commissioner Crochet, seconded by Commissioner Wolf to advise the Long Range Planning Commission that the Utilities Commission has no issues or concerns with proceeding with the official mapping of Dakar Road. Motion carried unanimously.

STREET LIGHT REQUEST ON FRANKLIN DRIVE

Public Works Director/City Engineer Walter reviewed the street light request from residents on the 90° corner on Franklin Drive.

Currently the only lighting is at the intersection of Woida Road and Franklin Drive and on the intersection of Wildflower Drive and Franklin Road. City policy does allow for the installation of street lights on 90° corners.

MOTION by Commissioner Crochet, seconded by Commissioner Wolf to recommend City Council approve the street light request on the 90° corner of Franklin Drive. Motion carried unanimously.

DAKOTA SUPPLY GROUP FIXED NETWORK WATER METER REPLACEMENT PROJECT PARTIAL PAY ESTIMATE NO. 3

Public Works Director/City Engineer Walter reviewed the Dakota Supply Group Partial Pay Estimate No. 3 for the 2016 Fixed Network Water Meter Replacement Project. Public Works Director/City Engineer Walter gave a brief update on the project to the Commission. Public Works Director/City Engineer Walter has no concerns with Partial Pay Estimate No. 3 and recommends approval.

MOTION by Commissioner Franzen, seconded by Commissioner Wolf to recommend City Council approve the Dakota Supply Group Partial Pay Estimate No. 3 in the amount of $100,362.13 for the 2016 Fixed Network Water Meter Replacement Project. Motion carried unanimously.

2016 FAIRVIEW ROAD IMPROVEMENTS PROJECT MONTHLY UPDATE

SEH Consulting Engineer Hedlund gave an update on the status of the various work tasks on the project.

Construction

- Project construction is complete with the exception of monitoring turf establishment through the spring of 2017.
- Project closeout is planned for mid-year 2017.

The following is an update on the status of the project budget:

Total project budget:

- The total project budget based on the as-bid construction costs and figures presented at the Assessment Hearing is $1.3M.
- Total final costs are still being calculated and reviewed, but it appears it will be close to the $1.3M.

Consultant budget:

- There are no unapproved scope changes at this time.

2016 FAIRVIEW ROAD IMPROVEMENTS PROJECT PARTIAL PAY ESTIMATE NO. 5

SEH Consulting Engineer Hedlund reviewed Partial Pay Estimate No. 5 for the 2016 Fairview Road Improvements Project with the commission. SEH Consulting Engineer Hedlund had no concerns with Partial Pay Estimate No. 5 and recommends approval.

MOTION by Commissioner Franzen, seconded by Commissioner Christofferson to recommend City Council approve the Anderson Brothers Partial Pay Estimate No. 5 in the amount of $30,070.21 for the 2015 Fairview Road Improvements Project. Motion carried unanimously.

2018 CYPRESS DRIVE IMPROVEMENTS PROJECT MONTHLY UPDATE

SEH Consulting Engineer Hedlund gave an update on the status of the various work tasks on the project.

Public Involvement

- A project informational letter was mailed to properties within the project limits in early October 2016.
  - Site meeting held with one property owner in response to the letter.
  - Phone conference with one property owner in response to the letter.
- Site meeting held with one other property primarily regarding site access for soil borings.
- The goal is to hold an open house showing the project layout drawings in January/February after Utilities Commission and City Council reviews of the layout.
-

Preliminary Design

- Topographic design survey update work is in process.
- Property ownership and encumbrance reports have been ordered, but not received.
- Traffic study update work has started including traffic counts on the southerly half of the project and existing conditions noise analysis field work.

- Geometric design update work is in process with emphasis on the southerly half of the project.
  - A roundabout concept option is being developed at the Cypress Drive/ College Road intersection.
- Stormwater design update work is in process with emphasis on the southerly half of the project including storm pond locations, sizing, and outlet routing.
- Soil borings on the southerly portion of the project were completed in October.
- Multiple design discussions/meetings have been held with City staff.
- The goal is to have an updated layout for discussion at the December/January Utilities Commission and City Council meetings.

Railroad Agreements
- Working with BNSF on site access – applied for access permit.
- Met with City Staff, City Attorney, WSN, and BMI to discuss railroad strategy and timing of contacts on the various current City projects with railroad involvement.

Phase 1 Environmental Site Assessment
- The draft report is being prepared.
- A site visit by SEH environmental staff has occurred.
- Interviews are in process.
- The goal is to have a draft report ready for discussion at the December Utilities Commission meeting.

The following is an update on the status of the project budget:

Total project budget:
- The preliminary total project budget based on the 2016 bonding bill request is $10.8M.
- An updated budget is being developed with the preliminary design.

Consultant budget:
- There are no unapproved scope changes at this time.

2016 GOLF COURSE DRIVE IMPROVEMENTS PROJECT MONTHLY UPDATE

Bolton & Menk Consulting Engineer Rardin reviewed the monthly project update with the Commission.

Work Progress - Seventh Update

Work on this project was substantially completed on Thursday, October 6, 2016. Permanent pavement markings were completed on Monday, October 10th.

The new storm sewer was cleaned and televised during late September and a report was provided to the City the week of October 3rd. A walk through inspection was conducted by the Contractor, City, and Bolton & Menk staff on Thursday morning, October 13, 2016. A punch list of items was developed and distributed immediately following the inspection.

The contractor has been working on punch list items since Monday, October 17th. Most items are minor except for groundwater leakage discovered in seven manholes and four sections of pipe along with acceptance of turf establishment. The contractor has not yet informed the City how the sewer / manhole leaks will be repaired. Based on turf establishment requirements, the City should not accept the turf establishment work until next spring when it can be determined that the work done this fall is successful. If grass does not successfully reestablish itself in the seeded areas within the time period allowed for in the contract, those areas may need to be reseeded next spring. That could be an additional cost of $1,500.00 to $2,500.00 to the City.

Project Schedule
The following is a brief summary of future construction activities:

November 2016 / June 2017 - storm sewer leak repair
May / June 2017 - completion / acceptance of turf establishment

Completion Dates
The contract calls for substantial completion by October 7th with final completion by October 14th. The project was substantially complete on October 6th. Due to contract terms related to turf establishment requirements and acceptance, final completion should be extended to next spring or summer. A Change Order acknowledging this final completion date change should be processed this fall. Final project acceptance and payment is expected to occur before the end of June 2017.

BOLTON & MENK AGREEMENT FOR PROFESSIONAL ENGINEERING SERVICES FEE AMENDMENT REQUEST FOR THE 2016 GOLF COURSE DRIVE IMPROVEMENTS PROJECT
Bolton & Menk Consulting Engineer Rardin reviewed the engineering services related to the design and construction of the 2016 Golf Course Drive Improvement Project, Municipal Project Number 4110. During the design of the project and at the end of construction the City requested Bolton & Menk to perform extra work beyond the scope of the original contract.

Completed Additional Work

During the design of the project we completed additional work requested by the City related to evaluating the existing storm sewer system in the project area and particularly beneath the Mills Fleet Farm store.

The work requested provided information to allow the City to evaluate the capacity, condition, and location of the existing storm sewer to answer concerns raised over possible relocation and sizing. This work was beyond the original scope of the Golf Course Drive Improvement project.

Pending Additional Work
During early October the contractor completed work on the Golf Course Drive Project. However, some utility relocation work remained to be completed. On October 17th, the City requested Bolton & Menk to oversee right of way restoration associated with the relocation of the CenterPoint Energy gas main along the east side of Golf Course Drive. This utility work was not necessary for completion of the project but due to the location of the gas line both the City and CenterPoint Energy felt relocation was necessary.

Oversight of this right of way restoration is considered beyond the scope of the Golf Course Drive Improvement project. This work is felt to be minimal and is estimated to cost less than $1,200.

Fee Amendment
The previously approved "Not to Exceed" fee was $133,180. The revised "Not to Exceed" fee, which includes the $23,564 of completed work and $1,200 of pending work, will be $157,944. The completed additional work in the amount of $23,564 has previously been billed to the City. The pending additional work, up to a not to exceed amount of $1,200, will be billed on an hourly basis.

MOTION by Commissioner Crochet, seconded by Commissioner Christofferson to recommend City Council approve the Bolton & Menk Agreement for Professional Engineering Services Fee Amendment Request for the 2016 Golf Course Drive Improvements Project in the increased amount of $23,564.00. Motion carried unanimously.

2016 GOLF COURSE DRIVE IMPROVEMENTS PROJECT CHANGE ORDER NO. 3
Bolton & Menk Consulting Engineer Rardin reviewed Change Order No. 3 for the 2016 Golf Course Drive Improvements Project with the commission. The change order included the following items:

- Furnish & install 6 trees
- Reconstruct drainage structure near Office Max

- Reconstruct drainage structure on Universal Road
- Panache temporary entrance road and site clean up
- Hydrant extension

Bolton & Menk Consulting Engineer Rardin had no concerns with Change Order No. 3 and recommends approval.

MOTION by Commissioner Crochet, seconded by Commissioner Franzen to recommend City Council approve the Anderson Brothers Change Order No. 3 in the increased amount of $9,728.60 for the 2016 Golf Course Drive Improvements Project. Motion carried unanimously.

2016 GOLF COURSE DRIVE IMPROVEMENTS PROJECT PARTIAL PAY ESTIMATE NO. 3

Bolton & Menk Consulting Engineer Rardin reviewed Partial Pay Estimate No. 3 for the 2016 Golf Course Drive Improvements Project with the commission. Bolton & Menk Consulting Engineer Rardin had no concerns with Partial Pay Estimate No. 3 and recommends approval.

MOTION by Commissioner Crochet, seconded by Commissioner Franzen to recommend City Council approve the Anderson Brothers Partial Pay Estimate No. 3 in the amount of $277,237.85 for the 2016 Golf Course Drive Improvements Project. Motion carried unanimously.

BOLTON & MENK PROPOSAL FOR ENGINEERING SERVICES FOR THE 2017 SEALCOAT PROJECT

Bolton & Menk Consulting Engineer Rardin reviewed the engineering proposal to the City for design, bidding, contract administration, and construction observation services for the 2017 Sealcoat Project. This project consists of sealcoating 69 street segments totaling about 9.9 miles in length and approximately 215,000 square yards in area, approximately 9,000 feet of trails totaling 10,425 square yards in area, and the City's Public Works Facility totaling approximately 9,354 square yards in area.

The proposed scope of services includes the following:

Project Scope Planning:

- Verify specification changes desired in 2017
- Verify Public Works Facility work and estimated quantities
- Obtain listing and dimensions of trails to be sealcoated in 2017
- Obtain pavement marking cut sheets from the City for streets to be sealcoated

Design Phase:

- Update sealcoat map to include trails

- Verify street widths and turn lane / cul-de-sac areas
- Calculate estimated quantities and costs
- Prepare project manual for bid phase
- Obtain project approval and bid authorization

Bid Phase:

- Advertisement of project
- Respond to bidder questions or concerns
- Participate in bid opening
- Evaluate bids and recommend award of contract

Construction Observation Services:

- Conduct a pre-construction conference
- Preparation of property owner notifications for City and contractor use
- Conduct a construction kick-off meeting
- Construction inspection
- Documentation of contract quantities
- Conduct a final walk through inspection
- Preparation of punch list items

Contract Administration

- Preparation of City Council and Utility Commission Reports
- Attendance at City Council and Utility Commission Meetings
- Preparation of change orders
- Preparation of partial and final contract quantities and payments
- Recommendations on project closeout activities and contract compliance issues, if any

Project Budget:

Bolton and Menk understands the City has a 2017 budget total of $500,000 for pavement sealcoating which includes both local and Municipal State Aid (MSA) designated streets. We assume the City has budgeted approximately $70,000 towards sealcoating the Public Works Facility and $15,000 towards trail sealcoating efforts. These amounts are intended to cover 100% of the construction and engineering costs needed to deliver this project. Based on the streets proposed for 2017 sealcoating along with $70,000 in Public Works Facility sealcoating and $15,000 in trail sealcoating costs, Bolton and Menk estimate the 2017 total sealcoat construction costs to be approximately $435,000.

Engineering Services - we propose to provide the services outlined above at the following estimated costs:

Scope Planning Phase	$3,500	Hourly - not to exceed
Design Phase	$7,000	Hourly - not to exceed
Bidding Phase	$3,500	Hourly - not to exceed
Construction Observation	$23,000	Hourly
Contract Administration	$6,000	Hourly - not to exceed
Total	$43,000	

The costs proposed above are based on services (and actual costs) provided by Bolton and Menk for the past several sealcoat projects completed by the City. Please note that the "Construction Observation" service is proposed as hourly as contractor performance greatly affects the actual time and thus the cost required for this service.

Schedule:
The following schedule is proposed for this project:

Task	Date
Authorize Project	November 2016
Retain Consultant	November 2016
Scope Planning	November - December 2016
Design	December 2016 - February 2017
Bidding	February - March 2017
Award Contract	March - April 2017
Sealcoat Construction (15 day construction window)	July 5, 2017 - August 11, 2017
Final Completion	August 25, 2017

Public Works Director/City Engineer Walter addressed the RFP Policy and while the commission recognized the city's Requests for Proposals Policy; they believe it to be in the best interest of the City to deviate from the schedule and threshold established within this policy since Bolton & Menk has been the project engineer for the past four years with a considerable amount of knowledge and experience on the City sealcoat projects.

MOTION by Commissioner Crochet, seconded by Commissioner Christofferson to recommend City Council approve the Bolton & Menk Proposal for Engineering Services for the 2017 Sealcoat Project in the not to exceed amount of $43,000.00. Motion carried unanimously.

2016 MILL AND OVERLAY, FULL DEPTH RECLAMATION AND RIGHT TURN LANE CONTRUCTION PROJECT MONTHLY UPDATE

WSN Consulting Engineer Wernberg reviewed the project update with the commission.

Work Completed Since Last Update

The contractor worked on punch list items and installed the signs.

Work Remaining

Minor bituminous patching in the Southdale project area to repair some of the roller marks in the bituminous pavement left by the rubber tire roller needs to be done. This work will need to be completed before the Council addresses the final payment.

Changes

Change Order 3 is being presented in the amount of $5,417.50. A summary of the change order items is as follows:

- City staff requested the trail "Stop" and "No Motor Vehicles Permitted" sign on the west side of the Private Drive off of College Road be placed on the south side of the trail in the existing bituminous parking lot. A concrete pad was poured to accept the anchor system for the sign. The change in the amount of $100.00 if the for the furnishing and installation of the anchor system.
- Type C signs were not included as a bid item and the City requested additional "No Parking" and "Dead End" signs on Maplewood Drive. Total cost was $1,957.50.
- Trail signs were not included as a bid item and the City requested new "Stop" and "No Motor Vehicles Permitted" signs at Cypress Drive and Southdale Park. Total Cost was
- $810.00.
- Flexamat permanent erosion control was used on Maplewood Drive and John Street at the direction of the Engineer. Total cost was $2,000.00
- A CS pipe apron was installed on the steel pipe storm sewer outlet that drains to White Sand Lake on Maplewood Drive. Total cost was $550.00.

WSN has no concerns and recommend approval of the Change Order as presented.

Final Pay Estimate

The total earned on the project was $815,458.14. Retainage in the amount of $40,343.28 is being released with this final pay estimate and the total due is $48,935.79. Total construction cost came in within 0.5% of the bid amount. The project is currently under budget and we recommend approval of the final payment as long as all outstanding punch list items are completed.

2016 MILL AND OVERLAY, FULL DEPTH RECLAMATION AND RIGHT TURN LANE CONSTRUCTION PROJECT CHANGE ORDER NO. 3

WSN Consulting Engineer Wernberg reviewed Change Order No. 3 for the 2016 Mill & Overlay, Full Depth Reclamation and Right Turn Lane Construction Project with the commission. The change order included the following items:

- City staff requested the "Stop" and "No Motorized Vehicles" trail signs on the west side of the private Drive off of College Road be placed on the south side of the trail. This required the sign to be placed in the bituminous parking lot. A concrete pad was poured to accept the anchor for the sign. The change order is for the furnishing and installation of the anchor system.
- Type C signs were not included as a bid item and the City requested additional "No Parking" and "Dead End" sign on Maplewood Drive.
- Trail signs were not included as a bit item and the City requested no "Stop" and "No Motor Vehicles Permitted" signs at Cypress Drive and Southdale Park.
- Flexamat permanent erosion control was used on Maplewood Drive and John Street at the direction of the Engineer.
- A CS pipe apron was installed on the steel pipe storm sewer outlet that drains to White Fish Lake on Maplewood Drive.

WSN Consulting Engineer Wernberg has no concerns with Change Order No. 3 and recommends approval.

MOTION by Commissioner Wolf, seconded by Commissioner Christofferson to recommend City Council approve the Tri-City Paving Change Order No. 3 in the increased amount of $5,417.50 for the 2016 Mill & Overlay, Full Depth Reclamation and Right Turn Lane Construction Project. Motion carried unanimously.

2016 MILL AND OVERLAY, FULL DEPTH RECLAMATION AND RIGHT TURN LANE CONSTRUCTION PROJECT FINAL PAY ESTIMATE NO. 4

WSN Consulting Engineer Wernberg reviewed Final Pay Estimate No. 4 for the 2016 Mill & Overlay, Full Depth Reclamation and Right Turn Lane Construction Project with the commission. WSN Consulting Engineer Wernberg has no concerns with Final Pay Estimate No. 4 and recommends approval.

MOTION by Commissioner Wolf, seconded by Commissioner Christofferson to recommend City Council approve the Tri-City Paving Final Pay Estimate No. 4 in the amount of $48,935.79 for the 2016 Mill & Overlay, Full Depth Reclamation and Right Turn Lane Construction Project

contingent on the roller marks on Cedardale Lane have been repaired. Motion carried unanimously.

2015 DELLWOOD DRIVE & NOVOTNY ROAD, INGLEWOOD DRIVE AND INDEPENDENCE ROAD IMPROVEMENTS PROJECT MONTHLY UPDATE

WSN Consulting Engineer Wernberg reviewed the project update with the commission.

Work Completed Since Last Update

No work was completed since the last update.

Project Schedule

Address warranty items as needed.

Easements

One roadway easement remains to be signed. All the necessary documents have been supplied to the property owner but our numerous attempts to contact the property owner have not garnered any response. The property is being sold on a contract for deed and the current occupant (Lakes Audio) does not have any issues with the proposed right-of-way.

An easement for the City utilities crossing Positive Realty is currently being addressed.

Changes

On Friday, October 21, 2016 we met with the Contractor to discuss Change Order 4. Our revised review and recommendation on Change Order 4 is included with the change order in the packet. The one claim that is not being addressed at this time is the additional work around underground utilities on Dellwood Drive and Novotny Road. This item will be addressed separately since no agreement could be reached at this time. WSN recommends approval of Change Order 4 as presented in the packet.

Pay Estimate

The total earned to date is $1,661,262.37. This includes all items shown on Change Order 3. Retainage has been reduced to $44,675.81 which, at the direction of the City Engineer, is the value of the outstanding claim regarding work around underground utilities. The total due on the pay estimate is $59,112.12. We recommend approval of Pay Estimate 7 as presented.

Potential Law Suit

The Contractor has offered a settlement on the claim regarding the directionally drilled watermain between Novotny Road and Audubon Way. The issue is complicated by the fact that the company that completed the work was a sub-contractor of a sub-contractor. This issue may

not be resolved by the end of the year which means IC-134's and lien waivers will not be available to close out the project.

2015 DELLWOOD DRIVE & NOVOTNY ROAD, INGLEWOOD DRIVE AND INDEPENDENCE ROAD IMPROVEMENTS PROJECT CHANGE ORDER NO. 4

WSN Consulting Engineer Wernberg reviewed Change Order No. 4 for the 2015 Dellwood Drive and Novotny Road, Inglewood Drive and Independence Road Improvements Project with the commission. The change order included the following items:

- Drainage structure by H.A.R.T
- Extended storm sewer pipe inlet on Dellwood Drive
- Lawn irrigation system repairs
- Extended culvert on Inglewood Drive
- Extended culvert at T.H. 210 (east)
- Extended culvert at T.H. 210 (west)
- Sanitary sewer cleanout boxes
- Install Flexamat flumes
- Relocate sanitary sewer manhole no. 7
- Repair damaged curbs

WSN Consulting Engineer Wernberg has no concerns with Change Order No. 4 and recommends approval.

MOTION by Commissioner Franzen, seconded by Commissioner Christofferson to recommend City Council approve the R.L. Larson Excavating Change Order No. 4 in the increased amount of $18,524.10 for the 2015 Dellwood Drive and Novotny Road, Inglewood Drive and Independence Road Improvements Project. Motion carried unanimously.

2015 DELLWOOD DRIVE & NOVOTNY ROAD, INGLEWOOD DRIVE AND INDEPENDENCE ROAD IMPROVEMENTS PARTIAL PAY ESTIMATE NO. 7

WSN Consulting Engineer Wernberg reviewed Partial Pay Estimate No. 7 for the 2015 Dellwood Drive & Novotny Road, Inglewood Drive and Independence Road Improvements Project with the commission. WSN Consulting Engineer Wernberg had no concerns with Partial Pay Estimate No. 7 and recommends approval.

MOTION by Commissioner Wolf, seconded by Commissioner Christofferson to recommend City Council approve the R.L. Larson Excavating Partial Pay Estimate No. 7 in the amount of $59,112.12 for the 2015 Dellwood Drive & Novotny Road, Inglewood Drive and Independence Road Improvements Project. Motion carried unanimously.

SECTION 6 – AREA A1 STORMWATER OUTLET AND ENGINEER'S ESTIMATE
Public Works Director/City Engineer Walter informed the commission this cost estimate is for the area between Woida Road and Clearwater Road that needs a storm water overflow system. This area needs a storm sewer outlet in order to move the water through the Section 6 Storm Water conveyance system. The construction of this outlet was discussed at the recent City Council capital improvements plan meeting. The project is feasible but would drop the reserves in the storm water enterprise fund to very minimum amounts.

EXCELSIOR ROAD STORM SEWER EXTENSION AND ENGINEER'S ESTIMATE
Public Works Director/City Engineer Walter stated the storm sewer extension and cost estimate will be addressed in the feasibility study for the 2017 full depth Reclamation Project of Excelsior Road from Inglewood Drive to Forest Drive.

BAXTER WATER SUPPLY PLAN FOR 2016 – 2026
Public Works Director/City Engineer Walter informed the commission the Water Supply Plan is a requirement from the Minnesota Department of Natural Resources (DNR) and the draft has been submitted to the DNR for comments.

The report was submitted with the minimum requirements; however, the DNR may require more stringent requirements on the City rate structure to address water conservation rate structure and a water audit to show where any water losses are occurring. Some of this loss can be attributed to spring and fall fire hydrant flushing and hockey/recreational ice rink flooding where the usage is not metered.

WSN PROPOSAL FOR ELECTRICAL ENGINEERING SERVICES FOR ARC FLASH EVALUATION FOR THE CITY OF BAXTER UTILITIES
WSN Consulting Engineer Wernberg reviewed the WSN Proposal for Electrical Engineering Services for ARC Flash Evaluation for the City of Baxter Utilities. Arc Flash Evaluations are required by OSHA and NFPA 70E - Standard for Electrical Safety in the Workplace. The results of the evaluation are used to determine the arc flash hazard at each piece of electrical and utilization equipment. This information is then used to produce warning labels for the equipment and also to determine the proper safety clothing to be used when working on the equipment when live voltage is present.

Our understanding of the project deliverables includes the following:

- An updated power distribution riser diagram for each facility except the lift stations.
- A short circuit analysis and report for each facility.
- An arc flash evaluation and report for each facility.

- Arc flash warning labels for each piece of electrical equipment studied.

WSN will work with Holden Electric to perform the site electrical survey. This includes determining the size and types of panels and overcurrent devices (fuses and circuit breakers), feeder lengths and sizes, and ratings for large 480V equipment. The project will be managed by WSN and we will include the costs for both firms.

WSN requests that the City of Baxter make available to WSN all drawings, specifications, and shop drawings for projects in which WSN was not originally involved.

SCOPE OF SERVICES

WSN proposed scope of services includes the following:

- Conduct a site survey of all electrical distribution equipment and determine the length and size of all distribution conduits and conductors.
- Enter the collected data into the calculation software and draw a one-line diagram of each electrical system.
- Run the short circuit analysis and the arc fault analysis.
- Print labels for each piece of equipment studied.

WSN scope does not include the following, although we can provide these services it desired:

- Correction of any electrical distribution deficiencies found during the study. WSN will, however, notify the City if any problems are found.

WSN proposes to complete the above scope of services for the Lump Sum of $14,450.00.

The commission held an extensive discussion on the need for the ARC Flash Evaluation and why it is required. Commissioner Franzen explained in detail the need for the evaluation and what type of protective gear may be needed even by City employees.

The commission inquired if this proposal will cover the generators the public works department use and connect to the lift stations. WSN Consulting Engineer Wernberg will inquire with the electrical engineering department if this is included in the evaluation.

MOTION by Commissioner Franzen, seconded by Commissioner Wolf to recommend City Council approve the WSN Proposal for Electrical Engineering Services for ARC Flash

Evaluation for the City of Baxter Water and sanitary Sewer Utilities in the Lump Sum of $14,450.00. Motion carried unanimously.

WSN AGREEMENT FOR PROFESSIONAL SERVICES FOR THE 2021 INGLEWOOD DRIVE RAILWAY CROSSING – STP FUNDING ASSISTANCE

WSN Consulting Engineer Wernberg reviewed the WSN Proposal for Services for the Inglewood Drive Railway Crossing – STP Funding Assistance. WSN understands the City is interested in applying to the Central Minnesota Area Transportation Partnership Local Surface Transportations Program (STP), requesting funding assistance for construction of a railway crossing at the Inglewood Drive intersection. We understand this crossing is a vital connection in the Cities long-range transportation plan.

WSN is very familiar with this proposed project and attended an on-site meeting on March 11, 2010 to review details associated with the proposed crossing. Attendees at that meeting included representatives from BNSF (Lynn Liebfrid and Mike Mohrfield), MnDOT (Jim Weatherhead), and the City (Trevor Walter). We have also previously prepared sketches and costs estimates for the proposed improvements along with the 2015 STP funding application.

Our proposal includes the following tasks to assist with submission of the funding application:

- Review sketches for conformance with current regulations and requirements of MnDOT and BNSF
- Update existing cost estimates
- Complete the application form and review with City staff.
- Incorporate any changes requested by City staff into the final submittal documents
- Assist City staff with actual submittal as necessary

WSN proposes to perform the services described for the Lump Sum amount of $2,450.00. Documents would be completed and provided to the City by November 15, 2016 for final review.

MOTION by Commissioner Crochet, seconded by Commissioner Christofferson to recommend City Council approve the WSN Agreement for Professional Services for the 2021 Inglewood Drive Railway Crossing STP Funding Assistance in the lump sum amount of $2,450.00. Motion carried unanimously.

WSN SCHEDULE FOR THE 2017 EXCELSIOR ROAD, FAIRVIEW ROAD AND EDGEWOOD DRIVE IMPROVEMENTS PROJECT

WSN Consulting Engineer Wernberg reviewed the proposed schedule for the 2017 Excelsior Road, Fairview Road and Edgewood Drive Improvements Project.

Should the City Council decide to move forward with the project it will be a very tight schedule. WSN Consulting Engineer Wernberg recommended the survey would need to be completed before the snow falls in order to stay on schedule for 2017.

WSN PROPOSAL FOR THE 2017 EXCELSIOR ROAD FEASIBILITY STUDY FROM INGLEWOOD DRIVE TO FOREST DRIVE

WSN Consulting Engineer Wernberg reviewed the WSN Proposal for the 2017 Excelsior Road Feasibility Report from Inglewood Drive to Forest Drive for the full depth reclamation of Excelsior Road from Inglewood drive to Forest Drive.

WSN understands that two Excelsior Road Projects are proposed to be combined and constructed in 2017. The report for the Excelsior Road Full Depth Reclamation project will be a standalone report for the residential project area west of Forest Drive. The report will review the following improvements:

- Excelsior Road
  - Full depth reclamation
  - Pedestrian and bicycle facilities

- Grand Oaks Drive
  - Analysis of south bound Grand Oaks Drive right turn lane
  - Pedestrian and bicycle facilities

Our proposed scope of services is as follows:

Feasibility Study

WSN proposes to complete a feasibility report meeting the requirements of the Minnesota Chapter 429 assessment process. Specific items included with this proposal are:

- Research of existing documents and studies
- Preparation of preliminary study exhibits
- Estimated preliminary quantities
- Preparation of preliminary cost estimates and assessment calculations
- Preparation of draft feasibility study that includes a review of existing conditions, proposed improvements, estimated project costs, project implementation and discussion of conclusions and recommendations
- Assist the City with a preliminary project informational meeting

- Review preliminary study with City staff and Council
- Prepare final study based on City review comments

WSN proposes to perform the services described above on an hourly basis, in accordance with the attached fee schedule, for the Not to Exceed amount of $9,880.00. WSN will subcontract with WSB for the traffic related analysis on Grand Oaks Drive. WSN proposes to have the feasibility study completed within 40 days following receipt of the notice to proceed.

MOTION by Commissioner Wolf, seconded by Commissioner Franzen to recommend City Council approve the WSN Proposal for the 2017 Excelsior Road Feasibility Report from Inglewood Drive to Forest Drive in the Not to Exceed amount of $9,880.00. Motion carried unanimously.

WSN AGREEMENT FOR PROFESSIONAL SERVICES FOR THE 2016 EXCELSIOR ROAD ROUNDABOUT PRELIMINARY SURVEY

WSN Consulting Engineer Wernberg reviewed the WSN Agreement for Professional Services for the 2016 Excelsior Road Roundabout Preliminary Survey. The project area includes Excelsior Road from Forest Drive to TH 371, Edgewood Drive from Cash Wise Liquor to Excelsior Road and the Fairview Road extension through the Fruth property.

Preliminary Survey Services

WSN proposes to complete a preliminary topographic survey of the project area suitable for design of the proposed improvements. Items included with this proposal include:

- Establish vertical and horizontal control points within the project area.
- Field survey existing conditions and topography for vertical and horizontal location information.
- Coordinate field location of existing utilities (i.e. electric, telephone, gas, cable).
- Record and document location of mapped or marked underground utilities.
- Record and document existing property corners and right-of-way that are evident.
- Import field survey points into base drawing along with property and right-of-way information.
- Prepare base topographic drawing and existing ground surface.

Wetland Delineation Services

WSN proposes to delineate wetlands located within the project limits, prepare a wetland delineation report and submit the report to the Technical Evaluation Panel (TEP). Items included in our proposed scope of services are as follows:

- Review existing records/maps/surveys and existing data as required by the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual

- Conduct a site reconnaissance and stake wetland boundaries based on existing hydrology, vegetation and soils
- Survey location of wetland boundaries
- Prepare a delineation report suitable for submittal to all applicable regulatory authorities
- Submit and present the findings of the report to the TEP

Please note that the proposed wetland delineation services and associated fee assumes previously completed wetland delineations and information from adjacent private developments will be available for use by the City.

WSN proposes to perform the services described above on an hourly basis, in accordance with the attached fee schedule, for the Not to Exceed amount of $14,750.00. The topographic survey would be completed as soon as possible and the wetland delineation report would be completed and ready for submittal at the first TEP meeting following the notice to proceed.

MOTION by Commissioner Crochet, seconded by Commissioner Wolf to recommend City Council approve the WSN Agreement for Professional Services for the 2016 Excelsior Road Roundabout Preliminary Survey in the Not to Exceed amount of $14,750.00. Motion carried unanimously.

ADJOURNMENT

MOTION by Commissioner Crochet, seconded by Commissioner Christofferson to adjourn the meeting at 8:35 p.m. Motion carried unanimously.

Approved by:

Rock Yliniemi
Chairman

Submitted by:

Mary Haugen
Administrative Assistant

DEVELOPMENT AGREEMENT

THIS AGREEMENT, made this 20th day of December, 2016, by and between Baxter PS 2016, LLC, a limited liability company under the state of Minnesota, party of the first part, hereinafter collectively referred to as "**Developer**" and City of Baxter a municipal corporation under the laws of Minnesota, party of the second part, hereinafter referred to as "**City**".

WITNESSETH:

WHEREAS, the Developer has submitted an Irrevocable Letter of Credit No. _____ attached hereto as **Attachment A** ("Letter of Credit") from Bremer Bank, National Association whose address is 225 South 6th Street, Suite 200, Minneapolis, MN 55402 in the amount of **$225,580.94** (125% of the Amount of the "Municipal Portion" (defined below) as detailed on **Attachment B** attached hereto) issued to the City for the platting and development of what is to be known as Lot 1, Block 1, of ELMWOOD ADDITION, in the City of Baxter, Crow Wing County, Minnesota, **Attachment C** hereinafter referred to as the "Development"; and

WHEREAS, the proposed Development includes the construction and installation of municipal water lines, municipal sanitary sewer mains, municipal pedestrian trail, private sidewalk, private drainage controls, private 100-year storm water design, private bituminous surfaced parking lot, and related improvements (hereinafter collectively referred to as the "**Privately Installed Improvements**") hereinafter described; and

WHEREAS, the Developer will construct the Privately Installed Improvements pursuant to the terms of this Agreement and as described in Sheets C1.01 through L1.02 (13 sheets total), Construction Plans and Specifications for Sanitary Sewer, Water, Storm Sewer, Trail, Streets, Grading, Landscaping, Drainage and Erosion Control and for Central Lakes Crossing Junior Box Retail Improvements dated October 20, 2016 and prepared by Michael G. Bultman, PE of Sambatek, Inc., a copy of which is attached hereto as **Attachment D**; as well as construct lighting onsite as detailed in Lighting Plan dated April 27, 2016 by Pulse Products a copy of which is attached as **Attachment E** and pay for all related costs, including any reasonable costs incurred or to be incurred by the City for engineering, legal and administrative services related to the Privately Installed Improvements; and

WHEREAS, in anticipation of the Development, the City has received from the Developer an Engineer's Estimate prepared by Michael G. Bultman, PE of Sambatek Inc. for completion of certain Development related improvements to be turned over to and owned by the City as detailed on **Attachment B** attached hereto, and has had said estimate, plans, and specifications reviewed and approved by the City Engineer, the Utilities Commission and the City Council; and

WHEREAS, the City has approved the final plat of Elmwood Addition subject to certain conditions; and

WHEREAS, Developer has just signed an Assessment Agreement to install three (3) right turn lanes and a pedestrian crossing and all related improvements on Elder Drive as set forth in said petition; and

WHEREAS, Developer has just signed a 100% Petition for Local Improvement regarding the Developer's obligations to pay for said Future Public Improvements to install three (3) right turn lanes and a pedestrian crossing and all related improvements on Elder Drive, as described in the WSB Feasibility study, dated May 31, 2016.

NOW, THEREFORE, in consideration of the premises and the mutual obligations of the parties contained herein, it is agreed between the parties as follows:

1. **Authority of Developer**. The Developer warrants and represents that the Developer is the sole owner of and has marketable title to the property to be developed for all Privately Installed Improvements and has the authority to enter into this Agreement.

2. **Construction.** The Developer shall construct said utilities in accordance with City specifications as detailed in **Attachment F** Sanitary Sewer Construction Drawings, **Attachment G** Sanitary Sewer Specification, **Attachment H** Water Main Standard Construction Drawings, **Attachment I** Water Main Specifications. All material and construction shall conform to the City of Baxter standard specifications. When conflicts that arise between the City specifications, general notes and Developer specifications, the more stringent shall take precedence. The City will grant access to the City regional storm water pond west of Isle Drive to be enlarged by approximately 791 cubic yards to accommodate the 0.49 acre-feet of runoff from the Development site to meet their 100-year storm water requirements onsite. Developer will be responsible for the removal and disposal of all material from enlarging the regional pond. Developer will also be responsible for the restoration of the site as per City specifications.

3. **Restoration.** Right-of-way restoration of Elmwood Drive, Elder Drive, Forthun Road and Garrison Road shall be in accordance with City specifications as detailed in **Attachment J** Right-of-way Restoration. Developer will restore all areas of disturbances to the regional storm water pond west of Isle Drive in accordance with City specifications.

4. **Surety**. Upon execution of this Agreement by the parties, the Developer shall deposit with the City an Irrevocable Letter of Credit for one year **(See Attachment A)** acceptable to the City in the amount of One Hundred Twenty Five percent (125%) of the Construction Contract Amount **(See Attachment B)** for the Municipal Portion of the Privately Installed Improvements. This surety shall be provided to the City within ten days of approval of this Agreement by the City or prior to commencement of any development activities, whichever is first. Said surety shall be released by the City upon acceptance of the Development by the City and once a one year Warranty Bond has been assigned to the City.

5. **As-Built Plans**. The Developer shall complete as-built plans for that portion of the Privately Installed Improvements consisting of the municipal water lines, municipal sanitary sewer lines, all storm sewer facilities, and the municipal pedestrian trail, all of which shall be installed in public rights-of-way or publicly dedicated easements owned or controlled by the City, (collectively the "**Municipal Portion**") and submit them in electronic format in ".dwg file form" at the Developer's expense. As-built plans shall include a complete set of plans depicting what was actually built and shall include all valves, hydrants, curb stops, sewer manholes, sewer cleanouts, and sewer service ends with County Coordinates on each item. Further plans shall include all storm sewer manholes, inverts, overflows, outflows, catch basins, and storm water ponds including the complete regional storm water pond west of Isle Drive with elevations and County Coordinates on each item for all of the Privately Installed Improvements on either Lot 1, Block 1, Elmwood Addition showing 1-foot contours, percentage of pervious, impervious, Class 5 surfaces and Bench Marks and control points within two months of substantial completion. Upon written confirmation by the City, the deadline for submitting such plans may be extended to the end of the one-year warranty period. The Irrevocable Letter of Credit may be reduced as set forth in paragraph 11 below up to 90% of said amount; provided, however, the Irrevocable Letter of Credit shall not be released until as-built drawings are submitted to the satisfaction of the City.

6. **GIS System**. The Developer shall reimburse the City for its reasonable costs related to incorporating the Privately Installed Improvements into the City's GIS system. The City shall charge an hourly rate based upon the City's adopted fee schedule in effect at the time services are performed. The 2016 hourly rate is $58.00 (The City will charge in one hour increments). The City's estimate for the total cost of these charges is estimated at $696.00 and is attached hereto as **Attachment K.**

7. **Engineer Inspections**. The Developer agrees that all construction of the Municipal Portion of the Privately Installed Improvements, to be owned or maintained by the City, shall be inspected by the City Engineer. The Developer shall reimburse the City for all inspection costs related to said Municipal Portion ensuring that they are constructed to City specifications. The City shall inspect construction of the Municipal Portion full time at an hourly rate based upon the City's adopted fee schedule in effect at the time services are performed. The 2016 hourly rate is $50.00 (The City will charge in one hour increments). If overtime hours are incurred, the City will bill those hours at one and one-half times the hourly rate in effect at the time such services are performed. The City's estimate for the total cost of these charges is estimated at $4,500.00 and is attached hereto as **Attachment L.**

8. **Utility Easements**. The Developer agrees that it will, at its own expense, provide utility easements over all sanitary sewer lines, sanitary sewer manholes, water lines, water valves and fire hydrants.

9. **Coordination**. The Developer agrees that it will, at its own expense, provide for and coordinate the satisfaction, obtaining and/or installing of each of the following items in connection with, and to the extent applicable to the Development:

A. All surveying, platting and recording requirements normally and customarily required by the City; and

B. Survey services to establish vertical and horizontal control and alignment points and staking for the placement of main line sanitary sewer, storm sewer and water main; and

C. Electricity, telephone, gas and cable television installations; and

D. Monumentation of lot corners; and

E. Plans and specifications for the Privately Installed Improvements; and

F. Payment of all fees, permits, licenses and recording fees; and

G. Erosion control in accordance with MPCA guidelines; and

H. All other items or site improvements necessary and incidental to completion of the Development; and

I. Lot grading, including stabilization and erosion controls; and

J. Municipal Water mains, gate valves, curb stops and fire hydrants; and

K. Municipal Sanitary sewer mains and manholes; and

L. Private topsoil, sod, seeding, and mulching of street right of way (only for that part disturbed as part of the construction of the Privately Installed Improvements); and

M. Construct and maintain a 100-year storm water drainage system serving Lot 1, Block 1, Elmwood Addition affected by the Privately Installed Improvements. The Developer shall be responsible for any sediment and erosion that is caused by the over land, over flow system from the 100-year storm water infiltration basins to the City or discharge to any public water way systems.

10. **City Acceptance**. The City agrees that the Municipal Portion of the Privately Installed Improvements when fully constructed and approved for acceptance by the City Engineer, Baxter Utility Commission and City Council shall become part of the municipal utility, street and trail

systems owned and/or controlled by the City. Developer agrees that it or its contractor(s) will carry a performance bond to warranty the Municipal Portion of the Privately Installed Improvements installed per this Agreement for a warranty period of one (1) year after completion of the Development by the City. Developer agrees to assign the bond to the City after all Privately Installed Improvements and Development related activities are completed to the reasonable satisfaction of the City, whereupon the City will indicate its acceptance of the Privately Installed Improvements. The assignment shall extend to the City all rights and ability to have the Developer's general contractor perform any required warranty work. If a bond cannot be assigned, the Developer agrees to extend surety for the one-year warranty period at an amount equal to the final construction price of the Municipal Portion plus ten percent, (10%) and in that event, the City shall not accept the Municipal Portion until the end of said warranty period. The City reserves the right to extend the time frame for acceptance of the Development if any problems with the Privately Installed Improvements are not resolved.

11. Irrevocable Letter of Credit. The Developer shall provide the City the one year Irrevocable Letter of Credit prior to starting any construction activities. The Developer agrees that the City may exercise its right to draw down upon the Letter of Credit to complete the Municipal Portion of the Privately Installed Improvements in event of default hereunder after notice to the Developer and failure of the Developer to cure after lapse of the cure period, to mitigate any public hazard created by the Municipal Portion of the Privately Installed Improvements or to compensate the City for any unpaid costs it incurs related to the construction of the Municipal Portion.

The Developer may request reduction of the Letter of Credit based on prepayment or the value of the completed Municipal Portion of the improvements at the time of the requested reduction. If requested, the City will perform an evaluation of the work. The City will attempt to complete this evaluation within thirty days of receiving this request, contingent upon the City being able to complete the evaluation. For example, if the request is made in the winter, the City may not be able to inspect the improvements in order to complete the evaluation within thirty days. If evaluations are requested, the Developer will be responsible for the estimated costs incurred by the City for performing the evaluations. The amount of reduction will be determined by the City based upon confirmation of that portion of the Municipal Portion of the improvements then completed.

If an event of default occurs under this provision, the City shall give written notice of the event of default or failure to perform to the Developer by Certified Mail at its addresses c/o H.J. Development, Inc., 15600 Wayzata Boulevard, Suite 201, Wayzata, MN 55391. If the Developer fails to undertake to cure the event of default and diligently proceed to cure the default within sixty (60) days after the date of the mailed notice, the City may avail itself of any or all of the following remedies for as long as the Developer is in default:

A. The City may perform the Municipal Portion of the work and the Developer shall reimburse the City for its expenses incurred. This

provision shall be a license granted by the Developer to the City to act, but shall not require the City to take any such action. The Developer consents to such an action by the City and waives any claims Developer may have against the City for damage in the event the City exercises its rights in accordance with this provision. This remedy is in addition to and not in lieu of the city's right to draw on all security referenced in this Agreement; and/or

B. Draw upon and utilize Letter of Credit in order to cover the costs of the City in order to correct the event of default.

12. SAC/WAC Charges. The Developer understands that the following SAC/WAC charges will also apply to the Project:

A. Sewer Availability Charge (SAC) ($3,400.00 per each unit in year 2016); and

B. Water Availability Charge (WAC) ($3,100.00 plus 7.875% applicable sales tax per each unit in year 2016).

The SAC and WAC fees will be payable at such time as a building permit is requested from the City. The fees are subject to an increase by the City Council. The City's estimate for the total cost of SAC and WAC charges is estimate at **$212,439.94** and is attached hereto as **Attachment M.** Developer acknowledges that the above stated SAC and WAC fees are estimates at this time based upon the prototype floor plans provided by Developer for each tenant in the Project. Final SAC and WAC fees will be reconciled by City for each tenant's premises when the final build out building permits are obtained for each tenant.

13. Monuments. The Developer shall place iron monuments at all lot corners and at all other angle points on boundary lines for Lot 1, Block 1, ELMWOOD ADDITION. Such iron monuments shall be placed after all streets and lawn grading has been completed in order to preserve the lot markers for future property owners. More monuments may be required by the City engineer to service the area.

14. Grant of License. The Developer hereby grants to the City, it agents, employees, officers and contractors a license to enter upon the property on which the Development work is being conducted to perform all necessary inspections deemed appropriate by the City during the construction of the Privately Installed Improvements.

15. Payment of City Fees. The City shall not execute this Agreement until the Developer has paid all fees for this Project as described in this section. Prior to execution of this Agreement, the City shall present Developer with estimated costs for engineering inspections and observation, legal and administrative costs incurred by the City to review the construction of the Privately Installed Improvements. The estimated fees for any engineering costs are as set forth in Sections

6 and 7 above. All other fees due the City for any legal or administrative fees are estimated at $2,816.00 as shown on **Attachment N** attached hereto. These fees shall also be due upon execution. Upon completion of the Development, the City shall refund to Developer any remaining funds if the actual costs were lower than estimated. If the actual costs exceed the estimates, the City shall bill the Developer for this deficit and the bill shall be paid by Developer within 30 days. No interest shall accrue on any monies held by the City pursuant to this Section 15. If any bill due the City is unpaid after 30 days, a one-time late fee shall be assessed equaling 5% of the unpaid balance and additional late fees at the rate of 1.5% per month shall be assessed for each month thereafter. If after multiple attempts to collect any outstanding bill(s) at the completion of the Project, a bill(s) remains unpaid, the Developer agrees the City may certify the outstanding balance, with certification fees and interest, to Lot 1, Block 1, ELMWOOD ADDITION for collection by the county on the following year's property taxes. The Developer or its successors, further agrees that when said assessment is levied it will not appeal or challenge this assessment amount and waives any notice of hearing related to adopting said assessment.

16. Future Public Improvements. Developer has agreed to pay for the Future Public Improvements as described and estimated at **$147,415.84** in the WSB Feasibility Study, dated May 31, 2016, for Elder Drive and Glory Road Improvements as shown in **Attachment O.** The City will complete the Future Public Improvements by September 1, 2017. However, the City may not commence construction of these Future Public Improvements unless the Privately Installed Improvements construction project is approved. The Developer and the City have just executed an Assessment Agreement regarding the Developer's obligations to pay for said Future Public Improvement as shown on **Attachment P** attached hereto. The Developer and the City have just executed a 100% Petition for Local Improvements regarding the Developer's obligations to pay for said Future Public Improvements as shown on **Attachment Q** attached hereto. Developer shall escrow the estimated cost of **$147,415.84** with the City upon execution of this Agreement to fund the construction of the Future Public Improvements with no interest to accrue. If the Future Public Improvements are completed, the City shall use these escrowed funds to pay for said Future Public Improvements. If said Improvements cost less than the escrowed amount, any remaining funds shall be returned to the Developer without interest. If said Improvements cost more than the escrowed amount, the City shall invoice the Developer for the difference. If not paid within 30 days of invoicing, the Developer authorizes the City to assess said difference pursuant to Attachment P and Attachment Q without further notice or public hearing.

17. Estoppel. The City agrees, upon the written request of the Developer, within thirty (30) days of the request, to issue to the Developer or its prospective mortgagee or purchaser, an estoppel certificate stating, to the best of the City's knowledge: (i) whether it knows of any default under this Agreement, and if there are known defaults, specifying the nature thereof; (ii) whether this Agreement is in full force and effect; and (iii) whether there are any sums due and owing by the Developer to the City that remain outstanding (that have not otherwise been assessed to the Property).

18. Miscellaneous. This Agreement shall inure to the benefit of and shall be binding upon the Developer and the City and their respective successors, agents and assignees, and shall be binding upon all future owners of all or any part of Lot 1, Block 1, ELMWOOD ADDITION and shall be deemed covenants running with the land. However, nothing in this Agreement, expressed or implied, shall give to any other person or entity any benefit or legal or equitable right, remedy or claim under this Agreement. This Agreement, at the option of the City, may be placed on record with the County Recorder so as to give notice hereof to subsequent purchases and encumbrances.

[SIGNATURES APPEAR ON THE NEXT PAGE]

IN TESTIMONY WHEREOF, the parties hereto have executed this Agreement as of the day and year set forth above.

CITY:

By: _____

Darrel Olson, Its Mayor

Attest: _____

Kelly Steele, Its Assistant City Administrator/ City Clerk

RATIFIED AND APPROVED BY THE CITY COUNCIL OF BAXTER, MINNESOTA, THIS 20th DAY OF DECEMBER, 2016.

_____

Mayor

ATTEST: _____

Assistant City Administrator/City Clerk

STATE OF MINNESOTA)
)ss.
COUNTY OF CROW WING)

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by Darrel Olson and Kelly Steele, the Mayor and Assistant City Administrator/City Clerk of the City of Baxter, a municipal corporation under the laws of Minnesota, on behalf of the corporation.

_____

Notary Public

DEVELOPER:

BAXTER PS 2016, LLC

_____
By: Jeffrey J. Carriveau
Its: A Manager

STATE OF MINNESOTA)
)ss.
COUNTY OF HENNEPIN)

The foregoing instrument was acknowledged before me this _____ day of _____, 2016 by Jeffrey J. Carriveau, a Manager of Baxter PS 2016, LLC, a Minnesota Limited Liability Company, on behalf of the company.

_____
Notary Public

THIS INSTRUMENT WAS DRAFTED BY:
City of Baxter
13190 Memorywood Dr.
P. O. Box 2626
Baxter, Minnesota 56425
218/454-5100

SCHEDULE OF ATTACHMENTS

ATTACHMENT A	Irrevocable Letter of Credit
ATTACHMENT B	Engineer's Estimate prepared by Michael G. Bultman, PE of Sambatek, Inc., for Construction of Municipal Portion of Privately Installed Improvements
ATTACHMENT C	Plat – Lot 1, Block 1, ELMWOOD ADDITION
ATTACHMENT D	Construction Plans and Specifications for Sanitary Sewer, Water, Storm Sewer, Trail, Streets, Grading, Drainage and Erosion Control dated October 20, 2016, prepared by Michael G. Bultman, PE of Sambatek, Inc.
ATTACHMENT E	Lighting Plan dated April 27, 2016 prepared by Pulse Products
ATTACHMENT F	Sanitary Sewer Construction Drawings
ATTACHMENT G	Sanitary Sewer Specifications
ATTACHMENT H	Water Main Standard Construction Drawings
ATTACHMENT I	Water Main Specifications
ATTACHMENT J	Right-of-way Restoration
ATTACHMENT K	GIS Incorporation Costs
ATTACHMENT L	City Estimated Inspection Costs
ATTACHMENT M	Detail of SAC/WAC Fees
ATTACHMENT N	Detail of Legal, Administrative and Other Fees Due to the City
ATTACHMENT O	Feasibility Study for Elder Drive and Glory Road Improvements
ATTACHMENT P	Assessment Agreement
ATTACHMENT Q	100% Petition for Local Improvements

WSB & Associates, Inc.

Infrastructure ■ Engineering ■ Planning ■ Construction

15574 Edgewood Drive
Suite 103
Baxter, MN 56401
Tel: 218-824-3960

Memorandum

To: ***Honorable Mayor and City Council***
City of Baxter, Minnesota

Copy To: ***Trevor Walter, PE, Public Works Director / City Engineer***
Jeremy Vacinek, Finance Director
Josh Doty, Community Development Director
City of Baxter, Minnesota

From: ***Chuck Rickart, PE, PTOE, Transportation Engineer***
WSB & Associates, Inc.

Date: ***May 31, 2016***

Re: ***Feasibility Study***
Elder Drive and Glory Road Improvements
City of Baxter, MN
WSB Project No: 2037-14

STATEMENT OF PURPOSE

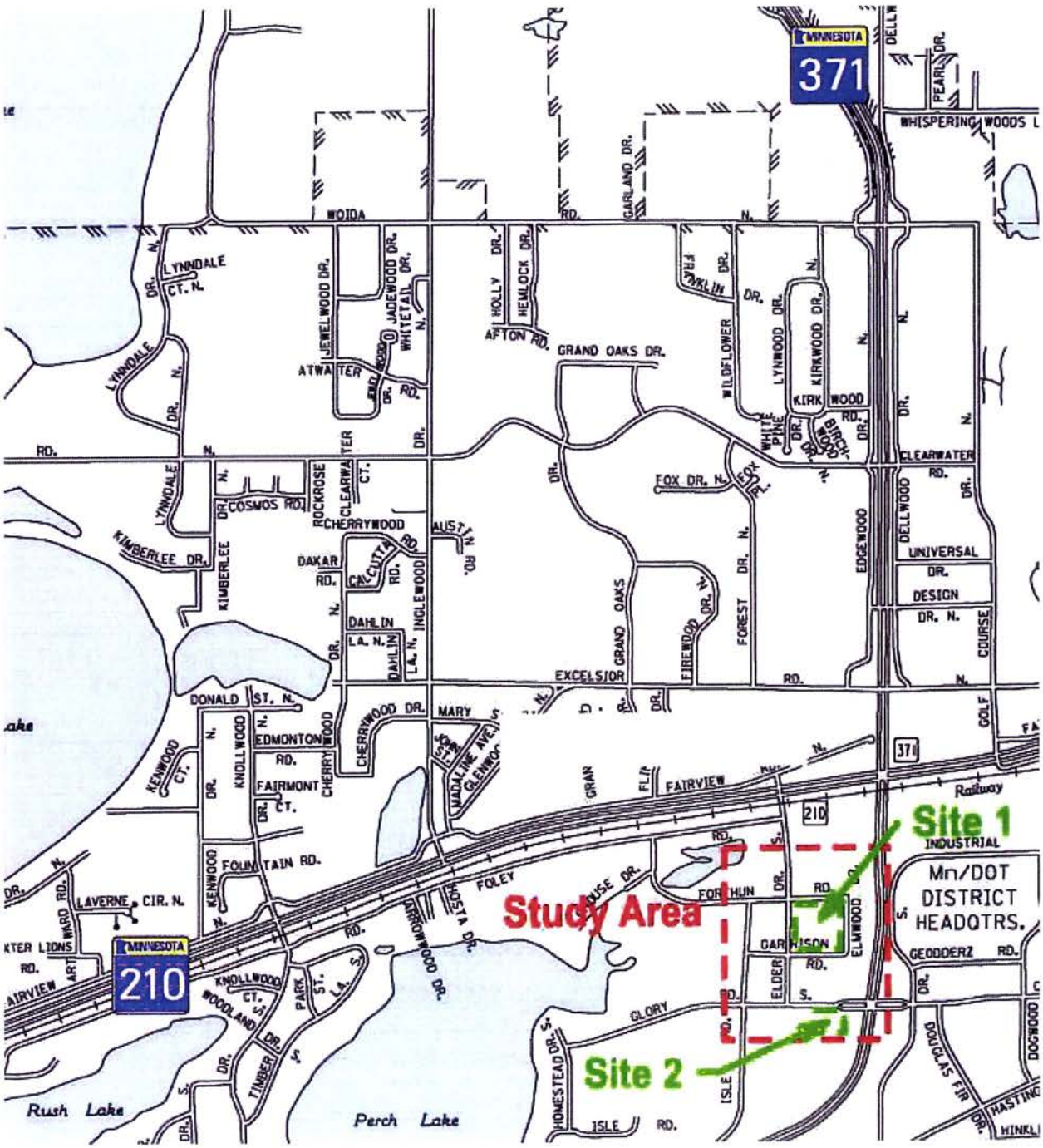
The primary purpose of this report is to study the feasibility of constructing improvements on Elder Drive and Glory Road in conjunction with the development of two sites within the Central Lakes Crossing development area, proposed by HJ Development. One site is located south of TH 210 and west of TH 371 on Elder Drive, just south of Costco. The second site is located south of Glory Road, west of TH 371 and east of Walmart. ***Figure 1*** shows the project area.

The proposed sites will be developed with retail and restaurant uses. Site 1 on Elder Drive will include 89,000 sf with four separate retail uses ranging from 10,000 sf to 40,000 sf. Site 2 on Glory Road will include 7,011 sf with four separate spaces, two restaurant sites and two retail sites ranging from 1,200 sf to 2,299 sf.

A Traffic Study was prepared and presented to the Utility Commission on May 4, 2016 and City Council on May 17, 2016, which documented the need for improvements to Elder Drive and Glory Road in association with the HJ Development project. On May 26, 2016, the City Council authorized WSB to complete a Feasibility Study for the proposed improvements.

This report will review existing conditions, propose feasible improvements, estimate project costs, discuss project implementation and present conclusions and recommendations for the proposed improvements.

Figure 1 – Project Location



EXISTING CONDITIONS

Roadways:

Elder Drive is a north/south street extending from Glory Road to TH 210. The roadway has a two-lane urban cross section with center left turn lanes and no right turn lanes. It was upgraded with the Costco development to include left turn lanes at Foley Road, Costco/Home Depot Entrance and Forthun Road. The intersection of TH 210 provides "3/4" access with a right-in/right-out on Elder Drive and a left turn from TH 210. The left turn movement from Elder Drive to TH 210 is not provided. The right turn out movement is controlled with a Stop sign. The intersection of Elder Drive and Glory Road is signalized with left and right turn lanes provided on all the approaches. The street in the area of the proposed improvements has the following primary characteristics:

- Classified as a Urban Collector
- Posted Speed Limit – 40 mph
- Bituminous pavement constructed in 1998 and reconstructed in 2015
- Width = 44 feet (curb face to curb face)
- No parking on either side
- 10 foot Bituminous Trail on the west side with a 5 foot boulevard
- Existing ADT = 3,300 vehicles per day
- Projected 2030 ADT = 8.000 vehicles per day

Glory Road is an east/west street extending from Homestead Drive near Perch Lake to TH 371. East of TH 371 Glory Road turns into College Road and extends into the City of Brainerd. West of TH 371 Glory Road has two lanes in each direction and left and right turn lanes at TH 371, Wal-Mart Entrance/Elder Drive and Isle Drive. West of Isle Drive Glory Road narrows to two lane section. Traffic signal control is provided at the Elder Drive/Wal-Mart Entrance and TH 371 intersections. The street in the area of the proposed improvements has the following primary characteristics:

- Classified as a Urban Collector
- Posted Speed Limit – 30 mph
- Bituminous pavement constructed in 2000 and reconstructed in 2015
- Width = 72 feet to 80 feet (curb face to curb face)
- No parking on either side
- 10 foot Bituminous Trail on the south side with a 5 foot boulevard
- Existing ADT = 8,750 vehicles per day
- Projected 2030 ADT = 15,000 vehicles per day

As part of the 2015 Street Reconstruction Project, full depth reclamation was completed on both Elder Drive and Glory Road.

Sanitary Sewer:
The trunk sanitary sewer system includes an 8 inch diameter pipe running down the centerline of Elder Drive, and; a 4 inch force main from Lift Station #11 connecting to a12 inch pipe down the eastbound lanes of Glory Road. The City is not aware of any issues or problems with the sanitary sewer system in this area.

Watermain:
The watermain system includes a 12 inch pipe running down the northbound lane of Elder Drive, and; a 10 inch pipe down the centerline of Glory Road. Fire hydrants are located on the east side of Elder Drive between Garrison Road and Forthun Road; on the east side of Elder Drive just south of Garrison Road, and; on the north side of Glory Road between Elder Drive and TH 371. The City is not aware of any issues or problems with the water system in this area.

Storm Sewer:
The high point for the storm sewer system on Elder Drive is located north of Forthun Road. Existing catch basins collect the water at Fothun Road, on the west side of Elder Drive and at Garrison Road. A 24 inch pipe carries the water under the west curb line of Elder Drive. The high point for the storm sewer system on Glory Road is located west of TH 371. Existing catch basins collect the water at TH 371 and just west of the JCPenney/Walmart access. The City is not aware of any issues or problems with the storm sewer system in this area.

Private Utilities:
Private utilities extend along both the Isle Drive and Glory Road corridors. All utilities are located underground. Existing gas and electric service runs along the east side of Elder Drive in the existing boulevard. All private utilities will be identified and located during final design.

PROPOSED IMPROVEMENTS

Proposed Roadway – Elder Drive (see attached ***Figure 2 and Figure 3***)

1. Remove existing striping and restripe Elder Drive from Forthun Road to Garrison Road with a continuous center left turn lane.
2. Construct right turn lanes at Forthun Road, Garrison Road and the proposed HJ Development site entrance.

Proposed Roadway – Glory Road (see attached ***Figure 4***)

1. Remove and restripe the eastbound Glory Road approach to TH 371 to include one left turn lane, one combination left/thru lane, one thru lane and one right turn lane.
2. Remove existing signing and replace with lane designation signing.
3. Revise the Glory Road at TH 371 from a protected/permissive left turn phasing to split phasing for the Glory Road/College Road approaches.

Proposed Pedestrian Facilities (see attached ***Figure 2***)

1. Stripe a new pedestrian crosswalk across Elder Drive on the north side of Garrison Road, connecting the trail being constructed with the proposed HJ Development with the existing trail on the west side of Elder Drive.
2. Construct ADA compliant pedestrian ramps at both corners at the crossing of Elder Drive at Garrison Road intersection.

Proposed Storm Sewer System
No significant improvements to the storm sewer system are being proposed with this project. The only change proposed is the relocation of the existing catch basin located in the southeast corner of the Elder Drive and Garrison Road intersection. All other existing impacted manholes and/or catch basins will be adjusted as needed.

Sanitary Sewer and Water Improvements
No significant improvements to the sanitary sewer or water systems are being proposed with this project. The only change proposed is the relocation of the existing fire hydrant and valve located on the east side of Elder Drive adjacent to the new site driveway. All other existing manholes and gate values will be adjusted as needed.

Private Utility Relocations
It is anticipated that the existing gas main will require relocation with the project at the developer's cost. This will be coordinated with the gas company during final design. All other private utilities will be identified and located during final design. Adjustments to the locations will be made as necessary.

ESTIMATED PROJECT COSTS

Estimated costs for the proposed improvements on Elder Drive and Glory Road are as follows:

Elder Drive at Garrison Road Right Turn Lane	$39,815.42
Elder Drive at Site Entrance Right Turn Lane	$46,088.06
Elder Drive at Forthun Road Right Turn Lane	$50,589.44
Elder Drive Center Left Turn Lane	$4,878.72
Elder Drive Pedestrian Improvements	$6,044.19
Glory Road Improvements	$10,901.09
ESTIMATED TOTAL PROJECT COST:	**$158,316.93**

The costs estimated are based on the preliminary information available and represent the probable cost based on the anticipated unit costs for the proposed project. Costs can vary widely depending upon many factors such as weather, economic conditions, size of project, and the workload of available contractors. Actual costs can only be determined by bidding the project. Detailed breakdowns of the estimates are attached. Costs estimated above include estimated construction costs, 10% contingencies, 20% indirect costs for engineering and 8% indirect costs for administration, financing, and legal fees.

PROJECT IMPLEMENTATION

Funding for the proposed improvements will be obtained from the City of Baxter and assessed to benefitted property owners. The estimated assessments included in this report were calculated in accordance with City policy.

The proposed improvements are considered a "Developer Requested Project" and are therefore proposed to be assessed 100% to the developer. Using the procedures outlined above, the following costs were estimated:

Total Estimated Project Costs – Elder Drive: $147,415.84
Estimated City Costs – $0
Estimated Assessable Costs: $147,415.84

Assessment Calculations: Central Lakes Property, LLC
Lot 1: PID 010071400BAD009 = 2.33 acres = $41,276.44
Lot 2: PID 010074100AC009 = 5.98 acres = $106,139.40

Total Estimated Project Costs – Glory Road: $10,901.09
Estimated City Costs – $0
Estimated Assessable Costs: $10,901.09

Assessment Calculations: Central Lakes Property, LLC
Lot 1: PID 0329200090A0009 =10.40 acres = $10,901.09

CONCLUSIONS AND RECOMMENATIONS

This memorandum has studied the feasibility of improvements to Elder Drive and Glory Road in conjunction with planned property development. The proposed improvements as outlined in this study are found to be necessary, cost effective, and feasible from an engineering standpoint.

The estimated project cost is $158,316.93 and the project is proposed to be funded 100% by benefitted properties. Assessable project costs were estimated in accordance with the "City of Baxter – Assessment Policy for Public Initiated Improvements". The proposed improvements are considered a "Developer Requested Project" therefore 100% of the cost will be assessed to the developer. Total assessable costs were estimated to be $158,316.93.

In conclusion, the improvements as proposed are feasible and no major construction obstacles were noted. Conflicts with underground utilities in developed areas such as this can become a real problem and we strongly recommend utility companies be informed of the project as soon as possible so any potential conflicts and relocations can be dealt with during the design phase and prior to construction. We recommend the City proceed as follows:

1. Pass a resolution receiving the report and calling the Improvement Hearing.
2. Hold the Improvement Hearing.
3. Pass a resolution ordering the improvement and preparation of plans and specifications.
4. Pass a resolution approving plans/specifications and authorizing advertisement for bids.
5. Review bids and recommend award of the construction contract.
6. After construction is complete, pass a resolution declaring costs to be assessed and ordering preparation of the proposed assessment.
7. Pass a resolution for hearing on the proposed assessment.
8. Hold the Assessment Hearing.
9. Pass a resolution adopting the assessments.

If you have any question concerning these comments please feel free to contact Chuck Rickart by email crickart@wsbeng.com or phone (612)360-1283.

Figure 2 – Elder Drive Improvements

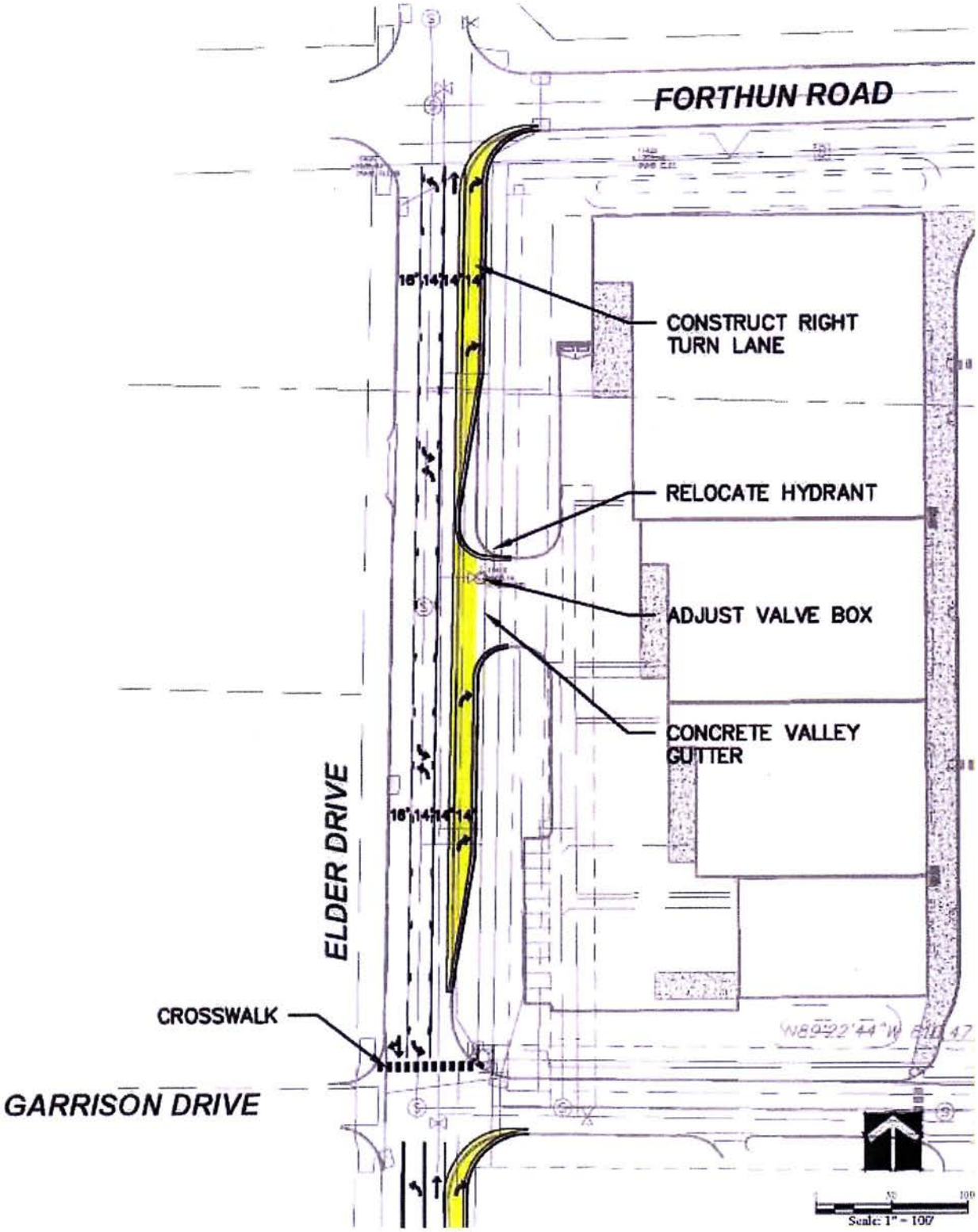


Figure 3 – Elder Drive Improvements

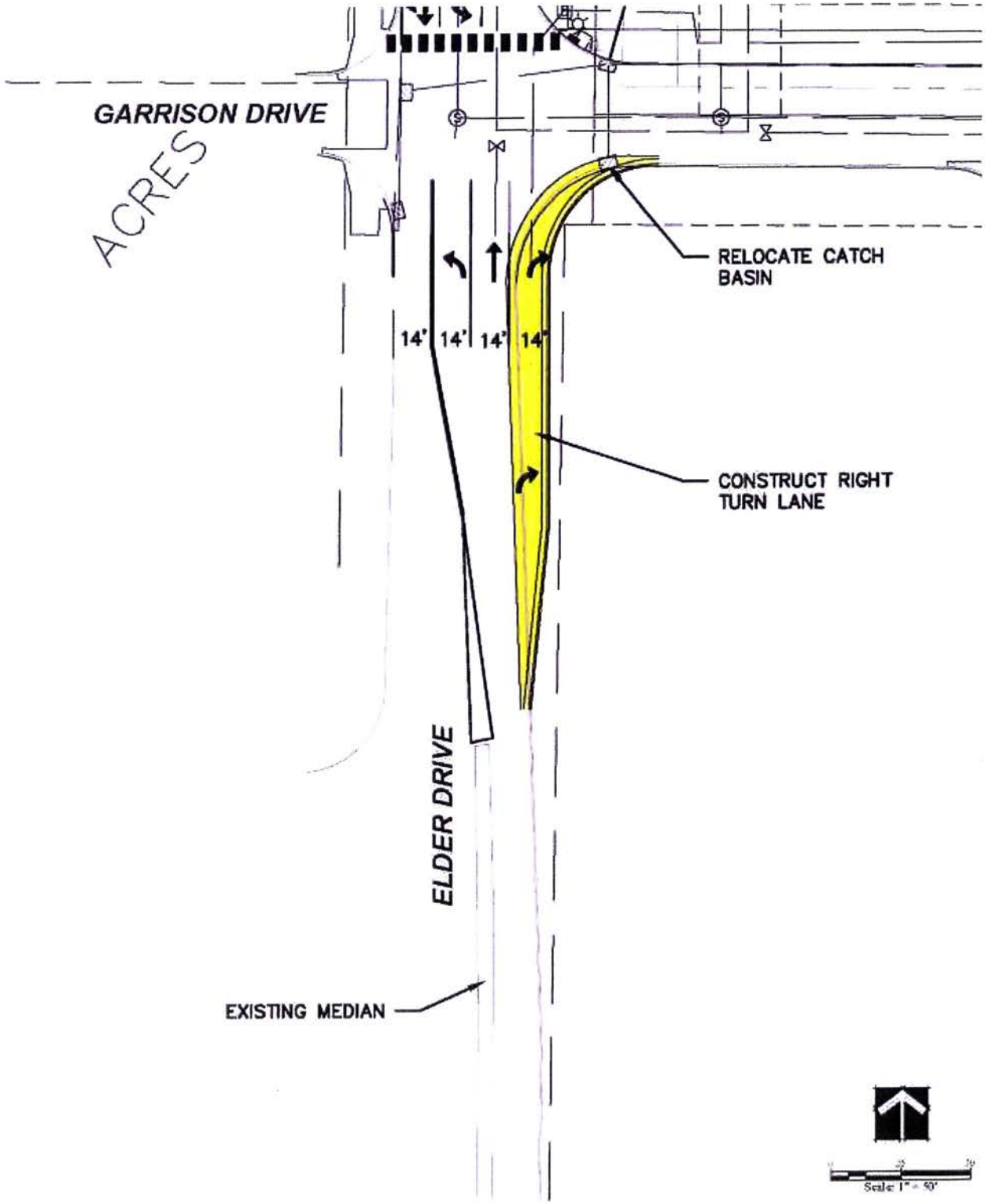
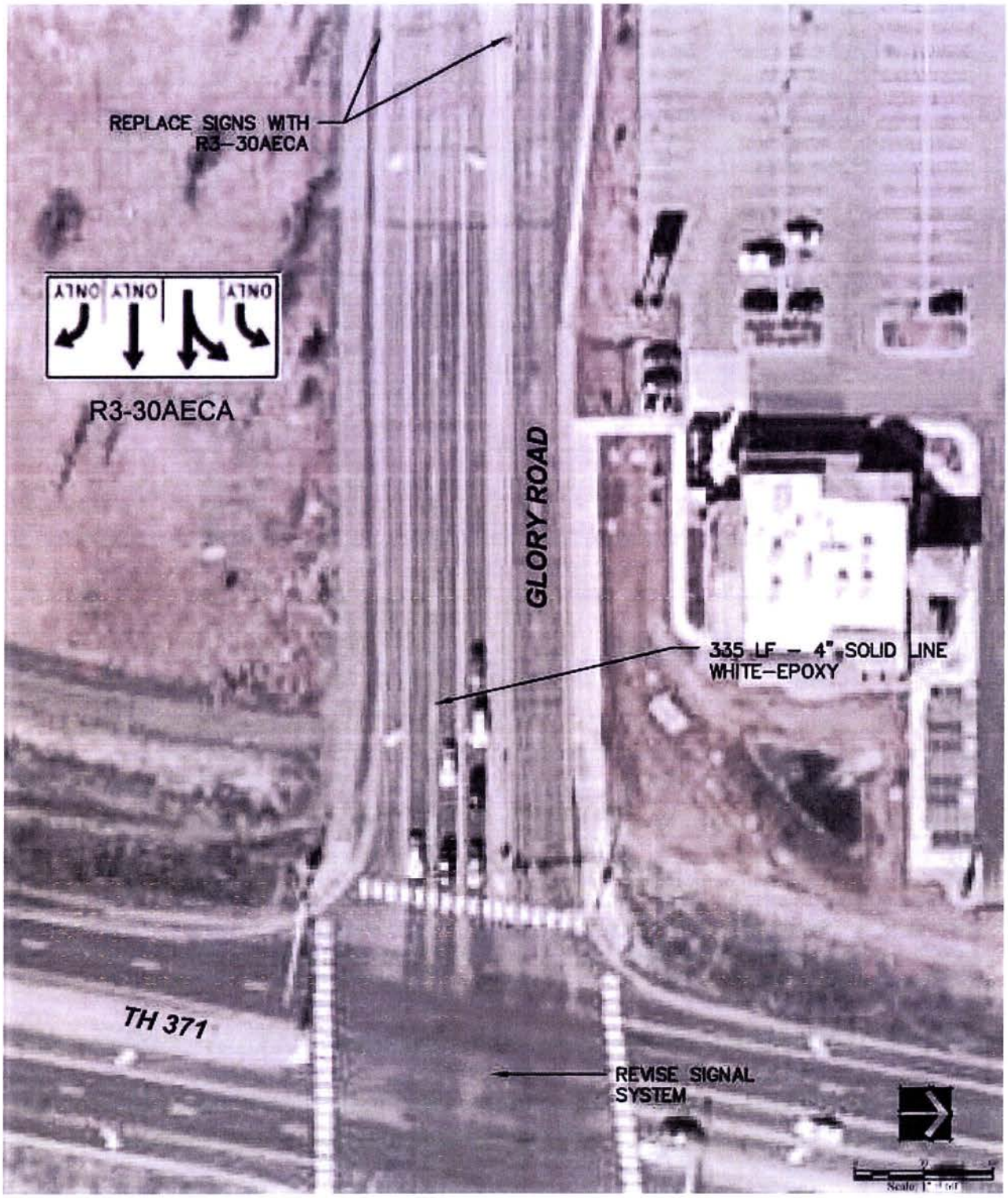


Figure 4 – Glory Road Improvements



ELDER DRIVE TURN LANE IMPROVEMENTS
BAXTER, MINNESOTA
WSB PROJECT NO. 02037-130

					RIGHT TURN LANE ON ELDER DRIVE AT GARRISON ROAD		RIGHT TURN LANE ON ELDER DRIVE INTO SITE		RIGHT TURN LANE ON ELDER DRIVE AT FORTHUN ROAD		PEDESTRIAN RAMP & CROSSWALK AT GARRISON		ELDER DRIVE STRIPING		GLORY ROAD IMPROVEMENTS AT TH 371		
ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	
1	2021.501	MOBILZATION	LS	$ 10,000.00	0.25	$ 2,500.00	0.30	$ 3,000.00	0.30	$ 3,000.00	0.05	$ 500.00	0.05	$ 500.00	0.05	$ 500.00	
2	2104.501	REMOVE CURB & GUTTER	LF	$ 10.00	385	$ 3,850.00	255	$ 2,550.00	340	$ 3,400.00	0	$ -	0	$ -	0	$ -	
3	2104.503	REMOVE BITUMINOUS PAVEMENT	SF	$ 1.00	365	$ 365.00	255	$ 255.00	340	$ 340.00	0	$ -	0	$ -	0	$ -	
4	2104.509	REMOVE SIGN PANEL TYPE C	EA	$ 250.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	2	$ 500.00	
5	2104.513	SAWING BITUMINOUS PAVEMENT	LF	$ 5.00	365	$ 1,825.00	255	$ 1,275.00	340	$ 1,700.00	0	$ -	0	$ -	0	$ -	
6	2104.523	SALVAGE HYDRANT	EA	$ 500.00	0	$ -	1	$ 500.00	0	$ -	0	$ -	0	$ -	0	$ -	
7	2104.523	SALVAGE CASTING	EA	$ 250.00	1	$ 250.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	
8	2105.501	COMMON EXCAVATION (P)	CY	$ 10.00	100	$ 1,000.00	170	$ 1,700.00	180	$ 1,800.00	0	$ -	0	$ -	0	$ -	
9	2211.522	SELECT GRANULAR BORROW (CV)	CY	$ 15.00	100	$ 1,500.00	170	$ 2,550.00	180	$ 2,700.00	0	$ -	0	$ -	0	$ -	
10	2211.501	AGGREGATE BASE CLASS 5	TON	$ 13.00	75	$ 975.00	125	$ 1,625.00	135	$ 1,755.00	0	$ -	0	$ -	0	$ -	
11	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL	$ 4.00	17	$ 68.00	22	$ 88.00	30	$ 120.00	0	$ -	0	$ -	0	$ -	
12	2360.501	TYPE SP 9.5 WEARING COURSE MIX (2,C)	TON	$ 75.00	30	$ 2,250.00	40	$ 3,000.00	50	$ 3,750.00	0	$ -	0	$ -	0	$ -	
13	2360.502	TYPE SP 12.5 NON WEAR COURSE MIX (2,C)	TON	$ 75.00	40	$ 3,000.00	50	$ 3,750.00	70	$ 5,250.00	0	$ -	0	$ -	0	$ -	
14	2501.511	12" RC PIPE CULVERT CLASS V	LF	$ 50.00	10	$ 500.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	
15	2504.602	ADJUST GATE VALVE & BOX	EA	$ 500.00	0	$ -	1	$ 500.00	0	$ -	0	$ -	0	$ -	0	$ -	
16	2504.602	INSTALL HYDRANT (FROM SALVAGE)	EA	$ 500.00	0	$ -	1	$ 500.00	0	$ -	0	$ -	0	$ -	0	$ -	
17	2504.603	6" PVC WATERMAIN	LF	$ 20.00	0	$ -	35	$ 700.00	0	$ -	0	$ -	0	$ -	0	$ -	
18	2504.608	DUCTILE IRON WATERMAIN FITTINGS	LB	$ 5.00	0	$ -	50	$ 250.00	0	$ -	0	$ -	0	$ -	0	$ -	
19	2506.602	CONST DRAINAGE STRUCTURE DESIGN SPECIAL	EA	$ 1,500.00	1	$ 1,500.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	
20	2521.501	4" CONCRETE WALK	SF	$ 6.00	0	$ -	0	$ -	0	$ -	165	$ 990.00	0	$ -	0	$ -	
21	2531.501	CONCRETE CURB & GUTTER DESIGN B624	LF	$ 15.00	365	$ 5,475.00	240	$ 3,600.00	310	$ 4,650.00	0	$ -	0	$ -	0	$ -	
22	2531.507	6" CONCRETE DRIVEWAY PAVEMENT	SY	$ 55.00	0	$ -	80	$ 4,400.00	80	$ 4,400.00	0	$ -	0	$ -	0	$ -	
23	2531.618	TRUNCTED DOMES	SF	$ 50.00	0	$ -	0	$ -	0	$ -	8	$ 400.00	0	$ -	0	$ -	
24	2563.601	TRAFFIC CONTROL	LS	$ 7,500.00	0.25	$ 1,875.00	0.30	$ 2,250.00	0.30	$ 2,250.00	0.05	$ 375.00	0.05	$ 375.00	0.05	$ 375.00	
25	2564.531	SIGN PANEL TYPE C	SF	$ 30.00	0.00	$ -	0.00	$ -	0.00	$ -	0.00	$ -	0.00	$ -	30	$ 900.00	
26	2565.616	REVISE SIGNAL SYSTEM	SYS	$ 5,000.00	0.00	$ -	0.00	$ -	0.00	$ -	0.00	$ -	0.00	$ -	1	$ 5,000.00	
27	2573.530	STORM DRAIN INLET PROTECTION	EA	$ 500.00	2	$ 1,000.00	0	$ -	1	$ 500.00	0	$ -	0	$ -	0	$ -	
28	2575.505	SODDING TYPE LAWN	SY	$ 3.00	115	$ 345.00	80	$ 240.00	105	$ 315.00	0	$ -	0	$ -	0	$ -	
29	2582.501	PAVT MSSG (LT ARROW) EPOXY	EA	$ 175.00	0	$ -	0	$ -	0	$ -	0	$ -	7	$ 1,225.00	0	$ -	
30	2582.501	PAVT MSSG (RT ARROW) EPOXY	EA	$ 175.00	0	$ -	0	$ -	0	$ -	0	$ -	6	$ 1,050.00	0	$ -	
31	2582.501	PAVT MSSG (THRU ARROW) EPOXY	LF	$ 175.00	0	$ -	0	$ -	0	$ -	0	$ -	2	$ 350.00	0	$ -	
32	2582.501	PAVT MSSG (LT-THRU) EPOXY	LF	$ 175.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	2	$ 350.00	
33	2582.501	PAVT MSSG (RT-THRU) EPOXY	LF	$ 175.00	0	$ -	0	$ -	0	$ -	0	$ -	1	$ 175.00	0	$ -	
34	2582.502	4" SOLID LINE WHITE-EPOXY	LF	$ 0.35	0	$ -	0	$ -	0	$ -	0	$ -	425	$ 148.75	335	$ 117.25	
35	2582.502	4" SOLID LINE YELLOW-EPOXY	LF	$ 0.35	0	$ -	0	$ -	0	$ -	0	$ -	1170	$ 409.50	0	$ -	
36	2582.502	4" BROKEN LINE YELLOW-EPOXY	LF	$ 0.35	0	$ -	0	$ -	0	$ -	0	$ -	170	$ 59.50	0	$ -	
37	2582.503	CROSSWALK MARKING-EPOXY	SF	$ 6.00	0	$ -	0	$ -	0	$ -	200	$ 1,200.00	0	$ -	0	$ -	
						$ 28,278.00		$ 32,733.00		$ 35,930.00		$ 3,465.00		$ 4,292.75		$ 7,742.25	$ 112,441.00
				10% CONTINGENCY		$ 2,827.80		$ 3,273.30		$ 3,593.00		$ 346.50		$ 429.28		$ 774.23	$ 11,244.10
				20% ENGINEERING		$ 6,221.16		$ 7,201.26		$ 7,904.60		$ 762.30		$ 944.41		$ 1,703.30	$ 24,737.02
				8% Admin, financing, Legal		$ 2,488.46		$ 2,880.50		$ 3,161.84		$ 304.92		$ 377.76		$ 681.32	$ 9,894.81
						$ 39,815.42		$ 46,088.06		$ 50,589.44		$ 4,878.72		$ 6,044.19		$ 10,901.09	$ 158,316.93

Petition for Local Improvements
(100 percent of property owners)

December 1, 2016

To the City Council of Baxter, Minnesota:

We, the undersigned, being the owners of the real property abutting upon the following street or public way between the points indicated:

Elder Drive Improvements, lying within the plat of Elmwood Addition

hereby petition the City of Baxter ("City"), Minnesota, to undertake without a public hearing, pursuant to Minnesota Statues, Section 429.031, the following improvements along said street or public way:

Complete the right hand turn lanes, pedestrian crossing, restriping, and all other improvements on or abutting Elder Drive as depicted in the Feasibility Study for Elder Drive and Glory Road Improvements and attached hereto as **Attachment A.**

and authorize the City to assess the entire final cost of the improvements thereof against our property abutting said improvements. The engineer's estimated cost to complete these improvements is $147,415.84 as depicted in Attachment A. We also authorize the City to certify the assessment to the Crow Wing County Auditor for collection against our real estate and at an interest rate of two (2) points above the bond obtained by the City. This certification may be completed by the City without our further consent. If the City maintains the above terms, we waive any right to appeal the amount of said assessment.

Signatures of Owners
Baxter PS 2016, LLC

By _____

Its _____

Dated: _____

LEGAL DESCRIPTION OF ALL ABUTTING PROPERTY:

Lot 1, Block 1, all in ELMWOOD ADDITION.

I hereby certify that I have the above petition and appropriate real estate records and find that said petition is in proper form and is signed by all owners of property abutting said improvements

WITNESS my hand as such Clerk and the seal of the Said City this _____ day of _____, 2016.

_____
City Clerk
City of Baxter

(Seal)

ASSESSMENT AGREEMENT

This Agreement, made and entered into this 20th of December, 2016, by and between the City of Baxter, a municipal corporation under the laws of Minnesota, party of the first part, hereinafter referred to as the "City", and Baxter PS 2016, LLC a limited liability company under the state of Minnesota, party of the second part, hereinafter collectively referred to as "Developer",

WITNESSETH,

WHEREAS, Developer is the owner of the following described tract in Crow Wing County, Minnesota: Lot 1, Block 1, ELMWOOD ADDITION; and

WHEREAS, Developer has just been approved to record a plat (herein referred to as "Lot 1, Block 1, Elmwood Addition") and construct a new Retail Building which requires the expansion of and improvements to Elder Drive; and

WHEREAS, Developer and the City have just executed a Development Agreement regarding the obligations of both parties during the construction of the project; and

WHEREAS, both parties anticipate the expansion and improvements of Elder Drive and the related utility improvements, as described and estimated in the WSB Feasibility Study, dated May 31, 2016, for Elder Drive and Glory Road Improvements as shown on **Attachment A**, in the near future (hereinafter referred to as the "Future Public Improvements").

NOW, THEREFORE, IT IS HEREBY AGREED by and between the parties hereto as follows:

1. Pursuant to said Development Agreement, Developer has agreed to pay its portion of the actual costs for the Future Public Improvements necessary for the expansion and improvements of Elder Drive. Based upon the estimate in the WSB Feasibility Study, dated May 31, 2016, for Elder Drive and Glory Road Improvements attached as **Attachment A**, if the Future Public Improvements were constructed now, Developer's estimated cost to the City would be approximately $147,415.84. This cost is only an estimate. The actual cost will be dependent upon the public bidding process and may increase with time if the project is delayed. In any event, Developer shall pay its portion of the actual costs based on the cost allocation further detailed in said Developer's Agreement and Exhibit O thereto.

2. The Developer hereby authorizes the City to adopt an assessment roll and certify it to the county auditor for the actual entire cost required to complete the Developer's portion of

the Future Public Improvements as set forth in paragraph 16 of said Development Agreement without regard to cash valuation against Lot 1, Block 1, ELMWOOD ADDITION. The assessment shall be amortized over a period of eight years and interest shall accrue on the assessment at a rate of 200 basis points (2%) over the true interest rate (TIR) on the bonds issued to finance the public portion of the Elder Drive Improvements. If the City does not issue bonds to finance these improvements and finances the improvements internally, the City will calculate an assessment interest rate by adding 200 basis points (2%) to the TIR of a recent bond sale of a similarly rated Minnesota city with comparable terms.

3. The Developer, or his successors, further agrees when said assessment is levied the Developer will not appeal or challenge the assessment and waives any notice of hearing related to adopting said assessments.

4. This Agreement shall run with the land and bind the heirs, successors and assigns of the parties hereto as fully as the parties themselves are bound.

IN WITNESS WHEREOF, the parties have hereunto set their hands the day and year first written.

Developer:

BAXTER PS 2016, LLC

_____
By: Jeffrey J. Carriveau
Its: A Manager

STATE OF MINNESOTA)
)ss.
COUNTY OF HENNEPIN)

The foregoing instrument was acknowledged before me this _____ day of _____, 2016 by Jeffrey J. Carriveau, a Manager of Baxter PS 2016, LLC, a Minnesota Limited Liability Company, on behalf of the company.

_____
Notary Public

City:

By:_____
Darrel L. Olson,
Its: Mayor

ATTEST:_____
Kelly Steele
Its: Assistant City Administrator/City Clerk

RATIFIED AND APPROVED BY THE CITY COUNCIL OF BAXTER, MINNESOTA, THIS 20th DAY OF DECEMBER, 2016.

_____
Darrel L. Olson
Its: Mayor

ATTEST:_____
Kelly Steele
Its; Assistant City Administrator/City Clerk

STATE OF MINNESOTA)
)ss.
COUNTY OF CROW WING)

The foregoing instrument was acknowledged before me this _____ day of _____, 2016 by Darrel Olson and Kelly Steele the Mayor and Assistant City Administrator/City Clerk of Baxter, a municipal corporation under the laws of Minnesota, on behalf of the corporation.

_____
Notary Public

THIS INSTRUMENT WAS DRAFTED BY:
The City of Baxter
13190 Memorywood Drive
P.O. Box 2626
Baxter, MN 56425

REQUEST FOR COUNCIL ACTION

12.20.2016

Department Origination:
Public Works

Agenda Section:
Consent

Agenda Item: Approve the WSB Professional Engineering Services Contract for the 2017 Elder Drive Improvements Project in the not to exceed amount of $42,800.00.

Approval Required: Simple Majority Vote of the Council

BACKGROUND

City staff submitted a request to solicit engineering proposals from local pre-qualified engineering firms to provide professional engineering and related services for improvements to Elder Drive and Glory Road.

The following firms submitted the Request for Proposals (RFP) for the 2017 Elder Drive Improvements Project before the deadline of Wednesday, June 15, 2016 at 4:30 p.m.:

Bolton & Menk
SEH, Inc.
WSB
WSN

All firms were evaluated by Public Works Director/City Engineer Trevor Walter as per the attached evaluation form. All firms met or exceeded all requirements outlined in the RFP therefore the only remaining factor was the cost of the services to the City. Based on a not to exceed cost of $42,800.00, Public Works Director/City Engineer Walter is recommending WSB for the 2017 Elder Drive Improvements Project.

FINANCIAL IMPLICATIONS

The City of Baxter will be assessing 100% of the project costs back to the developer.

STAFF RECOMMENDATION

Staff recommends approving the WSB Professional Engineering Services Contract for the 2017 Elder Drive Improvements Project in the not to exceed amount of $42,800.00.

COUNCIL ACTION REQUESTED

MOTION to approve the WSB Professional Engineering Services Contract for the 2017 Elder Drive Improvements Project in the not to exceed amount of $42,800.00.

Attached: Evaluation Form
Engineering Contract

2016 CITY OF BAXTER ELDER DRIVE & GLORY ROAD IMPROVEMENTS
Request for Proposals Evaluation Sheet

Evaluation Factors	Request for Proposal Firms			
	BOLTON & MENK	SEH, INC.	WSB	WSN
Technical Ability				
1. Technical competence, capabilities and specialized expertise was demonstrated by the responder's expressed project understanding, proposed project approach and methodology, project work plan and project management techniques.	N/A	Yes	Yes	Yes
2. Firm has the required background and experience with similar work, including ability and experience in handling project of similar nature.	N/A	Yes	Yes	Yes
3. The firm has all qualifications and availability of key personnel and other resources to perform the work within the specified project schedule.	N/A	Exceeds RFP	Exceeds RFP	Exceeds RFP
4. Was there any additional pertinent information required by the City after proposal submittal to the City.	N/A	None	None	None
5. Conflict of interest disclosure statement submitted.	N/A	Yes	Yes	Yes
6. Construction Testing	N/A	Braun	WSB	WSN
Past Experience				
1. Firm is experienced with similar projects and work. Consultant has completed how many similar projects in the last 10 years similar.	N/A	Yes	Yes	Yes
2. Project Team Members has how many combined years of relevant work experience.	N/A	Yes	Yes	Yes
Consultant Bid	N/A	$58,302.00	$42,800.00	$58,227.00
Additions to Bid	N/A	0	0	0
Total Consultant Cost	N/A	$58,302.00	$42,800.00	$58,227.00
Comments	Did not submit RFP Explained in letter	N/A	N/A	N/A

Reviewer Name: _____ **Title:** Public Works Director/City Engineer

WSB & ASSOCIATES, INC.
PROFESSIONAL SERVICES AGREEMENT

This Agreement is made as of the 5th day of July, 2016, by and between the City of Baxter, Minnesota, hereinafter referred to as Client, and WSB & Associates, Inc., hereinafter referred to as Engineer, with offices located at 15574 Edgewood Drive, Suite 103, Baxter, MN 56401.

Witnesseth, that the Client and Engineer, for the consideration herein named, agree as follows:

SECTION 1 / GENERAL CONTRACT PROVISIONS
These provisions shall be as set forth in Exhibit A.

SECTION 2 / SCOPE OF WORK
The scope of work to be performed by Engineer is set forth in Exhibit C. The work and services to be performed hereunder and described in Exhibit C shall be referred to herein and in the General Contract Provisions as the Project.

SECTION 3 / COMPENSATION
Compensation to Engineer for services described in this agreement shall be as designated in the attached Exhibit D and as hereinafter described.

SECTION 4 / WORK SCHEDULE
The anticipated schedule is set forth in Exhibit C.

SECTION 5 / SPECIAL CONDITIONS
Special conditions, if any, are as set forth in Exhibit G.

SECTION 6 / EXHIBITS
The following initialed Exhibits are attached to and made a part of this Agreement (check all that apply):

X Exhibit A General Contract Provisions
X Exhibit B Client Responsibilities
X Exhibit C Scope of Work
X Exhibit D Compensation
X Exhibit E Insurance Schedule
X Exhibit F Fee Schedule
___ Exhibit G Other Information

SECTION 7 / ACCEPTANCE OF AGREEMENT
All work and services described in this agreement shall be performed by Engineer only after written acceptance of the City. The undersigned hereby accept the terms and conditions of this agreement and Engineer is hereby authorized to perform the services described herein.

CLIENT: CITY OF BAXTER

ADDRESS: 13190 MEMORYWOOD DRIVE
BAXTER, MN 56425

BY: _____

SIGNATURE: _____

TITLE: _____

BY: _____

SIGNATURE: _____

TITLE: _____

BY: _____

SIGNATURE: _____

TITLE: City Attorney, As Required

ENGINEER: WSB & ASSOCIATES, INC.

ADDRESS: 15574 Edgewood Drive
SUITE 103
BAXTER, MN 56401

BY: Ron Bray, PE

SIGNATURE: Ronald S Bray

TITLE: Principal

BY: Charles Rickart, PE, PTOE

SIGNATURE: Charles T Rickart

TITLE: Principal

WSB & ASSOCIATES, INC.
EXHIBIT A
GENERAL CONTRACT PROVISIONS

ARTICLE 1 – GENERAL

These general contract provisions are incorporated in and become a part of the Agreement between WSB & Associates, Inc. (hereinafter referred to as Engineer) and the other party to the Agreement (Client) for the provision of engineering and related services, as set out in the Agreement to which this letter is attached. Either party may be hereinafter referred to as party or, collectively, parties. The starting date will commence when authorized by the Client.

As used herein the term "Agreement" means:

(1) The agreement for engineering, surveying and planning services;
(2) These general contract provisions;
(3) The attached exhibits; and
(4) The supplemental agreement(s), where applicable.

The attached exhibits shall govern over these General Contract Provisions and the Supplemental Agreement(s), where applicable, shall govern over attached exhibits and these general provisions. The Agreement constitutes the entire understanding between the Engineer and Client. The Agreement supersedes all prior written or oral understanding and may only be amended, supplemented, modified or cancelled by a duly executed written instrument.

ARTICLE 2 – STANDARD OF CARE

The standard of care for all professional engineering and related services performed or furnished by Engineer under this Agreement will be the care and skill ordinarily used by members of Engineer's profession practicing under similar circumstances at the same time and in the same locality. Engineer makes no warranties, express or implied, under this Agreement or otherwise, in connection with its services.

ARTICLE 3 – ADDITIONAL SERVICES

If the Engineer determines that any services it has been directed or requested to perform are beyond the scope as set forth in the Agreement or that, due to changed conditions or changes in the method or manner of administration of the Project, the Engineer's effort required to perform its services under this Agreement exceeds the estimate which formed the basis for the Engineer's compensation, Engineer shall promptly notify the Client of that fact. Upon notification, Engineer shall be entitled to additional compensation for same, and an extension of time for completion of work absent written objection by Client.

ARTICLE 4 – LOCATION OF UNDERGROUND IMPROVEMENTS

The Engineer and/or his or her authorized subconsultant will conduct the research that in his or her professional opinion is necessary and will prepare a plan indicating the locations intended for subsurface penetrations with respect to assumed locations of underground improvements. Such services by the Engineer or his or her subconsultant will be performed in a manner consistent with the ordinary standard of care. The Client recognizes that the research may not identify all underground improvements and that the information upon which the Engineer relies may contain errors or may not be completed.

The Client agrees, to the fullest extent permitted by law, to waive all claims and causes of action against the Engineer and anyone for whom the Engineer may be legally liable, for claims by Client or its contractors of delay or additional compensation relating to the identification, removal, relocation, or restoration of utilities, or damages to underground improvements resulting from subsurface penetration locations established by the Engineer.

ARTICLE 5 – CONSTRUCTION OBSERVATION

If requested by Client, Engineer shall visit the project during construction to become familiar with the progress and quality of the contractors' work and to determine if the work is proceeding, in general, in accordance with plans, specifications or other contract documents prepared by Engineer for the Client. The Client has not retained the Engineer to make detailed inspections or to provide exhaustive or continuous project review and observation services. Engineer does not guarantee the performance of, and shall have no responsibility for, the acts, errors or omissions of any contractor, subcontractor, supplier or any other entity furnishing materials or performing any work on the project.

Client acknowledges Engineer will not direct, supervise or control the work of contractors or their subcontractors, nor shall Engineer have authority over or responsibility for the contractors means, methods, or procedures of construction. Engineer's services do not include review or evaluation of the Client's, contractor's or subcontractor's safety measures, or job site safety.

For Client-observed projects, the Engineer shall be entitled to rely upon and accept representations of the Client's observer. If the Client desires more extensive project observation or full-time project representation, the Client shall request such services be provided by the Engineer as an Additional Service. Engineer and Client shall then enter into a Supplemental Agreement detailing the terms and conditions of the requested project observation.

ARTICLE 6 – OPINIONS OF PROBABLE COST

Opinions, if any, of probable cost, construction cost, financial evaluations, feasibility studies, economic analyses of alternate solutions and utilitarian considerations of operations and maintenance costs provided for are made or to be made on the basis of the Engineer's experience and qualifications and represent the Engineer's best judgment as an experienced and qualified professional design firm. The parties acknowledge, however, that the Engineer does not have control over the cost of labor, material, equipment or services furnished by others or over market conditions or contractor's methods of determining their prices, and any evaluation of any facility to be constructed or acquired, or work of necessity must be speculative until completion of construction or acquisition. Accordingly, the Engineer does not guarantee that proposals, bids or actual costs will not vary from opinions, evaluations or studies submitted by the Engineer and assumes no responsibility for the accuracy of opinions of Probable Construction Costs. If Client wishes greater assurance as to probable Construction Cost, Client shall employ an independent cost estimator as part of its Project responsibilities.

ARTICLE 7 – REUSE AND DISPOSITION OF INSTRUMENTS OF SERVICE

All documents, including reports, drawings, calculations, specifications, CADD materials, computers software or hardware or other work product prepared by Engineer pursuant to this Agreement are Engineer's Instruments of Service and Engineer retains all ownership interests in Instruments of Service, including copyrights. The Instruments of Service are not intended or represented to be suitable for reuse by the Client or others on extensions of the Project or on any other project. Copies of documents that may be relied upon by Client are limited to the printed copies (also known as hard copies) that are signed or sealed by Engineer. Files in electronic format furnished to Client are only for convenience of Client. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern. Engineer makes no representations as to long term compatibility, usability or readability of electronic files.

If requested, at the time of completion or termination of the work, the Engineer may make available to the Client the Instruments of Service upon (i) payment of amounts due and owing for work performed and expenses incurred to the date and time of termination, and (ii) fulfillment of the Client's obligations under this Agreement. Any use or re-use of such Instruments of Service by the Client or others without written consent, verification or adaptation by the Engineer except for the specific purpose intended will be at the Client's risk and full legal responsibility.

The Client will, to the fullest extent permitted by law, indemnify and hold the Engineer harmless from any claim, liability or cost (including reasonable attorneys' fees, and defense costs) arising or allegedly arising out of any unauthorized reuse or modification of these Instruments of Service by the Client or any person or entity that acquires or obtains the reports, plans and specifications from or through the Client without the written authorization of the Engineer. Under no circumstances shall transfer of Instruments of Service be deemed a sale by Engineer, and Engineer makes no warranties, either expressed or implied, of merchantability and fitness for any particular purpose. Engineer shall be entitled to compensation for any consent, verification or adaptation of the Instruments of Service for extensions of the Project or any other project.

ARTICLE 8 – PAYMENTS

Payment to Engineer shall be on a lump sum or hourly basis as set out in the Agreement. Engineer is entitled to payment of amounts due plus reimbursable expenses. Client will pay the balance stated on the invoice unless Client notifies Engineer in writing of any disputed items within 15 days from the date of invoice. In the event of any dispute, Client will pay all undisputed amounts in the ordinary course, and the Parties will endeavor to resolve all disputed items. All accounts unpaid after 30 days from the date of original invoice shall be subject to a service charge of 1-1/2% per month, or the maximum amount authorized by law, whichever is less. Engineer shall be entitled to recover all reasonable costs and disbursements, including reasonable attorneys fees, incurred in connection with collecting amounts owed by Client. In addition, Engineer may, after giving seven days' written notice to Client, suspend services under this Agreement until it receives full payment for all amounts then due for services, expenses and charges.

ARTICLE 9 – HAZARDOUS MATERIALS
Notwithstanding the Scope of Services to be provided pursuant to this Agreement, it is understood and agreed that Engineer is not a user, handler, generator, operator, treater, storer, transporter or disposer of hazardous or toxic substances, pollutants or contaminants as any of the foregoing items are defined by Federal, State and/or local law, rules or regulations, now existing or hereafter amended, and which may be found or identified on any Project which is undertaken by Engineer.

The Client agrees to hold harmless, indemnify and defend Engineer and its officers, subconsultant(s), employees and agents from and against any and all claims, losses, damages, liability and costs, including but not limited to costs of defense, arising out of or in any way connected with, the presence, discharge, release, or escape of hazardous or toxic substances, pollutants or contaminants of any kind, except that this clause shall not apply to such liability as may arise out of Engineer's sole negligence in the performance of services under this Agreement arising from or relating to hazardous or toxic substances, pollutants, or contaminants specifically identified by the Client and included within Engineer's services to be provided under this Agreement.

ARTICLE 10 – INSURANCE
Engineer has procured general and professional liability insurance. On request, Engineer will furnish client with a certificate of insurance detailing the precise nature and type of insurance, along with applicable policy limits.

ARTICLE 11 – TERMINATION
This Agreement may be terminated by either party upon thirty days' written notice without cause. In the event of termination, copies of plans, reports, specifications, electronic drawing/data files (CADD), field data, notes, and other documents whether written, printed or recorded on any medium whatsoever, finished or unfinished, prepared by the Engineer pursuant to this Agreement and pertaining to the work or to the Project, (hereinafter "Instruments of Service"), shall be made available to the Client pursuant to Article 7. All provisions of this Agreement allocating responsibility or liability between the Client and Engineer shall survive the completion of the services hereunder and/or the termination of this Agreement.

ARTICLE 12 – INDEMNIFICATION
The Engineer agrees, to the fullest extent permitted by law, to indemnify and hold the Client harmless from any damage, liability or cost (including reasonable attorneys' fees and costs of defense) to the extent caused by the Engineer's negligent acts, errors or omissions in the performance of professional services under this Agreement and those of his or her subconsultants or anyone for whom the Engineer is legally liable.

The Client agrees to the fullest extent permitted by law, to indemnify and hold the Engineer harmless from any damage, liability or cost (including reasonable attorneys' fees and costs of defense) to the extent caused by the Client's negligent acts, errors or omissions and those of his or her contractors, subcontractors or consultants or anyone for whom the Client is legally liable, and arising from the project that is the subject of this Agreement.

ARTICLE 13 – ASSIGNMENT
Neither Party to this Agreement shall assign its interest in this agreement, any proceeds due under the Agreement nor any claims that may arise from services or payments due under the Agreement without the written consent of the other Party. Any assignment in violation of this provision shall be null and void.

ARTICLE 14 – CONTROLLING LAW
This Agreement is to be governed by the laws of the State of Minnesota.

ARTICLE 15 – CONFLICT RESOLUTION
In an effort to resolve any conflicts that arise during the design or construction of the project or following the completion of the project, the Client and Engineer agree that all disputes between them arising out of or relating to this Agreement shall be submitted to nonbinding mediation as a precondition to any formal legal proceedings.

ARTICLE 16 – CONFIDENTIALITY
The Engineer agrees to keep confidential and not to disclose to any person or entity, other than the Engineer's employees, subconsultants and the general contractor and subcontractors, if appropriate, any data and information furnished to the Engineer and marked CONFIDENTIAL by the Client. These provisions shall not apply to information in whatever form that comes into the public domain, nor shall it restrict the Engineer from giving notices required by law or complying with an order to provide information or data when such order is issued by a court, administrative agency or other authority with proper jurisdiction, or if it is reasonably necessary for the Engineer to complete services under the Agreement or defend itself from any suit or claim.

ARTICLE 17 – DATA PRACTICES COMPLIANCE

Engineer will have access to data collected or maintained by the Client to the extent necessary to perform Engineer's obligation under this contract. Engineer acknowledges that, pursuant to Minn. Stat. § 13.05, subdivision 11, all of the data created, collected, received, stored, used, maintained or disseminated by Contract in performing the contract are subject to the requirements of the Minnesota Government Data Practices Act (the Act), Minnesota Statutes chapter 13. Engineer is required to comply with the requirements of the Act as if it were a government entity. Engineer acknowledges that the remedies provided in Minn. Stat. § 13.08 apply to Engineer with respect to such data. Engineer will notify the Client of all requests for data that Engineer receives. Engineer agrees to defend and indemnify the Client from any claim, liability, or damage that result from Engineer's violation of the Act or this section of the contract. Upon termination of this contract, Engineer agrees to return data to the Client as requested by the Client. The obligations of this section of the contract, including the obligation to defend and indemnify the Client, shall survive the termination of this Contract and shall continue so long as the data exists.

WSB & ASSOCIATES, INC.
EXHIBIT B
CLIENT RESPONSIBILITIES

The Client's responsibilities related to the services to be provided by Engineer are generally as set out below. These responsibilities can be modified through Supplemental Agreements.

In order to permit the Engineer to perform the services required under this Agreement, the Client shall, in proper time and sequence and where appropriate to the Project, at no expense to the Engineer:

1. Provide available information as to its requirements for the Project, including copies of any design and construction standards and comprehensive plans which the Client desires Engineer to follow or incorporate into its work.

2. Guarantee access to and make all provisions for the Engineer to enter upon public and private lands to enable the Engineer to perform its work under this Agreement.

3. Provide such legal, accounting and insurance counseling services as may be required for this Project.

4. Notify the Engineer whenever the Client observes or otherwise becomes aware of any defect in the Project construction or design.

5. Designate a Client Representative with authority to transmit and receive instructions and information, interpret and define the Client's policies with respect to services rendered by the Engineer, and authority to make decisions as required for Engineer to complete services required under this Agreement.

6. Act promptly to approve all pay requests, Supplemental Agreements, or request for information by Engineer as set out below.

7. Furnish data (and professional interpretations thereof) prepared by or services performed by others, including where applicable, but not limited to, previous reports, core borings, sub-surface explorations, hydrographic and hydrogeologic surveys, laboratory tests and inspection of samples, materials and equipment; appropriate professional interpretations of the foregoing data; environmental assessment and impact statements; property, boundary, easement, right-of-way, topographic and utility surveys; property description; zoning, deed and other land use restrictions; and other special data.

8. Review all reports, sketches, drawings, specifications and other documents prepared and presented by the Engineer, obtain advice of legal, accounting and insurance counselors or others as Client deems necessary for such examinations and render in writing decisions pertaining thereto.

9. Provide the foregoing in a manner sufficiently timely so as not to delay the performance by the Engineer of the services in accordance with the Contract Documents.

10. Engineer shall be entitled to rely on the accuracy and completeness of information or services furnished by the Client or others employed by the Client. Engineer shall endeavor to verify the information provided and shall promptly notify the Client if the Engineer discovers that any information or services furnished by the Client is in error or is inadequate for its purpose.

11. Client shall bear all costs incidental to compliance with the requirements of this article.

WSB & ASSOCIATES, INC.
EXHIBIT C
SCOPE OF WORK

ELDER DRIVE AND GLORY ROAD IMPROVEMENTS

The Elder Drive and Glory Road Improvements Feasibility Study will be reviewed by the Utilities Commission at a special meeting on June 22, 2016 and then considered by the City Council on July 5, 2016. Immediately following approval by City Council WSB will begin work on this project. A project kickoff meeting will be scheduled with City staff. Along with the kickoff meeting, a visual site survey will take place with WSB and City staff to determine any issues that the project may encounter. Any additional work could be added to improve the scope of the project at the award of the project, should the City and Utility Commission determine the need.

WSB will perform a topographic survey of the entire project area and use the information to develop a drawing base file. This information together with survey data provided by the developer will then be used by the design team to prepare final plans. Over the course of the project, WSB will make presentations to the Utilities Commission and City Council and coordinate with other utilities within the project limits. In addition although, the project is not using State Aid funding it is being designed to meet State Aid standards and will be submitted to MnDOT State Aid for a compliance review.

Coordination meetings will be held with MnDOT District 3 Traffic Section to secure approval of the proposed improvements and signal modifications to the TH 371 and Glory Road intersection signal system. It is anticipated that two meetings will be needed; the first to outline the request and traffic analysis completed for the intersection and the second to address any concerns or additional information they may require prior to approval.

The proposed improvements are considered a "Developer Requested Project" and are proposed to be assessed 100% to the developer/property owner of each project area. It is therefore assumed that the project will not require the need for an improvement hearing. However, an assessment hearing will be required. Because this is a developer requested project the assessment hearing will be conducted following substantial completion of the project at which time more detailed project costs will be available.

The construction testing portion of the project will also be completed by WSB and Associates, and will be executed in accordance with the MnDOT Schedule of Materials Control and State Aid standards. WSB will perform the field aggregate and density testing, field concrete testing, and coordinate bituminous testing through the City's Cooperative agreement with MnDOT.

Upon completion of the project, WSB will use our survey crews to collect topographic data from the completed project. This data will be used to prepare record drawings of the project. Electronic files will be provided to the City to be used to update their GIS system at completion of the project.

The following scope provides the work plan to prepare final design plans and construction services based on the Feasibility Study and RFP prepared by the City.

WSB & ASSOCIATES, INC.
EXHIBIT C
SCOPE OF WORK

TASK 1: PRELIMINARY DETAILS AND SURVEY:

1. Establish vertical and horizontal control points in the project area on Baxter coordinate system.
2. Field survey topography for vertical and horizontal location information.
3. Coordinate field location of existing utilities (i.e. electric, telephone, gas, cable, sanitary sewer, storm sewer and water, etc.).
4. Field-locate existing utility information.
5. Record and document existing property corners and right-of-way that is evident.
6. Create property base drawing with survey level accuracy using existing plats and legal descriptions.
7. Import field topography survey points and create base drawing of existing conditions with property and right-of-way information.
8. Coordinate with MnDOT preliminary approval of proposed signal phasing modifications, striping and signage at the intersection of TH 371 and Glory Road.

TASK 2: DESIGN:

1. Conduct preliminary design meeting with private utility companies.
2. Prepare title sheet.
3. Prepare Statement of Estimated Quantities with splits for assessment purposes.
4. Prepare typical construction details, notes and standard plan sheets.
5. Prepare quantity tabulation sheets.
6. Prepare typical roadway section sheets.
7. Prepare alignment plan sheets.
8. Prepare existing conditions sheets detailing existing City and private utilities.
9. Prepare traffic control and detour plan sheets.
10. Prepare erosion control sheets and details.
11. Prepare Storm Water Pollution Prevention Plan sheets.
12. Prepare removal plan sheets.
13. Prepare storm sewer schedule.
14. Prepare plans and profile sheets detailing storm sewer and roadway construction.
15. Prepare pavement marking and signing plan sheets.
16. Prepare roadway cross section and earthwork summary plan sheets.
17. Prepare revised traffic signal plan sheets.
18. Provide City with Engineer's Estimate of Probable Construction Cost.
19. Prepare contract documents using standard EJCDC documents/forms.
20. Prepare technical specifications.
21. Prepare bituminous pavement design calculations.
22. Submit plans, contract documents and specifications for review and approval by City staff, Utilities Commission and City Council.
23. Submit plans to MnDOT District 3 Traffic Engineer for approval of traffic signal upgrades at the intersection of Glory Road and TH 371.
24. Present final construction plans to the City Council at regular council meeting for final approval.

WSB & ASSOCIATES, INC.
EXHIBIT C
SCOPE OF WORK

TASK 3: ADVERTISING / BIDDING / AWARD:

1. Assist City with advertising the construction documents for public bidding in Brainerd Dispatch, Finance & Commerce and Quest CDN. City will coordinate payment of fees with each advertisement service provider.
2. Coordinate distribution of contract documents to prospective bidders.
3. Respond to all bidder inquiries.
4. Prepare and distribute addenda as necessary.
5. Attend and assist with bid opening procedures at City Hall.
6. Review apparent low bid for compliance with contract documents.
7. Make written recommendation to the City Utilities Commission and City Council for the award of the contract.
8. Attend Utilities Commission meeting in order to award bid.
9. Attend City Council meeting in order to award bid.

TASK 4: CONSTRUCTION STAKING:

1. Re-establish vertical and horizontal control in the project area.
2. Provide all construction staking duties with one day notice (two maximum).
3. Provide preliminary construction staking to assist with relocating minor utilities (power, telephone, gas, etc.).
4. Provide staking for relocation of storm sewer pipe, catch basins, and roadway improvements. Minimum staking requirements are as follows:
    a. Curb and Gutter
        - Type and Location: Cut/fill offset hubs, per Contractor preference.
        - Minimum Frequency: 1 per 25' both sides and at all grade breaks, low points and high points.
    b. Roadway Centerline
        - Type and Location: Grade hubs (bluetops) set at subgrade & set at top base urban roads.
        - Minimum Frequency: 1 per 50' and at all grade breaks, PC's, PT's low points and highpoints
    c. Storm Sewer
        - Type and Location: Cut/fill offset hubs, side of Contractor choice.
        - Minimum Frequency: 1 per catch basin relocation.

TASK 5: PROJECT MANAGEMENT:

1. Coordinate execution of the Contract Documents.
2. Review Contractor insurance and bonding submittals for compliance with the contract documents.
3. Submit necessary insurance and bonding information to the City Attorney to obtain approval for award of contract.
4. Coordinate with contractor to address any deficiencies in insurance and bonding submittals after Consultant and City Attorney review.
5. Coordinate, schedule and attend a pre-construction conference.

WSB & ASSOCIATES, INC.
EXHIBIT C
SCOPE OF WORK

6. Prepare agenda, distribute agenda and provide minutes of pre-construction conference.
7. Review Contractor submittals and assist with preparation of Contractor Applications for Payment.
8. Prepare Contractor Applications for Payment.
9. Review payment applications with the Owner.
10. Attend Utilities Commission meeting to review and present payment applications.
11. Review Contractor submittals and assist with preparation of documentation for Change Orders.
12. Review Change Orders with Owner.
13. Attend Utilities Commission meeting to review and present Change Order applications.
14. Submit a written project status report on a monthly basis to both Utilities Commission and City Council.
15. Attend monthly Utilities Commission meetings to review and update owner on project status.
16. Conduct weekly construction meetings between the Contractor, Sub-contractors, utility companies and City of Baxter.
17. Prepare and distribute minutes of weekly construction meetings.
18. Serve as the liaison between Owner and Contractor personnel.
19. Coordinate necessary conferences and meetings.

TASK 6: CONSTRUCTION SERVICES:

1. Appoint a contact person or person's to respond to any concerns, problems or emergencies that may arise during construction. The contact persons must be available 24 hours a day seven days a week.
2. Provide one full-time prime field observer during roadway construction activities.
3. Provide on-call observation during removal and restoration activities.
4. Provide one full-time prime field observer that shall work directly with property owners to answer questions and work through construction related issues.
5. Provide complete daily and weekly reports for review by City staff.
6. Provide additional qualified field observers as necessary to observe additional work or crews if required.
7. Serve as liaison between the project residents/property owners, the Contractor and City
8. Document daily work activities for conformance to the plans and specifications.
9. Measure and document quantities for payment.

TASK 7: POST CONSTRUCTION SERVICES / ASSESSMENT HEARING:

1. Field survey and obtain coordinate positions on the following items for "Record Drawing" preparation:

    - Sanitary sewer manholes
    - Sanitary sewer service stubs/cleanouts
    - Sanitary sewer mainline stubs
    - Watermain stubs
    - Fire hydrants

WSB & ASSOCIATES, INC.
EXHIBIT C
SCOPE OF WORK

- Gate valves
- Curb stops
- Storm sewer structures
- Storm water basin finished ground
- Street Signs
- Preparation of record drawings using field located and surveyed coordinates. All pipes and structures must be moved and shown in the correct location as located in the field.
- Provide one (1) .pdf copy and one (1) electronic copy of the record drawing documents. The electronic document must be in an acceptable format to update the City's GIS system.
- Preparation of pavement marking layout sheets with quantities.
- Re-establish removed or disturbed property boundary markers.

2. Prepare a final assessment role.
3. Present final assessments for the Utility Commission review.
4. Present final assessments to City Council and property owners at an assessment hearing.
5. WSB will provide information for the City to send out notices to the effected property owners.

WSB & ASSOCIATES, INC.
EXHIBIT D
COMPENSATION

ELDER DRIVE AND GLORY ROAD IMPROVEMENTS

Based on the Scope of Work and WSB's fee schedule (attached Exhibit F), it is estimated that the cost to complete the design and construction services shown in the following table. The estimated costs are not to exceed amounts. WSB will only bill for actual hours worked.

Task	Description	Estimated Cost
Task 1	Preliminary Details and Survey	$2,500
Task 2	Design	$10,700
Task 3	Advertising / Bidding / Award	$1,700
Task 4	Construction Staking	$3,200
Task 5	Construction Project Management / Testing	$2,300
Task 6	Construction Services	$20,400
Task 7	Post Construction Services / Assessment Hearing	$2,000
	Total Project Fee	**$42,800**

WSB & ASSOCIATES, INC.
EXHIBIT E
INSURANCE SCHEDULE

GENERAL LIABILITY

Carrier:	The Travelers Indemnity Company	
Type of Insurance:	Commercial General Liability	
Coverage:	General Aggregate	$2,000,000
	Products-Comp/Ops Aggregate	$2,000,000
	Personal & Advertising Injury	$1,000,000
	Each Occurrence	$1,000,000

AUTOMOBILE LIABILITY

Carrier:	The Travelers Indemnity Company	
Type of Insurance:	Hired Autos Non-Owned Autos	
Coverage:	Combined Single Limit	$1,000,000

WORKER'S COMPENSATION AND EMPLOYERS' LIABILITY

Carrier:	Travelers	
Coverage	Statutory	
	Each Accident	$ 1,000,000
	Disease-Policy Limit	$ 1,000,000
	Disease-Each Employee	$ 1,000,000

PROFESSIONAL LIABILITY (ERRORS AND OMISSIONS)

Carrier:	XL Specialty Insurance Company
Coverage:	$5,000,000 each claim/$10,000,000 annual aggregate

Certificates of Insurance will be provided upon request.

WSB 2016 Rate Schedule

	Billing Rate/Hour
Principal	$158
Associate / Senior Project Manager	$137|$147|$158
Project Manager	$121|$127|$133
Project Engineer	$104|$112|$121|$127|$133
Graduate Engineer	$80|$85|$92|$98
Sr Landscape Architect / Sr Planner / Sr GIS Specialist	$109|$118|$125|$133|$138
Landscape Architect / Planner / GIS Specialist	$66|$74|$81|$89|$99|$104
Engineering Specialist / Senior Environmental Scientist	$90|$98|$105|$112|$121|$130
Engineering Technician / Environmental Scientist	$52|$60|$67|$74|$79|$85
Construction Observer	$87|$94|$99|$105|$110
Coring Crew	
One-Person Crew	$162
Two-Person Crew	$238
Survey Crew	
One-Person Crew	$132
Two-Person Crew	$164
Three-Person Crew	$184
Underwater Inspection Dive Team	$460
Office Technician	$42|$65|$75|$85

Costs associated with word processing, cell phones, reproduction of common correspondence and mailing are included in the above hourly rates. Vehicle mileage is normally included in our billing rates, but can be charged separately if specifically outlined by contract.

Reimbursable expenses include costs associated with plan, specification and report reproduction, permit fee, delivery cost, etc.

Rate Schedule is adjusted annually.

Multiple rates illustrate the varying levels of experience within each category.

WSB & Associates, Inc.
Infrastructure ■ Engineering ■ Planning ■ Construction
15574 Edgewood Drive
Suite 103
Baxter, MN 56401
Tel: 218-824-3960

December 1, 2016

Mr. Trevor Walter
Public Works Director/City Engineer
City of Baxter
13190 Memorywood Drive
Baxter, MN 56425

Re: Proposal for Final Design and Construction Professional Engineering Services
Excelsior Road, Fairview Road and Edgewood Drive
Utility and roadway improvements
City of Baxter

Dear Mr. Walter:

WSB & Associates, Inc. (WSB) is pleased to submit this proposal to prepare Final Design Plans and Construction Services for the Excelsior Road, Fairview Road and Edgewood Drive Improvement project. We are proposing to team with Widseth Smith Nolting (WSN) to provide these services for the City of Baxter. The WSB/WSN team will be led by Chuck Rickart who will provide the overall management for the project.

Based on our understanding of the project we have developed the attached Approach, Scope of Work and Estimated Cost to complete the project.

We appreciate the opportunity to provide this proposal to the City of Baxter. If you have any questions we are available to discuss the details of this proposal at your request.

Sincerely,

WSB & Associates, Inc.

Charles T. Rickart, P.E, PTOE
Project Manager/Principal

EXCELSIOR RD, FAIRVIEW RD AND EDGEWOOD DR UTILITY AND ROADWAY IMPROVEMENTS

PROJECT UNDERSTANDING

The City of Baxter is planning the extension of Fairview Road from where it ends today adjacent to TH 210 to Excelsior Road; the re-alignment of Edgewood Drive north of Excelsior Road; the construction of a roundabout at the new intersection of Excelsior Road and Fairview Road/Edgewood Drive; the reclaiming and reconstruction of Excelsior Road from Forest Drive to Inglewood Drive, and; area pedestrian improvements.

The City has been considering these improvements for many years and the concept has been included as part of the Long Range Transportation and Functional Classification Street Map presented as part of the City's Comprehensive Plan. The Baxter City Council has also approved the "Excelsior Area Transportation Study" as well as an "Intersection Control Evaluation (ICE)" that recommended the construction of a single lane roundabout at the intersection of Excelsior Road with Fairview Road/Edgewood Drive.

A Draft Feasibility Study has been prepared for the proposed planned improvements. The report reviewed the existing conditions, anticipated project cost, preliminary property assessments, the feasibility of the improvements and presented conclusions and recommendations for the project area. Funding for improvements will be obtained from various sources including; the City of Baxter, Municipal State Aid, and assessments to benefitted property owners.

PROJECT APPROACH

The WSB team recognizes and understands that there are several stakeholders that have specific interests in this project – the City of Baxter, MnDOT, and the landowners, both residential and commercial, along the corridor. The project is mostly defined and the goals and objectives are established.

- Continue a strong public and agency involvement plan.
- Work with private and public utilities within the project area to fully identify conflicts and a plan for relocation.
- Address drainage and ponding requirements along the corridor.
- Develop construction plans to establish the necessary right of way needs for construction purposes.
- Develop the project in a way that the corridor construction could potentially be completed maintaining traffic through the corridor for the majority of the construction period.

SCOPE OF WORK AND TIMELINE

The WSB and WSN team will provide the following work plan through strong leadership committed to the timely development of a quality design to drive the project schedule to a successful completion with improvements completed in the fall of 2017. The following work plan outlines the tasks anticipated to complete this project based on the preliminary concept plan and the Draft Feasibility Study.

The proposed project timeline is set for a project bid by March/April 2017. It is anticipated that the Plans and Specifications would be completed in February/March of 2017 and final approval by MnDOT would be completed in March of 2017. Construction is anticipated to begin in early July, 2017. It is assumed that the project would be substantial completed by the end of October, 2017, with final completion by mid-November, 2017.

Design Phase

Task 1-Project Management and Coordination

The project team will drive the project success through proactive project management and a focus on quality documents. **Chuck Rickart** will provide the overall project management for the project and will be the primary point of contact for the City of Baxter. He will provide monthly progress reports and regularly scheduled updates. Further, the team will provide a constructability review, focused on setting clear expectations resulting in more accurate, and lower, construction bids. This task will include:

- Regular communication with the City regarding project status, including progress reports, budget and schedule
- Scheduling and facilitation of regular PMT meetings, including agendas and minutes
- Coordination with regulatory agencies, utility meetings and other meetings as required
- Coordination of overall design team activities, including meeting materials and graphics
- QA/QC reviews at 60%, 95% and Final completion stages

Task 2- Utility and Agency Coordination

The WSB/WSN team will work with the City of Baxter to develop final design and construction documents for the roadway and Utility improvements for the Excelsior Road, Fairview Road and Edgewood Drive improvements. Our team will prepare and implement agency involvement plan to convey and gather additional input on the project.

We will follow MnDOT's procedure for utility coordination and relocation. We will conduct a Gopher State One Call Design Locate and use this information to update mapping provided by the existing utilities. The team will submit construction plans to the affected utilities at each submittal stage, and submit the utility relocation certification form to MnDOT State-Aid.

The team will work with the utility companies to develop a proactive relocation plan and schedules to avoid utility conflicts with construction. It is assumed all utility relocation design will be done by their respective owner and the team's role will be to coordinate the project design with these utilities and identify potential location corridors within the project area.

Task 3 – Finalize Feasibility Study

Our team will work with the City of Baxter Utility Commission and City Council to define the final improvement plan, estimated cost and proposed funding for the project. The Feasibility Study will then be finalized and submitted for approval. The final design and improvement hearing will be based on this Final Feasibility Study.

Task 4 – Right of Way Acquisition

The WSB/WSN team will provide Right-of-Way acquisition services for securing property for the proposed project. We are assuming 10 parcels will be impacted and will require appraisals and parcel acquisition. No total takes are assumed.

- Secure appraiser and coordination of the appraisals, review appraisal and title commitments.
- Provide monthly parcel status reports and provide a detailed contact log for the impact parcel, maintain communication with the city to resolve issues or concerns that arise quickly to keep the project on schedule.
- Prepare documents including: Client authorization form, early notification letters, offer letters and conveyance documents
- Field Title Reports
- Offer Presentation and Negotiations. If possible, WSB recommends presenting the offer in person to build rapport and trust with the landowner. If the owners are unable to meet, the offer will be sent out by Certified Mail.
- Obtain all necessary mortgage consents
- Provide survey and platting of the final right-of-way for the project area.

It is assumed that the City will provide the Title work for the 10 parcels and the City Attorney will provide template of Conveyance and mortgage release documents and prepare record conveyance documents.

Task 5 – Design Survey and Wetland Delineation Services

Design survey and wetland delineation services are being provided under a separate agreement with WSN. If needed additional field information will be collected for the final design. It is anticipated that with the existing survey information and other site information previously collected, that this will be a minimal effort.

Task 6 - Geotechnical Studies

WSB will conduct subsurface exploration, laboratory testing and engineering review for the project. WSB will provide a soil boring program and CAD drawings depicting the soil borings in plan and profile view for review. It is anticipated that approximately 10 soil borings will be required for the project drilled in existing roadway surface, shoulders, new right of way/widening sections and special interest areas along the project.

The roadway borings will be a combination of auger borings ranging between ten to twenty feet. WSB will provide boring logs, material testing to establish the underling subsoil strengths (2 R-value tests) and a geotechnical report with design recommendations for pavements, base, embankments, subgrade excavation, muck excavation, dewatering, subsurface drainage, shrinkage factors, and use of onsite materials. The reports will be in accordance with MnDOT standards and submitted to the City and MnDOT for review and approval.

Task 7 - Construction Plan Preparation

The WSB/WSN team will prepare a set of detailed construction plans for the public utilities, grading, surface drainage, curb and gutter, pavement, pedestrian path and roundabout, in accordance with MnDOT and City standards. The team will coordinate its work closely with City of Baxter, MnDOT State Aid, and other public agencies during the entire design process to ensure that agency requirements are met. Additional coordination with property owners, respective utilities, emergency providers, service providers, and school districts will be necessary to coordinate the construction aspects of the plan that affects their services.

Our team will submit construction plans for review to the City of Baxter at 60%, 95% and completion along with the completed checklists. The team will provide a separate constructability review at the 60% plan completion to evaluate potential construction and utility conflicts, staging and schedules constraints, traffic detours, drainage issues to recommend a preferred construction staging and detour plan for consideration.

- Title Sheet and Index Map
- General Layout
- Statement of Estimated Quantities/Tabulations
- Quantity Tabulations
- Soil and construction notes
- Typical Sections
- Miscellaneous Details
- Standard Plans
- Construction Staging/Traffic Control Plan
- Alignment Plans and Tabulation
- Existing Utility Tabulations
- Existing Topo and Removal Plans
- Roadway Construction Plans and Details
- Roadway Profile
- Intersection Details/ ADA Plans
- Roundabout Plan and Details
- Storm Sewer Plans
- Storm Sewer Profiles
- Storm Water Rate/ Infiltrations Design/ Plans
- In-Place and Proposed Drainage Tabulations
- Watermain Plan and Details
- Sanitary Sewer Plan and Details
- Turf Establishment & Erosion Control Plans
- Landscaping Plans
- Street Lighting Plans
- Signing and Striping Plans
- SWPPP Plan
- Cross-Sections
- Private site improvement plans

Task 8, 9 and 10 - Special Provisions/Engineers Opinion of Construction Cost/Construction Contract Documents

Deliverables also include updated cost estimates in Excel format and special provisions at the 95% and 100% submittal for each individual project. WSB/WSN team will establish the necessary pay items in accordance with MnDOT's Trns*port system utilizing the latest cost data available and previous project experience.

We will prepare the specifications along with providing specific special provisions for all unique items not covered by MnDOT Standard Specification for each project in Microsoft Word format. The special provisions work descriptions, material, construction requirements, method of measurement and basis of payment. The special provisions for time and traffic will be prepared to address the individual traffic and construction timing needs.

The team will prepare an engineer's construction cost opinion based on quantities generated as part of the preparation of the construction plans. Costs will be split by funding source as necessary. Construction cost estimates will be submitted for review at the 60%, 95%, and final completion stages and a risk factor analysis for that level of design will be included.

Task 11 - Plan Review and Approval

The WSB/WSN team will prepare and submit 60%, 90% and 100% final plans for City and MnDOT review and comments. We will provide a written comment resolution form for each submittal addressing each comment and action taken. We will work proactively with the City and MnDOT's reviews to address the comments. The WSB/WSN team will prepare and submit a final fully signed and certified plan set, final quantity calculations, special provisions and cost estimates.

Task 12 - Permits

The WSB/WSN team will identify the necessary permits from the DNR, Watersheds, Wetland Conservation Act, U.S Army Corps of Engineers and developing the SWPPP for the NPDES permit. We will prepare and coordinate the permit submittals with the City Engineer. This task may involve meetings with the different regulatory agencies to review wetland delineations and review project impacts. Documentation of resolutions, including meeting minutes and memoranda for the records will prepared.

Our team will prepare the permit applications for signature and submittal. Anticipated permits include WCA, COE, MPCA (NPDES). MnDOT State Aid forms are also included under this task. Potential impacts to any private wells and septic systems may require additional permitting which the team will coordinate with the City. The City will be responsible for all permitting fees which can be paid directly, or as a reimbursable expense to WSB.

Task 13 - Bidding
The WSB/WSN team will prepare the final bid package for distribution to prospective bidders. The bid package will include all documents required bidding based on the City's standard contract documents and specifications.

We will prepare the advertisement for bid, place the ad in both the legal local newspaper and a trade magazine, as well as post the ad and bidding documents electronically on QuestCDN on behalf of the City. All costs associated with the advertisements will be directed to the City for payment.

The WSB/WSN will attend the bid opening, tabulate all responsive bidders, check the bidder's calculation, and provide a recommendation for award for the City Council.

Task 14 – Assessment Hearings and Assessment Role
The project team will conduct an Improvement Hearing where tehe results of the Feasibility Report will be presented to the public. Prior to the City Council awarding the project and after receiving bids and determining all project costs, including impacts from the bond sales, a final assessment role will be prepared. The final assessments will be presented to the City Council and property owners and an assessment hearing will be conducted. WSB/WSN will provide all information required for the assessment hearing. The City will be responsible for sending out notices to the effected property owners.

Task 15 - Meetings
Project management team (PMT) meetings with City staff and other required agencies will continue throughout the final design of the project. We will prepare the agendas, minutes, and support documentation for project meetings, formal internal and external construction. It is anticipated that up to 6 PMT meetings will be held.

It is also anticipated that three open house meetings will be held with the public. Two during the finalization of the Feasibility Report (one for the full depth reclamation project and one for the roundabout project) and one to review the design plans when they are at 90% complete. WSB will prepare the meeting notices for the public meeting for the City of Baxter to mail.

We will provide maps and technical data as requested to the City for their Project Website, along with providing for the preparation of meeting minutes, a summary of comments and responses, and coordination with the utility companies. Information on the modification to accesses along the project will also be documented.

WSB/WSN will attend Utility Commission and City Council meetings/Workshops to present the project and answer questions from the Commission and Council as requested. We will prepare the necessary exhibits, layouts, and handouts required for these meetings. It is anticipated that up to 4 Utility Commission and up to 4 City Council meetings will be attended.

Construction Phase

Task 1 - Construction Administration

WSB & Associates, Inc. will provide the overall project management of the project and will be responsible for all construction administration activities. After the contract has been awarded, WSB will hold a pre-construction meeting.

During the course of the project, weekly construction progress meetings will be conducted by the Project Manager. Periodic visits to the site will be made by the Project Manager. The project Manager/Engineer will be responsible for preparing all pay estimates, change orders, reviewing shop drawings, materials and suppliers, and preparing the final acceptance letter. The Project Manager/Engineer will provide coordination to all utility companies, property owners, surveyors, and all project personnel.

Task 2 - Construction Surveying

WSN will provide a survey crew to do all construction staking for this project, including construction limits, grading alignment and grades for all utility and street facilities and appurtenances, signage locations, and any other survey needs for this project.

Task 3 - Construction Observation

WSN would assign one lead full-time resident engineer to administer the field construction activities to assure that the project is constructed in conformity with the plans, specifications and contract provisions. WSB will provide additional observation services as necessary depending on the contractors schedule and operations.

The observer's responsibilities on the project would include the following:

- Monitor Contractor compliance with Plans and Specifications
- Track Quantities
- Coordinate Surveying and Staking
- Coordinate Testing
- Coordinate Design Issues
- Monitor conformance with permit requirements
- Take samples for testing
- Complete project documentation
- Coordinate with Property Owners on Construction Activities

The project documentation that will be completed as necessary and will include but not be limited to:

- Change orders
- Supplemental Agreements
- Daily and Weekly Diaries
- Monthly Grading and Base Reports
- Partial and Final Payment Vouchers
- Material Certification Forms
- Item Record Accounts

The project will be administered to conform to applicable laws and regulations and procedures established by MnDOT for State Aid projects.

Task 4 – Public Coordination

The Project Manager and engineer will coordinate with the City on providing weekly updates for the Cities website. In addition WSB/WSN will provide communication with the property owners/residents via email or direct conversation as necessary. This task will also include drafting any necessary press releases for City distribution.

Task 5 - Record Drawings

WSB/WSN will provide a set of record drawings of the project to the City on bond paper and electronic format as part of the contract. Prior to submitting record drawings, a black line copy of the record drawings will be submitted to both the City for review and comments.

Task 6 - Permit Monitoring

WSB will monitor the construction activity on a weekly basis and after any rainfall event that exceeds 0.25 inches to ensure the contractor is compliant with the SWPPP and MPCA regulations.

Task 7 - Field Testing Services/Sample Density/ Lab Tests

WSB plans on utilizing MnDOT's laboratories for some of the lab testing. MnDOT does charge for these services; however, the costs are very economical compared to private testing firms.

All field tests will be done in conformance with current MnDOT schedule of material controls and project specifications or as modified by the contract special provisions.

WSB & Associates, Inc.

ESTIMATE OF HOURS AND COSTS
Excelsior Rd, Fairview Rd and Edgewood Dr
Utility and Roadway Improvements
City of Baxter, Minnesota

WIDSETH SMITH NOLTING

		Estimated Hours									
		Sr. Project Manager	Project Design Manager	Graduate Engineer / Planner	Engineering Specialist III	Landscape Architect	Engineering Tech III	Coring Crew	Office Tech II	Total Hours	Cost
Task No.	*DETAILED DESIGN*										
1	Project Management	20	60						20	100	$ 12,640.00
2	Utility/Agency Coordination		24				12		4	40	$ 4,512.00
3	Finalize Feasibility Study	4	12						4	20	$ 2,528.00
4	Right of Way Acquisition	40		132	65				38	275	$ 29,971.00
5	Design Surveys	Completed with Preliminary Design/Feasibility Study									
6	Geotechnical Studies	6		8	20		30	24	8	96	$ 13,014.00
7	Construction Plan Preparation										
	A. Title Sheet		1				6			7	$ 643.00
	B. General Layout		1	4			6			11	$ 1,035.00
	C. Statement of Quantities/Tabulations	1	4	16			24		4	49	$ 4,598.00
	D. Soils, Construction Notes		1	6			12			19	$ 1,741.00
	E. Typical Sections	1	2	6			12			21	$ 2,032.00
	F. Standard Plans / Miscellaneous Details			4			12			16	$ 1,412.00
	G. Construction Staging/Traffic Control	2	6	12			28			48	$ 4,670.00
	H. Alignment Plans and Tabulations		4	12			24			40	$ 3,748.00
	I. Existing Utility and Removal Plans		2	8			24			34	$ 3,090.00
	J. Roadway Construction Plan Sheets	4	32	60			72			168	$ 16,888.00
	K. Roadway Profile Sheets	2	12	28			40			82	$ 8,056.00
	L. Intersection Details	2	8	24			32			66	$ 6,452.00
	M. Roundabout Plan and Details	2	32	12			40			86	$ 9,148.00
	N. Bike/Pedestrian Path Pan and Profile	2	12	16			30			60	$ 6,030.00
	O. Storm Sewer Plans	1	24		32		48			105	$ 11,302.00
	P. Storm Sewer Profile	1	12		16		20			49	$ 5,390.00
	Q. Storm water Rate Control	1	8		16		12			37	$ 4,178.00
	R. Superelevation Diagrams	1	8	16			20			45	$ 4,490.00
	S. In-Place / Proposed Drainage Tab	1	8	12	16		24			61	$ 6,374.00
	T. Turf Establishment and Erosion Control		6	12	24					42	$ 4,878.00
	U. Streetscape / Landscape Plans	1	6			16	24			47	$ 4,660.00
	V Street Lighting Plan	2	6	20			24			52	$ 5,114.00
	W Signing and Striping Plan	1	4	12			24			41	$ 3,906.00
	X. Cross-Sections	4	20	28			32			84	$ 8,756.00
	Y . QA/QC Plan and Process	12	24				12			48	$ 6,108.00
8	Special Provisions	8	20	24	16		12		12	92	$ 10,132.00
9	Construction Cost Estimate	8	20	30	8		8		1	75	$ 8,587.00
10	Contract Documents	8	24	16			28		4	80	$ 8,704.00
11	Plan Review and Approval	4	12	8	4		12		2	42	$ 4,666.00
12	Permits (NPDES, PCA, DNR, CORP, DOH)	4	16	10	8		12		4	54	$ 6,028.00
13	Bidding	4	12	20			4		6	46	$ 4,978.00
14	Assement Hearings and Assessment Role	12	24				2		4	42	$ 5,558.00
15	Meetings										
	A. PMT/City Staff (8)	16	4	2					2	24	$ 3,406.00
	B. Public Meeting (3)	12		4					2	18	$ 2,438.00
	C. City Utility Commission Meetings (4)	8	4						2	14	$ 1,946.00
	D. City Council Meetings (4)	8	4						2	14	$ 1,946.00
Total Hours		**203**	**479**	**562**	**225**	**16**	**722**	**24**	**119**	2350	
Hourly Costs		158.00	133.00	98.00	121.00	104.00	85.00	238.00	75.00		
Detailed Design Labor Costs		**$32,074.00**	**$63,707.00**	**$55,076.00**	**$27,225.00**	**$1,664.00**	**$61,370.00**	**$5,712.00**	**$8,925.00**	**$255,753.00**	**$ 255,753.00**

Expenses		
Misc Expenses / Permit Fees (Reimbursable)	NPDES, MPCA, Department of Health	$ 6,000.00
Appraisal	Johanneck Appraisals	$ 32,500.00
Appraisal Review	Tinjum Appraisal Company	$ 13,000.00
WSN Fees		$ 145,585.00
Total Expenses		$197,085.00
Total Labor and Expenses		**$452,838.00**

WSB & Associates, Inc.

ESTIMATE OF HOURS AND COSTS
Excelsior Rd, Fairview Rd and Edgewood Dr
Utility and Roadway Improvements
City of Baxter, Minnesota

WIDSETH SMITH NOLTING

		Estimated Hours						
		Sr. Project Manager	Project Design Manager	Construction Observer / Materials Tester	Labor Compliance Engineer	Office Tech II	Total Hours	Cost
Task No.	*CONSTRUCTION*							
1	Project Administration							
	A. Project Management	10	30			5	45	$ 6,065.00
	B. Weekly Construction Meetings	14	56	28		14	112	$ 13,874.00
	C. Utility Coordination		20				20	$ 2,740.00
	D. Contractor Coordination		60	30	84		174	$ 19,266.00
	E. Pay Estimates/Change Orders/Work Orders	8	16	12		12	48	$ 5,616.00
	F. Project Closeout	8	12	80		8	108	$ 11,908.00
2	Construction Surveying / Staking			By WSN				
3	Construction Observation		40	600			640	$ 68,480.00
4	Public Coordination/Press Releases	4	12			8	24	$ 2,876.00
5	Record Drawings		4	32		2	38	$ 4,058.00
6	Permit Monitoring	4	16	8		4	32	$ 3,964.00
7	Materials Testing	4	8	160			172	$ 18,528.00
Total Hours		**52**	**274**	**950**	**84**	**53**	1413	
Hourly Costs		158.00	137.00	105.00	94.00	75.00		
Detailed Design Labor Costs		**$8,216.00**	**$37,538.00**	**$99,750.00**	**$7,896.00**	**$3,975.00**	**$157,375.00**	**$ 157,375.00**

Expenses		
WSN Fee		$ 219,356.00
Miscellaneous Expenses	Mileage, Materials testing supplies and equipment	$ 5,700.00
Total Expenses		$225,056.00
Total Labor and Expenses		**$382,431.00**

ESTIMATE OF HOURS AND COSTS
Excelsior Rd, Fairview Rd and Edgewood Dr
Utility and Roadway Improvements
City of Baxter, Minnesota

WIDSETH SMITH NOLTING

		Estimated Hours								
		Engineer / Scientist Level 4	Engineer / Surveyor Level 3	Engineer / Scientist Level 1	Technician Level 5	Technician Level 3	Technician Level 2	Admin. Assistant	Total Hours	Cost
Task No.	*DETAILED DESIGN*									
1	Project Management	10	80						90	$ 12,520.00
2	Utility/Agency Coordination		10		8	15	15	2	50	$ 5,073.00
3	Finalize Feasibility Study		36		4			2	42	$ 5,556.00
4	Right of Way Acquisition		100		18	6	6	5	135	$ 17,280.00
5	Design Surveys		2			16	16	2	36	$ 3,184.00
6	Geotechnical Studies		1			8		1	10	$ 952.00
7	Construction Plan Preparation									
	FDR Plans									
	Base Drawing				4				4	$ 480.00
	Statement of Estimated Quantities		2		6				8	$ 996.00
	Pavement Design		4						4	$ 552.00
	Trail Design		8		4				12	$ 1,584.00
	Typical Sections and Notes		2		6				8	$ 996.00
	Traffic Control and Staging Plan		4		8				12	$ 1,512.00
	Plan Sheets		2		12				14	$ 1,716.00
	Ditch Plan		8		8				16	$ 2,064.00
	Erosion Control Plan		2		6				8	$ 996.00
	SWPPP		2		6				8	$ 996.00
	Utility Plans									
	Statement of Estimated Quantities		2		4				6	$ 756.00
	Construction Notes		1		2				3	$ 378.00
	Typical Details		1		4				5	$ 618.00
	Sewer and Water Design		4		16				20	$ 2,472.00
	Plan and Profile Sheets		1		6				7	$ 858.00
	Private Site Plans									
	Demo Plan	6		24					30	$ 3,144.00
	Site Plan	6		24					30	$ 3,144.00
	Grading Plan	10		40					50	$ 5,240.00
	Utility Plan	8		32					40	$ 4,192.00
	Electrical Plan	6		24					30	$ 3,144.00
	Landscape Plan	6		24					30	$ 3,144.00
	Plan Review/Modifications/Revisions	20	20	40	40				120	$ 14,280.00
	Final Plan Preparation		6	6	6				18	$ 2,112.00
8	Special Provisions		16						16	$ 2,208.00
9	Construction Cost Estimate		24		4				28	$ 3,792.00
10	Contract Documents		4						4	$ 552.00
11	Plan Review and Approval	6	12	24	24	24			90	$ 9,960.00
12	Permits (NPDES, PCA, DNR, CORP, DOH)	24	14	90				4	132	$ 14,160.00
13	Bidding	4	15		4				23	$ 3,142.00
14	Assessment Role and Hearing		48						48	$ 6,624.00
15	Meetings									
	A. PMT/City Staff (8)		12						12	$ 1,656.00
	B. Public Meeting		18		2				20	$ 2,724.00
	C. City Utility Commission Meetings (2)		2						2	$ 276.00
	D. City Council Meetings (4)		4						4	$ 552.00
Total Hours		**106**	**467**	**328**	**202**	**69**	**37**	**16**	1225	
Hourly Costs		148.00	138.00	94.00	120.00	95.00	80.00	54.00		
Detailed Design Labor Costs		**$15,688.00**	**$64,446.00**	**$30,832.00**	**$24,240.00**	**$6,555.00**	**$2,960.00**	**$864.00**	**$145,585.00**	**$ 145,585.00**

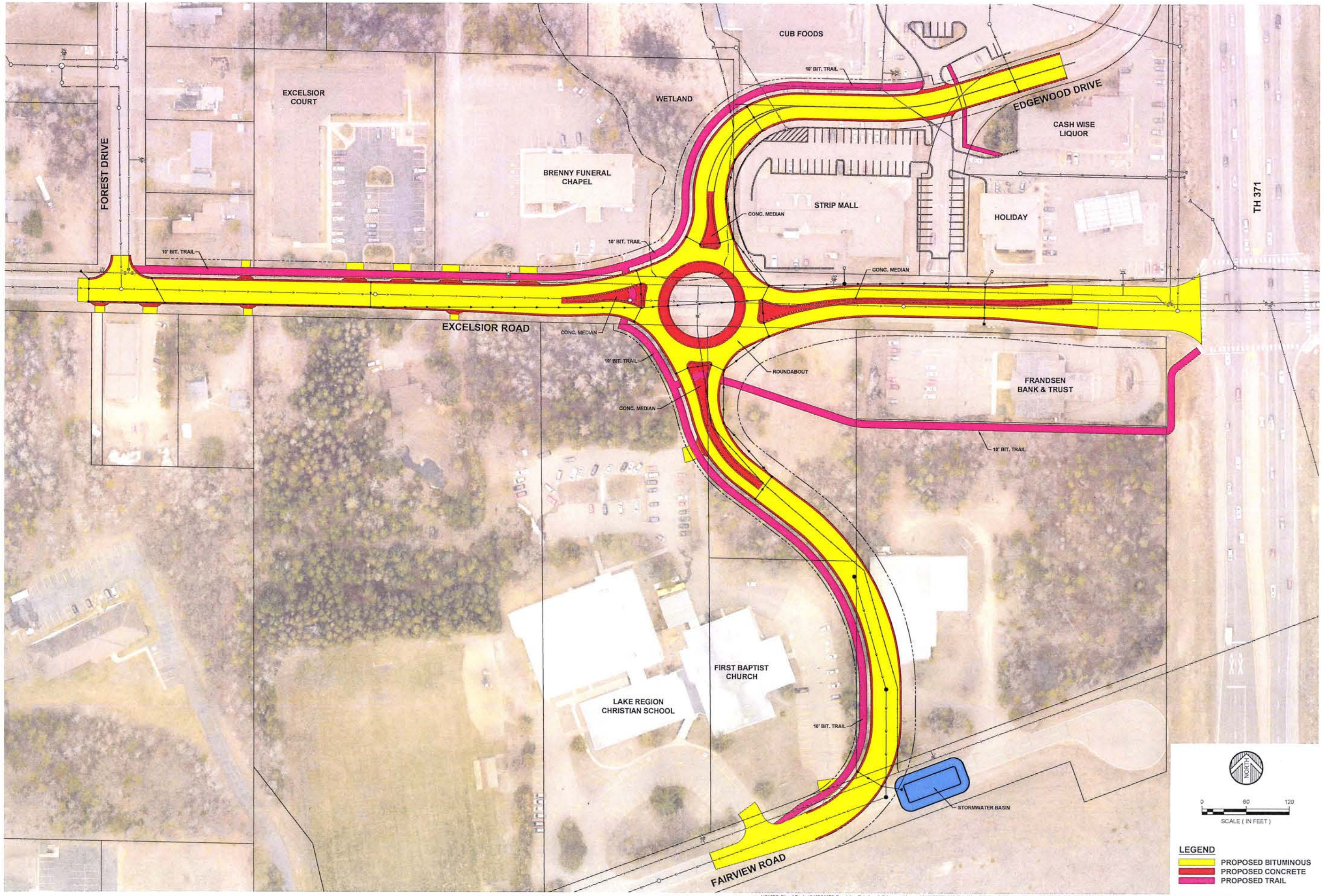
Expenses			
Misc Expenses / Permit Fees (Reimbursable)	NPDES, MPCA, Department of Health		$ -
Total Expenses			
Total Labor and Expenses			**$145,585.00**

ESTIMATE OF HOURS AND COSTS
Excelsior Rd, Fairview Rd and Edgewood Dr
Utility and Roadway Improvements
City of Baxter, Minnesota

WIDSETH SMITH NOLTING

	Estimated Hours							
	Engineer / Surveyor Level 3	Engineer Level 1	Technician Level 5	Technician Level 3	Technician Level 2	Admin. Assistant	Total Hours	Cost
Task No. CONSTRUCTION								
1 Project Administration								
A. Project Management	20						20	$ 2,760.00
B. Weekly Construction Meetings	16		32				48	$ 6,048.00
C. Utility Coordination	4		12				16	$ 1,992.00
D. Contractor Coordination	4		24				28	$ 3,432.00
E. Change Orders/Work Orders	8		12				20	$ 2,544.00
F. Project Closeout	8		40				48	$ 5,904.00
2 Construction Surveying / Staking	56	14	17	134	134	16	371	$ 35,398.00
3 Construction Observation			1200				1200	$ 144,000.00
4 Public Coordination/Press Releases	4		32				36	$ 4,392.00
5 Record Drawings	14		16	22	22	2	76	$ 7,810.00
6 Permit Monitoring	2		20				22	$ 2,676.00
7 Field Testing/Sample Density/Lab Tests			20				20	$ 2,400.00
Total Hours	**136**	**14**	**1425**	**156**	**156**	**18**	1905	
Hourly Costs	138.00	94.00	120.00	95.00	80.00	54.00		
Detailed Design Labor Costs	**$18,768.00**	**$1,316.00**	**$171,000.00**	**$14,820.00**	**$12,480.00**	**$972.00**	**$219,356.00**	**$ 219,356.00**

Expenses		
Miscellaneous Expenses	MnDOT QA Lab Testing	$ -
Total Expenses		
Total Labor and Expenses		**$219,356.00**



J:\01028-City of Baxter\010280373-Excelsior, Fairview & Edgewood Improv\0102B0373.000-Excelsior, Fairview & Edgewood Improv\CADD\Civil\C-SP-0102B0373.000 A.dwg Plotted by:Aric Welch 11/22/2016 10:31:03 AM © 2016 WIDSETH SMITH NOLTING

WIDSETH SMITH NOLTING
Engineering | Architecture | Surveying | Environmental

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 ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

ARIC WELCH DATE: #### LIC. NO. 41983

DATE	REVM	REVISIONS DESCRIPTION	BY

DATE: MAR 2016
SCALE: AS SHOWN
DRAWN BY: ALW.
CHECKED BY: ALW.
JOB NUMBER: 0102B0373.000

EXCELSIOR, FAIRVIEW AND EDGEWOOD IMPROVEMENTS
CITY OF BAXTER
BAXTER, MINNESOTA

EXHIBIT D - PROSED ROADWAY IMPROVEMENTS

SHEET NO.
D

BOLTON & MENK
Real People. Real Solutions.

7656 Design Road
Suite 200
Baxter, MN 56425-8676

Ph: (218) 825-0684
Fax: (218) 825-0685
Bolton-Menk.com

November 28, 2016

Mr. Trevor Walter, Public Works Director/City Engineer
City of Baxter
13190 Memorywood Drive
PO Box 2626
Baxter, MN 56425

RE: Fee Amendment - Engineering Services Contract
2016 Golf Course Drive Improvement Project
Municipal Project Number 4110
City of Baxter

Dear Mr. Walter,

We are currently under contract with the City for engineering services related to the design and construction of the 2016 Golf Course Drive Improvement Project, Municipal Project Number 4110. After completion of the 2016 construction work by the contractor the City requested Bolton & Menk to perform extra work (Turf Restoration Inspection) beyond the scope of the original contract.

Requested Additional Work
During early October the contractor completed work on the Golf Course Drive Project. Shortly thereafter CenterPoint Energy began relocation of a gas main along on the east side of Golf Course Drive near the south end of the recently completed project. On October 17th, the City requested Bolton & Menk to oversee right of way restoration associated with the relocation of this gas main. This utility work was not necessary for completion of the project but due to the location of the gas line both the City and CenterPoint Energy felt relocation was necessary. Oversight of this right of way restoration is considered beyond the scope of the Golf Course Drive Improvement project. This work was minimal and our actual costs amounted to $1,200.00.

Fee Amendment
Our previously approved "Not to Exceed" fee was $156,744. As a result of this requested work, the revised "Not to Exceed" fee is increased by $1,200.00 to $157,944.

We thank you for your consideration of our requested Fee Amendment and for giving us the opportunity to work with the City on this project.

Please feel free to contact me at 218-232-6536 or via e-mail at michaelra@bolton-menk.com if you have any questions or if you require additional information.

Sincerely,

Bolton & Menk, Inc.

Michael P. Rardin

Mike Rardin, PE
Senior Project Manager

This contract fee amendment is hereby approved and payment to Bolton & Menk, Inc. is authorized as agreed to above.

Approved: _____ _____
Darrel Olson, Mayor Kelly Steele, Asst. City Administrator / Clerk

Date: _____

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

Change Order No. 4

Date of Issuance:	November 17, 2016	Effective Date:	Council Approval
Owner:	City of Baxter, Minnesota	Owner's Contract No.:	4110
Contractor:	Anderson Brothers Construction	Contractor's Project No.:	
Engineer:	Bolton & Menk, Inc.	Engineer's Project No.:	B11.111354
Project:	2016 Golf Course Drive Improvement Project	Contract Name:	

The Contract is modified as follows upon execution of this Change Order:
Description: Revise date the project will be Ready for Final Payment to June 30, 2017.

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIMES *[note changes in Milestones if applicable]*
Original Contract Price: $ 1,090,108.01	Original Contract Times: Substantial Completion: September 30, 2016 Ready for Final Payment: October 14, 2016 days or dates
Increase from previously approved Change Orders No. 1 to No. 3: $ 27,956.94	Increase from previously approved Change Orders No. 1 to No. 3: Substantial Completion: October 7, 2016 Ready for Final Payment: October 14, 2016 dates
Contract Price prior to this Change Order: $ 1,118,064.95	Contract Times prior to this Change Order: Substantial Completion: October 7, 2016 Ready for Final Payment: October 14, 2016 dates
Increase of this Change Order: $ 0.00	Increase of this Change Order: Substantial Completion: October 7, 2016 Ready for Final Payment: June 30, 2017 dates
Contract Price incorporating this Change Order: $ 1,118,064.95	Contract Times with all approved Change Orders: Substantial Completion: October 7, 2016 Ready for Final Payment: June 30, 2017 dates

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: Bryan S. Oram	By:	By: Al Knoll
Engineer (if required)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Title: Project Engineer	Title:	Title: VP Roads & Streets
Date: 11/23/2016	Date:	Date: 11/22/16

Approved by Funding Agency (if applicable)
By: _____ Date: _____
Title: _____

MEMO

WIDSETH SMITH NOLTING

Brainerd/Baxter
7804 Industrial Park Road
PO Box 2720
Baxter, MN 56425-2720

218.829.5117
218.829.2517
Brainerd@wsn.us.com

WidsethSmithNolting.com

Date: November 30, 2016
To: **Baxter Utilities Commission**
From: Aric Welch
Cc: Trevor Walter
Project Name: Dellwood, Novotny, Inglewood and Independence Improvements
Project No.: 0102B0274.000
Subject: **Project Update**

Work Completed Since Last Update
No work was completed since the last update.

Project Schedule
Address warranty items as needed.

Easements
Thor Wicklund has given verbal approval of the one remaining roadway easement and we anticipate he will sign the documents within the next week.

Pearo's will be checking again with the bank to see if the easement for the watermain can be completed.

Jack Antolak has agree to sign the utility easement across the Positive Reality property and we anticipate this will be complete within a week.

Changes
No additional information associated with the claim regarding work around underground utilities has been submitted by the Contractor as requested. We contacted Greg Phillipi from RL Larson and he said they would like to clean up this claim in the next month.

Pay Estimate
No pay estimate this month.

Potential Law Suit
A resolution to the claim regarding the directionally drilled watermain between Novotny Road and Audubon Way has not been reached between RL Larson and their subcontractor. This issue will likely not be resolved by the end of the year which means IC-134's and lien waivers will not be available to close out the project this year.

LIMITED USE AGREEMENT

THIS AGREEMENT made and entered into as the 29 day of April, **2016** by and between the City of Baxter, a Minnesota municipal corporation ("City") and Arnold S. Johnson Properties, LLC, a Minnesota limited liability company, ("Developer").

WITNESSETH:

WHEREAS, Developer is the owner of the land legally described as follows:

Lots 2 and 3, Block 1, Second Addition to Johnson Centre.

WHEREAS, a portion of the parking lot and a signs for the businesses located on said Lots are located in the right of way of Golf Course Drive as depicted in the Preliminary Plat of said Second Addition to Johnson Centre; and

NOW, THEREFORE, it is stipulated and agreed by and between the parties hereto as follows:

1. **Improvements and Area.** Developer will be allowed to retain these improvements within the right of way.

2. **Maintenance.** Developer shall at all times keep and maintain the area used for the improvements in a good state of repair and agrees to indemnify and save harmless the City, its officers, agents and employees from any claim for personal injury, property damage or death occasioned by the location or maintenance of the encroachments on the City property. Developer also waives and releases the City from any claims which Developer may have against the City for damage to the encroachments resulting from activities conducted by the City on the City property except for such gross negligence or willful acts of the City (which proximately cause damage to the improvements) for which

the City would by (according to then applicable municipal or state laws) otherwise liable to similarly suited property owners. Nothing in his Agreement shall be construed as a waiver by the City of any immunity, defenses, or other limitations on liability to which the City is entitled by law, including but not limited to the minimum monetary amounts on liability established by Minnesota Statues Chapter 466.

3. **Termination.** The City may terminate this Agreement at any time, for good cause as determined by the City Council, by giving the Developer a 180-day written notice of termination. Developer hereby releases and waives any claim, which they may have for damages resulting from the termination of this Agreement including the impact that the removal of the parking may have on the businesses or on their ability to legally continue. The Developer also indemnifies and holds the City harmless from any third party claims in the event of termination of this Agreement. Unless the Improvements are removed from the City Property during that period, the Improvements, which are located on City property, shall become the exclusive property of the City. The City may remove the Improvements and assess the cost in the form of a lien against the Subject Property and may levy a special assessment in the manner provided by Minnesota Statutes Chapter 429. Developer acknowledges that the removal of the improvements from City Property shall constitute a benefit to the Subject Property for the purposes of Minnesota Statutes Chapter 429. Developer hereby waives the right to object to the aforementioned special assessment pursuant to Minnesota Statutes Chapter 429.

4. **Successors and Assigns.** Subject to the termination provisions of this Agreement, this Agreement may be assigned to any successor or assignee of any or all of the Developer's or the City's interest in the Subject Property or City Property, respectively.

5. **Recording.** Developer shall properly record this Agreement among the land records for the property described above and pay any staff costs to process this request.

IN TESTIMONY WHEREOF, the parties hereto have caused this Agreement to be executed as of the day and year first above written.

CITY OF BAXTER

By _____
Its Mayor

By_____
Its City Clerk/ Asst. City Administrator

DEVELOPER

Arnold S. Johnson Properties, LLC

By: _____
Arnold S. Johnson, its President

STATE OF MINNESOTA)
)SS
COUNTY OF CROW WING)

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by Darrel Olson and Kelly Steele, the Mayor and City Clerk/ Asst. Administrator, respectively, of the City of Baxter, a Minnesota Municipal corporation on behalf of the City.

_____
Notary Public

STATE OF MINNESOTA)
)ss
COUNTY OF CROW WING)

The foregoing instrument was acknowledged before me this 29th Day of April, 2016, by Arnold S. Johnson, as President of Arnold S. Johnson Properties, LLC, a Minnesota limited liability company, on behalf of the company.

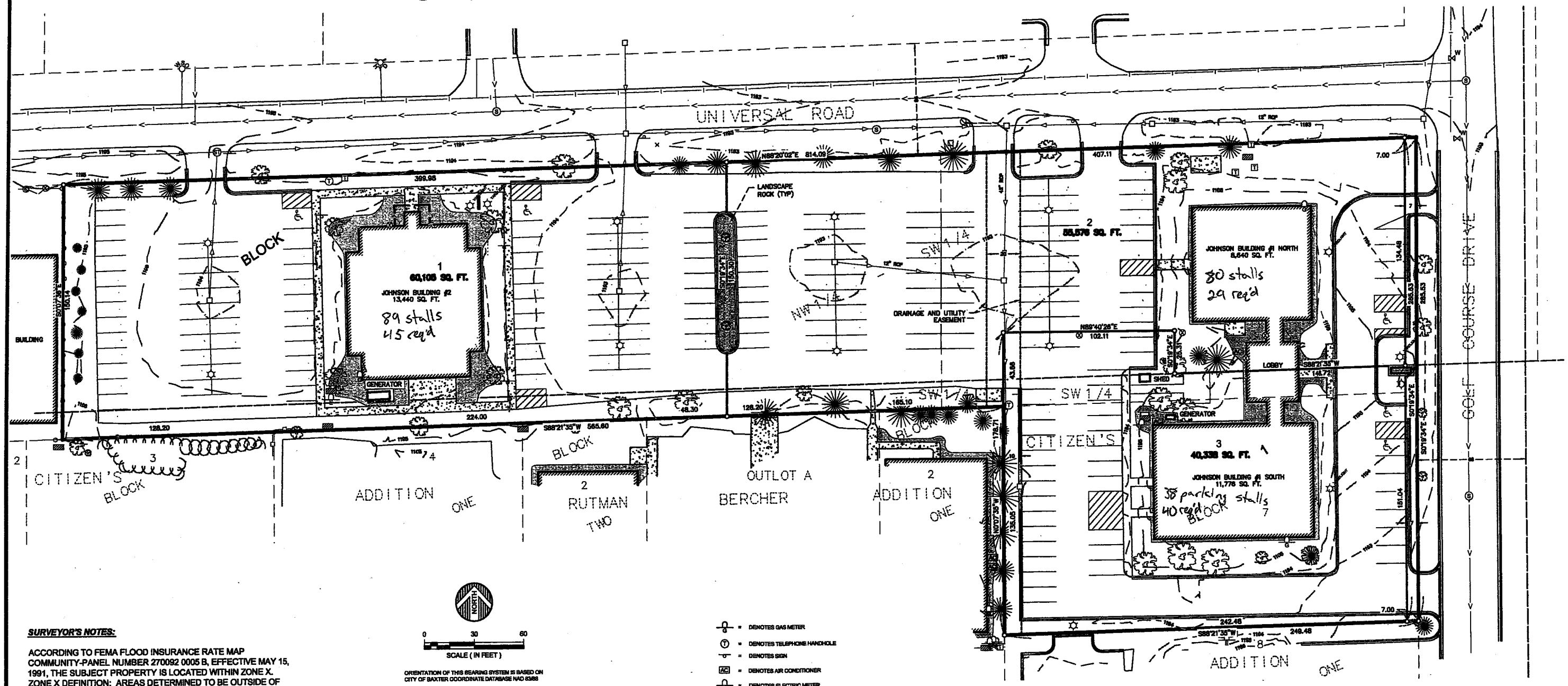
Anne Archibald
Notary Public

ANNE M ARCHIBALD
Notary Public
Minnesota
My Comm. Expires
Jan 31, 2020

THIS INSTRUMENT WAS DRAFTED BY:
J. Brad Person
BREEN & PERSON, LTD.
P. O. Box 472
Brainerd, Minnesota 56401
218/828-1248

--- PRELIMINARY PLAT OF ---

SECOND ADDITION TO JOHNSON CENTRE



SURVEYOR'S NOTES:

ACCORDING TO FEMA FLOOD INSURANCE RATE MAP COMMUNITY-PANEL NUMBER 270092 0005 B, EFFECTIVE MAY 15, 1991, THE SUBJECT PROPERTY IS LOCATED WITHIN ZONE X. ZONE X DEFINITION: AREAS DETERMINED TO BE OUTSIDE OF THE 500 YEAR FLOOD PLAIN.

UNDERGROUND UTILITIES SHOWN ARE ACCORDING TO VISIBLE EVIDENCE AND FROM EXISTING AS-BUILT PLANS FROM THE CITY OF BAXTER. WIDSETH SMITH NOLTING ASSUMES NO RESPONSIBILITY FOR THE COMPLETENESS AND ACCURACIES OF THESE LOCATIONS. FURTHER LOCATIONS AND VERIFICATIONS ARE RECOMMENDED BEFORE ANY CONSTRUCTION OR EXCAVATION.

NORTH

0 30 60

SCALE (IN FEET)

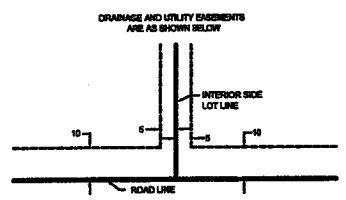
ORIENTATION OF THIS BEARING SYSTEM IS BASED ON CITY OF BAXTER COORDINATE DATABASE NAD 83/86

ELEVATIONS ARE BASED ON THE NGVD 29 DATUM

● = DENOTES FOUND IRON MONUMENT

○ = DENOTES 1/2 INCH DIAMETER BY 18 INCH LONG IRON PIPE MONUMENT SET AND MARKED RLS # 41643

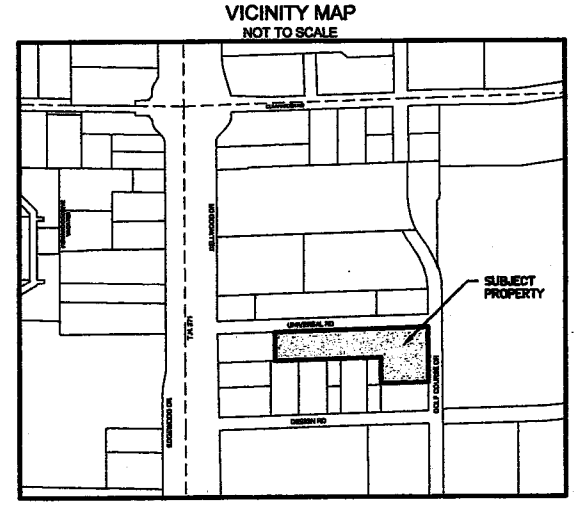
DRAINAGE AND UTILITY EASEMENTS ARE AS SHOWN BELOW



BEING 5 FEET IN WIDTH AND ADJOINING ALL INTERIOR SIDE LOT LINES AND 10 FEET IN WIDTH AND ADJOINING ALL ROAD LINES.

= DENOTES GAS METER
= DENOTES TELEPHONE HANDHOLE
= DENOTES SIGN
= DENOTES AIR CONDITIONER
= DENOTES ELECTRIC METER
= DENOTES LIGHT POLE
= DENOTES HANDICAP PARKING STALL
= DENOTES EXISTING HYDRANT
= DENOTES EXISTING SANITARY SEWER MANHOLE
= DENOTES EXISTING WETLAND
= DENOTES ELECTRIC TRANSFORMER
= DENOTES TELEPHONE PEDESTAL
= DENOTES STORM MANHOLE
= DENOTES WATER VALVE
= DENOTES CURB STOP
= DENOTES CATCH BASIN
= DENOTES CONIFEROUS TREE
= DENOTES DECIDUOUS TREE
UGE — UGE = DENOTES UNDERGROUND ELECTRIC
= DENOTES SANITARY SEWER
= DENOTES WATERMAIN
= DENOTES STORM SEWER
UGT — UGT = DENOTES UNDERGROUND COMMUNICATIONS
GAS — GAS = DENOTES GAS LINE

VICINITY MAP
NOT TO SCALE



DESCRIPTION: LOT 7, BLOCK ONE, CITIZEN'S ADDITION AND PART OF THE SW1/4 ALL IN SECTION 5, TOWNSHIP 133, RANGE 28, CROW WING COUNTY, MINNESOTA

OWNER/ DEVELOPER: ARNOLD S. JOHNSON ENTERPRISES LLC
14275 GOLF COURSE DR SUITE 120
BAXTER, MN 56425

SURVEYOR: WIDSETH SMITH NOLTING
7804 INDUSTRIAL PARK ROAD
BAXTER, MN 56425

AREA: 3.58 ACRES (156,019 SQ.FT.)

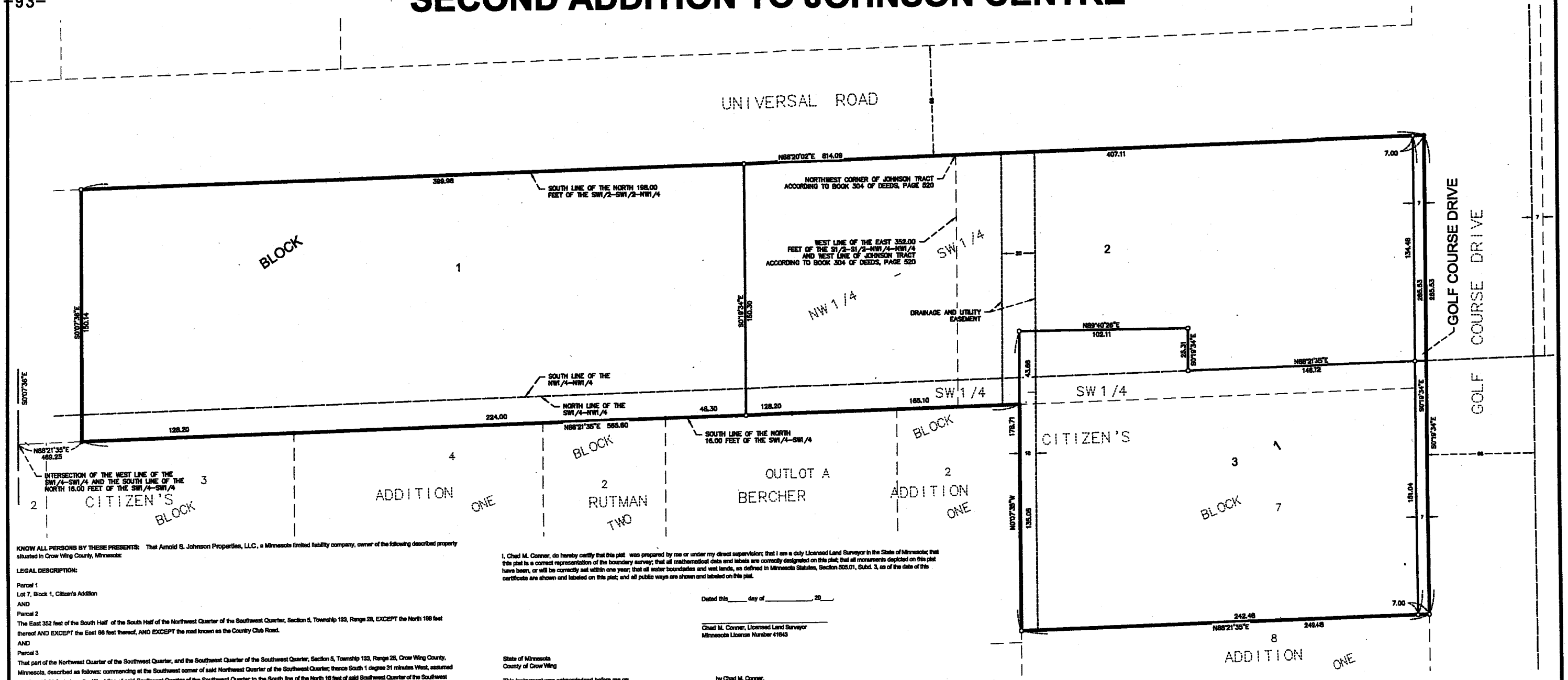
DATE: 2-10-15
REVISED:

ZONING: C2 - REGIONAL COMMERCIAL

WIDSETH SMITH NOLTING
Engineering | Architecture | Surveying | Environmental

© 2015 WIDSETH SMITH NOLTING

SECOND ADDITION TO JOHNSON CENTRE



KNOW ALL PERSONS BY THESE PRESENTS: That Arnold S. Johnson Properties, LLC., a Minnesota limited liability company, owner of the following described property situated in Crow Wing County, Minnesota:

LEGAL DESCRIPTION:

Parcel 1
Lot 7, Block 1, Citizen's Addition
AND
Parcel 2
The East 352 feet of the South Half of the South Half of the Northwest Quarter of the Southwest Quarter, Section 5, Township 133, Range 28, EXCEPT the North 198 feet thereof AND EXCEPT the East 66 feet thereof, AND EXCEPT the road known as the Country Club Road.
AND
Parcel 3
That part of the Northwest Quarter of the Southwest Quarter, and the Southwest Quarter of the Southwest Quarter, Section 5, Township 133, Range 28, Crow Wing County, Minnesota, described as follows: commencing at the Southwest corner of said Northwest Quarter of the Southwest Quarter; thence South 1 degree 31 minutes West, assumed bearing, 18.01 feet along the West line of said Southwest Quarter of the Southwest Quarter to the South line of the North 16 feet of said Southwest Quarter of the Southwest Quarter; thence East 469.25 feet along said South line to the point of beginning of the tract to be described; thence North 1 degree 31 minutes East 149.90 feet to the South line of the North 198 feet of the South Half of the South Half of said Northwest Quarter of the Southwest Quarter; thence North 89 degrees 58 minutes 01 seconds East along said South line to the Northwest corner of the tract deed to Johnson by deed dated June 27, 1979, filed July, 9, 1979 and recorded in the Crow Wing County Recorder's Office in Book 304 of Deeds, page 520; thence South along the West line of said Johnson Tract to the South line of the North 16 feet of said Southwest Quarter of the Southwest Quarter; thence West along said South line to the point of beginning.

Have caused the same to be surveyed and platted as SECOND ADDITION TO JOHNSON CENTRE and does hereby dedicate to the public for public use the public way(s) and/or the drainage and utility easement(s) as created by this plat.

IN WITNESS WHEREOF, said Arnold S. Johnson Properties, LLC., a Minnesota limited liability company, has caused these presents to be signed by its proper officer this_____ day of

_____, 2015.

SIGNED: Arnold S. Johnson Properties, LLC

_____ _____, Chief Manager

State of _____

County of _____

This instrument was acknowledged before me on _____ by Arnold S. Johnson, Chief Manager of Arnold S. Johnson Properties, LLC., a Minnesota limited liability company.

_____
_____, Notary Public
Print name
_____County, _____
My Commission Expires: _____

I, Chad M. Conner, do hereby certify that this plat was prepared by me or under my direct supervision; that I am a duly Licensed Land Surveyor in the State of Minnesota; that this plat is a correct representation of the boundary survey; that all mathematical data and labels are correctly designated on this plat; that all monuments depicted on this plat have been, or will be correctly set within one year; that all water boundaries and wet lands, as defined in Minnesota Statutes, Section 505.01, Subd. 3, as of the date of this certificate are shown and labeled on this plat; and all public ways are shown and labeled on this plat.

Dated this_____ day of _____, 20___.

_____
Chad M. Conner, Licensed Land Surveyor
Minnesota License Number 41643

State of Minnesota
County of Crow Wing

This instrument was acknowledged before me on _____ by Chad M. Conner.

_____
_____, Notary Public
Print name
_____County, _____
My Commission Expires: _____

City Council, City of Baxter, Minnesota

This plat of SECOND ADDITION TO JOHNSON CENTRE was approved and accepted by the City Council of the City of Baxter, Minnesota, at a regular meeting thereof held this _____ day of _____, 2015, and said plat is in compliance with the provisions of the Minnesota Statutes, Section 505.03, Subd. 2.

City Council, City of Baxter, Minnesota

By: _____ Mayor

By: _____ City Administrator/City Clerk

County Auditor/Treasurer, Crow Wing County, Minnesota

Pursuant to Minnesota Statutes, Chapter 272.12 that there are no delinquent taxes on the land hereinbefore described on this plat and transfer and pursuant to Chapter 505.021, Subd. 9, taxes payable for the year 20____ on the land hereinbefore described have been this _____ day of _____, 20___.

Crow Wing County Auditor/Treasurer

_____
Deborah A. Erickson, Auditor/Treasurer
Crow Wing County, Minnesota

NORTH

0 30 60
SCALE (IN FEET)

ORIENTATION OF THIS BEARING SYSTEM IS BASED ON CITY OF BAXTER COORDINATE DATABASE NAD 83/86

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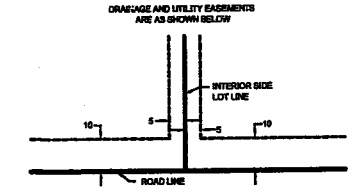

BEING 5 FEET IN WIDTH AND ADJOINING ALL INTERIOR SIDE LOT LINES AND 10 FEET IN WIDTH AND ADJOINING ALL ROAD LINES.

WIDSETH SMITH NOLTING
Engineering | Architecture | Surveying | Environmental

© 2015 WIDSETH SMITH NOLTING

TKDA

444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

CHANGE ORDER

Saint Paul, MN November 30 20 16 Proj. No. 16035.000 Change Order No. 2

To Dakota Supply Group, 620 16th Ave South Hopkins, MN 55343

for Fixed Network Water Meter Replacement

for City of Baxter, Minnesota

You are hereby directed to make the following change to your contract dated March 16, 20 16. The change and the work affected thereby is subject to all contract stipulations and covenants. This Change Order will (increase) the contract sum by Thirty Two Thousand Eight Hundred Fifty Seven Dollars and 50/100 .....($ 32,857.50).

This change order provides for changes in the work of this contract according to the attached itemization.

NET CHANGE =

Amount of Original Contract		$ 883,841.33
Additions approved to date (No. 1	)	$ 36,129.50
Deductions approved to date (Nos.	)	
Contract amount to date		$ 919,970.83
Amount of this Change Order (Add)		$ 32,857.50
Revised Contract Amount		$ 952,828.33

Approved _____
Owner

By _____

Approved DSG
Contractor

By _____

TKDA

By Matthew R. Ellingson
Matthew R. Ellingson, PE

An employee-owned company promoting affirmative action and equal opportunity.

DSG
DAKOTA SUPPLY GROUP
For all the right connections!
METERING TECHNOLOGY

CHANGE ORDER #2

Dakota Supply Group (DSG)
620 16th Ave South
Hopkins, MN 55343
Company: (952) 890-3811

Brad Simms
Territory Manager
bsimms@dsginc.biz
Mobile: (952) 300-0352

DATE: November 22, 2016

TO:
City of Baxter
Attn: Todd DeBoer
13190 Memorywood Drive
Baxter, MN 56425

REFERENCE:
Change Orders for City of Baxter
Water Meter Change-out & AMI Project

QTY	DESCRIPTION	PRICE	TOTAL
	Change Order on July 5, 2016 - Approved by Trevor Walters (DSG-C465599)		
	- AMI infrastructure additional labor work requested		
1	Installation of PVC conduit on two water towers with 120V electric circuits and enclosure	$ 10,500.00	$ 10,500.00
1	Installation of PVC conduit at cell tower with 120V circuit and enclosure with trenching	$ 12,595.00	$ 12,595.00
	Change Order on September 7, 2016 - Approved by Trevor Walters (DSG-C583523)		
	- Move collector from the east tower to the south tower due to SCADA interference		
1	Installation labor: removing and re-installing collector, including pit work and antenna ext	$ 6,095.00	$ 6,095.00
1	Installation labor: adjust repeater antennas at lift station locations	$ 647.50	$ 647.50
1	Installation labor: move node to outside house of 2 concerned residents	$ 500.00	$ 500.00
	Change Order on October 3, 2016 - Approved by Trevor Walters (DSG-C609882)		
	- Order some integral mount SSR registers with Mi-Nodes for private irrigation meters		
6	Model 420 SSR register and Integral Mi-Node	$ 140.00	$ 840.00
6	Model 562 SSR register and Integral Mi-Node	$ 140.00	$ 840.00
6	Model 572 SSR register and Integral Mi-Node	$ 140.00	$ 840.00
BY:	*Brad Simms*	**TOTAL**	**$ 32,857.50**

Confidential Company Information

Shipping and Taxes not included

444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

TKDA

November 30, 2016

Mr. Trevor Walter
Public Works Director/City Engineer
City of Baxter
13190 Memorywood Drive
PO Box 2626
Baxter, Minnesota 56425

Re: Fixed Network Water Meter Replacement Project
TKDA Project No. 16035.000

Dear Mr. Walter:

Please find enclosed Partial Payment Estimate and Certificate No. 4 in the amount of $65,360.47 for the above referenced project. This is sent to you for City approval and payment to the Contractor. When payment is made, please have the Contractor sign three copies and return one copy to TKDA, one copy to the Contractor and keep one copy for the City records.

Also enclosed is Change Order No. 2 which will add $32,857.50 to the contract. This change order includes the extra data collector and infrastructure work done by the Contractor. Please let me know if you have any questions.

Sincerely,

Matthew R. Ellingson

Matthew R. Ellingson, P.E.
Project Engineer

MRE
Enclosure

Cc: Todd DeBoer

An employee owned company promoting affirmative action and equal opportunity

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

PERIODICAL ESTIMATE FOR PARTIAL PAYMENTS

Estimate No. 4 Period Ending November 22, 2016 Page 1 of 1 Proj. No. 16035.000
Contractor Dakota Supply Group Original Contract Amount $883,841.33
Project Fixed Network Water Meter Replacement
Location Baxter, Minnesota

Total Contract Work Completed			$	859,587.75
Total Approved Credits			$	0.00
Total Approved Extra Work Completed	$	65,604.45		
Approved Extra Orders Amount Completed			$	65,604.45
Total Amount Earned This Estimate			$	925,192.20

Less Approved Credits	$	0.00		
Less 5 % Retained	$	46,259.61		
Less Previous Payments	$	813,572.12		
Total Deductions			$	859,831.73
Amount Due This Estimate			$	65,360.47

Contractor [signature] Date 11/30/16

Engineer Matthew R. Ellinger Date 11/30/2016

An employee-owned company promoting affirmative action and equal opportunity.

CITY OF BAXTER, MINNESOTA
PAY REQUEST #4 - NOVEMBER 22, 2016

ALTERNATE BID PROPOSAL "A"
SCHEDULE NO. 1 - ALL NEW METERS

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT
Furnish Only Items During the Contract					
	BASE BID ITEMS				
1	5/8" X 3/4" Meter Complete With Radio Transmitter and Meter Seal	2	EA	$ 144.41	$ 288.82
2	1" Meter Complete With Radio Transmitter and Meter Seal	21	EA	$ 192.23	$ 4,036.83
3	1-1/2" Meter Complete With Radio Transmitter and Meter Seal	0	EA	$ 381.59	$ -
4	2" Disc Meter Complete With Radio Transmitter and Meter Seal	3	EA	$ 480.91	$ 1,442.73
5	2" Compound Meter Complete With Radio Transmitter and Meter Seal	0	EA	$ 1,465.91	$ -
6	3" Compound Meter Complete With Radio Transmitter and Meter Seal	1	EA	$ 1,891.48	$ 1,891.48
7	4" Compound Meter Complete With Radio Transmitter and Meter Seal	0	EA	$ 2,264.77	$ -
8	6" Compound Meter Complete With Radio Transmitter and Meter Seal	0	EA	$ 4,027.27	$ -
9	New Radio Transmitter and E-Coder Register For an Existing 5/8" X 3/4" Neptune Meter	0	EA	$ 119.10	$ -
10	New Radio Transmitter and E-Coder Register For an Existing 1" Neptune Meter	0	EA	$ 119.10	$ -
11	New Radio Transmitter and E-Coder Register For an Existing 1-1/2" Neptune Meter	0	EA	$ 119.10	$ -
12	New Radio Transmitter and E-Coder Register For an Existing 2" Neptune Disc Meter	0	EA	$ 119.10	$ -
13	New Radio Transmitter and E-Coder Register For an Existing 2" Neptune Compound Meter	0	EA	$ 119.10	$ -
14	New Radio Transmitter and E-Coder Register For an Existing 3" Neptune Compound Meter	0	EA	$ 119.10	$ -
15	New Radio Transmitter and E-Coder Register For an Existing 4" Neptune Compound Meter	0	EA	$ 119.10	$ -
16	New Radio Transmitter and E-Coder Register For an Existing 6" Neptune Compound Meter	0	EA	$ 119.10	$ -
17	3/4" or 1" Quarter Turn Ball Valve	24	EA	$ 9.98	$ 239.52
18	1-1/2" or 2" Quarter Turn Ball Valve	3	EA	$ 24.75	$ 74.25
19	3/4" or 1" First or Second Nipple Between Valve and Meter	0	EA	$ 8.57	$ -
20	1-1/2" or 2" First or Second Nipple Between Valve and Meter	0	EA	$ 61.93	$ -
21	Meter Horn for 5/8" X 3/4" or 3/4" Meter	12	EA	$ 50.45	$ 605.40
22	Meter Horn for 1" Meter	0	EA	$ 89.19	$ -
23	Allowance for Misc. Plumbing Material	0	LS	$ 1,000.00	$ -
24	Add for Pit Meter Register (5/8" - 2" Wet install)	0	EA	$ -	$ -
25	Handheld Radio Reading Device	0	LS	$ 5,681.82	$ -
26	Furnish All Equipment Required to Provide a Fixed Network Reading System Including Hardware, Vendor Hosted Software, Collectors, Antennas, Programming and Training, Communication and Backhaul Costs Until One Year After Final Completion, as Required. (Provide a pricing breakdown of the items included)	0	LS	$ 33,000.00	$ -

CITY OF BAXTER, MINNESOTA
PAY REQUEST #4 - NOVEMBER 22, 2016

ALTERNATE BID PROPOSAL "A"
SCHEDULE NO. 1 - ALL NEW METERS

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT
27	5/8" X 3/4" Meter Complete With Touchpad and New Wire and Meter Seal	0	EA	$ 142.05	$ -
28	1" Meter Complete With Touchpad and New Wire and Meter Seal	0	EA	$ 236.14	$ -
29	Touchpad Reader	0	EA	$ 340.91	$ -
TOTAL SCHEDULE NO. 1: ITEMS NO. 1 THRU NO. 29					**$ 8,579.03**
NOTE: For items 9-16 the City would like to reuse these meter bodies if possible with your register and radio transmitter. If your register and radio transmitter are not compatible with the existing Neptune T-10 meters you must replace the entire meter for these line items.					
NOTE: All meters shall be provided with gaskets.					

A1	Furnish City Hosted Software for Managing the Read Data. (Add or Deduct from Vendor Hosted System)	1	LS	Not Included @ this time	$ -
A2	Furnish a Mobile Drive By Reading Device Including Laptop, Antenna, Wiring, Software and Hardware as Required to Read Your System (as a backup way to collect reads if the Fixed Network System is down). If your system does not have a mobile drive by reading device leave blank.	1	LS	Already Included	$ -

CITY OF BAXTER, MINNESOTA
PAY REQUEST #4 - NOVEMBER 22, 2016

ALTERNATE BID PROPOSAL "B"
SCHEDULE NO. 3 - ALL NEW METERS

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT
Install All Base Bid and Alternate Items					
	BASE BID ITEMS				
1	Project Start Up and Mobilization	0	LS	$ 6,315.79	$ -
2	5/8" X 3/4" Meter Complete With Radio Transmitter and Meter Seal	6	EA	$ 57.98	$ 347.88
3	1" Meter Complete With Radio Transmitter and Meter Seal	4	EA	$ 57.98	$ 231.92
4	1-1/2" Meter Complete With Radio Transmitter and Meter Seal	0	EA	$ 100.00	$ -
5	2" Disc Meter Complete With Radio Transmitter and Meter Seal	4	EA	$ 121.05	$ 484.20
6	2" Compound Meter Complete With Radio Transmitter and Meter Seal	0	EA	$ 121.05	$ -
7	3" Compound Meter Complete With Radio Transmitter and Meter Seal	2	EA	$ 310.53	$ 621.06
8	4" Compound Meter Complete With Radio Transmitter and Meter Seal	0	EA	$ 405.26	$ -
9	6" Compound Meter Complete With Radio Transmitter and Meter Seal	0	EA	$ 521.05	$ -
10	New Radio Transmitter and Register For an Existing 5/8" X 3/4" Neptune Meter	0	EA	$ 44.21	$ -
11	New Radio Transmitter and Register For an Existing 1" Neptune Meter	0	EA	$ 44.21	$ -
12	New Radio Transmitter and Register For an Existing 1-1/2" Neptune Meter	0	EA	$ 44.21	$ -
13	New Radio Transmitter and Register For an Existing 2" Neptune Disc Meter	0	EA	$ 44.21	$ -
14	New Radio Transmitter and Register For an Existing 2" Neptune Compound Meter	0	EA	$ 44.21	$ -
15	New Radio Transmitter and Register For an Existing 3" Neptune Compound Meter	0	EA	$ 44.21	$ -
16	New Radio Transmitter and Register For an Existing 4" Neptune Compound Meter	0	EA	$ 44.21	$ -
17	New Radio Transmitter and Register For an Existing 6" Neptune Compound Meter	0	EA	$ 44.21	$ -
18	3/4" or 1" Quarter Turn Ball Valve	24	EA	$ 68.42	$ 1,642.08
19	1-1/2" or 2" Quarter Turn Ball Valve	3	EA	$ 131.58	$ 394.74
20	3/4" or 1" First or Second Nipple Between Valve and Meter	0	EA	$ -	$ -
21	1-1/2" or 2" First or Second Nipple Between Valve and Meter	0	EA	$ -	$ -
22	Meter Horn for 5/8" X 3/4" or 3/4" Meter	8	EA	$ 5.26	$ 42.08
23	Meter Horn for 1" Meter	0	EA	$ 5.26	$ -
24	Add Amount for Installation Under a Trailer Home	0	EA	$ 26.32	$ -
25	Confined Space Entry Installation	0	EA	$ 47.37	$ -
26	Rate for Plumber	236	HR	$ 100.00	$ 23,600.00
27	Install All Equipment Required to Provide a Fixed Network Reading System Including Hardware, Software, Collectors, Antennas, Programming and Training, Communication and Backhaul Costs as Required.	0	LS	$ 27,920.63	$ -
28	5/8" X 3/4" Meter Complete With Touchpad and New Wire and Meter Seal	0	EA	$ 71.58	$ -
29	1" Meter Complete With Touchpad and New Wire and Meter Seal	0	EA	$ 71.58	$ -
TOTAL SCHEDULE NO. 3: ITEMS NO. 1 THRU NO. 29					**$ 27,363.96**

CITY OF BAXTER, MINNESOTA
PAY REQUEST #4 - NOVEMBER 22, 2016

ALTERNATE BID PROPOSAL "B"
SCHEDULE NO. 3 - ALL NEW METERS

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT
	ALTERNATE BID ITEMS				
A1	Add Amount to Install the Radio Transmitter on the Outside of the Building With New 22 Gauge Wire (Add to Items 2-17 Above)	0	EA	$ 15.79	$ -
TOTAL SCHEDULE NO. 3 WITH ALTERNATE BID ITEMS					**$ 27,363.96**
NOTE: For items 2-17 the radio transmitters shall be installed in the floor joists inside of the building.					
NOTE: For items 10-17 the City would like to reuse these meter bodies if possible with your register and radio transmitter. If your register and radio transmitter is not compatible with the existing Neptune T-10 meters, you must provide pricing to replace the entire meter for these line items.					
NOTE: All meters shall be provided with gaskets.					

DSG
DAKOTA SUPPLY GROUP
For all the right connections!
METERING TECHNOLOGY

CHANGE ORDER #2

Dakota Supply Group (DSG)
620 16th Ave South
Hopkins, MN 55343
Company: (952) 890-3811

Brad Simms
Territory Manager
bsimms@dsginc.biz
Mobile: (952) 300-0352

DATE: November 22, 2016

TO:
City of Baxter
Attn: Todd DeBoer
13190 Memorywood Drive
Baxter, MN 56425

REFERENCE:
Change Orders for City of Baxter
Water Meter Change-out & AMI Project

QTY	DESCRIPTION	PRICE	TOTAL
	Change Order on July 5, 2016 - Approved by Trevor Walters (DSG-C465599)		
	- AMI infrastructure additional labor work requested		
1	Installation of PVC conduit on two water towers with 120V electric circuits and enclosure	$ 10,500.00	$ 10,500.00
1	Installation of PVC conduit at cell tower with 120V circuit and enclosure with trenching	$ 12,595.00	$ 12,595.00
	Change Order on September 7, 2016 - Approved by Trevor Walters (DSG-C583523)		
	- Move collector from the east tower to the south tower due to SCADA interference		
1	Installation labor: removing and re-installing collector, including pit work and antenna ext	$ 6,095.00	$ 6,095.00
1	Installation labor: adjust repeater antennas at lift station locations	$ 647.50	$ 647.50
1	Installation labor: move node to outside house of 2 concerned residents	$ 500.00	$ 500.00
	Change Order on October 3, 2016 - Approved by Trevor Walters (DSG-C609882)		
	- Order some integral mount SSR registers with Mi-Nodes for private irrigation meters		
6	Model 420 SSR register and Integral Mi-Node	$ 140.00	$ 840.00
6	Model 562 SSR register and Integral Mi-Node	$ 140.00	$ 840.00
6	Model 572 SSR register and Integral Mi-Node	$ 140.00	$ 840.00
BY:	*Brad Simms*	**TOTAL**	**$ 32,857.50**

Confidential Company Information

Shipping and Taxes not included

[redacted]

Invoice

5093

10/21/2016

Bill To

Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Ship To

Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Description	Amount
Meter Work in Baxter, MN	
6015 Donald Street	
Meter Behind Wall	
1- Access Panel	
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	
6000 Fairview	
Bad Valve, Leaky Curbstop	
Labor Tim/2 hours	
Labor Steve/2 hours	
14311 Englewood Drive	
No Valve/Repipe Meter Loop	
Labor Tim/8 hours	
Labor Steve/3 hours	
8111 Greenwood	
Bad Valve/Change Meter Loop	
Labor Tim/2 hours	

(2)

[redacted]

5093

10/21/2016

Bill To

Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Ship To

Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Description	Amount
Labor Steve/2 hours	
8044 Dalton	
Furnace In the Way of Meter	
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	
7398 Fairview Dr	
Hard to Access	
Labor Tim/2.5 hours	
Labor Steve/2.5 hours	
13187 Flintwood Drive	
Bad Valve/Change Meter Loop	
Fitting	
Labor Tim/2 hours	
Labor Steve/2 hours	
15323 Edgewood Drive	
New Valve	
Labor Tim/2 hours	

(3)

[redacted]

5093

10/21/2016

Bill To
Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Ship To
Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Description	Amount
Labor Steve/2 hours	
14383 Grand Oaks Dr/ Main Valve	
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	
8343 Hwy 210/Change Meter Flanges	
Labor Tim/2 hours	
Labor Steve/2 hours	
14675 Edgewood Drive/Cut Open the Wall	
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	
14370 Dellwood Drive/Main Valve	
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	
13015 Kingwood/Emergency Leak	
Emergent Call	
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	

(4)

[redacted]

5093

10/21/2016

Bill To
Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Ship To
Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Description	Amount
13342 Knollwood Drive/Broken Valve	
Emergency	
Labor Tim/2 hours	
7995 Greenwood/Bad Valve 2"	
Brass Fittings	
Labor Tim/2 hours	
Labor Steve/2 hours	
Emergency	
7789 Hastings/Rusty Fittings	
Labor Tim/2 hours	
Labor Steve/2 hours	
7694 Industrial Park Road/Meter Leak	
Labor Tim/1 hour	
Labor Steve/1 hour	
13259 Dogwood/Fix Valve	
Labor Tim/1 hour	
14180 Broadmore Drive/move meter	

(5)

Invoice

5093

10/21/2016

Bill To
Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Ship To
Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Description	Amount
2" Fittings	
Labor Tim/2.5 hours	
Labor Steve/2.5 hours	
15222 Dellwood Drive/Change Piping	
1 1/2" Fittings and Ground Clamp	
Labor Tim/2.5 hours	
Labor Steve/2.5 hours	
13316 Meredith/Change Out Meter Loop[	
Emergency	
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	
6568 Clearwater/Install Meter Loop and 2 Valves	
Pipe & Fittings	
Labor Tim/2 hours	
Labor Steve/2 hours	
14978 Hemlock/Replace Both Valves	
Labor Tim/1.5 hours	

(6)

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Invoice

5093

10/21/2016

Bill To
Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Ship To
Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Description	Amount
Labor Steve/1.5 hours	
14466 Dellwood Drive/Softener In the way	
Labor Tim/2 hours	
Labor Steve/2 hours	
13575 Kenwood Drive/Difficult Meters to get to	
Labor Tim/2 hours	
Labor Steve/2 hours	
7267 Excelsior/Main Valve	
1- 2" Valve	
7- Galvonized Fittings	
Labor Steve/2.5 hours	
Labor Steve/2.5 hours	
7788 Fairview Drive/Leaky Piping	
1 1/4" Copper Pipe Fittings	
Labor Tim/3.5 hours	
Labor Steve/3.5 hours	
8471 Greenwood/Bad Valve	

(7)

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Invoice

5093

10/21/2016

Bill To

Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Ship To

Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Description	Amount
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	
13417 Cypruss Drive/Move Softener	
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	
5756 Laverne Circle/Replace Rusty Fittings	
Brass Fittings	
Labor Tim/2 hours	
Labor Steve/2 hours	
15240 Dellwood Drive/Leak by the meter	
1- 2" Male Adt	
Labor Tim/2.5 hours	
Labor Steve/2.5 hours	
6375 Calcutta Road/Leak by the meter	
Fittings	
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	

(8)

[redacted]

5093

10/21/2016

Bill To
Midwest Testing
2091 Sorenson's Road
Mora, Mn. 55051

Ship To
Midwest Testing
2091 Sorenson's Road
Mora, Mn. 55051

Description	Amount
8114 Greenwood/Main Valve	
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	
14843 Edgewood Drive/Furnace in the way	
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	

Amount Paid

Amount Due

Discount

Shipping Cost

Sub Total

Total

Pg 1

[redacted]

5101

11/13/2016

Bill To

Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Ship To

Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Description	Amount
7609 Excelsior/meter too close to the wall	
Labor Tim/2.5	
Labor Steve/2.5	
14819 Edgewood Drive/Softener in the way of both meters	
Labor Tim/2 hours	
Labor Steve/2 hours	
14221 Golf Course Drive/Wall in the way of both meters	
Labor Tim/2 hours	
Labor Steve/2 hours	
7651 Universal Drive/Wall in the way	
Labor Tim/2 hours	
Labor Steve/2 hours	
13398 Maplewood Drive/Bad Valve, Replace Piping	
Materials	
Labor Tim/2.5 hours	
Labor Steve/2.5 hours	
14358 Inglewood Dr/No Valve, Change Piping	

Pg 2

[redacted]

Invoice

5101

11/13/2016

Bill To

Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Ship To

Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Description	Amount
Materials	
Labor Tim/2.5 hours	
Labor Steve/2.5 hours	
12681 Northern Oak Drive/Change piping for 1" meter	
Materials	
Labor Tim/2.5 hours	
Labor Steve/2.5 hours	
13023 Homestead Drive/Leaky Motor Horn	
Emergency	
Labor Tim/2 hours	
Labor Steve/2 hours	
7015 Fox Road/Bad Valves	
Materials	
Labor Tim/2 hours	
Labor Steve/2 hours	
6036 Fairview Road/Bad Valve. Replace Loup and valve	
Materials	

Pg 3

Invoice

5101

11/13/2016

Bill To
Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Ship To
Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Description	Amount
Labor Tim/2.5 hours	
Labor Steve/2.5 hours	
13288 Memorywood Drive/Meter in wall	
Labor Tim/2 hours	
Labor Steve/2 hours	
6652 Mary Street/Bad Valve	
Labor Tim/2 hours	
Labor Steve/2 hours	
13347 Norway Dr/Add Valve	
Materials	
Labor Tim/2 hours	
Labor Steve/2 hours	
14213 Golf Course Drive/1 1/2" Valve & Fittings	
Materials	
Labor Tim/2.5 hours	
Labor Steve/2.5 hours	
4650 Brentwood/Bad Valve	

pg 4

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5101

11/13/2016

Bill To
Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Ship To
Midwest Testing
2091 Sorenson's Road
Mora, Mn, 55051

Description	Amount
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	
5201 Jordan Road/Water Heater In the eway	
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	
13495 Elder Drive/Change Piping	
Materials	
Labor Tim/2 hours	
Labor Steve/2 hours	
13060 Isle Drive/Change Piping	
Materials	
Labor Tim/6 hours	
Labor Steve/6 hours	
12659 Knollwood Drive/Bad Valve	
Labor Tim/1.5 hours	
Labor Steve/1.5 hours	
5168 Camden Road/No Valve	

Pg 5

[redacted]

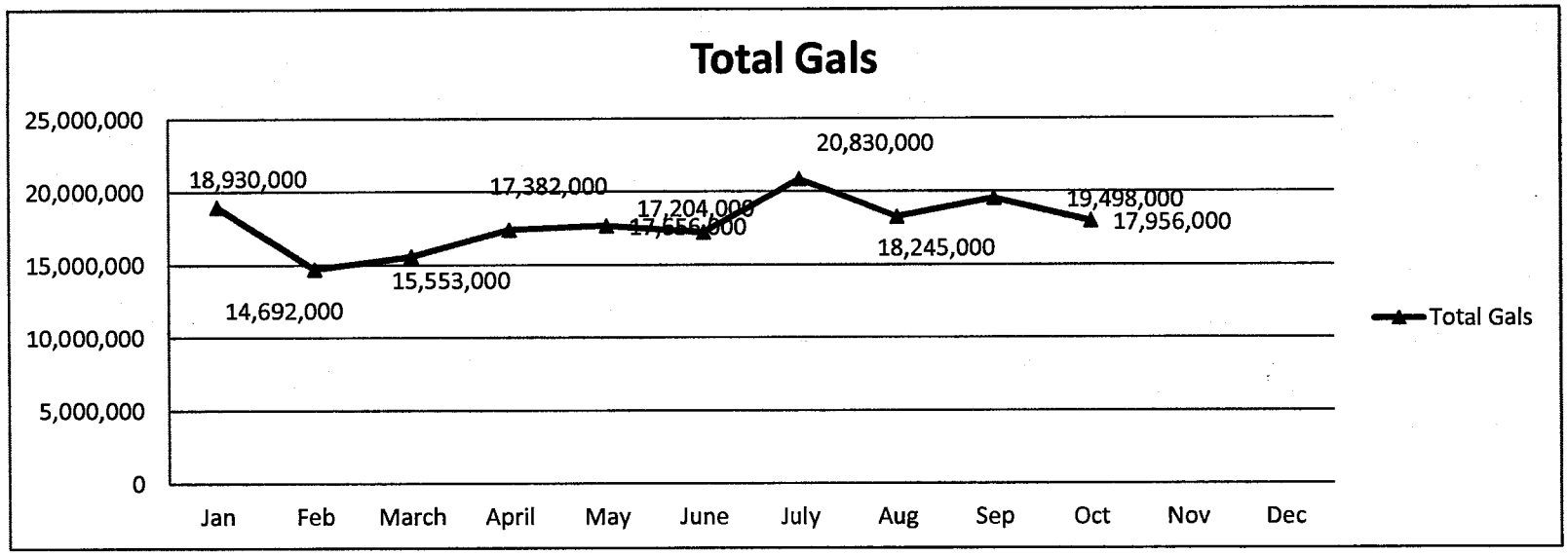
5101

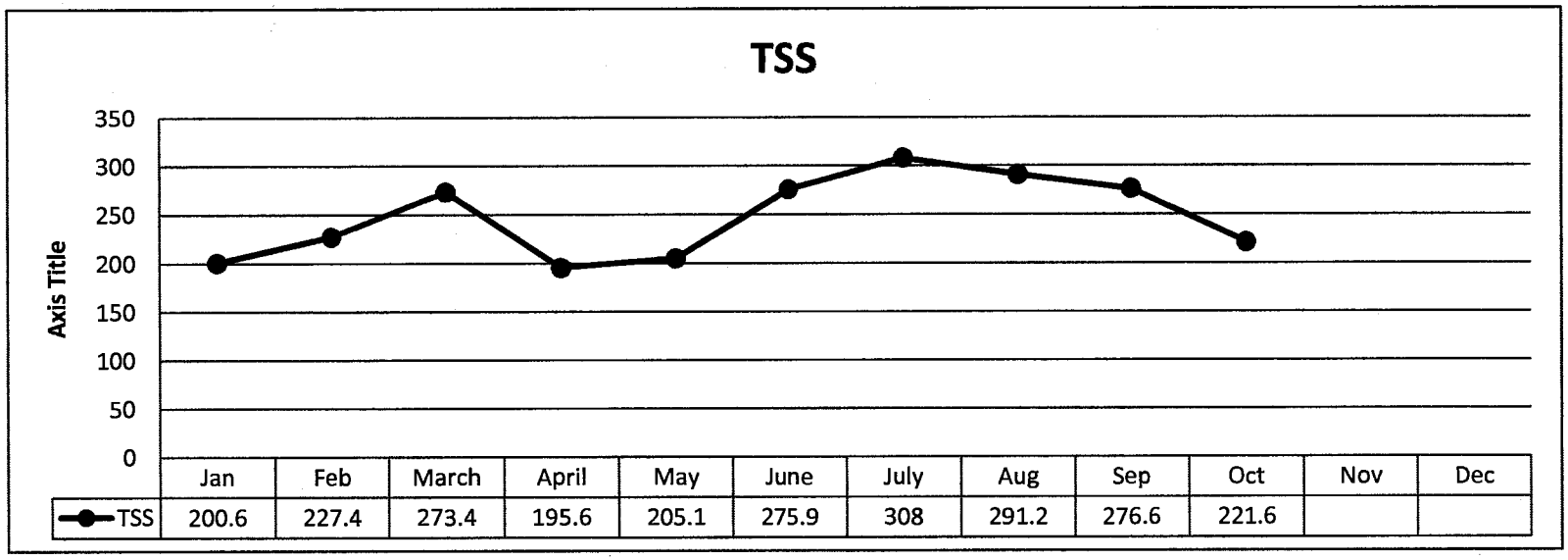
11/13/2016

Bill To	Ship To
Midwest Testing 2091 Sorenson's Road Mora, Mn, 55051	Midwest Testing 2091 Sorenson's Road Mora, Mn, 55051

Description	Amount
Materials	
Labor Tim/2 hours	
Labor Steve/2 hours	
5258 Cedardale Lane/ Bad Valve, Leaky Meter Loup	
Labor Tim/2 hours	
Labor Steve/2 hours	
8465 State Hwy 210/ Laky Fittings by Meter	
Emergency	
Labor Tim/2.5 hours	
Labor Steve/2.5 hours	

Amount Paid	Discount
Amount Due	Shipping Cost
	Sub Total
	Total





	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
TSS	200.6	227.4	273.4	195.6	205.1	275.9	308	291.2	276.6	221.6		

BRAINERD PUBLIC UTILITIES

8027 Highland Scenic Road • P.O. Box 373 • Brainerd, Minnesota 56401-0373

COMMISSION SECRETARY – Business Office 218.829.8726 – FAX 218.829.4703

SUPERINTENDENT OF UTILITIES – Repair Service Operations 218.829.2193 – FAX 218.829.2308

INTERNET WEB SITE – www.bpu.org

BRAINERD PUBLIC UTILITIES
WASTEWATER TREATMENT CHARGES FOR THE
CITY OF BAXTER
for
October 2016

Baxter Monthly Flow and Loading Data

Number of days in billing period	31
Total flow for period (gallons)	17,956,000
Average Daily Flow (MGD)	0.579
CBOD (mg/L)	140.1
TSS (mg/L)	221.6
TP (mg/L)	5.2

I. Base Charges

Base Capital Charge	$0.00
Base Operating Charge	38,164.82
Subtotal for Period	**$38,164.82**

II. Excess Charges

Excess Capital Charge	$0.00
Excess Operating Charges	
Excess Flow	0.00
Excess Loading	0.00
Excess Strength	0.00
Subtotal for Period	**$0.00**

III. Base and Excess Charge Adjustments
('True up' from previous year based on actual Operating Costs)

Operating Charges Previously Billed	$0.00
True-up Charges (Credit) for 2015	0.00
Excess Capital Charge Adjustment	0.00
Excess Operating Charge Adjustments	
Excess Flow Adjustment	0.00
Excess Loading Adjustment	0.00
Excess Strength Adjustment	0.00
Subtotal for Period	**$0.00**
Total for Period	**$38,164.82**

Member American Public Power Association • Minnesota Municipal Utilities Association • American Water Works Association

Monthly Input Data
for
October 2016

Current Month	October
Year	2016
Number of days in billing period	31

Flow

	Brainerd	Baxter	Total
Total flow for period (gallons)	50,067,000	17,956,000	68,023,000
Average Daily Flow (MGD)	1.615	0.579	2.194

Loading

	Brainerd				Baxter			
Measurement Number	CBOD (mg/L)	TSS (mg/L)	TP (mg/L)	TM (ng/L)	CBOD (mg/L)	TSS (mg/L)	TP (mg/L)	TM (ng/L)
1	110			0	334			0
2	106				144			
3	87				114			
4	95	186			139	258		
5	74	176			98	156		
6	104	184			103	220		
7	86	354			181	322		
8	106	182			137	230		
9	108	189	3.79		103	222	5.52	
10	119	276			132	232		
11	94	188			123	184		
12	96	186	3.27		118	211	4.79	
13	108	160			143	224		
14	89	162			93	198		
15		136				202		
16								
17								
18								
19								
20								
Average Daily Loadings (conc.)	99	198	3.5	-	140	222	5.2	-
Average Daily Loadings (lbs/d)	1,331	2,672	48	-	677	1,071	25	-
Average Daily Loadings (mg/d)	-	-	-	-	-	-	-	-

Most Recent Twelve Months Input Data

Brainerd Most Recent Twelve Months Data

	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Average	mg/L
Flow (MGD)	1.292	1.423	1.356	1.203	1.305	1.472	1.579	1.431	1.894	1.966	1.891	1.615	1.536	
CBOD (lbs/d)	1,610	1,417	1,187	1,420	1,497	1,146	1,475	1,086	1,863	2,473	1,655	1,331	1,513	118
TSS (lbs/d)	4,403	2,982	2,250	2,900	2,200	2,380	3,854	2,848	4,750	7,590	3,622	2,872	3,538	276
TP (lbs/d)	52	45	50	52	47	48	51	46	44	55	55	48		

Baxter Most Recent Twelve Months Data

	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16		
Flow (MGD)	0.572	0.544	0.541	0.525	0.555	0.561	0.570	0.573	0.631	0.065	0.629	0.579	0.529	
CBOD (lbs/d)	683	634	711	561	694	741	791	962	1,000	1,004	727	677	765	173
TSS (lbs/d)	1,294	1,190	906	996	1,267	915	975	1,320	1,622	1,584	1,452	1,071	1,216	276
TP (lbs/d)	27	26	23	23	26	28	28	29	27	25	28	25		

Base Charge Calculations
for
October 2016

Base Capital Charge Calculations

(Based on the estimated Phase I capital costs, actual costs will be dependent upon interest rates, construction bids, etc.)

Capital Cost: $0

PFA Interest Rate: 3.233%
Repayment Period (years) 20

	Weight	Brainerd Allocation		Baxter Allocation		Subtotals
	(%)	(%)	($)	(%)	($)	($)
Flow	30%	66.67%	$0	33.33%	$0	$0
CBOD	30%	66.67%	$0	33.33%	$0	$0
TSS	30%	66.67%	$0	33.33%	$0	$0
TP	10%	66.67%	$0	33.33%	$0	$0
		Totals	$0		$0	$0

	Brainerd	Baxter
Monthly Charges	**$0.00**	**$0.00**

Base Operating Charge Calculations

Brainerd

Current Month Flow and Loading Data

Average Daily Flow (MGD)		1.615
CBOD (mg/L)		98.7
TSS (mg/L)		198.3
TP (mg/L)		3.5

Current Month Operating Charge

	Base Unit Cost		Mass	Monthly Cost
	($)	Units	(lbs/day)	($)
Flow	$0.559	1000 gal	NA	$27,987
CBOD	$0.613	lb CBOD	1,331	$25,271
TSS	$0.328	lb TSS	2,672	$27,168
TP	$5.658	lb TP	48	$8,345
			Subtotal	**$88,770.83**

Baxter

Current Month Flow and Loading Data

Average Daily Flow (MGD)		0.579
CBOD (mg/L)		140.1
TSS (mg/L)		221.6
TP (mg/L)		5.2

Current Month Operating Charge

	Base Unit Cost		Mass	Monthly Cost
	($)	Units	(lbs/day)	($)
Flow	$0.559	1000 gal	NA	$10,037
CBOD	$0.613	lb CBOD	677	$12,867
TSS	$0.328	lb TSS	1,071	$10,890
TP	$5.658	lb TP	25	$4,371
			Subtotal	**$38,164.82**

Trevor Walter

From: Kelly Steele
Sent: Tuesday, November 29, 2016 3:26 PM
To: Jeremy Vacinek; Josh Doty; Jim Exsted; Todd DeBoer; Trevor Walter
Subject: BPU Statement

FYI.

The City of Brainerd has initiated an action to detach property from the City of Baxter and have it annexed into Brainerd. The property contains the Cities' Joint Waste Water Treatment Plant, built cooperatively within the City of Baxter to serve both communities. The Plant is bordered by many Baxter residents who have justifiable concerns about the ongoing operation of the Plant and its impact on their homes, property and lives. As with any other commercial or industrial operation, the City of Baxter's role is to protect the health, safety and welfare of its community and residents from adverse impacts, particularly for those who are in close proximity to such uses. It is inconsistent with the Cities' agreement to have the Plant forcibly moved into Brainerd. More importantly, it would undermine Baxter's role to protect its community and residents from potential negative impacts of the Plant's operation, its future use and potential expansion. It is unfortunate that Brainerd has unilaterally chosen to try and change the Cities' agreement as to the location of the Plant, exposing both Cities to unnecessary expenses related to an annexation proceeding.

Kelly Steele
Assistant City Administrator
City of Baxter
PO Box 2626
13190 Memorywood Drive
Baxter, Minnesota 56425
218.454.5108 Office
218.330.8748 Cell

BAXTER
A Growing Community

UTILITIES COMMISSION MEETING DEADLINE FOR 2017

10:00 A.M. DEADLINE	MEETING DATE
December 28, 2016	January 4, 2017
February 1, 2017	February 8, 2017
March 1, 2017	March 8, 2017
March 29, 2017	April 5, 2017
April 26, 2017	May 3, 2017
May 31, 2017	June 7, 2017
June 28, 2017	July 5, 2017
July 26, 2017	August 2, 2017
August 30, 2017	September 6, 2017
September 27, 2017	October 4, 2017
November 1, 2017	November 8, 2017
November 29, 2017	December 6, 2017

February, March & November meeting dates were changed to match City Council

DEVELOPMENT AGREEMENT

THIS AGREEMENT, made this 20th day of December, 2016, by and between Bradford Northwoods Holdings, LLC, a Iowa Limited Liability Partnership and Bradford Northwoods Development, LLC, a Iowa Limited Liability Partnership, parties of the first part, hereinafter referred to as the "**Developers**" and City of Baxter a municipal corporation under the laws of Minnesota, party of the second part, hereinafter referred to as "**City**".

WITNESSETH:

WHEREAS, the Developers have submitted an Irrevocable Letter of Credit No. 400-020-020 attached hereto as **Attachment A** from Farmers State Bank, whose address is 224 W 6th St, Waterloo, IA 50701 in the amount of **$35,887.50** and an Irrevocable Letter of Credit No. 400-020-085 attached hereto as **Attachment B** from Farmers State Bank, whose address is 224 W 6th St, Waterloo, IA 50701 in the amount of **$35,887.50** for a total security in the amount of **71,775.00** (125% of the Engineering Estimate Amount of the "Municipal Portion" (defined below) as detailed on **Attachment C** attached hereto) issued to the City for the development; and

WHEREAS, The Developers are the owners of both Parcels RE: 030323300E00009 and RE: 030323300E00009 with the following described real estate descriptions in the City of Baxter, Crow Wing County, Minnesota, hereinafter referred to as the "**Project**":

RE: 030323300E00009 - That part of the Southwest Quarter of the Southwest Quarter, Section 32, Township 134, Range 28, Crow Wing County, Minnesota, described as follows, to-wit: Commencing at the Southwest comer of said Southwest Quarter of the Southwest Quarter; thence due North along the West line of said Section 32 which line is also the centerline of State Highway 371, for a distance of 338 feet to the point of beginning, thence South 89 degrees 40 minutes East for a distance of 156.5 feet to an iron monument; thence continuing on the same tangent for a distance of 300 feet to an iron monument; thence due North for a distance of 150 feet to an iron monument, thence North 89 degrees 40 minutes West for a distance of 300 feet to an iron monument, thence continuing on the same tangent for distance of 156.5 feet to the west line of Section 32, thence due South for a distance of 150 feet to the place of beginning.

And

RE: 030323300E00009 - That part of the Southwest Quarter of the Southwest Quarter, Section 32, Township 134, Range 28, Crow Wing County, Minnesota described as follows, to-wit: Commencing at the Southwest comer of said Southwest Quarter of the Southwest Quarter; thence due North along the West line of said Section 32 which line is also the centerline of State Highway 371, for a distance of 488 feet to the point of beginning, thence south 89 degrees 40 minutes East for a distance of 156.5 feet to an iron monument, thence continuing on the same tangent for a distance of 300 feet to an Iron monument, thence due North for a distance of 150 feet to an iron monument, thence North 89 degrees 40 minutes West for a distance of 300 feet to

an Iron monument, thence continuing on the same tangent for a distance of 156.5 feet to the West line of said Section 32, thence due South for a distance of 150 feet to the point of beginning.

; and

WHEREAS, the Project includes the construction and installation of municipal water lines, municipal sanitary sewer manhole, private drainage controls, private 100-year storm water design, private bituminous surfaced parking lot, and related improvements (hereinafter collectively referred to as the "**Privately Installed Improvements**") hereinafter described; and

WHEREAS, the Developers will construct the Privately Installed Improvements pursuant to the terms of this Agreement and as described in Sheets C1.0 through C8.0 (20 sheets total), Construction Plans and Specifications for Sanitary Sewer, Water, Storm Sewer, Streets, Grading, Drainage and Erosion Control and for Northwoods Crossing Improvements dated November 30, 2016 and prepared by Michael E, Rude, P.E of Widseth Smith Nolting, Inc., a copy of which is attached hereto as **Attachment D**, and sheet L1.0 – E0.0 (2 sheets total) for landscaping and lighting plans and specifications for Northwoods Cross Development hereto as **Attachment E** prepared by Michael E, Rude, P.E of Widseth Smith Nolting, Inc., dated November 30, 2016 and pay for all related costs, including any reasonable costs incurred or to be incurred by the City for engineering, legal and administrative services related to the Privately Installed Improvements; and

WHEREAS, in anticipation of the Project, the City has received from the Developers an Engineer's Estimate from Widseth Smith Nolting, Inc. for completion of certain Project related improvements to be turned over to and owned by the City as detailed on **Attachment C** attached hereto, and has had said estimate, plans, and specifications reviewed and approved by the City Engineer, the Utilities Commission and the City Council; and

WHEREAS, the Developers will construct all Privately Installed Improvements pursuant to the terms of this Agreement and will pay for all related costs, including any costs incurred or to be incurred by the City for engineering, legal and administrative services related to the Project.

NOW, THEREFORE, in consideration of the premises and the mutual obligations of the parties contained herein, it is agreed between the parties as follows:

1. <u>Authority of Developers</u>. The Developers warrants and represents that Developers are the sole owners of and have marketable title to the property to be developed for all Privately Installed Improvements and have the authority to enter into this Agreement.

2. <u>Construction.</u> The Developers shall construct said utilities in accordance with City specifications as detailed in **Attachment F** Sanitary Sewer Construction Drawings, **Attachment G** Sanitary Sewer Construction Specifications, **Attachment H** Water Main Standard

Construction Drawings, **Attachment I** Water Main Specifications. All material and construction shall conform to the City of Baxter standard specifications. When conflicts that arise between the City specifications, general notes and Developers specifications, the more stringent shall take precedence.

3. Restoration. Right-of-way restoration of Dellwood Drive shall be in accordance with City specifications as detailed in **Attachment J** Right-of-way Restoration.

4. Surety. Upon execution of this Agreement by the parties, the Developers shall deposit with the City two Irrevocable Letters of Credit **(See Attachment A and Attachment B)** acceptable to the City in the amount of One Hundred Twenty Five percent (125%) of the Engineering Estimate Amount **(See Attachment C)** for the Municipal Portion of the Privately Installed Improvements. This surety shall be provided to the City within ten days of approval of this Agreement by the City or prior to commencement of any development activities, whichever is first. Said surety shall be released by the City upon acceptance of the Project by the City and once a one-year Warranty Bond has been assigned to the City.

5. As Built Plans. The Developers shall complete as-built plans for that portion of the Privately Installed Improvements consisting of the municipal water lines, municipal sanitary sewer hole, all of which shall be installed in public rights-of-way or publicly dedicated easements owned or controlled by the City, (collectively the "**Municipal Portion**") and submit them in electronic format in ".dwg file form" at the Developers expense. As-built plans shall include a complete set of plans depicting what was actually built and shall include all valves, hydrants, curb stops, sewer manholes, sewer clean-outs, and sewer service ends with County Coordinates on each item. Further plans shall include all storm sewer manhole, inverts, overflows, outflows, catch basins, and storm water ponds with elevations and County Coordinates on each item for all of the Privately Installed Improvements on either RE: 030323300E00009 and RE: 030323300E00009 showing 1-foot contours, percentage of pervious, impervious, Class 5 surfaces and Bench Marks and control points within one months of substantial completion. Upon written confirmation by the City, the deadline for submitting such plans may be extended to the end of the one-year warranty period. The Irrevocable Letter of Credit may be reduced as set forth in paragraph 11 below up to 90% of said amount; provided, however, the Irrevocable Letter of Credit shall not be released until as-built drawings are submitted to the satisfaction of the City.

6. GIS System. The Developers shall reimburse the City for its reasonable costs related to incorporating the Privately Installed Improvements into the City's GIS system. The City shall charge an hourly rate based upon the City's adopted fee schedule in effect at the time services are performed. The 2016 hourly rate is $58.00 (The City will charge in one hour increments). The City's estimate for the total cost of these charges is **$696.00** and is attached hereto as **Attachment K**.

7. Engineer Inspections. Developers agree that all construction of the Municipal Portion of the Privately Installed Improvements, to be owned or maintained by the City, shall be inspected by the City Engineer. The Developers shall reimburse the City for all inspection costs related to said Municipal Portion ensuring that they are constructed to City specifications. The City shall inspect construction of the Municipal Portion full time at an hourly rate based upon the City's adopted fee schedule in effect at the time services are performed. The 2016 hourly rate is $50.00 (The City will charge in one hour increments). If overtime hours are incurred, the City will bill those hours at one and one-half times the hourly rate in effect at the time such services are performed. The City's estimate for the total cost of these charges is **$3,000.00** and is attached hereto as **Attachment L**.

8. Utility Easements. Developers agree that it will, at its own expense, provide utility easements over all sanitary sewer lines, sanitary sewer manholes, water lines, water valves and fire hydrants as listed on **Attachment M** attached hereto.

9. Coordination. Developers agree that it will, at its own expense, provide for and coordinate the satisfaction, obtaining and/or installing of each of the following items in connection with, and to the extent applicable to the Project:

A. All surveying and easement recording requirements normally and customarily required by the City; and

B. Survey services to establish vertical and horizontal control and alignment points and staking for the placement of main line sanitary sewer, storm sewer and water main; and

C. Electricity, telephone, gas and cable television installations; and

D. Monumentation of lot corners; and

E. Plans and specifications for the Privately Installed Improvements; and

F. Payment of all fees, permits, licenses and recording fees; and

G. Erosion control in accordance with MPCA guidelines; and

H. All other items or site improvements necessary and incidental to completion of the Project; and

I. Lot grading, including stabilization and erosion controls; and

J. Municipal Water mains, gate valves, curb stops and fire hydrants; and

K. Municipal Sanitary sewer mains and manholes; and

L. Private topsoil, sod, seeding, and mulching of street right of way (only for that part disturbed as part of the construction of the Privately Installed Improvements); and

M. Construct and maintain a 100-year storm water drainage system serving RE: 030323300E00009 and RE: 030323300E00009 affected by the Privately Installed Improvements. The Developers shall be responsible for any sediment and erosion that is caused by the over land, over flow system from the 100-year storm water infiltration basins to the City or discharge to any public water way systems.

10. <u>City Acceptance</u>. City agrees that the Municipal Portion of the Privately Installed Improvements when fully constructed and approved for acceptance by the City Engineer, Baxter Utility Commission and City Council shall become part of the municipal utility, owned and/or controlled by the City. Developers agrees that it or its contractor(s) will carry a performance bond to warranty the Municipal Portion of the Privately Installed Improvements installed per this Agreement for a warranty period of one (1) year after completion of the Project by the City. Developers agree to assign the bond to the City after all Privately Installed Improvements and Project related activities are completed to the reasonable satisfaction of the City, whereupon the City will indicate its acceptance of the Privately Installed Improvements. The assignment shall extend to the City all rights and ability to have the Developers general contractor perform any required warranty work. If a bond cannot be assigned, the Developers agrees to extend surety for the one-year warranty period at an amount equal to the final construction price of the Municipal Portion plus ten percent, (10%) and in that event, the City shall not accept the Municipal Portion until the end of said warranty period. The City reserves the right to extend the time frame for acceptance of the Project if any problems with the Privately Installed Improvements are not resolved.

11. <u>Bonds/Surety</u>. The Developers shall provide the City a copy of the contractor's Surety and Performance Bond(s) prior to starting any construction activities. The Developers agrees that the City may exercise its right to utilize surety to complete the Municipal Portion of the Privately Installed Improvements in event of default hereunder, to mitigate any public hazard created by the Municipal Portion of the Privately Installed Improvements or to compensate the City for any unpaid costs it incurs related to the construction of the Municipal Portion.

As Project costs and City expenses are paid by the Developers, the City, in its discretion, may allow a reduction in the surety bond or cash escrow account herein above provided for in an amount as determined by City so as to provide sufficient security for the performance of all terms and conditions provided for herein. In no case shall surety be reduced to less than actual construction cost of the Municipal Portion until the City accepts the Project.

12. <u>SAC/WAC Charges</u>. The Developers understand that the following SAC/WAC charges will also apply to the Project:

A. Sewer Availability Charge (SAC) ($3,400.00 per each unit in year 2016); and

B. Water Availability Charge (WAC) ($3,100.00 per each unit in year 2016).

The SAC and WAC fees will be payable at such time as a building permit is requested from the City. The fees are subject to an increase by the City Council. The City's estimate for the total cost of SAC and WAC charges is **$26,914.50** and is attached hereto as **Attachment N.**

13. Monuments. The Developers shall place iron monuments at all lot corners and at all other angle points on boundary lines for RE: 030323300E00009 and RE: 030323300E00009. Such iron monuments shall be placed after all streets and lawn grading has been completed in order to preserve the lot markers for future property owners. More monuments may be required by the City engineer to service the area.

14. Grant of License. The Developers hereby grants to the City, it agents, employees, officers and contractors a license to enter upon the property on which the Project work is being conducted to perform all necessary inspections deemed appropriate by the City during the construction of the Privately Installed Improvements.

15. Payment of City Fees. The City shall not execute this Agreement until the Developers have paid all fees for this Project as described in this Section 15 below. Prior to execution of this Agreement, the City shall present Developers with estimated costs for engineering inspections and observation, legal or administrative costs incurred by the City to review the construction of the Privately Installed Improvements. The estimated fees for any engineering costs are as set forth in Sections 6 and 7 above. All other fees due the City for any legal or administrative fees are estimated at **$1,616.00** as shown on **Attachment O** attached hereto. These fees shall also be due upon execution. Upon completion of the Project, the City shall refund to Developers any remaining funds if the actual costs were lower than estimated. If the actual costs exceed the estimates, the City shall bill the Developers for this surplus and the bill shall be paid by Developers within 30 days. No interest shall accrue on any monies held by the City pursuant to this Section 14. If any bill due the City is unpaid after 30 days, a one-time late fee shall be assessed equaling 5% of the unpaid balance and additional late fees at the rate of 1.5% per month shall be assessed for each month thereafter. If after multiple attempts to collect any outstanding bill(s) at the completion of the Project, a bill(s) remains unpaid, the Developers agrees the City may certify the outstanding balance, with certification fees and interest, to RE: 030323300E00009 and RE: 030323300E00009 for collection by the county on the following year's property taxes. The Developers, or its successors, further agrees that when said assessment is levied it will not appeal or challenge this assessment amount and waives any notice of hearing related to adopting said assessment.

16. Estoppel. The City agrees, upon the written request of the Developers, within thirty (30) days of the request, to issue to the Developers or its prospective mortgagee or purchaser, an estoppel certificate stating, to the best of the City's knowledge: (i) whether it knows of any default under this Agreement, and if there are known defaults, specifying the nature thereof; (ii)

whether this Agreement is in full force and effect; and (iii) whether there are any sums due and owing by the Developers to the City that remain outstanding (that have not otherwise been assessed to the Property).

17. Miscellaneous. This Agreement shall inure to the benefit of and shall be binding upon the Developers and the City and their respective successors, agents and assignees, and shall be binding upon all future owners of all or any part of RE: 030323300E00009 and RE: 030323300E00009 and shall be deemed covenants running with the land. However, nothing in this Agreement, expressed or implied, shall give to any other person or entity any benefit or legal or equitable right, remedy or claim under this Agreement. This Agreement, at the option of the City, may be placed on record with the County Recorder so as to give notice hereof to subsequent purchases and encumbrances.

[SIGNATURES APPEAR ON THE NEXT PAGE]

IN TESTIMONY WHEREOF, the parties hereto have executed this Agreement as of the day and year set forth above.

CITY:

CITY OF BAXTER, MINNESOTA

By: _____

Darrel Olson, Its Mayor

Attest: _____

Kelly Steele, Its Assistant City Administrator/City Clerk

RATIFIED AND APPROVED BY THE CITY COUNCIL OF BAXTER, MINNESOTA, THIS 20th DAY OF DECEMBER, 2016.

_____
Mayor

ATTEST:_____
Assistant City Administrator/City Clerk

STATE OF MINNESOTA)
)ss.
COUNTY OF CROW WING)

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by Darrel Olson and Kelly Steele, the Mayor and Assistant City Administrator/City Clerk of the City of Baxter, a municipal corporation under the laws of Minnesota, on behalf of the corporation.

_____
Notary Public

DEVELOPERS:

Bradford Northwoods Holdings, LLC,

By: _____
Bill Bradford
Its: President

Bradford Northwoods Development, LLC,

By: _____
Bill Bradford
Its: President

STATE OF IOWA)
)ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this ____ day of _____, 2016, by Bill Bradford the President of Bradford Northwoods Holdings, LLC, a Iowa Limited Liability Partnership, on behalf of the company.

_____
Notary Public

STATE OF IOWA)
)ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this ____ day of _____, 2016, by Bill Bradford the President of Bradford Northwoods Development, LLC, a Iowa Limited Liability Partnership, on behalf of the company.

_____
Notary Public

THIS INSTRUMENT WAS DRAFTED BY:
City of Baxter
13190 Memorywood Dr.
P. O. Box 2626
Baxter, Minnesota 56425
218/454-5100

SCHEDULE OF ATTACHMENTS

ATTACHMENT A	Irrevocable Letter of Credit No. 400-020-020.
ATTACHMENT B	Irrevocable Letter of Credit No. 400-020-085.
ATTACHMENT C	Engineer's Estimate from Widseth Smith Nolting, Inc. for Construction of Municipal Portion of Privately Installed Improvements.
ATTACHMENT D	Construction Plans and Specifications for Sanitary Sewer, Water, Storm Sewer, Trail, Streets, Grading, Drainage and Erosion Control dated November 30, 2016, prepared by Widseth Smith Nolting, Inc.
ATTACHMENT E	Landscape and Lighting Plans dated November 30, 2016 prepared by Widseth Smith Nolting, Inc.
ATTACHMENT F	Sanitary Sewer Standard Construction Drawings.
ATTACHMENT G	Sanitary Sewer Specifications.
ATTACHMENT H	Watermain Standard Construction Drawings.
ATTACHMENT I	Watermain Specifications.
ATTACHMENT J	Right-of-way Restoration.
ATTACHMENT K	GIS Incorporation Costs estimated time/cost.
ATTACHMENT L	City Estimated Engineering Inspection Costs
ATTACHMENT M	Listing of Utility Easement Areas needed for Sanitary Sewer Lines and Manholes, Water Lines and Valves and Fire Hydrants.
ATTACHMENT N	Detail of SAC/WAC Fees.
ATTACHMENT O	Detail of Legal, Administrative and Other Fees Due City.

Building a Better World
for All of Us®

MEMORANDUM

TO: Honorable Mayor and City Council and Utilities Commission
c/o Trevor Walter, PE
City of Baxter, Minnesota

FROM: Scott Hedlund, PE

DATE: December 1, 2016

RE: 2018 Cypress Drive Improvements
Monthly Project Status Update
SEH No. BAXTE 138944 20.00

The following is an update on the status of the various work tasks on the project:

A. Public Involvement
- A project informational letter was mailed to properties within the project limits in early October 2016.
  - Subsequent site meetings and phone conferences with some property owners have occurred.
- The plan is to hold a public open house showing the project layout drawings after Utilities Commission and City Council reviews of the layout.
  - We are targeting the second week of January 2017 for the open house.

B. Preliminary Design
- Topographic design survey update work is nearly complete.
  - Railroad property survey work remains.
- Property ownership and encumbrance reports have been received and a right of way base map has been prepared.
- The traffic study is complete and planned for approval at the December Utilities Commission and City Council meetings.
- Geometric design update work is in process.
  - A roundabout concept option has been developed at the Cypress Drive/ College Road intersection.
  - A preliminary overall project layout was reviewed with the City Council on 11/15/16 with focus on trails and the roundabout concept at Cypress Drive/ College Road.
  - An updated layout is planned for approval at the December Utilities Commission and City Council meetings.
- Stormwater design update work is in process.
  - A stormwater-focused design meeting with City staff was held 11/16/16.
  - Attached to this memo is preliminary project drainage exhibit for reference depicting some of the stormwater work competed to date.
    1. More detailed stormwater information is planned to be included with the January/February Utilities Commission and City Council meetings.
- Soil borings on the southerly portion of the project were completed in October.
  - Site specific infiltration testing south of Industrial Road remains.

- Ongoing design discussions/meetings have been held with City staff.

C. Railroad Agreements
- Working with BNSF on site access – applied for access permit.
- Met with City Staff, City Attorney, WSN, and BMI in October to discuss railroad strategy and timing of contacts on the various current City projects with railroad involvement.
- SEH has been in contact with BNSF seeking their pre-approval of an appraiser for the necessary project easements on BNSF parcels.
- BNSF easement needs are being finalized and associated documents in process.
- The goal is to submit initial documents to BNSF to initiate the Construction and Maintenance Agreement process in January 2017.

D. Phase 1 Environmental Site Assessment (ESA)
- The draft report is complete and has been submitted to MnDOT for review.
- The draft report will be included in the December Utilities Commission meeting packet.
- The goal is have the Final Phase 1 ESA report and contract for moving forward with a Phase 2 ESA ready for approval by the Utilities Commission and City Council in January.

E. Federal Highway Administration (FHWA) Environmental Review and Documentation (aka Project Memorandum (PM) or Environmental Assessment (EA))
- SEH has been in discussions with MnDOT on the level and type of environmental review and documentation needed to satisfy the requirements of the National Environmental Policy Act (NEPA), as it relates to the federal funding the project has received.
- It is unclear at this time whether a PM or EA document will be required.
- An assessment of the level of potential project impacts is necessary to help MnDOT/FHWA make the decision.
- An SEH contract to start the environmental review and documentation process is planned to approval consideration at the December Utilities Commission and City Council meetings.
    - The minimum timeline to complete the PM process is 3 - 4 months.
    - The minimum timeline to complete the EA process is typically 2 – 3 times longer than a PM.
    - This NEPA environmental work is a critical path item for the overall project schedule.

The following is an update on the status of the project budget:

F. Total project budget:
- The preliminary total project budget based on the 2016 bonding bill request is $10.8M.
- An updated budget is being developed with the preliminary design.

G. Consultant budget:
- The following scope changes have occurred to date that impact the consultant budget and will be addressed in future fee amendment requests.
    - Additional trail alignment along the northerly side of TH210 between TH 371 and the Paul Bunyan State Trail is being designed.
    - The limits of topographic survey have increased for stormwater design south of BNSF property, TH 210 trail, and College Drive/Cypress intersection roundabout purposes.
    - Procuring quotes for sanitary sewer and storm sewer televising, future reviewing the televising results, and making recommendations on necessary repairs/next steps – if any.
    - Stormwater analysis has stretched beyond project specific needs south of BNSF property in order to assist the City with addressing existing stormwater challenges.

c: Kelly Steele, Jeremy Vacinek – City of Baxter
sh
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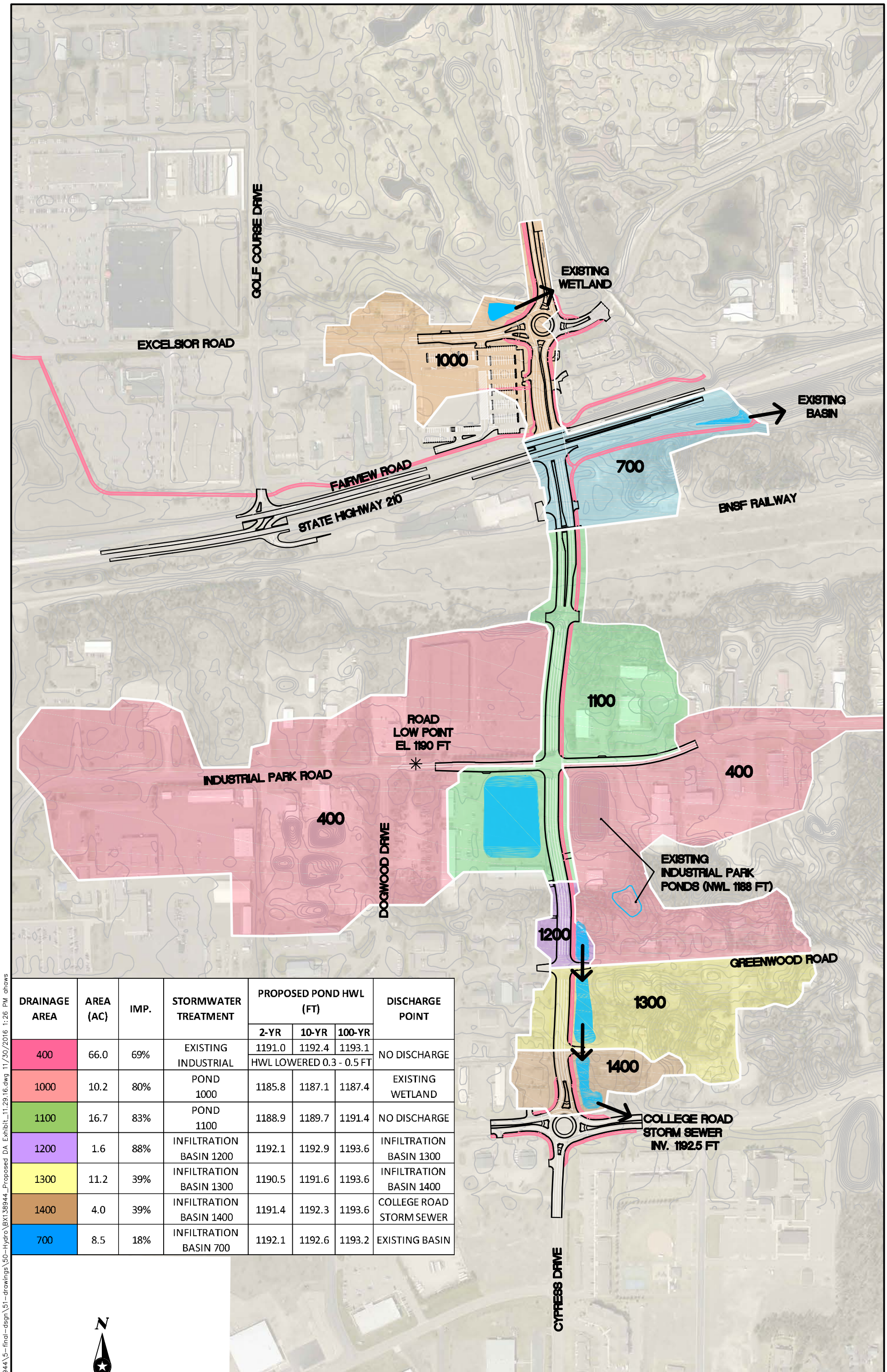

DRAINAGE AREA	AREA (AC)	IMP.	STORMWATER TREATMENT	PROPOSED POND HWL (FT)			DISCHARGE POINT
				2-YR	10-YR	100-YR	
400	66.0	69%	EXISTING INDUSTRIAL	1191.0	1192.4	1193.1	NO DISCHARGE
				HWL LOWERED 0.3 - 0.5 FT			
1000	10.2	80%	POND 1000	1185.8	1187.1	1187.4	EXISTING WETLAND
1100	16.7	83%	POND 1100	1188.9	1189.7	1191.4	NO DISCHARGE
1200	1.6	88%	INFILTRATION BASIN 1200	1192.1	1192.9	1193.6	INFILTRATION BASIN 1300
1300	11.2	39%	INFILTRATION BASIN 1300	1190.5	1191.6	1193.6	INFILTRATION BASIN 1400
1400	4.0	39%	INFILTRATION BASIN 1400	1191.4	1192.3	1193.6	COLLEGE ROAD STORM SEWER
700	8.5	18%	INFILTRATION BASIN 700	1192.1	1192.6	1193.2	EXISTING BASIN

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FILE NO. BAXTE138944

DATE: 11/30/2016

CYPRESS DRIVE
PROPOSED DRAINAGE
BAXTER, MINNESOTA

EXHIBIT NO. 1

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MEMORANDUM

TO: Honorable Mayor and City Council and Utilities Commission
c/o Trevor Walter, PE
City of Baxter, Minnesota

FROM: Scott Hedlund, PE

DATE: December 1, 2016

RE: 2018 Cypress Drive Improvements
Geometric Layout Review
SEH No. BAXTE 138944 16.00

Attached are exhibits of the current overall project layout that SEH will present at the December Utilities Commission and City Council meetings for review and approval consideration.

The layout was discussed with the City Council at their working session on 11/15/16 with the purpose to obtain consensus on a number of preliminary design project scoping items such as trails, roundabout concept for the intersection of Cypress Drive at College Road, Super One Foods and Fairview Road reconfiguration, and utilities extensions.

Attachments
c: Kelly Steele – City of Baxter
sh
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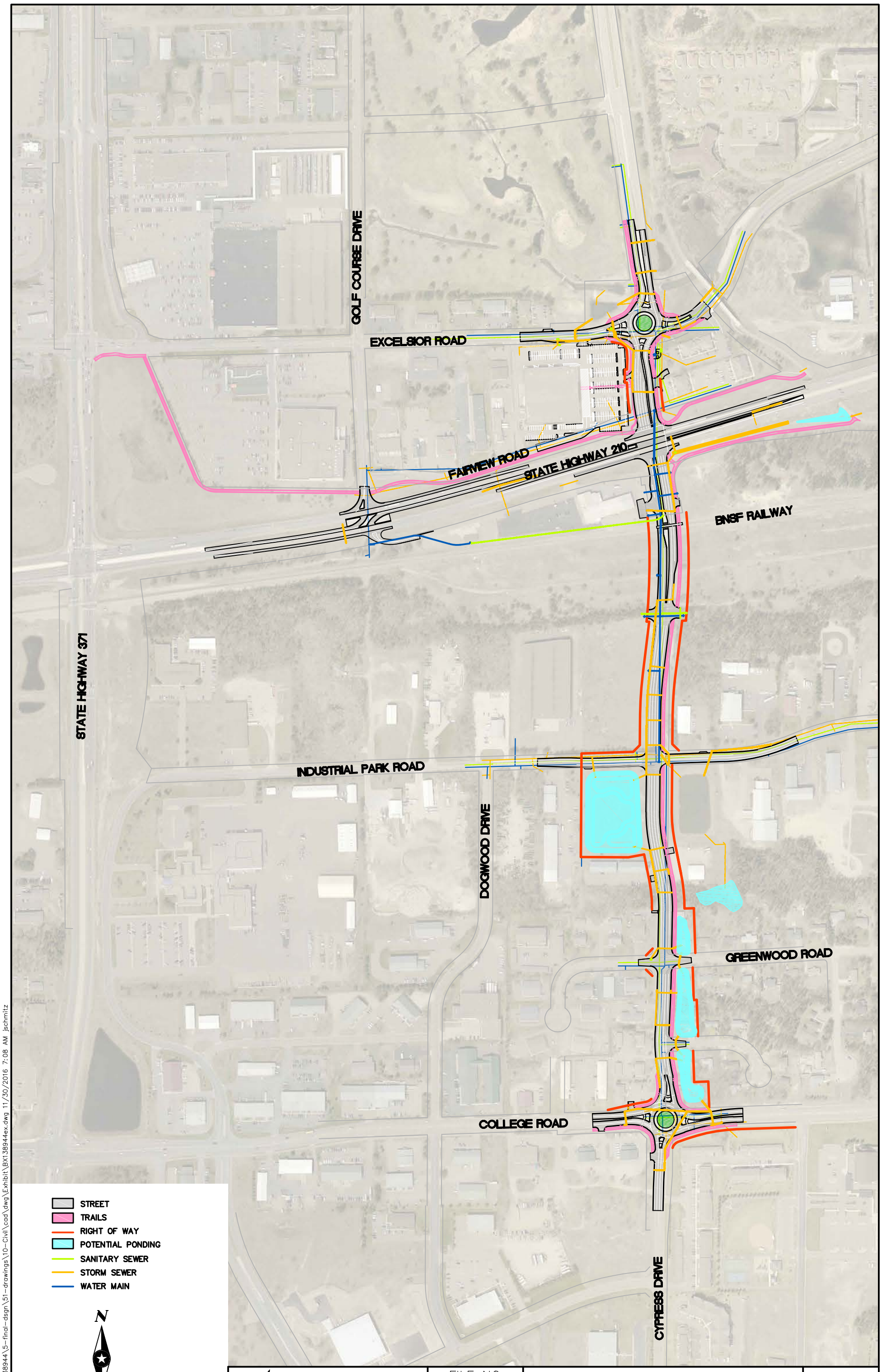

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BAXTER, MINNESOTA

EXHIBIT
NO. 3

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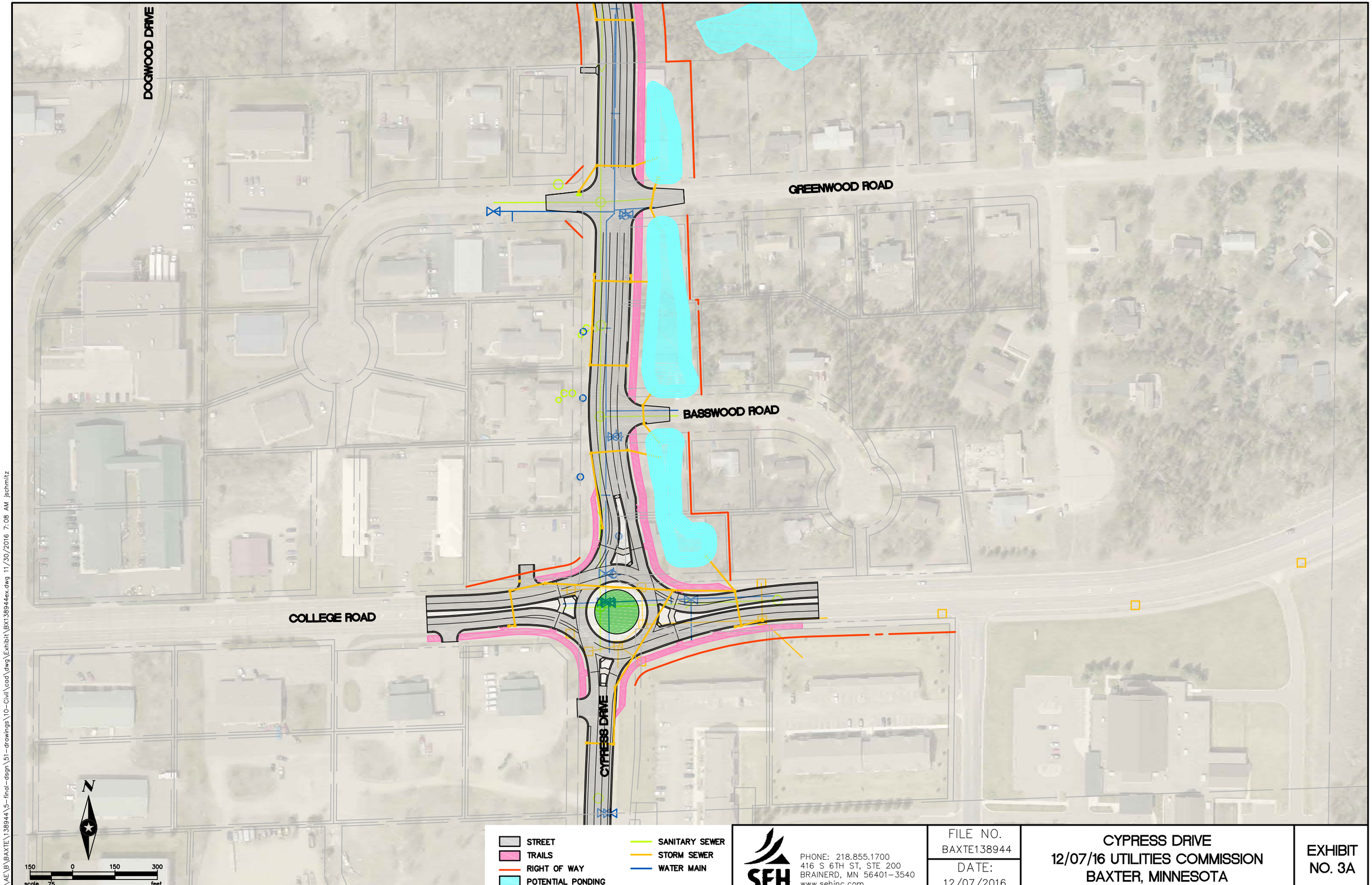

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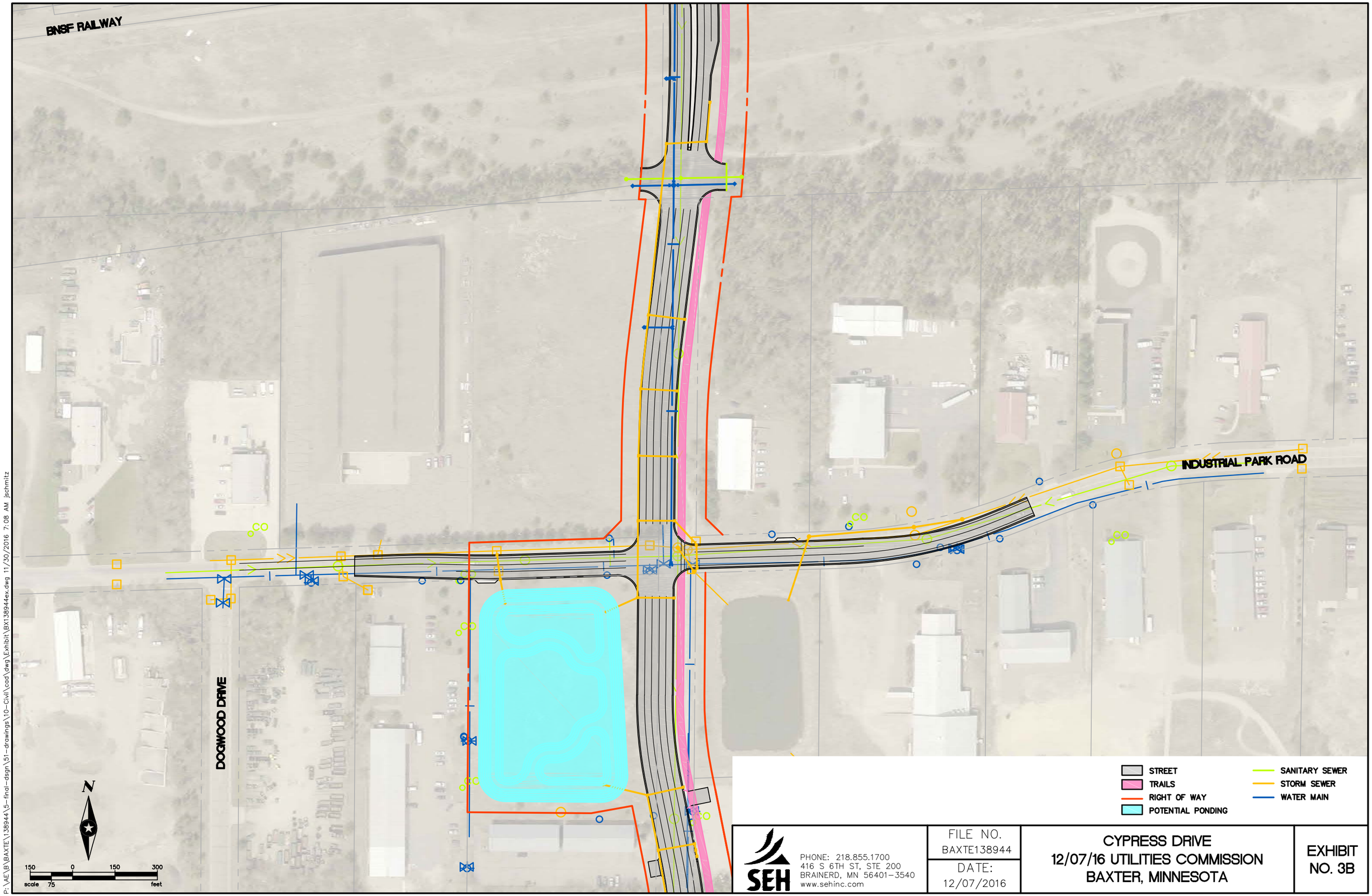

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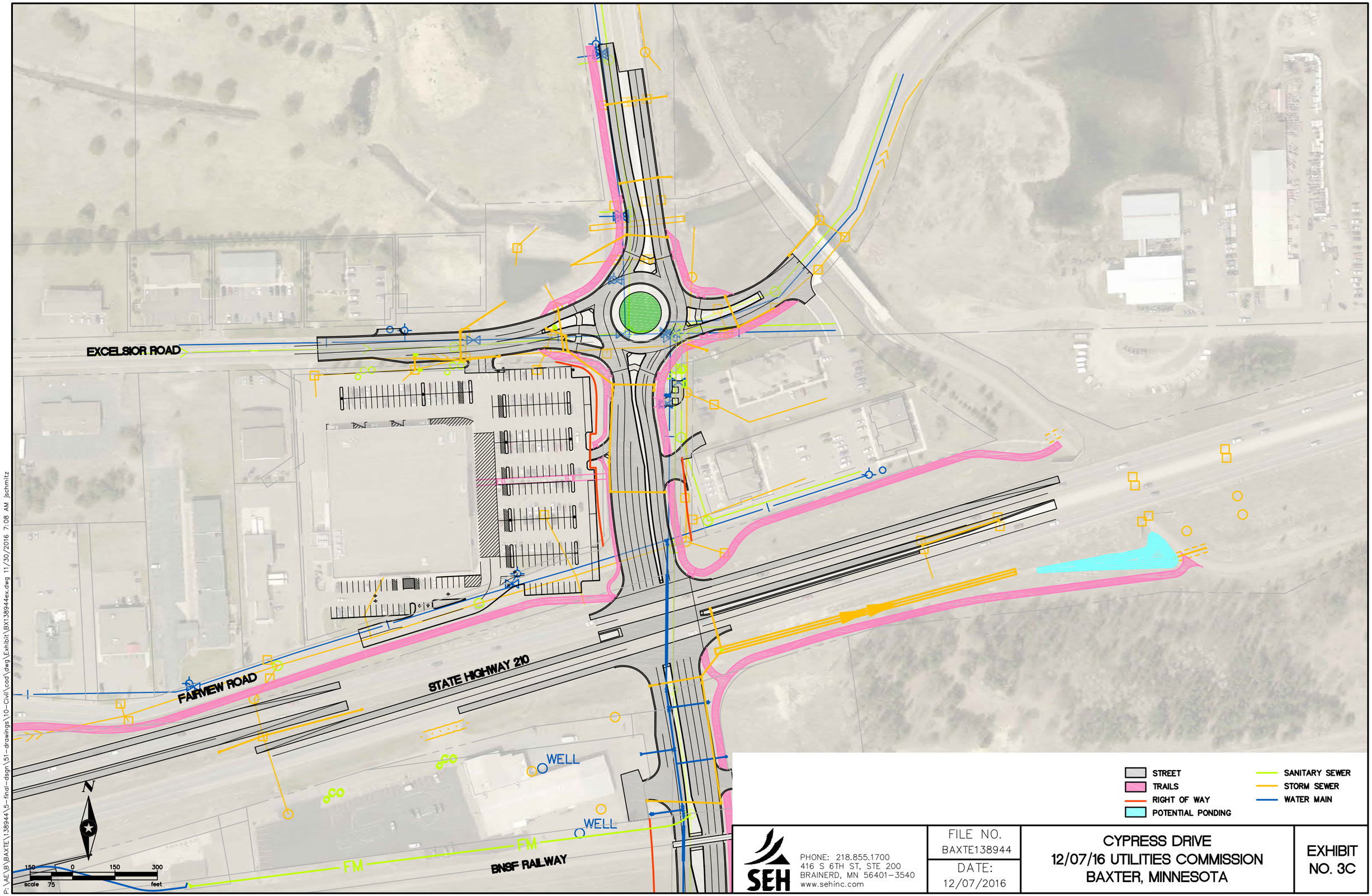

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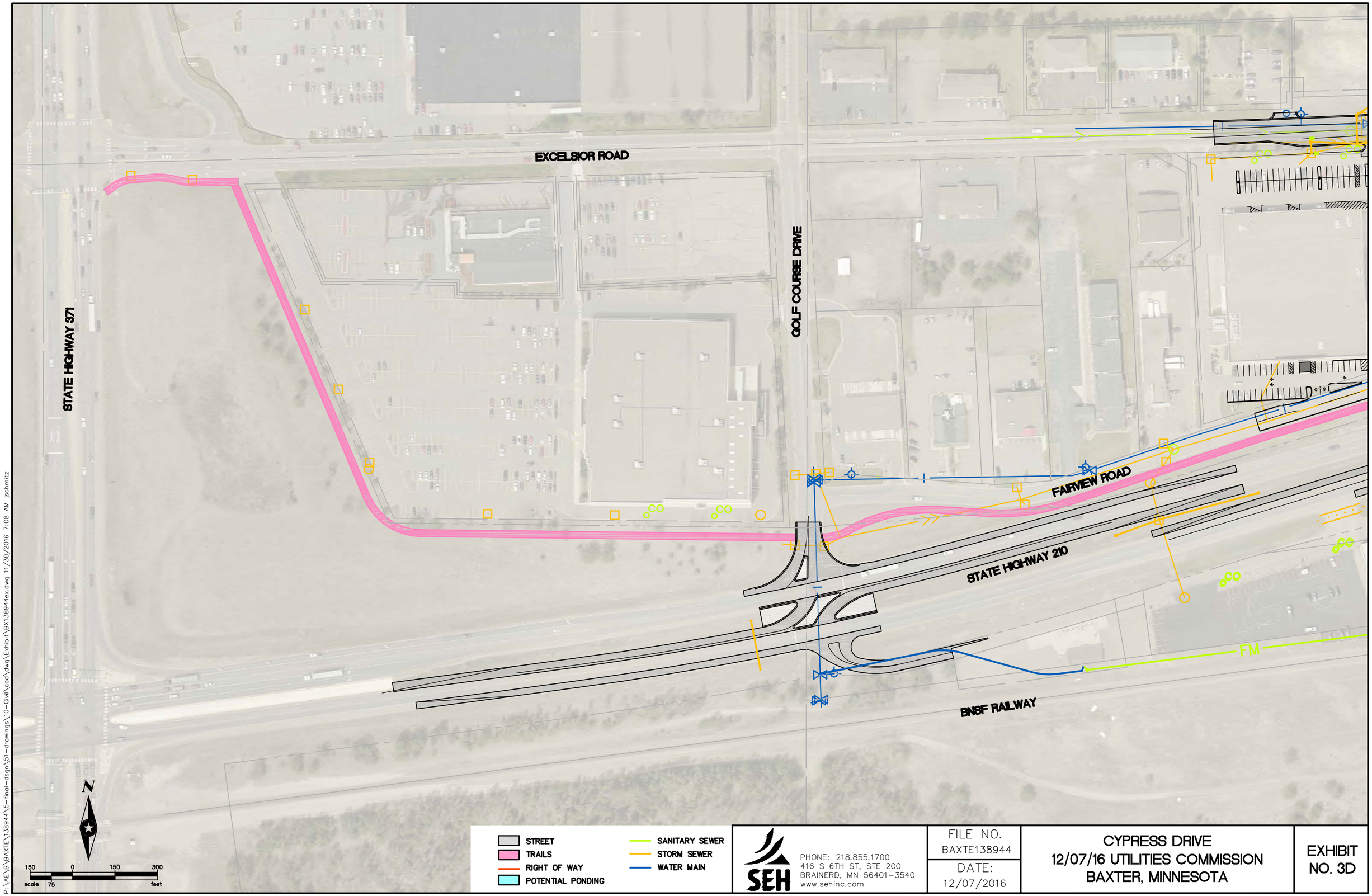

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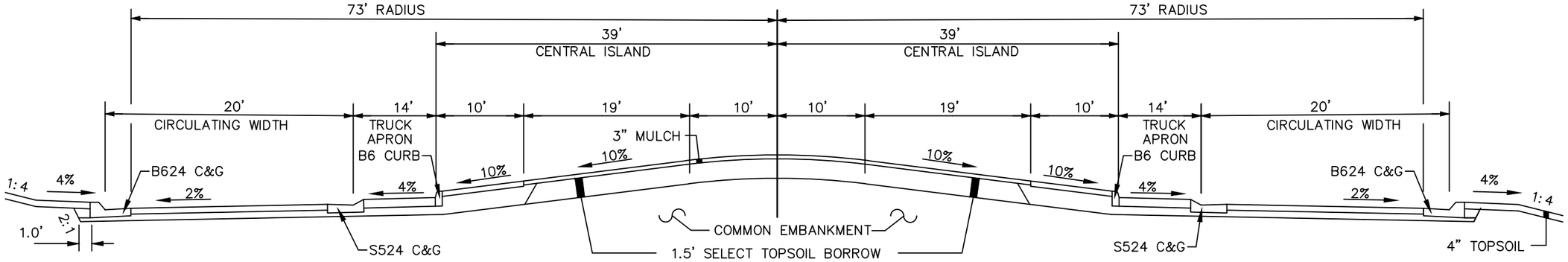
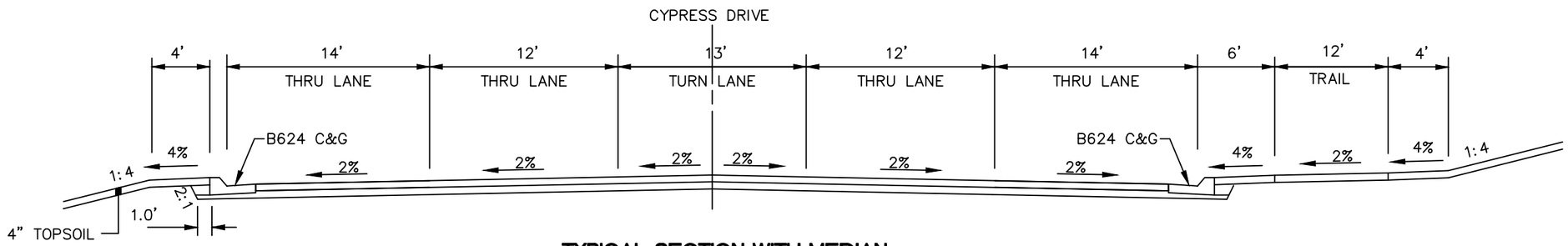
TYPICAL SECTION AT COLLEGE ROUNDABOUT



TYPICAL SECTION WITHOUT MEDIAN



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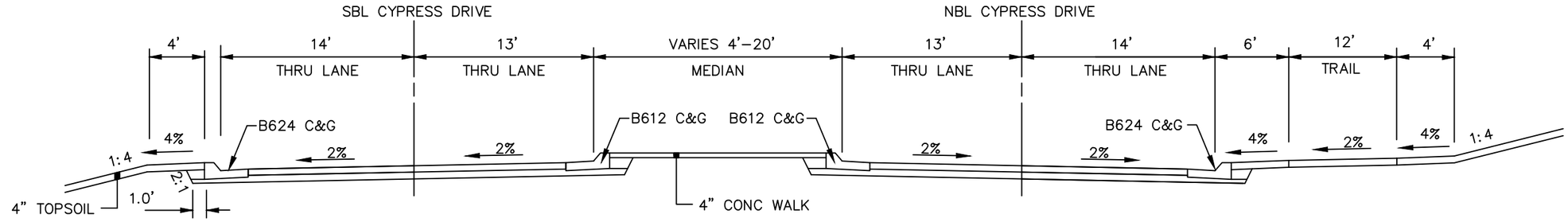
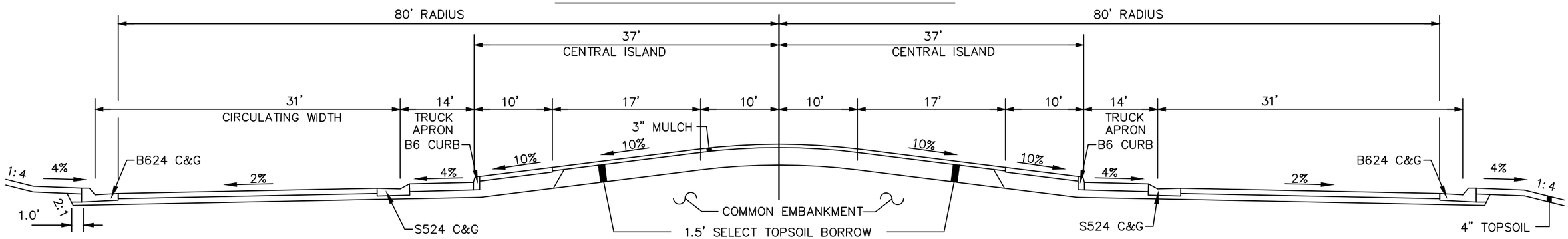


TYPICAL SECTION AT EXCELSIOR ROUNDABOUT



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DRAFT MEMORANDUM

TO: Trevor Walter, PE
Public Works Director/City Engineer
City of Baxter

FROM: Graham Johnson, PE
Sr. Traffic Engineer

DATE: November 30, 2016

RE: 2018 Cypress Drive Improvements Project - Traffic Memorandum
SEH No. BAXTE 138944 14.00

This memorandum summarizes the review and assessment of previous traffic work that has occurred within the project area of the current 2018 Cypress Drive Improvements Project to confirm its adequacy for use in the final design process. The findings here will be used to assess the previous MnDOT Intersection Control Evaluations (ICE) Report for Cypress Drive at both TH 210 and Excelsior Road intersections as well as the current ICE report for Cypress Drive at both College Road and Industrial Park Road, and confirm the overall project layout.

The current Cypress Drive Extension Project includes extending Cypress Drive from Fairview Road, north of TH 210, down to Industrial Park Road, south of TH 210, and also reconstructing Cypress Drive from Excelsior Road to Fairview Road and from Industrial Road down to College Road. When complete, Cypress Drive would have two continuous through lanes in each direction from north of Clearwater Road, across TH 210, and down to College Road. The current project layout from Excelsior Road to College Road is attached to this memorandum.

The current project, does not include construction of Cypress Drive between College Road and Hinckley Road. The City of Baxter's long range plan includes extension of Cypress Drive to be a continuous collector/arterial roadway from CSAH 48 to CSHA 49.

TRAFFIC FORECASTS

Traffic Forecasts were previously developed as part of an earlier study for the City of Baxter. In 2005, Benshoof & Associates, Inc. developed 2025 traffic forecasts for the entire City of Baxter based on future land use growth and roadway network changes. The full traffic forecasts report is titled *Roadway System Plan for City of Baxter and Corridor Plan for Cypress Drive and CSAH 48*; dated April 2005.

The forecasts provided a range of daily traffic levels from low (3% to 4%) to high growth (4% to 6%) for the regional area. The data was based on the 2001 Average Annual Daily Traffic (AADT) demands from MnDOT, Crow Wing County, and the Cities of Baxter and Brainerd. The forecasts incorporated historical AADT demands, recent traffic studies of the time, as well as planned and expected growth areas in the region.

As previously approved by MnDOT, the lower range of approximately 3% to 4% growth was to be used in the traffic study for the Cypress Drive crossing of TH 210. The percentage growth was used in the previous ICE report to develop a year of opening forecast for 2009 demands.

The forecasts were developed during the thriving economic times of the early 2000's that were ultimately set back during the recession that followed in the late 2000's. Therefore the previously anticipated growth was never realized as traffic demands stayed stagnate for many years.

A review of the forecast information, population data, and more recent historical AADT data was conducted to assess the validity of the previous forecasts and determine an appropriate path to reconcile the forecasts for use in final design.

Population Growth

The first assessment of the growth within the study area is to look at the population changes that have occurred since the previous forecast study. The City of Baxter recently provided updated data in their 2015 Comprehensive Plan Update.

The data suggests Crow Wing County will see significant growth through 2035 while the City of Brainerd will only see a small change in population. The City of Baxter will see significant growth between the 2010 Census data and the 2035 projections. It should be noted that the Minnesota State Demographer has recently updated the 2015 estimates, which are lower than the 2015 estimates from the Comprehensive Plan.

Table 1 Population Data

	2000[1]	2010[1]	2015[2]	2015[3]	2035[2]
Crow Wing County	55,099	62,500	66,067	62,694	80,350
City of Baxter	5,555	7,610	9,678	8,065	12,814
City of Brainerd	13,178	13,590	14,406	13,671	14,613

1 – US Census Data

2 – 2015 Baxter Comprehensive Plan Update; data from MN State Demographer 2015

3 – 2016 MN State Demographers updated estimate

The projections for the City of Baxter show that the 2035 population projection is represented by a 3.7% linear growth rate per year from the 2000 census data; approximately 207 persons per year. However, comparing the projected growth from the 2010 census data to the 2035 population projection is represented by a 2.7% linear growth rate per year; approximately 208 persons per year.

Historical AADT

Based on review of historical AADT's from 1996 to 2015 for the surrounding roadway network in the Baxter area, many of the roadways have seen fairly stagnant growth during the last 10 years or more.

The attached Exhibit 1 includes the approximate 20-year historical AADT data, a historical linear regression to the design year 2038, and a comparison to the previous 2025 forecast ranges. All growth rates in the tables are linear rates based on the 2001/2002 AADT information.

Based on the historical AADT information, while many roadways did have fluctuating demands over the previous 20-year time frame, the overall linear growth rates out to 2038 range from approximately 1% to 2% per year from the 2001 AADT information.

The historical trend projected out to 2038 is almost always lower than the previous 2025 forecast range. There are two locations along TH 371 where the trend is higher than the 2025 Low Range forecasts but does fall within the 2025 High Range forecasts.

DRAFT

Forecast Assessment

The 2005 study's 2025 forecasts, in the vicinity of the current project's study intersections, were expected to grow by approximately 3% to 4% per year from 2001 to 2025 for the low range forecasts; MnDOT had previously approved using the lower range ADT forecasts as part of the previous ICE evaluation.

The low range 2025 forecasts are typically within 15% of the historical project 2038 ADT demands. As traffic forecasting is sensitive too many contributing factors, typical forecast results are acceptable within a deviation of plus or minus 15%. The 2025 forecast demands fall within this generally accepted deviation of 15%.

Therefore, using linear regression it was evaluated that the previous 2025 forecasts demands, represented by an approximate 3% to 4% growth from 2001, are representative of 2038 traffic forecast demands represented by an approximate 2% growth per year from 2001.

Moving forward, the previous 2025 forecast traffic demands will be used as 2038 design year forecast demands and utilized in the current Cypress Drive Extension Project.

VALIDATION OF PREVIOUS ICE REPORT

The conclusion to utilize the previous 2025 forecast demands as the current design year 2038 forecasts for this project provides confidence in the previous design and operations analysis for the Cypress Drive at TH 210 and Excelsior Road to still provide acceptable operations through 2038.

We then conclude that the previously approved ICE Report, *TH 210 at Cypress Drive and Excelsior Road at Cypress Drive* dated June 8, 2009, is still valid as previously approved by all necessary entities.

FORECAST TURNING MOVEMENTS FOR ICE REPORT

As part of the current project, 13-hour intersection turning movement counts were collected in October of 2016 along Cypress Drive at both College Road and Industrial Park Road. This data was used as a starting point to forecast the intersection demands to the 2038 forecast year.

While not exclusively counted, the intersection of Cypress Drive and Greenwood Road was included in the forecasting effort to account for the imbalance of existing demands between College Road and Industrial Park Road.

The previous ICE study included 2025, now representing 2038, turning movement forecasts at Cypress Drive and TH 210. This information was utilized to understand the demands coming from the Cypress Drive extension south of the BNSF railroad tracks and ultimately balanced through to the current study intersections. This demand was ultimately balanced at the Cypress Drive and Industrial Park Road intersection and through the College Road intersection.

Cypress Drive south of College Road

The previous forecasting work did not include a forecast ADT on Cypress Drive south of College Road. North of College Road, Cypress Drive has a forecast ADT of 15,000 vehicles per day (vpd) and College Road has a forecast ADT of 15,000 vpd as well.

To develop a forecast ADT for the segment of Cypress Drive, south of College Road, the surrounding roadway network and forecast demands were considered. While the extended Cypress Drive would operate as a parallel reliever route for TH 371, the segment south of College Road ends at CSAH 48 and provides primarily local connectivity. The Cypress Drive connection would also allow College Road to operate as a quasi-parallel reliever route for TH 210 for local east-west traffic.

DRAFT

There appears to be two roadway configurations that would limit the overall use of Cypress Drive south of College Road.

The first limiting factor is the orientation of TH 371 between CSAH 48 and College Road. Traffic using Cypress Drive as a reliever to TH 371 would likely choose to enter or exit Cypress Drive near College Road rather than near CSAH 48. Southbound traffic, from north of TH 210, would find more capacity and quicker access to TH 371 or Brainerd via College Road rather than continuing to CSAH 48. Northbound traffic, from south of CSAH 48, would use CSAH 48 to access Brainerd and likely use College Road to access Cypress as it is a shorter path. This would limit the regional use of the southerly segment of Cypress Drive.

The second limiting factor is that the Mississippi River restricts the overall connectivity of the roadway network between Baxter and Brainerd. Cypress Drive ultimately ends at CSAH 48, which generally parallels the river from TH 371 into Brainerd. Longer, regional type trips would therefore likely use either College Road or CSAH 48.

The forecast ADT along CSAH 48 is only expected to reach approximately 9,000 vpd west of Cypress Drive and approximately 10,000 north of College Road. This tends to keep the forecast ADT along Cypress Drive to be approximately the same or less than these values.

Therefore, for purposes of this project, a 2038 forecast of 10,000 vpd along Cypress Drive, between College Road and CSAH 48 was used to develop the intersection turning movement forecasts. This value is within the functional range of a roadway with single through lanes in each direction. Intersection turn lanes may become necessary along the corridor to improve both safety and operations; therefore a 3-lane roadway should be considered with any future project.

Cypress Drive at College Road

Utilizing existing and forecast ADT information and the forecast turning movements at Cypress Drive/TH 210, the forecast demands along Cypress Drive were balanced all the way through the College Road intersection. The resulting forecast turning movement data can be found in the forthcoming ICE Report for the Cypress Drive at College Road and Industrial Park Road.

Southbound Cypress Drive approaching College Road will have approximately 510 vehicles during the PM peak hour; 460 more vehicles than the existing conditions. The southbound traffic was distributed nearly evenly to the east, south, and west.

Northbound Cypress Drive departing from College Road will have approximately 730 vehicles during the PM peak hour; 685 more vehicles than the existing conditions. The traffic entering Cypress Drive was distributed with approximately 30% from both eastbound and westbound College Road and approximately 40% from south of College Road.

College Road has an existing AADT of 9,600 vpd and a 2038 forecast of 15,000 vpd. This information, along with the turning movement volume increases from the Cypress Drive extension, was used to develop the eastbound and westbound turning demands at the study intersection.

The additional eastbound trips drawn to the Cypress Drive intersection were added to the eastbound approach as left and right turn movements; the eastbound through demands are only increased due to background growth and not the roadway changes.

The additional westbound trips drawn to the Cypress Drive intersection would include potential routing changes as many westbound through trips could be destined to northbound TH 371. Therefore, an assumed proportion of approximately 1/3 of the new Cypress Drive trips were rerouted from the westbound through movements to the

DRAFT

north; all westbound College Road demands heading south on Cypress Drive were considered new trips and not rerouted.

CONCLUSION

In reviewing the previous traffic forecasting and traffic operations work completed in the area, it was determined that the previous traffic forecasts included significant growth expectations that have not yet been realized. The resultant daily forecasts for 2025 are realistically representative of the currently projected 2038 design year based on updated historical AADT information and engineering judgement.

The previously approved ICE report for the Cypress Drive intersections with TH 210 and Excelsior Road are therefore still valid.

The forecasts for the Cypress Drive analysis south of TH 210 were utilized in the new 2016 ICE Report for the intersections of Cypress Drive at College Road and Industrial Park Road.

gtj
Attachments:
Exhibit 1 – Cypress Drive Project Layout
Exhibit 2 – Historical and Forecast AADT
2009 ICE Report – TH 210 at Cypress Drive and Excelsior Road at Cypress Drive (Includes 2005 Forecast Study)
c: Scott Hedlund, SEH
Mike Kotila, SEH
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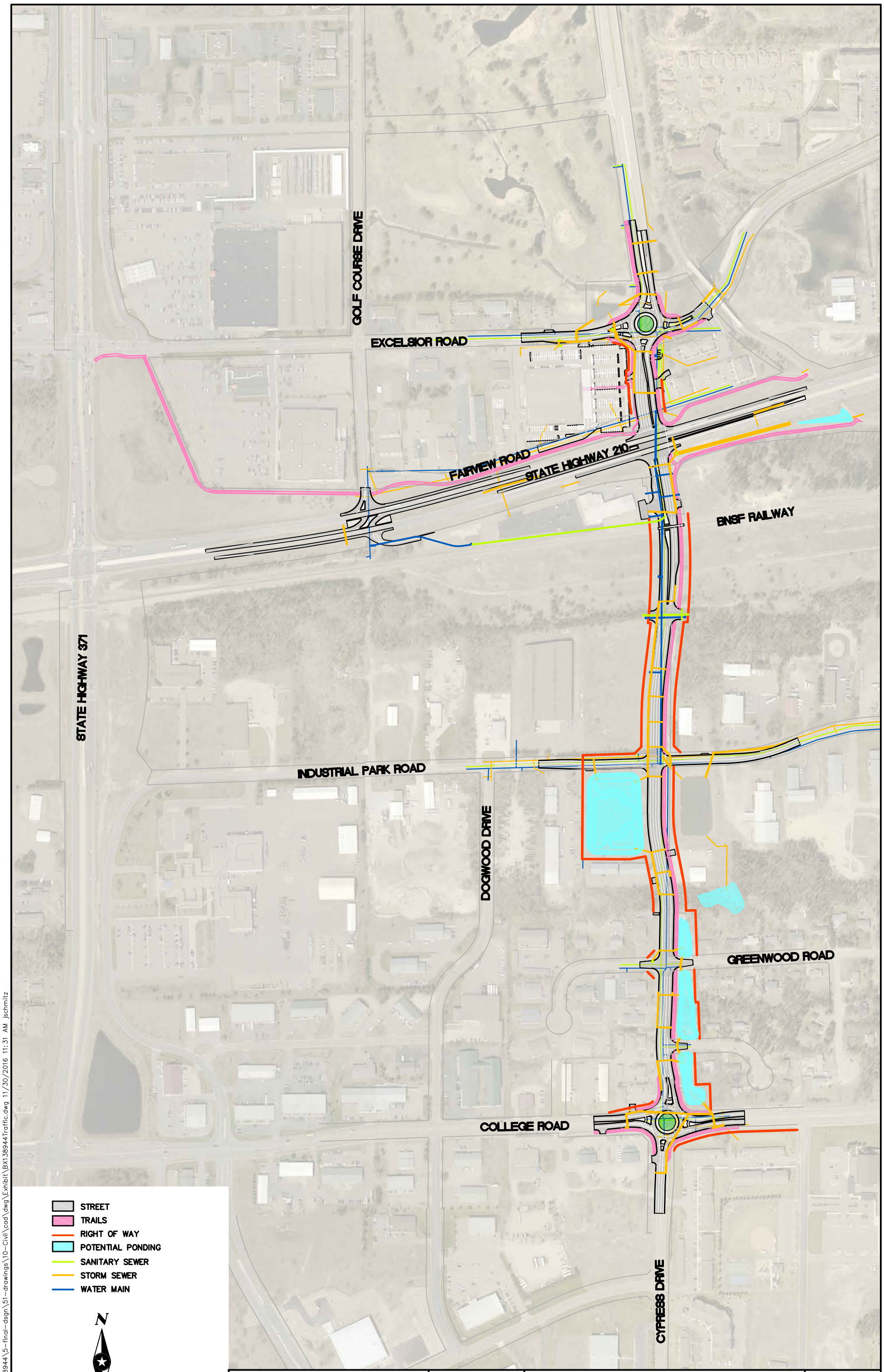

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BAXTE138944

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12/07/2016

CYPRESS DRIVE
PRELIMINARY LAYOUT
BAXTER, MINNESOTA

EXHIBIT
NO. 1

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Exhibit 2
Historical AADT/Forecast Data

EAST - WEST ARTERIAL ROUTES

Roadway	Description	Historical AADT Information[1]														Historical Linear Regression		2025 Forecast Data			
																		Low Range		High Range	
		1996	1997	1998	2000	2001	2002	2004	2005	2006	2007	2009	2011	2013	2015	2038	Rate[2]	2025	Rate[2]	2025	Rate[2]
Excelsior Road	West of TH 371		1,950			3,600			3,300		4,250		4,000		3,800	6,400	2.1%	8,000	5.1%	11,100	8.7%
Excelsior Road	East of TH 371					6,800			7,100		8,200		8,000		7,600	9,500	1.1%	13,300	4.0%	16,600	6.0%
Excelsior Road	East of Golf Course Road		4,300			6,000			10,200		9,000		8,100		7,200	12,800	3.1%				
Excelsior Road	East of Cypress Drive		4,300			6,000			7,800		7,300		7,100		6,600	10,400	2.0%	11,800	4.0%	14,600	6.0%
TH 210	West of TH 371	11,500		11,800	11,400		14,500	15,700		15,900		13,800	12,400	12,000	16,900	18,200	0.7%				
TH 210	East of TH 371	21,300		25,600	20,600		20,600	21,500		20,000		20,000	19,900	21,300	22,800	19,200	-0.2%				
TH 210	West of 4th Street (Brainerd)	27,800		28,800	28,200		26,000	26,000		24,500		24,500	26,000	28,800	29,500	26,900	0.1%	35,000	1.5%	45,000	3.2%
CSAH 48	East of TH 371		3,400			2,350			5,800		5,300		4,500		4,750	7,700	6.2%	8,800	11.4%	11,000	15.3%
College Road	West of CSAH 48					7,000			11,000		11,400		9,600		9,600	12,900	2.3%	15,000	4.8%	20,000	7.7%
College Road	East of CSAH 48		7,200			9,000			13,500		13,100		11,700		11,000	18,000	2.7%				

NORTH - SOUTH ARTERIAL ROUTES

Roadway	Description	Historical AADT Information[1]														Historical Linear Regression		2025 Forecast Data			
																		Low Range		High Range	
		1996	1997	1998	2000	2001	2002	2004	2005	2006	2007	2009	2011	2013	2015	2038	Rate[2]	2025	Rate[2]	2025	Rate[2]
TH 371	North of Business 371					8,600		8,900		9,600		10,100	9,900	10,500	10,900	14,500	1.9%	11,000	1.2%	14,000	2.6%
TH 371	North of CSAH 48					10,500		10,500		11,500		11,100	10,500	11,200	12,000	13,200	0.7%				
TH 371	South of TH 120					19,900						20,700	20,300	20,400	21,100	22,300	0.3%	22,000	0.4%	28,000	1.7%
TH 371	North of TH 120	18,900		21,400	22,000		25,200	27,000		25,000		27,000	26,000	27,800	30,500	40,800	1.7%				
TH 371	North of Excelsior Road					22,000							28,000	24,800	24,500	31,300	1.1%	35,000	2.5%	45,000	4.4%
TH 371	South of CSAH 49	17,500		19,700	18,300		17,800	20,200		23,000		21,900	20,800	19,700	21,500	25,800	1.2%	30,000	3.0%	39,000	5.2%
CSAH 48	South of College Road		4,100			4,500			5,300		5,600		5,000		4,400	5,600	0.7%				
CSAH 48	North of College Road		6,600			5,800			4,100		4,050		3,800		4,050	3,700	-1.0%	10,000	3.0%	12,800	5.0%
CSAH 48	Norht of Industrial Park Road		3,700			4,000			4,150		4,100		4,550		4,950	6,300	1.6%				
4th Street	South of TH 120		7,900			8,300			9,200		9,300		8,900		9,300	11,200	0.9%				
4th Street	North of TH 120		8,800			9,600			10,500		11,500		10,800		11,300	14,800	1.5%				

Data not available

xx Linear Regression/Assumed ADT for Rate Calculations

2025 Forecasts Higher than 2038 Regression

NOTES:
(1) Historical AADT Data from MnDOT Traffic Flow Mapping
(2) Linear Growth Rate from 2001/2002 AADT Data

Intersection Control Evaluation (ICE)

TH 210 at Cypress Drive and Excelsior Road at Cypress Drive

SEH No. A-BAXTE0502.00

June 8, 2009

SEH

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TH 210 at Cypress Drive and Excelsior Road at Cypress Drive
Intersection Control Evaluation (ICE)

SEH No. A-BAXTE0502.00

June 8, 2009

Proposed Letting Date: 2010 / 2011

Work Identification: Roadway Construction and Signal Installation

I hereby certify that this 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.

George P. Calebaugh

George Calebaugh, PE

Date: 06/08/09 Lic. No.: 15153

Reviewed by: Scott P. Hedlund 06/08/09

Scott Hedlund, PE Date

REVIEWED:

Date

Tom Dumont 6/15/2009

Tom Dumont, District Traffic Engineer Date

Kelvin Howieson 6/26/09

Kelvin Howieson, District State Aid Engineer Date

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Warrant Analysis
Benshoof & Associates, Inc. Cypress Drive and CSAH 48 Study

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Intersection Control Evaluation (ICE)

TH 210 at Cypress Drive and Excelsior Road at Cypress Drive

Prepared for Minnesota Department of Transportation District 3

1.0 Background and Purpose

The City of Baxter, Minnesota has a long-range plan to create a north/south arterial roadway along the Cypress Drive alignment between CSAH 49 and CSAH 48. In 2009, the City proposes to construct a segment of the planned Cypress Drive from Excelsior Road to the BNSF railroad tracks south of TH 210 (see Figure 1). The planned project would create a new at-grade intersection at TH 210 and Cypress Drive. The City of Baxter is working with Mn/DOT to plan and develop final layouts for the TH 210/Cypress Drive intersection.

In developing the Cypress Drive project, the appropriate type of intersection control needs to be determined for the TH 210/Cypress Drive intersection and the Cypress Drive/Excelsior Road intersection. The proposed Cypress Drive/Excelsior Road intersection is located approximately 400 feet north of the proposed TH 210/Cypress Drive intersection. Due to the close spacing between the intersections, the traffic operations at one intersection will likely be impacted by traffic operations at the other intersection.

The purpose of this study is to determine the most appropriate type of traffic control for the TH 210/Cypress Drive intersection and the Cypress Drive/Excelsior Road intersection. The Mn/DOT Intersection Control Evaluation (ICE) process will be used to investigate what type of traffic control should be provided. The investigation includes analyzing traffic operations at both intersections during the PM peak hour for forecast 2009 and forecast 2025 traffic conditions.

2.0 Description of the Location

The two intersections included in this study will be created as part of the proposed Cypress Drive construction project in Baxter, Minnesota. The project includes not only construction of Cypress Drive between Excelsior Road and the BNSF railroad tracks, but also reconstruction of Excelsior Road between Cypress Drive and Baxter Drive, elimination of the traffic signal at the TH 210/Golf Course Drive intersection, and revision of the TH 210/Golf Course Drive intersection to a ¾ access intersection.

Land use along Cypress Drive, Excelsior Road, and TH 210 within the study area is primarily commercial. The City of Baxter is located in central Minnesota and is situated in the west central section of Crow Wing County. The 2007 United States Census Bureau population estimate for the City of Baxter is 8,096.

3.0 Existing Conditions

Currently, TH 210 is a 4-lane divided highway through the City of Baxter, and no access to Cypress Drive is provided from TH 210. TH 210 is a major east-west route that extends from the North Dakota state border through Minnesota to the Wisconsin state border. TH 210 is functionally classified as a principal arterial and designated as a Medium Priority Interregional Corridor (IRC).

Locally and regionally, TH 210 connects citizens and communities to jobs, retail centers, and recreational/tourist destinations. TH 210 serves local traffic, regional traffic, and interregional traffic. TH 210 is one of the few roadways that provide a Mississippi River crossing in the area. There are high levels of truck traffic along the corridor and the speed limit through this area is 45 mph.

There are several signalized intersections along TH 210 in the study area and these signals are interconnected and coordinated. The nearest signal east of the proposed Cypress Drive intersection is at the TH 210/Baxter Drive intersection, which is approximately 2,400 feet east of Cypress Drive. The nearest signal west of the proposed Cypress Drive intersection is at the TH 210/Golf Course Drive intersection, which is located approximately, 1,300 feet west of the proposed Cypress Drive intersection.

There is also a signal at the TH 210/TH 371 intersection, located approximately 2,700 feet west of the proposed Cypress Drive intersection. (Since the signal at TH 210/Golf Course Drive is proposed to be eliminated under the Cypress Drive project, the TH 371 signal will become the nearest signalized intersection west of Cypress Drive.)

Currently, the segment of Cypress Drive proposed for construction does not exist. The City’s Comprehensive Plan indicates this segment of Cypress Drive, as well as Cypress Drive between CSAH 49 and CSAH 48, is proposed to be a minor arterial. Under the proposed Cypress Drive project, this section of Cypress Drive will be constructed as a 4-lane divided roadway. The expected speed limit for Cypress Drive is 30 mph.

The existing average daily traffic (ADT) volumes for roadways in the study area are shown in Figure 2. The existing ADT data is from 2007 Mn/DOT Traffic Volume Maps.

4.0 Future Conditions

It is proposed that TH 210 be a 4-lane divided roadway with single right and left turn lanes on TH 210 at Cypress Drive. Cypress Drive is proposed to be a 4-lane divided urban roadway with single left and right turn lanes for the northbound approach, and dual left and a single right turn lane for the southbound approach of Cypress Drive to TH 210. Excelsior Road will be a 2-lane undivided roadway within the study area.

BNSF railroad tracks are located south of TH 210 and run parallel to TH 210. The long-range plan is to extend Cypress Drive south of the railroad tracks. Currently, an at-grade crossing is being planned for Cypress Drive at the tracks.

Paul Bunyan State Trail is a 100-mile recreational trail that connects Baxter, to Bemidji. The trailhead is located approximately 900 feet east of the proposed TH 210 and Cypress Drive intersection and the trail runs north/south parallel to Cypress Drive within the study area. Currently, this trail has a below grade crossing at TH 210. Therefore, pedestrian and bicyclist activity from the Paul Bunyan Trail will not be a concern for the TH 210/Cypress Drive intersection.

It is anticipated the TH 210/Cypress Drive intersection will be completely constructed in 2009. Though the southerly extension of Cypress Drive will not be completed as part of this project, the City anticipates constructing Cypress Drive south of the railroad tracks within the next five years. The analysis for the forecast year 2009 conditions will examine the traffic operations with and without the Cypress Drive extension south of the railroad tracks.

Along with Cypress Drive project, the traffic signal at TH 210/Golf Course Drive intersection, which is located approximately 1,300 feet west of the proposed TH 210/Cypress Drive intersection, will be removed. The Golf Course Drive intersection at TH 210 is proposed to be converted to a ¾ access intersection. It is anticipated that the Golf Course Drive intersection modifications will be completed in 2009.

4.1 Traffic Forecasts

2025 traffic forecasts were developed by Benshoof & Associates, Inc. for the City of Baxter. These forecasts are summarized in a report titled “Roadway System Plan for City of Baxter and Corridor Plan for Cypress Drive and CSAH 48”, dated April 2005 (see Appendix B). The report presents forecast 2025 daily traffic volumes along TH 210, Cypress Drive, and Excelsior Road.

The study evaluated two roadway system options, Option A and Option B. The recommended roadway system option, Option A included the extension of Cypress Drive across the railroad tracks. Option B was not recommended from the study and this option did not include the Cypress Drive extension across the railroad tracks. The Option A 2025 traffic forecasts for TH 210 is 35,000 to 45,000 vehicles per day (vpd), while Cypress Drive is projected to have between 16,500 to 20,500 vpd north of Excelsior Road and 15,000-20,000 vpd south of TH 210 and Excelsior Road is projected to have between 11,800 to 16,600 vpd. Option B 2025 forecasts that differed from Option A 2025 forecasts was just for Cypress Drive north of Excelsior Road, which is estimated to have between 15,000-19,000 vpd. After discussions with Mn/DOT, it was determined the lower range of these projections should be used in developing traffic forecasts for the study analysis. This is compatible with other studies Mn/DOT has done in this area.

Forecast 2009 and 2025 turning movement volumes (see Figure 4 and Figure 5) at the TH 210/Cypress Drive intersection and Cypress Drive/Excelsior road intersection were estimated using Benshoof & Associates traffic projections, along with estimates of turning movement percentages. Estimated turning movement percentages were based upon anticipated developments and trip attraction to existing developments in Baxter and surrounding communities.

Benshoof & Associates, Inc. estimates traffic in the vicinity of the study intersections is expected to grow by about 3-percent per year. Therefore, this percentage was used to drop back the forecasts to estimate the year 2009 traffic conditions.

Option A forecast 2009 traffic was converted to 24-hour traffic volumes based on national travel data from the National Cooperative Highway Research Program (NCHRP) 365, Table 42. The 24-hour traffic distribution from this report is shown in Table 1. The hourly distribution breakdown in Table 1 was used to estimate the 24-hour approach count for the 2009 traffic conditions for both study intersections. Table 2 shows the estimated 24-hour approach volumes for TH 210 and Cypress Drive and Table 3 shows the estimated 24-hour approach volumes for Excelsior Road and Cypress Drive for the forecast 2009 traffic conditions.

Table 1
NCHRP 365, Table 42 24-hour distribution

Hour	Distribution
Midnight	0.30%
1:00 a.m.	0.20%
2:00 a.m.	0.30%
3:00 a.m.	0.20%
4:00 a.m.	0.30%
5:00 a.m.	0.80%
6:00 a.m.	2.60%
7:00 a.m.	6.20%
8:00 a.m.	5.40%
9:00 a.m.	4.30%
10:00 a.m.	4.70%
11:00 a.m.	5.20%
Noon	6.60%
1:00 p.m.	5.70%
2:00 p.m.	6.90%
3:00 p.m.	8.90%
4:00 p.m.	8.20%
5:00 p.m.	8.80%
6:00 p.m.	7.10%
7:00 p.m.	5.80%
8:00 p.m.	4.30%
9:00 p.m.	3.40%
10:00 p.m.	2.10%
11:00 p.m.	1.50%

Table 2 TH 210 and Cypress Drive Forecast 2009 Approach Volumes				
	Cypress Drive		TH 210	
	Southbound	Northbound	Eastbound	Westbound
Midnight	15	14	33	33
1:00 a.m.	10	9	22	22
2:00 a.m.	15	14	33	33
3:00 a.m.	10	9	22	22
4:00 a.m.	15	14	33	33
5:00 a.m.	41	37	87	87
6:00 a.m.	134	122	284	284
7:00 a.m.	319	290	676	676
8:00 a.m.	278	252	589	589
9:00 a.m.	221	201	469	469
10:00 a.m.	242	220	513	513
11:00 a.m.	267	243	567	567
Noon	339	308	720	720
1:00 p.m.	293	266	622	622
2:00 p.m.	355	322	752	752
3:00 p.m.	458	416	971	971
4:00 p.m.	422	383	894	894
5:00 p.m.	452	411	960	960
6:00 p.m.	365	332	774	774
7:00 p.m.	298	271	633	633
8:00 p.m.	221	201	469	469
9:00 p.m.	175	159	371	371
10:00 p.m.	108	98	229	229
11:00 p.m.	87	79	185	185
Total	**5,141**	**4,674**	**10,905**	**10,905**

Table 3
Excelsior Road and Cypress Drive Forecast 2009 Approach Volumes

	Cypress Drive		Excelsior Road	
	Southbound	Northbound	Eastbound	Westbound
Midnight	15	15	14	14
1:00 a.m.	10	10	10	10
2:00 a.m.	15	15	14	14
3:00 a.m.	10	10	10	10
4:00 a.m.	15	15	14	14
5:00 a.m.	41	41	38	38
6:00 a.m.	134	134	124	124
7:00 a.m.	319	319	296	296
8:00 a.m.	278	278	258	258
9:00 a.m.	221	221	205	205
10:00 a.m.	242	242	224	224
11:00 a.m.	267	267	248	248
Noon	339	339	315	315
1:00 p.m.	293	293	272	272
2:00 p.m.	355	355	329	329
3:00 p.m.	458	458	425	425
4:00 p.m.	422	422	391	391
5:00 p.m.	452	452	420	420
6:00 p.m.	365	365	339	339
7:00 p.m.	301	301	277	277
8:00 p.m.	221	221	205	205
9:00 p.m.	175	175	162	162
10:00 p.m.	108	108	100	100
11:00 p.m.	87	87	81	81
Total	**5,141**	**5,141**	**4,774**	**4,774**

5.0 Analysis of Alternatives

5.1 Warrant Analysis

The Minnesota Manual on Uniform Traffic Control Devices (MnMUTCD) provides guidance about when it may be appropriate to use all-way stop or signal control at an intersection. This MnMUTCD guidance is provided in the form of “warrants”, or criteria, for when all-way stop or signal control may be justified.

Though all-way stop or signal control should not be installed at an intersection unless a MnMUTCD warrant is met, meeting a warrant at an intersection does not in itself require the installation of that particular type of control. Under the Mn/DOT ICE process, roundabouts are considered to be warranted if traffic volumes meeting the criteria for either all-way stops or traffic signals. An engineering study that considers factors, including warrants, should be performed to determine the “best” type of control at an intersection.

TH 210 is a designated IRC, and the use of stop signs on an IRC is discouraged. Therefore, the warrant analysis for all-way stop control at the TH 210/Cypress Drive intersection was not performed. The warrant analysis for the TH 210/Cypress Drive intersection only investigated if signal warrants were met. Based on the forecast 2009 traffic volumes, one or more traffic signal warrants from the MnMUTCD were met for the TH 210/Cypress Drive intersection. For this intersection, traffic volume requirements from the MnMUTCD warrants were reduced to 70 percent of their stated values, as allowed when the 85th percentile of the major roadway exceeds 40 mph. The posted speed limit of 45 mph on TH 210 allows the use of this reduction factor.

Signal warrants were only analyzed at the Cypress Drive/Excelsior Road intersection. All-way stop control was not considered for this intersection, since the traffic operations analysis (see Section 5.3) indicated that all-way stop control was not a long-term solution at the intersection. The all-way stop control created excessive delays and queues under 2025 traffic conditions. Based on the forecast 2009 traffic volumes, one or more traffic signal warrants from the MnMUTCD were met for the Cypress Drive/Excelsior Road intersection.

Table 4 provides the traffic warrant summary for both study intersections using the 2009 traffic volumes. It should be noted the traffic signal warrant analysis includes removal of 100% of the right turning traffic from the minor leg since this movement typically is able to enter the traffic stream with minimal conflicts. The traffic signal warrant analysis sheets and the analysis traffic volumes for the forecast year 2009 are shown in Appendix A. Forecast 2025 warrants were not analyzed since warrants are met under forecast 2009 traffic conditions.

Table 4
Signal Warrant Analysis – Forecast 2009 Traffic Volumes

MMUTCD Warrant	Hours Required to be Met	Cypress Drive & TH 210*	Cypress Drive & Excelsior Road*
		Warrant Met (Hours Met)	Warrant Met (Hours Met)
Warrant 1 Eight Hour Vehicle Volumes	-	YES	YES
Warrant 1A Minimum Vehicular Volume	8	YES (13)	YES (8)
Warrant 1B Interruption of Continuous Traffic	8	YES (14)	No (2)
Warrant 1 A & B Combination of Warrants	8	YES (14)	No (4)
Warrant 2 Four Hour Volumes	4	YES (13)	YES (6)
Warrant 3 Peak Hour	1	YES (12)	YES (2)
Warrant 7 Crash Experience	-	-	-

*Warrant analysis was evaluated with removal of 100% of right turning traffic from side streets

5.2 Safety Analysis

Mn/DOT District 3 average rates were used for the safety analysis, since actual existing crash rates are not available for the study intersections. Mn/DOT District 3 average rates are based on crash data from the period 2004 to 2006 and are shown in Table 5. The District 3 average rate for urban, thru/stop control is 0.40 crashes/MEV for urban, thru/stop control and is 1.10 for traffic signal control on a high volume (>15,000 ADT) and high-speed (greater than or equal to 45 mph) roadway. Roundabouts typically reduce signalized intersection crashes by half, thus the roundabout crash rate was assumed to be ½ of the traffic signal crash rate.

Table 5
Mn/DOT District 3 Average Crash Rates

Traffic Control	Crash Rate (Crashes/Million Entering Vehicles)
Thru/Stop	0.40
Traffic Signal	1.10
Roundabout*	0.55

*Roundabout crash rate assumed to be ½ of the traffic signal crash rate

Future crash estimates were determined by applying the Mn/DOT District 3 average crash rates to the forecast 2009 and 2025 average entering traffic for the study intersections. The highest crash estimate was for signals for each of the study intersections. Table 6 shows the projected number of total annual crashes for forecast year 2009 conditions and Table 7 shows the projected number of total annual crashes for forecast year 2025 conditions.

Table 6
Forecast 2009 Annual Crash Estimate

Forecast Year	Total Annual Crash Estimates by Control Type			Intersection Entering Volume
	Thru/Stop	Traffic Signal	Roundabout	
TH 210 and Cypress Drive	5	13	N/A	31,625
Excelsior Road and Cypress Drive	3	8	4	19,800

Table 7
Forecast 2025 Annual Crash Estimate

Forecast Year	Total Annual Crash Estimates by Control Type			Intersection Entering Volume
	Thru/Stop	Traffic Signal	Roundabout	
TH 210 and Cypress Drive	7	20	N/A	50,750
Excelsior Road and Cypress Drive	4	12	6	29,050

5.3 Traffic Operations Analysis

Traffic operations analyses were conducted for the study intersections to determine the level of service (LOS), delay, and queuing information for the forecast 2009 and 2025 PM peak hour conditions. LOS is a qualitative rating system used to describe the efficiency of traffic operations at an intersection. Six LOS are defined, designated by letters A through F. LOS A represents the best operating conditions (no congestion), and LOS F represents the worst operating conditions (severe congestion). It was assumed that LOS D or better represents acceptable operating conditions for the Baxter area.

The capacity analysis was conducted for the forecast 2009 and 2025 PM peak hour. AM peak hour traffic volumes are significantly lower than PM peak hour traffic volumes in commercial areas. Since the study area is predominately commercial in nature, AM peak hour traffic volumes were not considered in this analysis.

The operations analysis was conducted in two stages, the first stage examined varying types of control at each study intersection on an individual level and the second stage examined the effective control types jointly. Syncho/SimTraffic 7.0 software package was used for the stop control and signal control intersection analysis, while RODEL and VISSIM software was used for the roundabout analysis.

At the TH 210/Cypress Drive intersection, all-way stop control and roundabout control were not considered acceptable types of intersection control and were not evaluated. TH 210 is a designated IRC and stop sign control is discouraged on IRCs. The TH 210 corridor has a coordinated signal system and a posted speed limit of 45 mph, and Mn/DOT District 3 is concerned about using roundabout control on TH 210 under these conditions. Therefore, the traffic operations analysis investigated signal control and two-way stop control at the TH 210/Cypress Drive intersection. Mn/DOT's current corridor timings were utilized to ensure green bands along TH 210 were preserved.

Table 8 show results for the traffic operations analysis for the TH 210/Cypress Drive intersection under forecast 2009 and forecast 2025 PM peak hour traffic conditions for the two-way stop control and signal control. Forecast 2009 conditions for the traffic signal control were evaluated with and without the Cypress Drive extension across the railroad tracks. The two-way stop control analysis indicates that two-way (northbound and southbound) stop control will not operate effectively under forecast 2009 and forecast 2025 traffic conditions. The signalized control analysis shows an overall intersection LOS D under forecast 2009 volumes with the Cypress Drive extension across the railroad tracks and a LOS C under forecast 2009 volumes without the Cypress Drive railroad crossing. For the remainder of the analysis, only the traffic forecasts assuming the southern extension across the tracks will be evaluated since this is the worst-case scenario for opening year traffic levels. The intersection operates at an overall LOS D under forecast 2025 conditions.

Some movements do show LOS E and F conditions. These movements were reviewed using SimTraffic and were generally found to be operating adequately (vehicles typically cleared the intersection in one signal cycle and queues did not exceed storage capacity.). One exception to this was the southbound left turn movement. The queues for this southbound left turn movement occasionally exceeded the storage capacity of the left turn lanes, though this movement typically did clear the intersection in one signal cycle.

The long signal cycle length (200 seconds) used by Mn/DOT for the coordinated signal system along the TH 210 corridor is the main reason behind the LOS E and F operation. Many of the movements with the poor LOS have relatively low volumes, which mean they receive only a small amount of green time out of the 200-second signal cycle. This, in turn, means these movements generally have an average wait time for their green light of more than 55 seconds (LOS E threshold) or 80 seconds (LOS F threshold). Once these movements receive their green light, they clear the intersection in one signal cycle. Since these movements clear the intersection in one signal cycle, the long delays these vehicles experience are not considered a traffic operations problem that needs mitigation.

At the Cypress Drive/Excelsior Road intersection, two-way stop, all-way stop, signal control, and roundabout control were all considered an acceptable type of intersection control and were evaluated. The analysis shows that two-way eastbound/westbound stop control does not operate effectively for the forecast 2009 and 2025 traffic conditions. All-way stop control operates effectively for 2009 forecast conditions but does not operate effectively for the forecast 2025 conditions. Traffic signal control analysis indicates adequate operations for all intersection movements through the forecast year 2025 traffic conditions. Roundabout control analysis also shows good operations for all intersection approaches through the forecast year 2025 traffic conditions. Table 9 shows the analysis results for the two-way stop control, signal control, and roundabout control for both the forecast year 2009 and 2025 traffic conditions.

Table 8
TH 210 and Cypress Drive PM Peak Hour Traffic Operations Results

Control Type	Forecast Year	Approach	Demand Volumes (Veh/Hour)				Delay (s/veh)						LOS By Approach		LOS By Intersection		Through	Left Turn		Right Turn	
							Left		Thru		Right										
			Left	Thru	Right	Total	Delay	LOS	Delay	LOS	Delay	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	95th % Queue	Storage	95th % Queue	Storage	95th % Queue
Northbound/Southbound Stop Control	2009	EB	50	880	50	980	10.6	B	0	A	0	A	0.5	A			0	500	6	330	0
		WB	100	830	50	980	11.5	B	0	A	0	A	1.2	A	91.6	F	0	500	15	500	0
		NB	40	315	65	420	+300	F	+300	F	+300	F	300.0	F			+500	280	+500	190	+500
		SB	235	140	90	465	+300	F	+300	F	228	F	286.1	F			+500	230	+500	340	315
	2025	EB	80	1420	80	1,580	16.4	C	0	A	0	A	0.8	A			0	500	21	330	0
		WB	155	1340	80	1,575	22.0	C	0	A	0	A	2.2	A	94.1	F	0	500	57	500	0
		NB	70	500	105	675	+300	F	+300	F	+300	F	300.0	F			+500	280	+500	190	+500
		SB	370	225	150	745	+300	F	+300	F	+300	F	300.0	F			+500	230	+500	340	+500
Traffic Signal Control	2009 volumes with Cypress Drive Railroad Crossing	EB	50	880	50	980	84.8	F	25.6	C	4.9	A	27.6	C			513	500	122	330	27
		WB	100	830	50	980	98.2	F	26.2	C	4.7	A	32.5	C	44.9	D	461	500	214	500	26
		NB	40	315	65	420	71.5	E	89.5	F	14.7	B	76.2	E			287	280	92	190	52
		SB	235	140	90	465	94.2	F	93.1	F	18.1	B	79.1	E			147	230	225	340	66
	2009 volumes without Cypress Drive Railroad	EB	195	775	10	980	93.2	F	16.3	B	5.9	A	31.5	C			36	500	382	330	10
		WB	10	775	195	980	95.3	F	34.2	C	3.4	A	28.7	C	34.7	C	459	500	41	500	49
		NB	4	30	6	40	90.8	F	92.6	F	44	D	85.1	F			44	280	20	190	20
		SB	285	10	125	420	69.3	E	61.6	E	9.8	A	51.4	D			17	230	240	340	65
	2025	EB	80	1420	80	1,580	100.8	F	39.0	D	14.3	B	40.9	D			900	500	103	330	16
		WB	155	1340	80	1,575	106.1	F	51.5	D	12.8	B	54.9	D	54.7	D	778	500	255	500	31
		NB	70	500	105	675	108.1	F	78.0	E	24.7	C	72.8	E			438	280	168	190	106
		SB	370	225	150	745	97.6	F	55.3	E	10.0	B	67.2	E			178	230	339	340	74

*Queue length coloring is as follows:

a. through queue is colored "pink" when queue length exceeds 500 feet

b. left turn queue is colored "red" when queue is more than the storage length and colored "pink" when queue is 95% of the storage length

c. right turn queue is colored "red" when queue is more than the storage length and colored "pink" when queue is 95% of the storage length

Table 9
Excelsior Road and Cypress Drive PM Peak Hour Traffic Operations Results

Control Type	Forecast Year	Approach	Demand Volumes (Veh/Hour)				Delay (s/veh)						LOS By Approach		LOS By Intersection		Through	Left Turn		Right Turn	
							Left		Thru		Right										
			Left	Thru	Right	Total	Delay	LOS	Delay	LOS	Delay	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	95th % Queue	Storage	95th % Queue	Storage	95th % Queue
Northbound/Southbound Stop Control	2009	EB	40	170	215	425	+300	F	32.9	D	32.9	D	58.0	F			189	300	121	300	189
		WB	100	255	70	425	+300	F	155.0	F	155.0	F	189.1	F	61.8	F	401	300	227	300	401
		NB	80	255	80	415	8.2	A	0.0	A	0.0	A	1.6	A			0	170	6	230	0
		SB	145	230	90	465	8.5	A	0.0	A	0.0	A	2.7	A			0	300	12	300	0
	2025	EB	60	240	300	600	+300	F	+300	F	+300	F	300.0	F			+500	300	+500	300	+500
		WB	130	315	80	525	+300	F	+300	F	+300	F	300.0	F	133.5	F	+500	300	+500	300	+500
		NB	130	425	130	685	9.2	A	0.0	A	0.0	A	1.7	A			0	170	9.2	230	0
		SB	225	370	150	745	10.1	B	0.0	A	0.0	A	3.1	A			0	300	26	300	0
All-way Stop Control	2009	EB	40	170	215	425	14.7	B	18.0	C	11.9	B	14.6	B			91	300	43	300	77
		WB	100	255	70	425	15.8	C	20.1	C	9.4	A	17.3	C	21.1	B	151	300	61	300	50
		NB	80	255	80	415	20.4	C	28.2	D	13.3	B	23.8	C			108	170	163	230	96
		SB	145	230	90	465	28.1	D	30.7	D	20.9	C	28.0	D			68	300	80	300	45
	2025	EB	60	240	300	600	33.1	D	105.8	F	3.9	A	47.6	E			611	300	260	300	315
		WB	130	315	80	525	108.4	F	185.0	F	89.6	F	151.5	F	100.6	F	+500	300	430	300	434
		NB	130	425	130	685	65.5	F	128.0	F	28.1	D	97.2	F			409	170	258	230	340
		SB	225	370	150	745	191.1	F	92.4	F	34.7	D	110.6	F			578	300	402	300	78
Traffic Signal Control	2009	EB	40	170	215	425	23.1	C	17.0	B	4.4	A	11.2	B			95	300	40	300	41
		WB	100	255	70	425	22.0	C	13.2	B	4.4	A	13.8	B	12.4	B	130	300	76	300	22
		NB	80	255	80	415	10.1	B	15.9	B	5.4	A	12.8	B			68	170	40	230	27
		SB	145	230	90	465	10.9	B	14.8	B	5.2	A	11.7	B			62	300	66	300	29
	2025	EB	60	240	300	600	29.8	C	21.5	C	5.0	A	14.1	B			143	300	57	300	51
		WB	130	315	80	525	32.9	C	19.4	B	4.8	A	20.5	C	15.6	B	180	300	122	300	26
		NB	130	425	130	685	11.5	B	18.4	B	5.0	A	14.5	B			109	170	58	230	33
		SB	225	370	150	745	17.2	B	16.7	B	4.5	A	14.4	B			95	300	102	300	36
																	Approach Max Queue (assumed an average vehicle of 25 feet)				
Roundabout	2009	EB	40	170	215	425	Rodel results do not include delay by movement						5.0	A			8				
		WB	100	255	70	425							6.5	A	4.0	A	25				
		NB	80	255	80	415							2.2	A			8				
		SB	145	230	90	465							2.3	A			10				
	2025	EB	60	240	300	600							7.2	A			20				
		WB	130	315	80	525							11.5	B	5.7	A	58				
		NB	130	425	130	685							2.8	A			18				
		SB	225	370	150	745							3.1	A			20				

*Queue length coloring is as follows:

a. through queue is colored "pink" when queue length exceeds 500 feet

b. left turn queue is colored "red" when queue is more than the storage length and colored "pink" when queue is 95% of the storage length

c. right turn queue is colored "red" when queue is more than the storage length and colored "pink" when queue is 95% of the storage length

The individual analysis show that signal and roundabout control should be considered at the Cypress Drive/Excelsior Road intersection and only signal control should be considered at TH 210/Cypress Drive intersection. The next step in the analysis is to determine how well each of the intersection controls operates jointly. Therefore, two options were evaluated. Scenario 1 includes signal control at both the TH 210/Cypress Drive intersection and the Cypress Drive/Excelsior Road intersection. Scenario 2 includes roundabout control at the Cypress Drive/Excelsior Road intersection and signal control at the TH 210/Cypress Drive intersection.

The Scenario 1 (two signalized intersections) analysis used VISSIM software to conduct the operations analysis. The splits and cycle length for the Cypress Drive/Excelsior Road intersection was optimized using Synchro software and the cycle length for the TH 210/Cypress Drive intersection remained 200 seconds, as predetermined based on Mn/DOT's practice. Table 10 illustrate the analysis results for Scenario 1. Forecast 2009 and 2025 conditions show an overall intersection LOS D for the TH 210/Cypress Drive intersection. There are some movements that have LOS E or F. However, as explained previously, the long delays for these movements are caused by the long cycle time employed by Mn/DOT, and these movements generally clear the intersection in one signal cycle. The southbound left turn queue length does occasionally spillback to the Excelsior Road and Cypress Drive intersection, but the queue is usually cleared in one cycle length. The Cypress Drive/Excelsior Road intersection operates at an overall LOS B and all movements operate at LOS D or better for both 2009 and 2025 forecast traffic conditions.

For Scenario 2 (roundabout control at Cypress Drive/Excelsior Road intersection), VISSIM software was used to conduct the operations analysis. The cycle length for the TH 210/Cypress Drive intersection remained 200 seconds as predetermined by Mn/DOT's practice. Table 11 illustrates the analysis results for Scenario 2. Forecast 2009 and 2025 conditions show an overall intersection LOS D for the TH 210/Cypress Drive intersection. There are some movements that have LOS E or F. However, as explained previously, the long delays for these movements are caused by the long cycle time employed by Mn/DOT, and these movements generally clear the intersection in one signal cycle. The southbound left turn queue length does occasionally spillback to the Excelsior Road and Cypress Drive intersection but the queue is usually cleared in one cycle length. The roundabout controlled intersection for Excelsior Road and Cypress Drive operates at an overall LOS A for 2009 traffic conditions and LOS B for 2025 traffic conditions.

Table 10
Scenario 1 PM Peak Hour Traffic Operations Results
(Excelsior Road/Cypress Drive Signal Control)

Forecast Year	Intersection	Approach	Demand Volumes (Veh/Hour)				Delay (s/veh)						LOS By Approach		LOS By Intersection		Through		Left Turn			Right Turn		
							Left		Thru		Right													
			Left	Thru	Right	Total	Delay	LOS	Delay	LOS	Delay	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Max Queue	Average Queue	Storage	Max Queue	Average Queue	Storage	Max Queue	Average Queue
2009	TH 210 and Cypress Drive (Signal Control)	EB	50	880	50	980	97.2	F	45.1	D	6.6	A	45.8	D			598	126	500	137	27	330	35	0
		WB	100	830	50	980	92.4	F	41.0	D	4.8	A	44.4	D	44.1	D	498	104	500	206	48	500	34	0
		NB	40	315	65	420	62.8	E	33.6	C	8.3	A	32.4	C			223	36	280	110	15	190	52	1
		SB	235	140	90	465	83.2	F	22.9	C	6.9	A	50.3	D			98	13	230	253	71	340	69	1
	Excelsior Road and Cypress Drive (Signal Control)	EB	40	170	215	425	33.1	C	20.6	C	5.8	A	14.3	B			151	18	300	86	8	300	69	3
		WB	100	255	70	425	35.9	D	21.8	C	4.5	A	22.3	C	14.5	B	217	28	300	133	20	300	40	1
		NB	80	255	80	415	10.9	B	13.5	B	5.4	A	11.4	B			143	10	170	135	4	230	68	1
		SB	145	230	90	465	11.4	B	12.3	B	4.1	A	10.4	B			116	10	300	117	6	300	40	1
2025	TH 210 and Cypress Drive (Signal Control)	EB	80	1420	80	1,580	91.3	F	46.8	D	12.7	B	47.3	D			997	274	500	234	53	330	44	0
		WB	155	1340	80	1,575	97.9	F	44.0	D	7.0	A	47.4	D	51.8	D	1130	233	500	348	83	500	46	1
		NB	70	500	105	675	98.2	F	68.4	E	21.6	C	64.2	E			468	117	280	175	40	190	63	2
		SB	370	225	150	745	81.0	F	50.8	D	19.3	B	59.4	E			211	39	230	451	110	340	102	6
	Excelsior Road and Cypress Drive (Signal Control)	EB	60	240	300	600	33.7	C	20.9	C	7.5	A	15.5	B			213	27	300	99	11	300	102	5
		WB	130	315	80	525	40.9	D	21.5	C	5.1	A	23.8	C	16.8	B	261	35	300	155	27	300	48	1
		NB	130	425	130	685	15.8	B	18.6	B	8.4	A	16.2	B			255	23	170	224	12	230	129	3
		SB	225	370	150	745	15.9	B	15.7	B	5.2	A	13.7	B			157	19	300	195	15	300	46	1

*Queue length coloring is as follows:

a. through queue is colored "pink" when queue length exceeds 500 feet

b. left turn queue is colored "red" when queue is more than the storage length and colored "pink" when queue is 95% of the storage length

c. right turn queue is colored "red" when queue is more than the storage length and colored "pink" when queue is 95% of the storage length

Table 11
Scenario 2 PM Peak Hour Traffic Operations Results
(Excelsior Road/Cypress Drive Roundabout Control)

Control Type	Intersection	Approach	Demand Volumes (Veh/Hour)				Delay (s/veh)						LOS By Approach		LOS By Intersection		Through		Left Turn			Right Turn		
							Left		Thru		Right													
			Left	Thru	Right	Total	Delay	LOS	Delay	LOS	Delay	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Max Queue	Average Queue	Storage	Max Queue	Average Queue	Storage	Max Queue	Average Queue
2009	TH 210 and Cypress Drive (Signal Control)	EB	50	880	50	980	100.2	F	41.3	D	6.0	A	42.5	D			614	114	500	137	28	330	34	0
		WB	100	830	50	980	95.6	F	37.9	D	4.3	A	42.1	D	42.3	D	477	95	500	213	48	500	30	0
		NB	40	315	65	420	63.5	E	32.8	C	8.1	A	31.9	C			210	34	280	114	15	190	48	1
		SB	235	140	90	465	86.1	F	23.3	C	7.1	A	51.9	D			91	12	230	382	85	340	53	1
	Excelsior Road and Cypress Drive (Roundabout Control)	EB	40	170	215	425	3.9	A	4.5	A	2.3	A	3.3	A			69	2		69	2	350	69	2
		WB	100	255	70	425	2.1	A	2.4	A	1.5	A	2.2	A	3.2	A	89	1		89	1		89	1
		NB	80	255	80	415	4.8	A	3.9	A	5.1	A	4.3	A			185	4		185	4		185	4
		SB	145	230	90	465	3.5	A	2.8	A	2.2	A	2.9	A			97	3		97	3		97	3
2025	TH 210 and Cypress Drive (Signal Control)	EB	80	1420	80	1,580	91.3	F	46.5	D	12.1	B	47.0	D			994	275	500	206	41	330	39	0
		WB	155	1340	80	1,575	99.3	F	43.0	D	8.4	A	46.8	D	52.3	D	1080	220	500	317	84	500	53	1
		NB	70	500	105	675	96.0	F	69.6	E	22.2	C	65.0	E			446	116	280	174	39	190	56	3
		SB	370	225	150	745	90.3	F	49.8	D	17.2	B	63.3	E			286	42	230	576	169	340	127	6
	Excelsior Road and Cypress Drive (Roundabout Control)	EB	60	240	300	600	20.7	C	14.8	B	9.2	A	12.6	B			254	33		254	33	350	254	33
		WB	130	315	80	525	6.1	A	4.2	A	2.8	A	4.5	A	10.2	B	131	4		131	4		131	4
		NB	130	425	130	685	15.3	B	13.5	B	15.2	B	14.2	B			377	37		377	37		377	37
		SB	225	370	150	745	13.7	B	7.8	A	4.2	A	8.8	A			260	16		260	16		260	16

*Queue length coloring is as follows:

a. through queue is colored "pink" when queue length exceeds 500 feet

b. left turn queue is colored "red" when queue is more than the storage length and colored "pink" when queue is 95% of the storage length

c. right turn queue is colored "red" when queue is more than the storage length and colored "pink" when queue is 95% of the storage length

6.0 Recommended Alternatives

Based on the information provided in this document, it is recommended the TH 210/Cypress Drive intersection be controlled by a traffic signal and the Cypress Drive/Excelsior Road intersection be controlled by a roundabout. The proposed layout for these intersections is shown in Figure 3.

With the high levels of traffic along TH 210, a traffic signal is the most appropriate means for Cypress Drive traffic to access TH 210 safely and efficiently without severely impeding TH 210 traffic. Roundabout control at the Cypress Drive/Excelsior Road intersection provides a high level of operation and safety at the intersection and provides better operation than signal control.

List of Figures

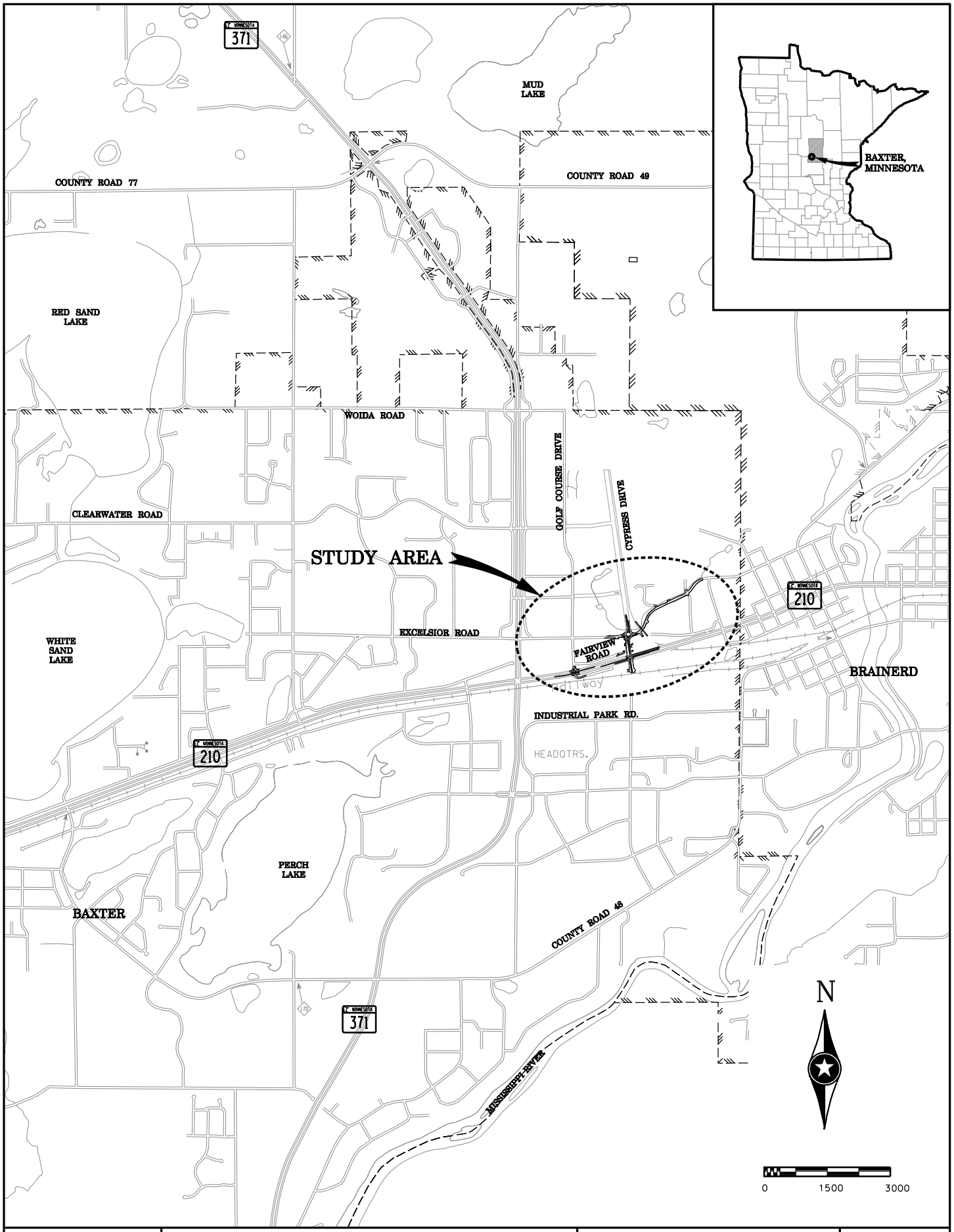
Figure 1 – Project Location

Figure 2 – Existing Corridor Layout

Figure 3 – Proposed Corridor Layout

Figure 4 – Forecast 2009 Traffic without Cypress Railroad Crossing

Figure 5 – Traffic Forecasts with Cypress Drive Railroad Crossing



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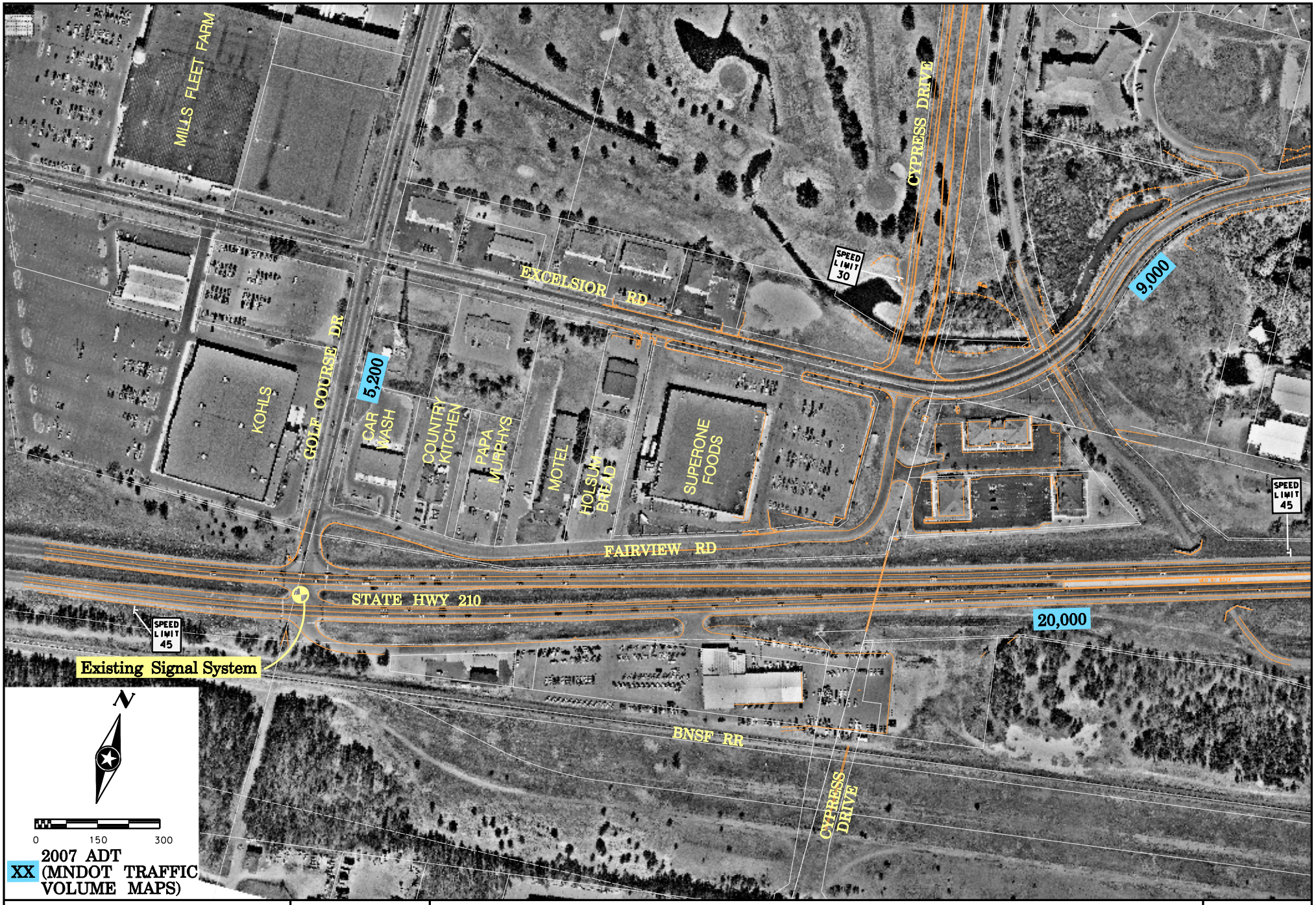
INTERSECTION CONTROL EVALUATION
TH 210\CYPRESS DR\EXCELSIOR RD
BAXTER, MN

PROJECT LOCATION

FIGURE NO. 1



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FILE NO.
BAXTE0502.00

DATE:
06/05/09

EXISTING CORRIDOR LAYOUT
TH 210/CYPRESS DRIVE IMPROVEMENTS
BAXTER, MINNESOTA

FIGURE NO. 2

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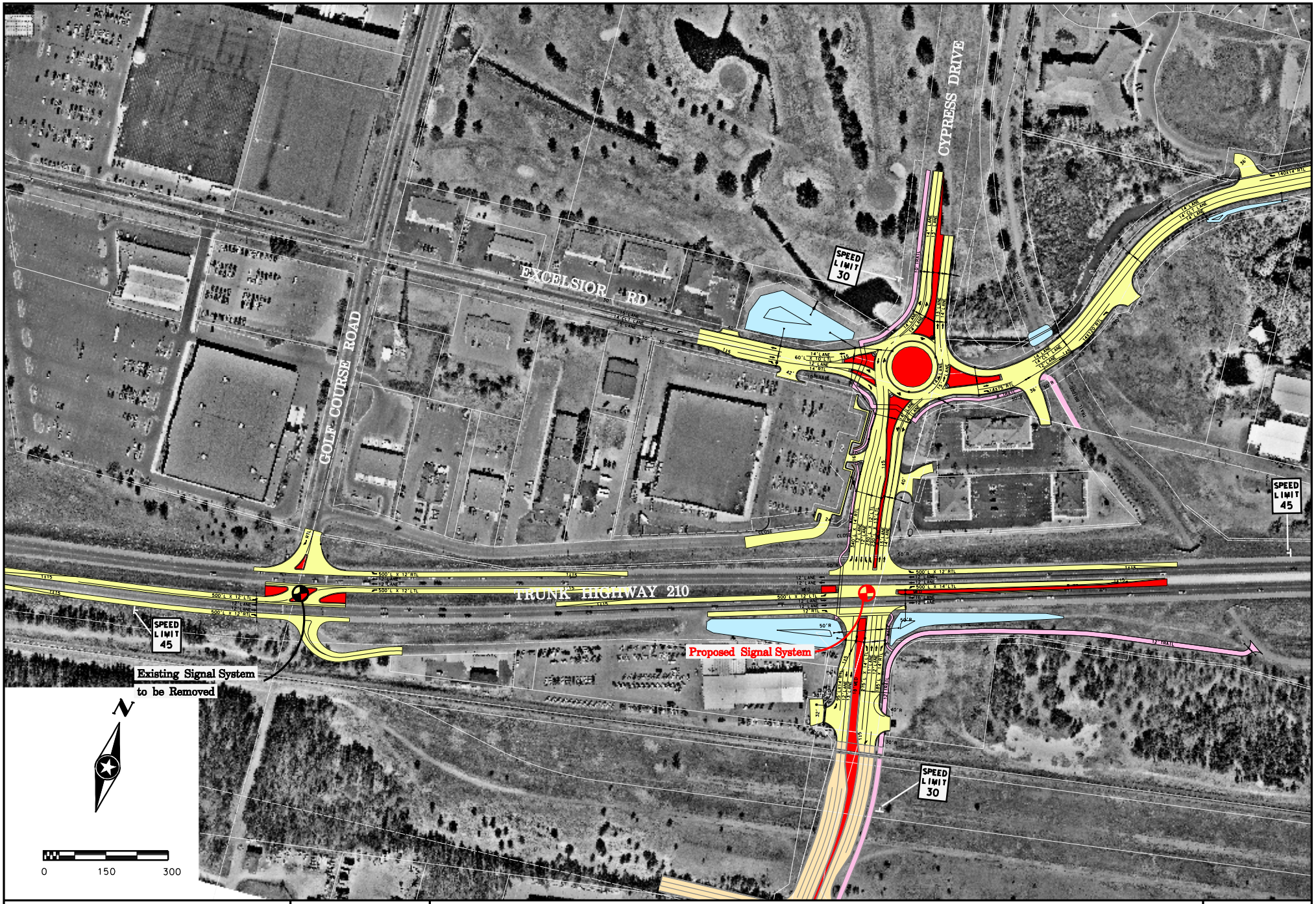

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FILE NO.
BAXTE0502.00

DATE:
06/05/09

PROPOSED CORRIDOR LAYOUT
TH 210/CYPRESS DRIVE IMPROVEMENTS
BAXTER, MINNESOTA

FIGURE NO. 3

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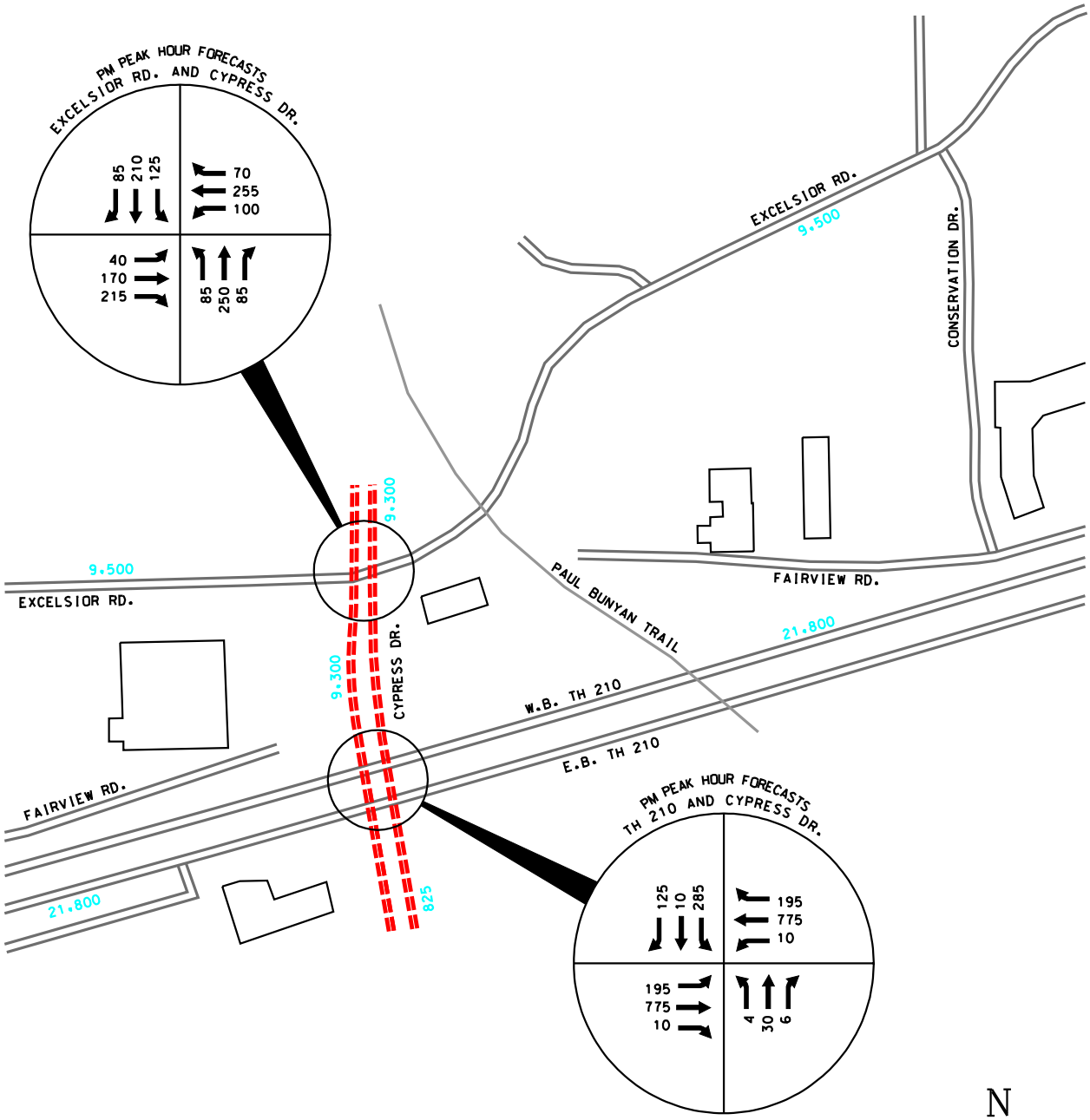

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LEGEND

XX	2009 FORECAST ADT
	EXISTING ROADWAY
	PROPOSED ROADWAY
XX	2009 TURNING MOVEMENT VOLUMES

SEH

TRAFFIC FORECASTS WITH 3/4 ACCESS AT GOLF COURSE DRIVE TH 210\CYPRESS DR\EXCELSIOR RD BAXTER, MN

FORECAST 2009 TRAFFIC WITHOUT CYPESS DRIVE RR CROSSING

FIGURE NO. 4

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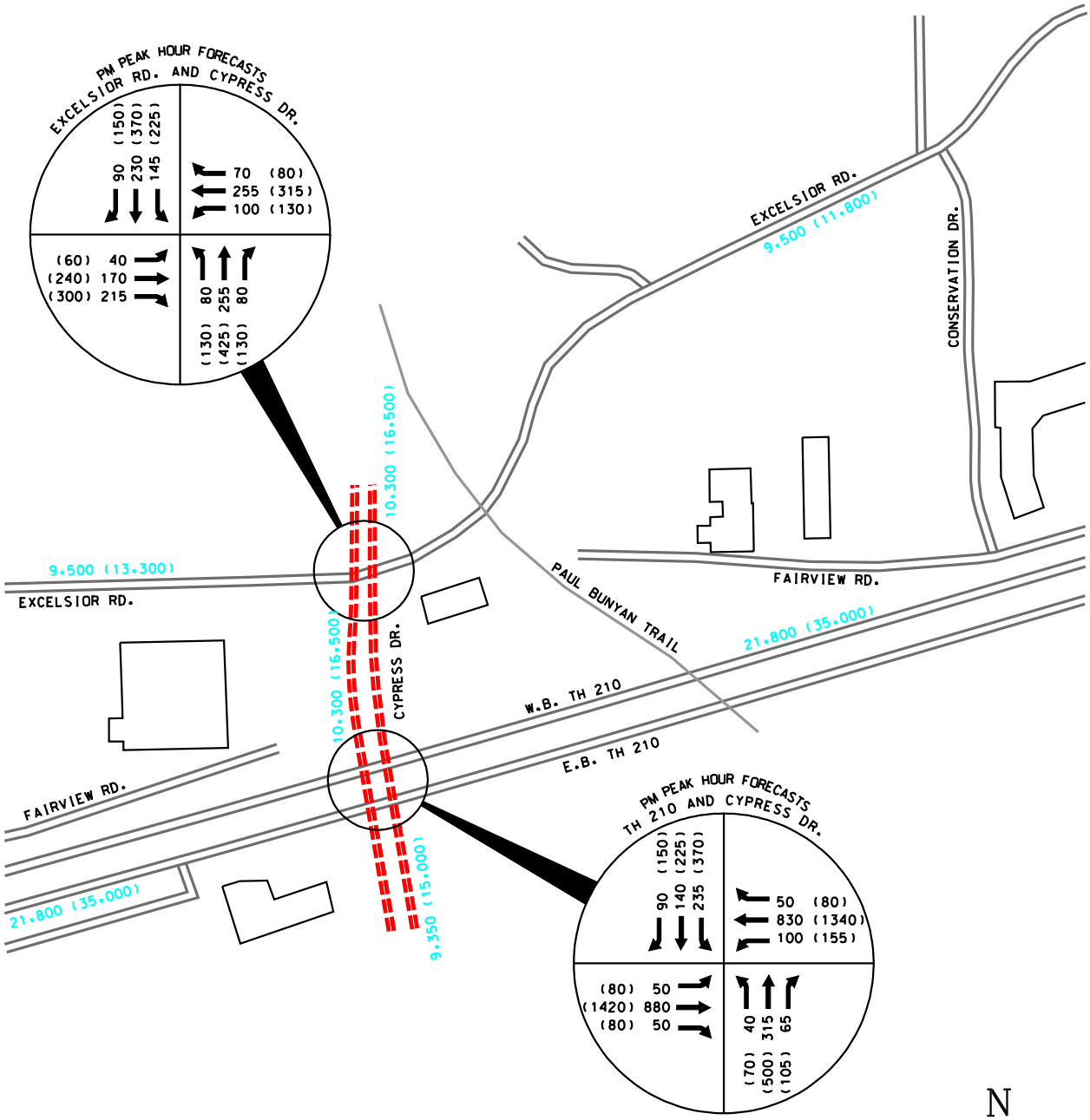

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TRAFFIC FORECASTS WITH 3/4 ACCESS AT GOLF COURSE DRIVE TH 210\CYPRESS DR\EXCELSIOR RD BAXTER, MN

TRAFFIC FORECASTS WITH CYPRESS DRIVE RR CROSSING

FIGURE NO. 5

Appendix A

Warrant Analysis

Short Elliot Hendrickson Inc.
1200 25th Avenue South
PO Box 1717
St. Cloud, MN 56302-1717
320-229-4300

Study Name : **Cypress Dr and TH 210_2009**
Study Date : **10/10/08**
Page No. : **1**

Signal Warrants - Summary

Major Street Approaches

Eastbound: **TH 210**
Number of Lanes: **2**
Approach Speed: **41**
Total Approach Volume: **10,905**

Westbound: **TH 210**
Number of Lanes: **2**
Approach Speed: **45**
Total Approach Volume: **10,905**

Minor Street Approaches

Northbound: **Cypress Drive**
Number of Lanes: **2**
Total Approach Volume: **3,970**

Southbound: **Cypress Drive**
Number of Lanes: **2**
Total Approach Volume: **4,110**

Warrant Summary **(Rural values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Satisfied**
Required volumes reached for 13 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Satisfied**
Required volumes reached for 14 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Satisfied**
Required volumes reached for 14 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Satisfied**
Number of hours (13) volumes exceed minimum >= minimum required (4).

Warrant 3 - Peak Hour ..... **Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Total approach volumes and delays on minor street do not exceed minimums for any hour.

Warrant 3B - Peak Hour Volumes ..... **Satisfied**
Volumes exceed minimums for at least one hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

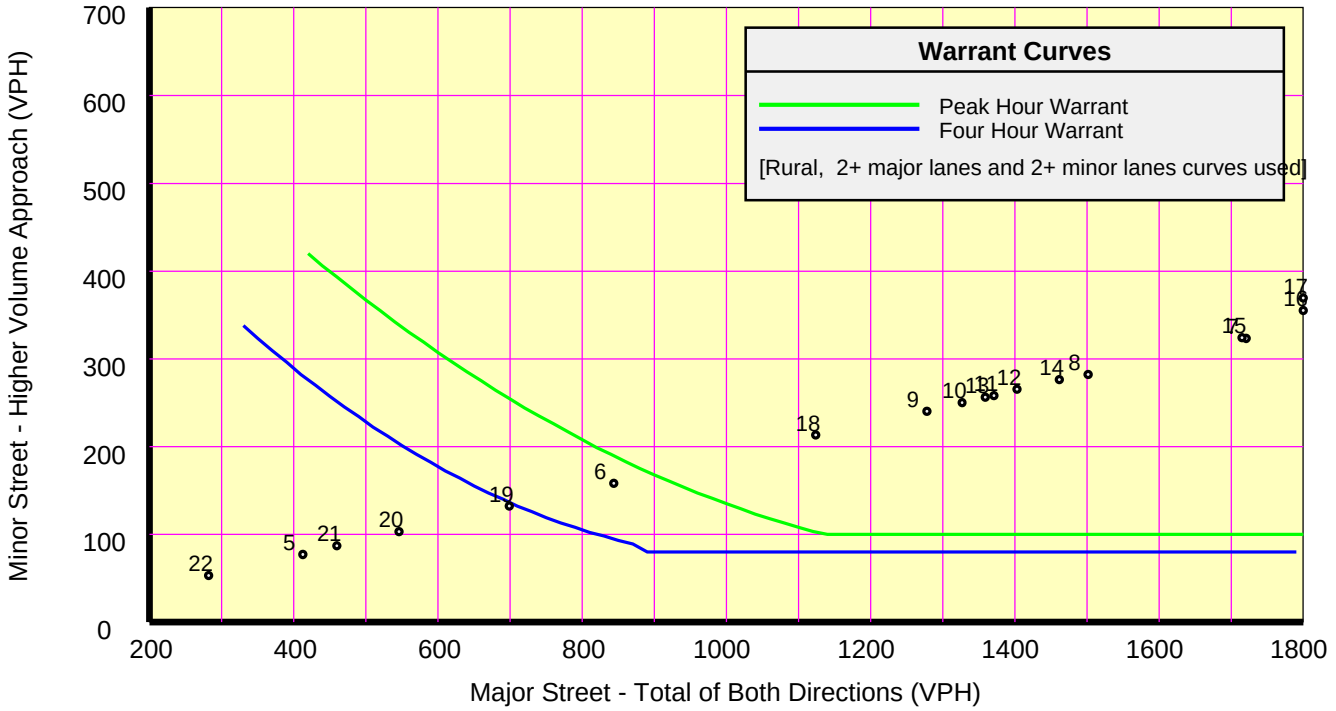
Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

Short Elliot Hendrickson Inc.
1200 25th Avenue South
PO Box 1717
St. Cloud, MN 56302-1717
320-229-4300

Study Name : **Cypress Dr and TH 210_2009**
Study Date : **10/10/08**
Page No. : **2**

Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	50	8	SB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
01:00	34	6	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
02:00	51	10	SB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
03:00	77	15	SB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
04:00	137	26	SB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
05:00	413	77	SB	420-No	140-No	---	630-No	70-Yes	Minor	504-No	112-No	---
06:00	844	158	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
07:00	1,721	323	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
08:00	1,502	282	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
09:00	1,278	240	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
10:00	1,327	250	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
11:00	1,371	258	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
12:00	1,403	265	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
13:00	1,359	256	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
14:00	1,462	276	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
15:00	1,715	324	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
16:00	1,876	355	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
17:00	1,952	369	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
18:00	1,124	213	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
19:00	699	132	SB	420-Yes	140-No	Major	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
20:00	546	103	SB	420-Yes	140-No	Major	630-No	70-Yes	Minor	504-Yes	112-No	Major
21:00	460	87	SB	420-Yes	140-No	Major	630-No	70-Yes	Minor	504-No	112-No	---
22:00	282	53	SB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
23:00	127	24	SB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---

Short Elliot Hendrickson Inc.
1200 25th Avenue South
PO Box 1717
St. Cloud, MN 56302-1717
320-229-4300

Study Name : **Cypress Dr and Excelsior Rd_2009**
Study Date : **10/17/08**
Page No. : **1**

Signal Warrants - Summary

Major Street Approaches

Northbound: **Cypress Drive**
Number of Lanes: **2**
Approach Speed: **30**
Total Approach Volume: **5,141**

Southbound: **Cypress Drive**
Number of Lanes: **2**
Approach Speed: **30**
Total Approach Volume: **5,141**

Minor Street Approaches

Eastbound: **Excelsior Avenue**
Number of Lanes: **1**
Total Approach Volume: **2,387**

Westbound: **Excelsior Avenue**
Number of Lanes: **1**
Total Approach Volume: **4,056**

Warrant Summary **(Urban values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Satisfied**
Required volumes reached for 8 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Not Satisfied**
Required volumes reached for 2 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Not Satisfied**
Required volumes reached for 4 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Satisfied**
Number of hours (6) volumes exceed minimum >= minimum required (4).

Warrant 3 - Peak Hour ..... **Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Total approach volumes and delays on minor street do not exceed minimums for any hour.

Warrant 3B - Peak Hour Volumes ..... **Satisfied**
Volumes exceed minimums for at least one hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

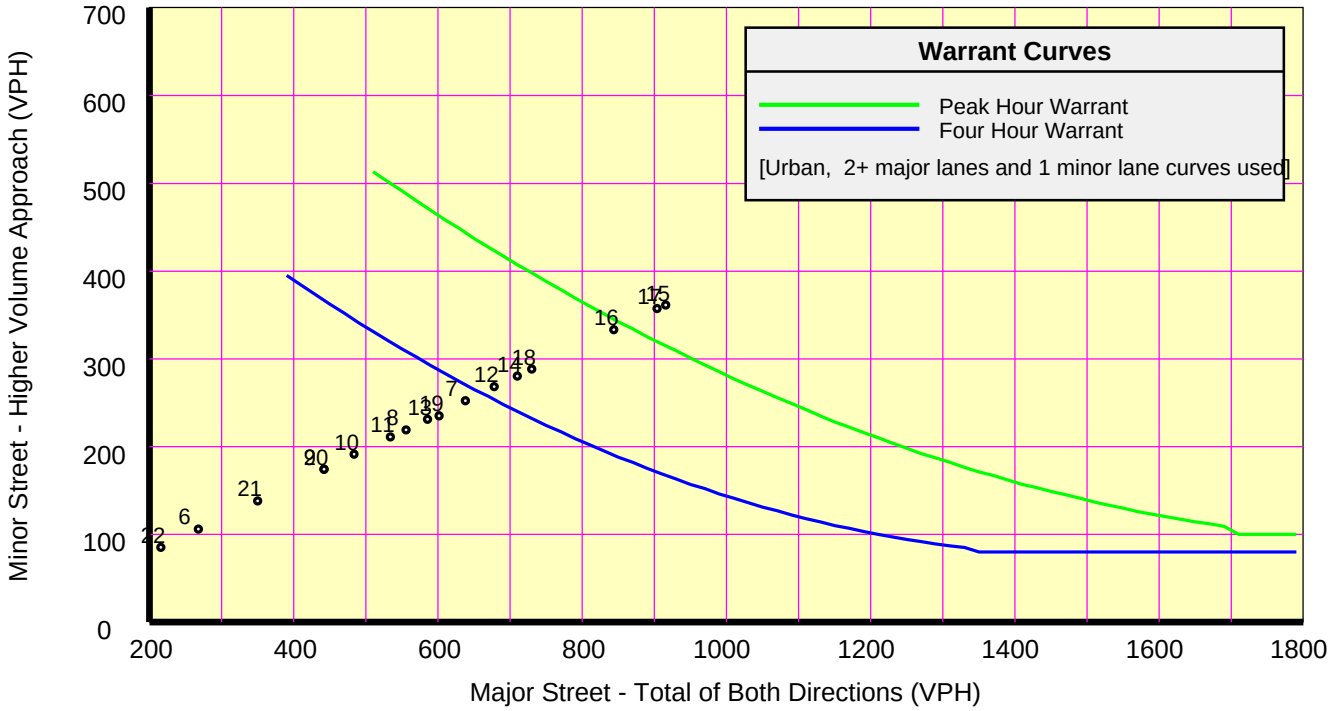
Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

Short Elliot Hendrickson Inc.
1200 25th Avenue South
PO Box 1717
St. Cloud, MN 56302-1717
320-229-4300

Study Name : **Cypress Dr and Excelsior Rd_2009**
Study Date : **10/17/08**
Page No. : **2**

Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	30	12	WB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
01:00	20	8	WB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
02:00	30	12	WB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
03:00	20	8	WB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
04:00	30	12	WB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
05:00	78	32	WB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
06:00	268	106	WB	600-No	150-No	---	900-No	75-Yes	Minor	720-No	120-No	---
07:00	638	252	WB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-No	120-Yes	Minor
08:00	556	219	WB	600-No	150-Yes	Minor	900-No	75-Yes	Minor	720-No	120-Yes	Minor
09:00	442	174	WB	600-No	150-Yes	Minor	900-No	75-Yes	Minor	720-No	120-Yes	Minor
10:00	484	191	WB	600-No	150-Yes	Minor	900-No	75-Yes	Minor	720-No	120-Yes	Minor
11:00	534	211	WB	600-No	150-Yes	Minor	900-No	75-Yes	Minor	720-No	120-Yes	Minor
12:00	678	268	WB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-No	120-Yes	Minor
13:00	586	231	WB	600-No	150-Yes	Minor	900-No	75-Yes	Minor	720-No	120-Yes	Minor
14:00	710	280	WB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-No	120-Yes	Minor
15:00	916	361	WB	600-Yes	150-Yes	Both	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
16:00	844	333	WB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-Yes	120-Yes	Both
17:00	904	357	WB	600-Yes	150-Yes	Both	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
18:00	730	288	WB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-Yes	120-Yes	Both
19:00	602	235	WB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-No	120-Yes	Minor
20:00	442	174	WB	600-No	150-Yes	Minor	900-No	75-Yes	Minor	720-No	120-Yes	Minor
21:00	350	138	WB	600-No	150-No	---	900-No	75-Yes	Minor	720-No	120-Yes	Minor
22:00	216	85	WB	600-No	150-No	---	900-No	75-Yes	Minor	720-No	120-No	---
23:00	174	69	WB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---

Appendix B

Benshoof & Associates, Inc. Cypress Drive and CSAH 48 Study

ROADWAY SYSTEM PLAN FOR CITY OF BAXTER AND CORRIDOR PLAN FOR CYPRESS DRIVE AND CSAH 48

CITY OF BAXTER, MINNESOTA

Prepared for:

City of Baxter
Crow Wing County

Prepared by:

Benshoof & Associates, Inc.

April 2005

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SUMMARY

The City of Baxter and Crow Wing County retained Benshoof & Associates, Inc. to complete a traffic study to fulfill the following three principal purposes:

a) *Establish an overall roadway system plan for the City of Baxter*. The principal focus of this purpose is to establish a basic network of major roadways that is needed to adequately meet the long-term transportation demand for the rapidly-growing City of Baxter and Crow Wing County.

b) *Establish a specific plan for the Cypress Drive/CSAH 48 corridor across the Burlington Northern Railroad tracks*. The focus of this purpose is to assess the need and feasibility of extending Cypress Drive, CSAH 48, or both across the Burlington Northern Railroad tracks to TH 210.

c) Provide guidance for Crow Wing County, City of Baxter, and City of Brainerd regarding the future alignment and other key characteristics for CSAH 48.

In addition to fulfilling the above purposes, the traffic study accounted for future bicycle trail needs, especially completion of the Paul Bunyan Trail, and the City's interest regarding redevelopment of the railroad corridor. To effectively fulfill the above purposes, roadway system plan objectives were developed. After reviewing numerous options, two roadway system options were selected that would best meet these objectives.

Traffic forecasts were completed for the two roadway system options to perform an objective evaluation. These forecasts consisted of 2025 daily traffic volume projections on all major roadways. Alternatives regarding completion of the Paul Bunyan State Trail were developed for the two roadway system options.

The roadway options were evaluated with respect to their ability to meet the objectives. Based on this evaluation, a recommended roadway system plan was developed. Two key features of this plan include:

- Cypress Drive extension across the Burlington Northern Railroad tracks to TH 210 with a continuation of this roadway north to CSAH 49. With this roadway extension, Cypress Drive would provide a continuous minor arterial route on the east side of TH 371 that extends for over three miles between CSAH 49 on the north and CSAH 48 on the south.
- CSAH 48 realignment west of TH 371 along Mapleton Road to Cass County CSAH 36.

A preliminary layout plan was developed for Cypress Drive between Excelsior Road and Industrial Park Road including number of lanes, widths, and sidewalks/trail. Finally, implementation guidelines were developed that would assist the responsible agencies in effectively executing the recommendations established through this study.

PURPOSE AND OBJECTIVES

PURPOSE

Benshoof & Associates, Inc. completed a traffic study for the City of Baxter and Crow Wing County to develop a roadway system plan for the City and a corridor plan for Cypress Drive and CSAH 48. The three primary purposes are as follows:

a) *Establish an overall roadway system plan for the City of Baxter*. This is to establish a basic network of major roadways needed to adequately meet the long-term transportation demand for the rapidly-growing City of Baxter and Crow Wing County.

b) *Establish a specific plan for the Cypress Drive/CSAH 48 corridor across the Burlington Northern Railroad tracks*. This purpose is to assess the need and feasibility of extending Cypress Drive, CSAH 48, or both across the Burlington Northern Railroad tracks to TH 210.

c) Provide guidance for Crow Wing County, City of Baxter, and City of Brainerd regarding the future alignment and other key characteristics for CSAH 48.

In addition to fulfilling the above principal purposes, this study addressed the needs associated with the following two important items:

- Current and future needs and interests regarding the Paul Bunyan Trail through the City of Baxter.

- The City's principal interests regarding redevelopment of excess railroad land in the Cypress Drive/CSAH 48 corridor.

ROADWAY SYSTEM PLAN OBJECTIVES

The following set of objectives were developed that form the key bases in effectively fulfilling the purposes described above:

a) Provide a roadway system that serves the following needs:
   i. Connectivity between cities, communities, activity centers, urban regions, and neighborhoods.
   ii. Accessibility for people to efficiently reach their destinations.
   iii. Mobility to help people efficiently travel from place to place.

b) Provide a safe and efficient roadway system that is cost effective.

c) Establish a roadway system that does not cause significant negative impacts on the environment or affected properties.

d) Provide a roadway system plan that is effectively coordinated with plans of the following agencies:

   i. Crow Wing County including unorganized territory north of Baxter
   ii. City of Brainerd,
   iii. Sylvan Township in Cass County
   iv. East Gull Lake Township in Cass County
   v. Cass County
   vi. Mn/DOT
   vii. Burlington Northern Railroad

e) Provide and support a roadway system that enhances quality economic development within the City.

f) Provide a roadway system plan that effectively correlates with the planned pedestrian/bicycle trail system, with particular attention to the Paul Bunyan Trail.

g) Provide a system of minor arterials and collectors that enhances the ability of TH 371 and TH 210 to serve as principal arterials.

h) Provide a roadway system plan that offers improved alternatives to traffic use of the TH 210/Fourth Street intersection in the City of Brainerd.

ROADWAY SYSTEM PLAN OPTIONS

To effectively fulfill the purposes and objectives set forth for this study, numerous roadway system options were considered. Based on a review of these initial options regarding their ability to meet the objectives, two roadway system options were selected for further examination. These two options include a combination of existing and potential future roadways that seeks to effectively meet the objectives. One of the principal existing features is Excelsior Road north of TH 210. Excelsior Road provides relief for TH 210 by serving local east-west trips. These two options are presented in Figures 1 and 2. The new roadway segments included in both of the options and the reasons for including these segments are presented next:

- *A north-south roadway east of TH 371 that would extend between CSAH 49 and TH 210*. This roadway segment is shown in the City's future plans and also has been identified in the traffic study for the Industrial Park. This roadway segment will relocate the full access signalized intersection presently at TH 210/Golf Course Drive intersection to the intersection of the new north-south roadway (Cypress Drive) with TH 210, which will result in a more even and adequate spacing between full access signalized intersections on TH 210. It was also determined that a strong need exists for a north-south roadway that will serve local trips and thereby help TH 371 better serve its principal arterial function. A north-south arterial roadway would also effectively fulfill the connectivity, mobility, and the accessibility objectives for north-south travel in the portion of Baxter east of TH 371.

- *Extension of Edgewood Drive from Excelsior Road to Fairview Road.* Edgewood Drive presently serves the west service road for TH 371 north of Excelsior Road. The extension of Edgewood Drive shown in Figures 1 and 2 is needed to complete this service road and extending it south to Fairview Road, which in turn has several intersection connections with TH 210.

- *Extension of Hastings Road, Douglas Fir Drive, and Cypress Drive south to CSAH 48.* Under both roadway options, these extensions are needed to effectively serve the Industrial Park traffic. Under option A, the Cypress Drive extension is needed not only to effectively serve the Industrial Park traffic, but also to provide a continuous minor arterial roadway between CSAH 48 and CSAH 49.

- *Southerly extension of Isle Drive.* This extension is needed to effectively serve traffic between the commercial area in the southwest quadrant of the TH 210/TH 371 intersection and the residential areas to the west and southwest without using TH 371.

- *Extension of Foley Road west to the TH 210/Memorywood Drive intersection.* The need for this extension and the merits of the alignment shown have been identified in the Traffic Plan completed by Benshoof & Associates, Inc. for the TH 210/CSAH 48/Memorywood Drive intersection area. Some of the objectives that this extension would fulfill include providing one signalized intersection that effectively serves the north and south sides of TH 210, providing north-south continuity for vehicle,

pedestrian, and bicycle movements, and providing compatibility with the overall roadway system.

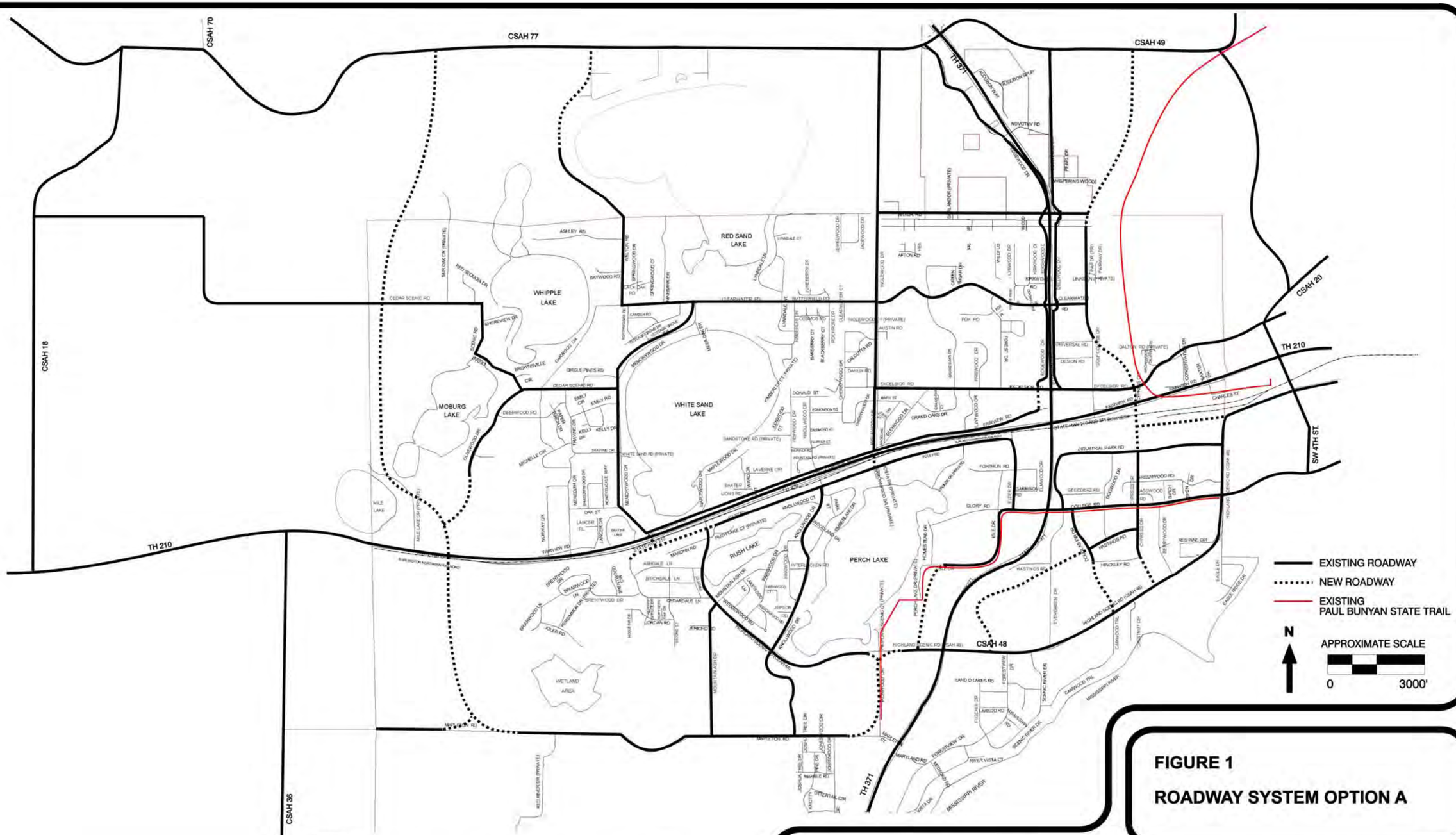
- *Extension of Welton Road north around the western portion of Red Sand Lake to intersect CSAH 77*. Currently, the spacing between Cass County CSAH 18 and Inglewood Drive, which provide connections between TH 210 and CSAH 77, is approximately 4 ½ miles. Considering this long spacing, a strong need exists for a new connection between neighborhoods in the western portion of Baxter and CSAH 77. This purpose will be effectively served by extending Welton Road to CSAH 77.

- *Extension of Laurel Street west from CSAH 48 into redevelopment property along railroad tracks*. In addition to serving the redevelopment property, this extension would enhance east-west connectivity between the Baxter Industrial Park and locations in Brainerd.

The principal differences between the two roadway system options are as follows:

- Western portion of the roadway system options A and B
    - *Option A*. This option includes designating the existing CSAH 48 segment west of TH 371 as a City street. Just west of TH 371, CSAH 48 is shown to extend to the south (new), follow existing Mapleton Road and then extend north across TH 210 all the way to CSAH 77.
    - *Option B*. This option retains the existing CSAH 48 alignment, except for the short segment between Foley Road and TH 210, where it is realigned to intersect TH 210 at Memorywood Drive. This option includes a new roadway connection between Mapleton Road and Olivewood Drive across TH 210.

- Eastern portion of the roadway system options A and B:
    - *Option A.*
        - This option includes extension of Cypress Drive from Industrial Park Road to TH 210. This extension results in a continuous minor arterial roadway between CSAH 48 and CSAH 49.
        - Under option A, the Laurel Street extension west of CSAH 48 will serve a higher traffic volume and will provide greater relief for traffic use of TH 210 because it will connect with Cypress Drive, which in turn will serve trips to/from area to the west and north.
    - *Option B.*
        - This option includes extension of CSAH 48 to TH 210 near the east edge of the City of Baxter. This extension results in an offset between the minor arterial (Cypress Drive) to the north of TH 210 and the minor arterial (CSAH 48) to the south of TH 210.
        - Under option B, the Laurel Street extension west of CSAH 48 will serve a lower traffic volume than under option A because it will just connect with the Baxter Industrial Park.



NOTES:

- FULL ACCESS INTERSECTIONS ON TH 210 IN CITY OF BAXTER WEST OF TH 371 ARE AT THE FOLLOWING LOCATIONS: NEW ROADWAY CONNECTING OLIVEWOOD DRIVE AND MAPLETON ROAD, MEMORYWOOD DRIVE, INGLEWOOD DRIVE, AND ELDER DRIVE.
- TWO ALIGNMENT OPTIONS ARE AVAILABLE FOR CYPRESS DRIVE NORTH OF TH 210:
  A) ALONG GOLF COURSE DRIVE ALIGNMENT AS SHOWN IN THIS FIGURE, AND
  B) ALONG THE WEST SIDE OF THE PAUL BUNYAN TRAIL.

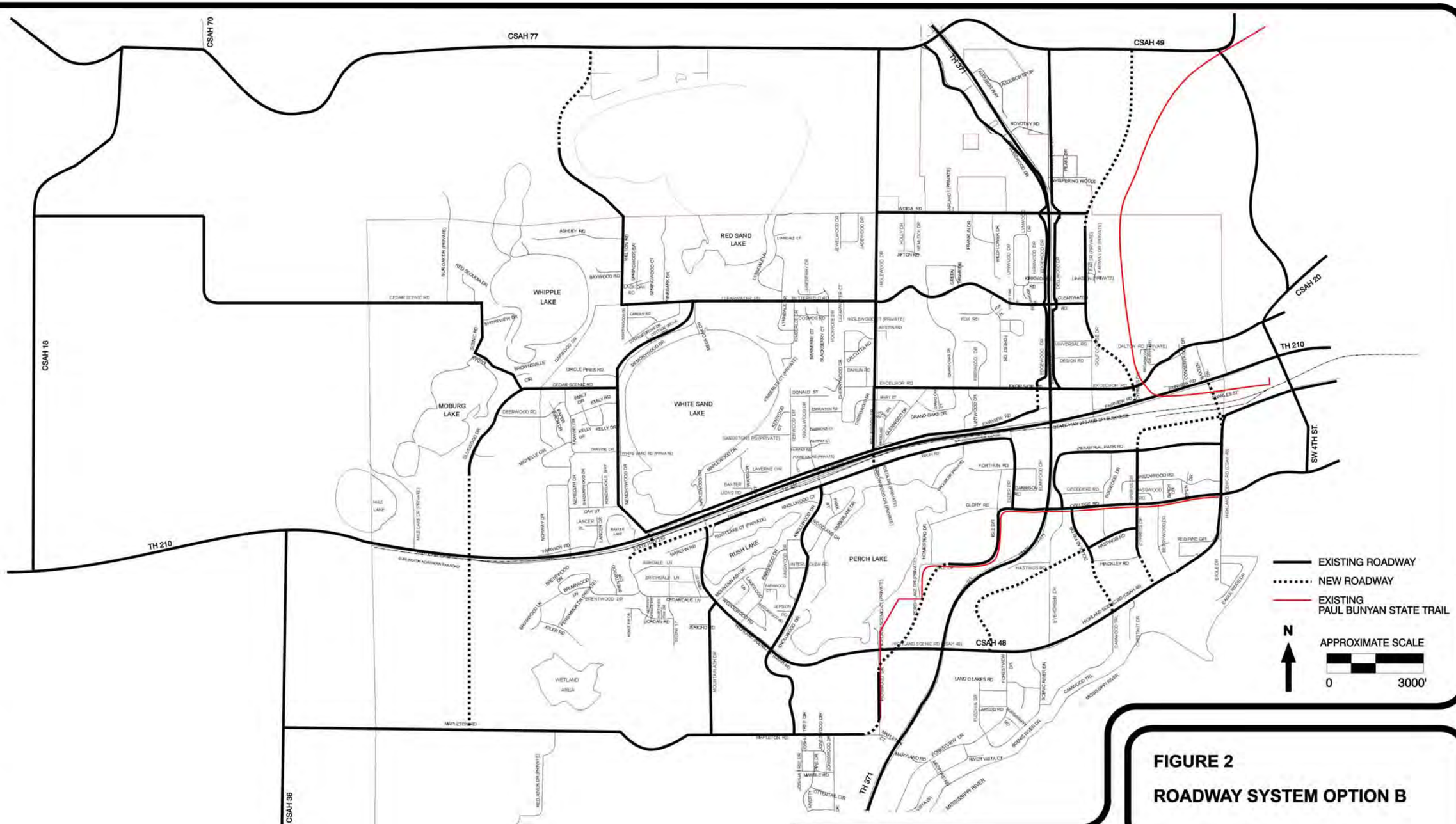
FIGURE 1

ROADWAY SYSTEM OPTION A

CITY OF BAXTER
CROW WING COUNTY

BENSHOOF & ASSOCIATES, INC.
TRANSPORTATION ENGINEERS AND PLANNERS

ROADWAY SYSTEM PLAN FOR BAXTER AND CORRIDOR PLAN FOR CYPRESS DRIVE AND CSAH 48



NOTES:

- FULL ACCESS INTERSECTIONS ON TH 210 IN CITY OF BAXTER WEST OF TH 371 ARE AT THE FOLLOWING LOCATIONS: NEW ROADWAY CONNECTING OLIVEWOOD DRIVE AND MAPLETON ROAD, MEMORYWOOD DRIVE, INGLEWOOD DRIVE, AND ELDER DRIVE.
- TWO ALIGNMENT OPTIONS ARE AVAILABLE FOR CYPRESS DRIVE NORTH OF TH 210:
  A) ALONG GOLF COURSE DRIVE ALIGNMENT AS SHOWN IN THIS FIGURE, AND
  B) ALONG THE WEST SIDE OF THE PAUL BUNYAN TRAIL.

FIGURE 2

ROADWAY SYSTEM OPTION B

CITY OF BAXTER
CROW WING COUNTY

BENSHOOF & ASSOCIATES, INC.
TRANSPORTATION ENGINEERS AND PLANNERS

ROADWAY SYSTEM PLAN FOR BAXTER AND CORRIDOR PLAN FOR CYPRESS DRIVE AND CSAH 48

TRAFFIC FORECASTS FOR ROADWAY SYSTEM OPTIONS

OBJECTIVES

Long-term traffic forecasts need to be developed for the two roadway system options in order to address the following important points:

- Determine the extent to which particular roadway segments would be used and, as a result, the associated need for this roadway segment in the overall roadway system plan.
- Determine the extent to which a particular roadway segment would influence volumes on other roadway segments.
- Provide guidance regarding the functional classification and number of traffic lanes needed for each roadway segment.

To effectively fulfill the above purposes, a set of traffic forecasts has been prepared that represent the expected approximate range of daily traffic volume on major roadways in the year 2025. The year 2025 was selected to be consistent with normal practice for transportation plans, which is to establish a 20 year planning horizon. **It is important to emphasize that the traffic volume ranges shown represent approximate values.** The 2025 daily volumes for most roadway segments will be within the ranges shown. However, depending on specific growth patterns in Baxter and the broader region, it is possible that the daily volume experienced in year 2025 on particular roadway segments could be higher or lower than the range shown.

PREMISES

The following premises were used in developing traffic forecasts for the two roadway system options:

a) 2001 traffic volumes for major roadways presented in the traffic flow maps for Cities of Baxter and Brainerd and for Crow Wing and Cass Counties.
b) Historic traffic growth trends and future growth expectations.
c) Planned future density and type of development in City of Baxter.
d) Locations of existing and planned major development as shown in Figure 3.
e) Principal traffic patterns through the TH 371/TH 210 intersection.
f) Traffic forecasts developed through the following studies completed by Benshoof & Associates, Inc. :
    - Traffic study for Baxter Industrial Park
    - Traffic plan for TH 210/CSAH 48/Memorywood Drive intersection area
    - Traffic study for the commercial area west of TH 371 and south of TH 210.
    - Traffic study for CSAH 48 and Knollwood Drive intersection
    - Traffic study completed as part of the EAW for the new middle school located south of CSAH 48 at Knollwood Drive.

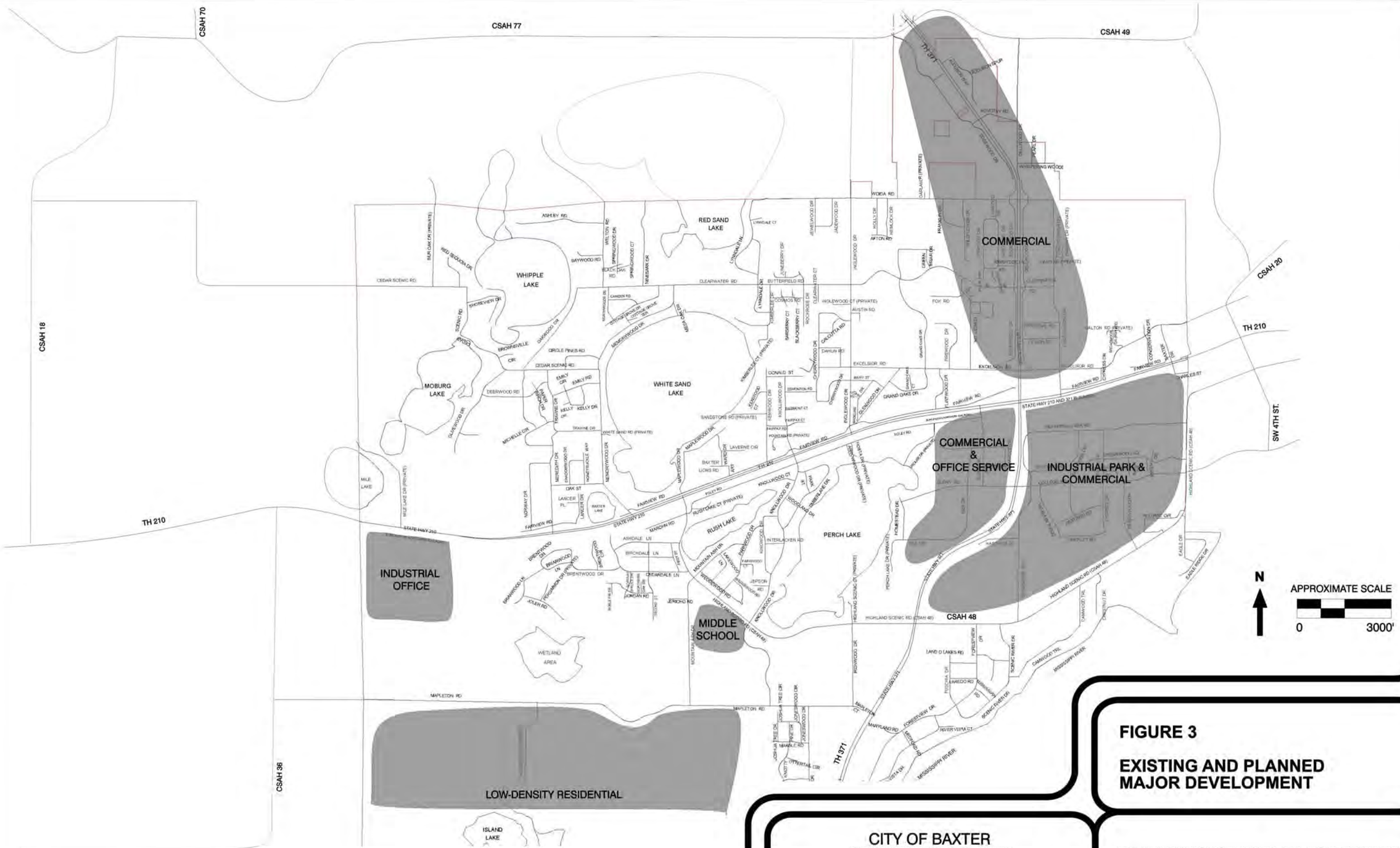


FIGURE 3

EXISTING AND PLANNED MAJOR DEVELOPMENT

CITY OF BAXTER
CROW WING COUNTY

BENSHOOF & ASSOCIATES, INC.
TRANSPORTATION ENGINEERS AND PLANNERS

ROADWAY SYSTEM PLAN FOR BAXTER AND CORRIDOR PLAN FOR CYPRESS DRIVE AND CSAH 48

APPROACH

Consistent with the normal 20-year transportation planning horizon, traffic forecasts were developed for the year 2025. The 2025 daily traffic volumes for major roadways in the two roadway system options were forecasted through the following steps:

Step 1: Based on historic traffic growth trends and growth expectations for the future, two ranges of multiplication factors were established that can be applied to 2001 daily volumes on existing roadways to calculate 2025 volumes. For roadways that are expected to experience a moderate growth, the range of factors is 1.72 to 2.2 based on a three to five percent annual growth. For high growth roadway segments, the multiplication factor range was 1.96 to 2.44 based on a four to six percent annual growth.

Step 2: Based on expected future traffic patterns and development plans for the two roadway options, all major roadway segments were divided into moderate growth and high growth segments. 2001 daily volumes on these major roadways were multiplied by the above factors to establish preliminary 2025 daily volumes. For locations on major roadways where 2001 volumes are not available, 2025 projections were estimated based on volumes at the nearest location, the roadway network layout, and expected development along the subject segment.

Step 3: Traffic volumes from step 2 were checked for reasonableness by accomplishing the following:

- Check consistency of 2025 daily traffic volumes with projections developed through other traffic studies recently completed by Benshoof & Associates, Inc.
- Check consistency of 2025 daily traffic volumes with expected development along the major roadway segments and expected use of these segments by regional traffic.

Step 4: Locations where inconsistencies were identified between the 2025 daily traffic volumes determined from the factoring method and the above reasonableness parameters, the preliminary 2025 daily volumes were adjusted.

2025 DAILY TRAFFIC VOLUMES

As previously identified, two major differences exist between roadway system options A and B:

a) *Western Portion of CSAH 48*. Option A includes realignment of CSAH 48 west of TH 371 along Mapleton Road, then to the north to intersect TH 210 just east of the western City boundary, and then farther to the north to end at CSAH 77. Option B retains much of CSAH 48 on its current alignment.

b) *Cypress Drive/CSAH 48 Corridor*. Option A creates a new railroad crossing through a northerly extension of Cypress Drive to TH 210, whereas option B creates a new

railroad crossing through a northerly extension of CSAH 48 to the Baxter Drive/TH 210 intersection.

The 2025 traffic volume projections for the two roadway options are presented in Figures 4 and 5. A basic explanation regarding the volume differences between options A and B due to the two basic roadway network differences described above are as follows:

- *Western Portion of CSAH 48*. Two types of trips would use the segment of CSAH 48 north of TH 210 shown in option A: a) trips generated due to development along the segment, and b) other trips that use this segment to travel between two points external to this segment. The expected low use of this CSAH 48 extension north of TH 210 is due to the following reasons:

    - *Trips generated due to development along the segment.* There is limited opportunity for development to occur along the northerly extension of CSAH 48 for the following reasons:
        - Presence of large wetlands, and
        - Subject land is located near and outside the Baxter City boundary.
    - *Other trips traveling between two points that are external to the subject segment.* There is limited travel demand between TH 210 and CSAH 77, which is evident from the low traffic volume on Cass County Highway 18, which is located just two miles to the west.

- *Cypress Drive/CSAH 48 Corridor*. Greater traffic volumes would be experienced on the Cypress Drive extension in option A as compared to the CSAH 48 extension in option B by virtue of its location relative to the Industrial Park and relative to TH 371. This results in lower traffic volume on TH 371 with option A compared to option B. In option A, trips between the north and the south sides of TH 210 that would use the new north-south minor arterial do not need to travel on TH 210. On the other hand, in option B, these trips would need to use TH 210 to travel between the TH 210 intersections with CSAH 48 and Cypress Drive (north of TH 210). Due to the preceding reasons, the Cypress Drive extension in option A will provide greater relief to TH 371 and TH 210 when compared to the CSAH 48 extension in option B.

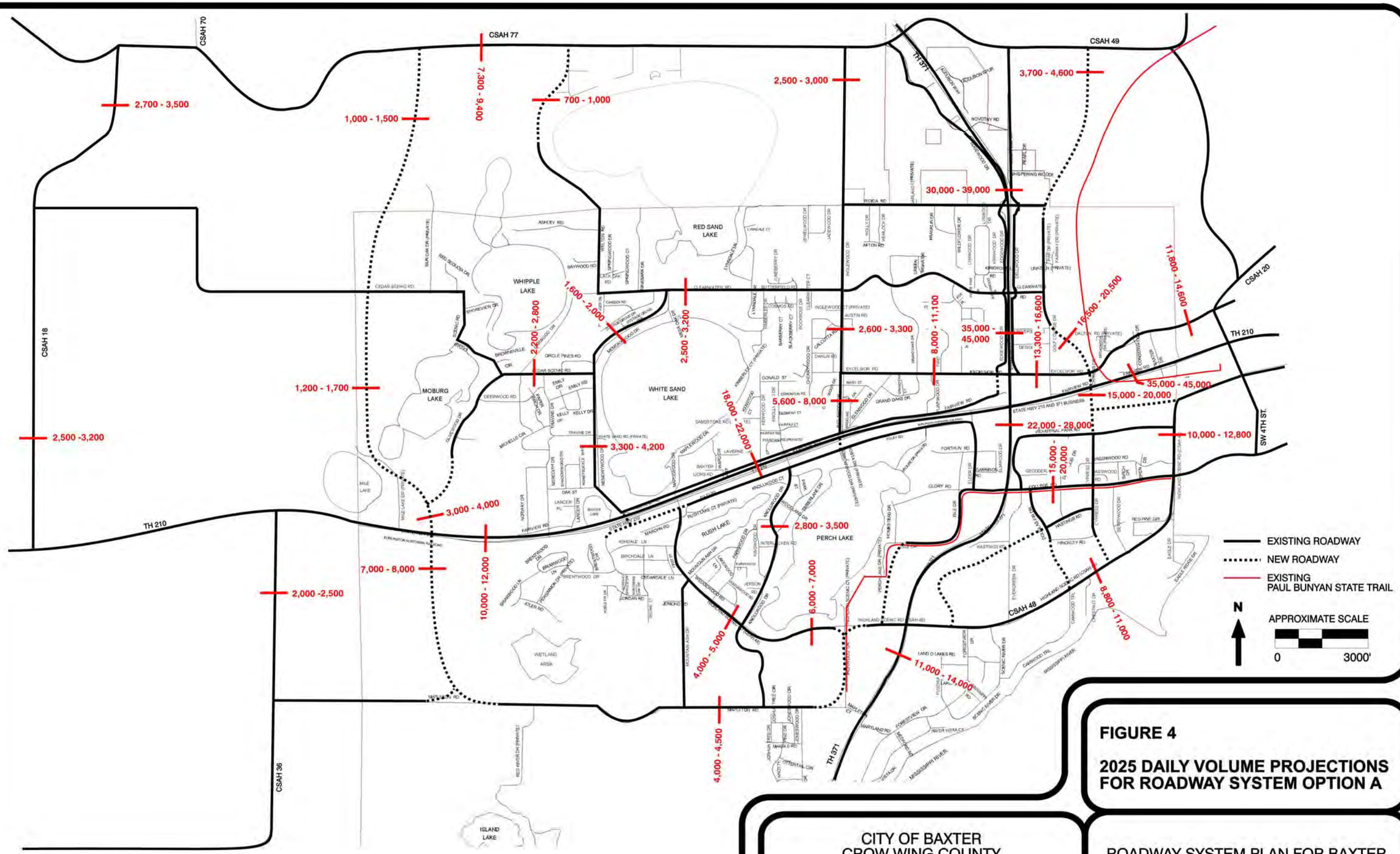


FIGURE 4

2025 DAILY VOLUME PROJECTIONS FOR ROADWAY SYSTEM OPTION A

CITY OF BAXTER
CROW WING COUNTY

BENSHOOF & ASSOCIATES, INC.
TRANSPORTATION ENGINEERS AND PLANNERS

ROADWAY SYSTEM PLAN FOR BAXTER AND CORRIDOR PLAN FOR CYPRESS DRIVE AND CSAH 48

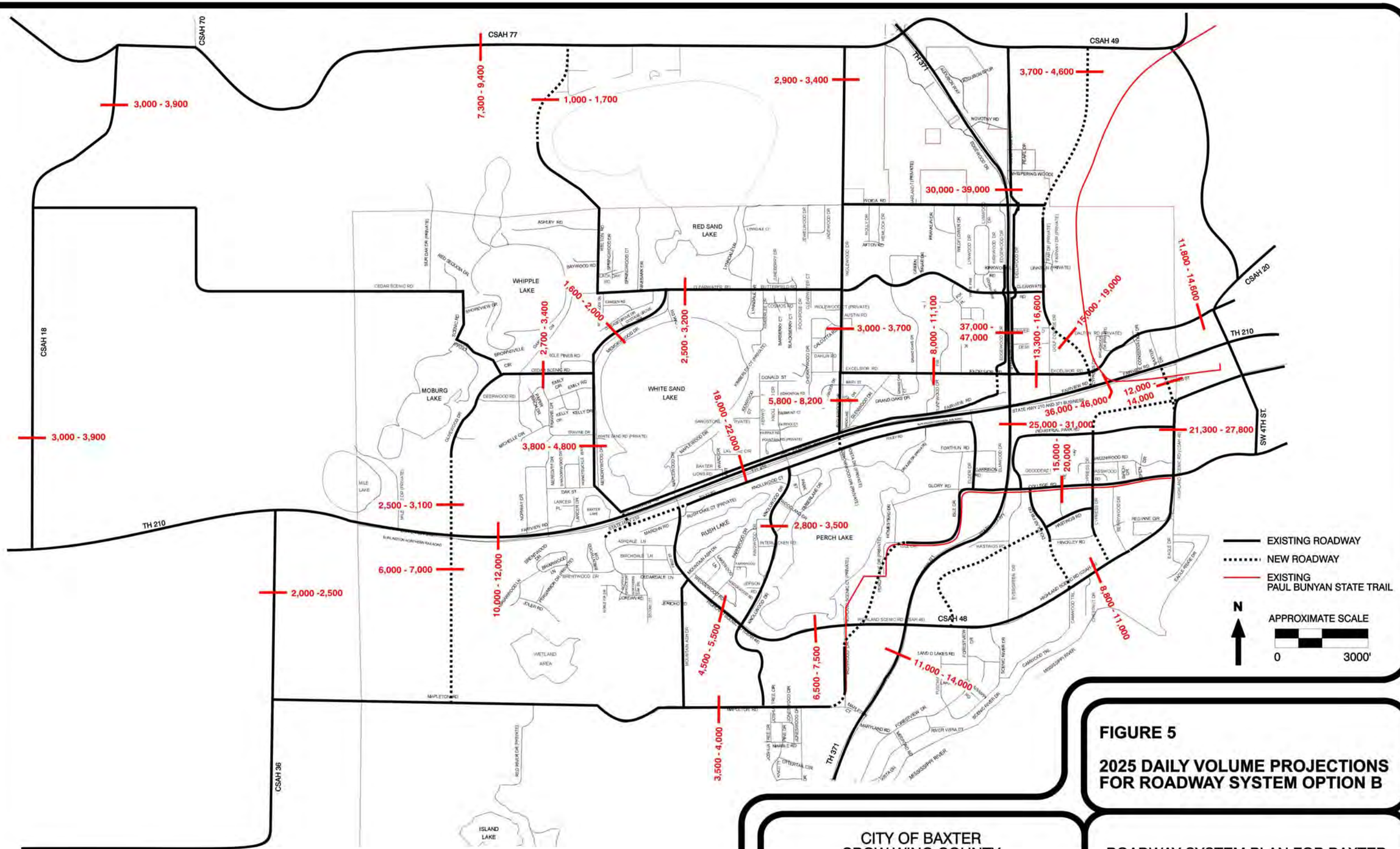


FIGURE 5

2025 DAILY VOLUME PROJECTIONS FOR ROADWAY SYSTEM OPTION B

CITY OF BAXTER
CROW WING COUNTY

BENSHOOF & ASSOCIATES, INC.
TRANSPORTATION ENGINEERS AND PLANNERS

ROADWAY SYSTEM PLAN FOR BAXTER AND CORRIDOR PLAN FOR CYPRESS DRIVE AND CSAH 48

BICYCLE TRAIL PROVISIONS IN CYPRESS DRIVE/CSAH 48 CORRIDOR

In addition to developing the two roadway system options, trail provisions in the Cypress Drive/CSAH 48 corridor were studied. The principal objective to be accomplished is to eliminate the gap that now exists in the Paul Bunyan State Trail. From the north, this trail crosses under TH 210, follows an abandoned railroad alignment to the east and then terminates at William Street just west of Fourth Street. A gap presently exists in the Paul Bunyan State Trail between this location and the intersection of CSAH 48 and College Road where the trail is reestablished and continues to the west on the south side of College Road. In addition to eliminating this gap in the Paul Bunyan State Trail, the following two objectives also should be accomplished:

a) Provide opportunities to connect the Paul Bunyan State Trail with bicycle/pedestrian routes in the City of Brainerd.
b) Preserve and/or enhance the existing snowmobile routes in the CSAH 48 corridor area.

To fulfill the above objectives, alternative trail arrangements were developed for the two roadway system options. Trail alternatives for the roadway system options A and B are shown in Figures 6, 7, and 8. One of the most desired features common to all three trail alternatives is a grade-separation for the Paul Bunyan Trail at Excelsior Road. This feature is needed to provide a high level of safety for trail users.

The trail alternatives also show snowmobile routes. Between Excelsior Road and Industrial Park Road, snowmobiles would operate either in the roadside ditches or on the Paul Bunyan State trail or both depending on the trail alternative implemented. The trail alternatives presented in this report are intended to be conceptual. Consideration should be given to applicable standards when detailed trail plan drawings are prepared (e.g. minimum radius on curves).

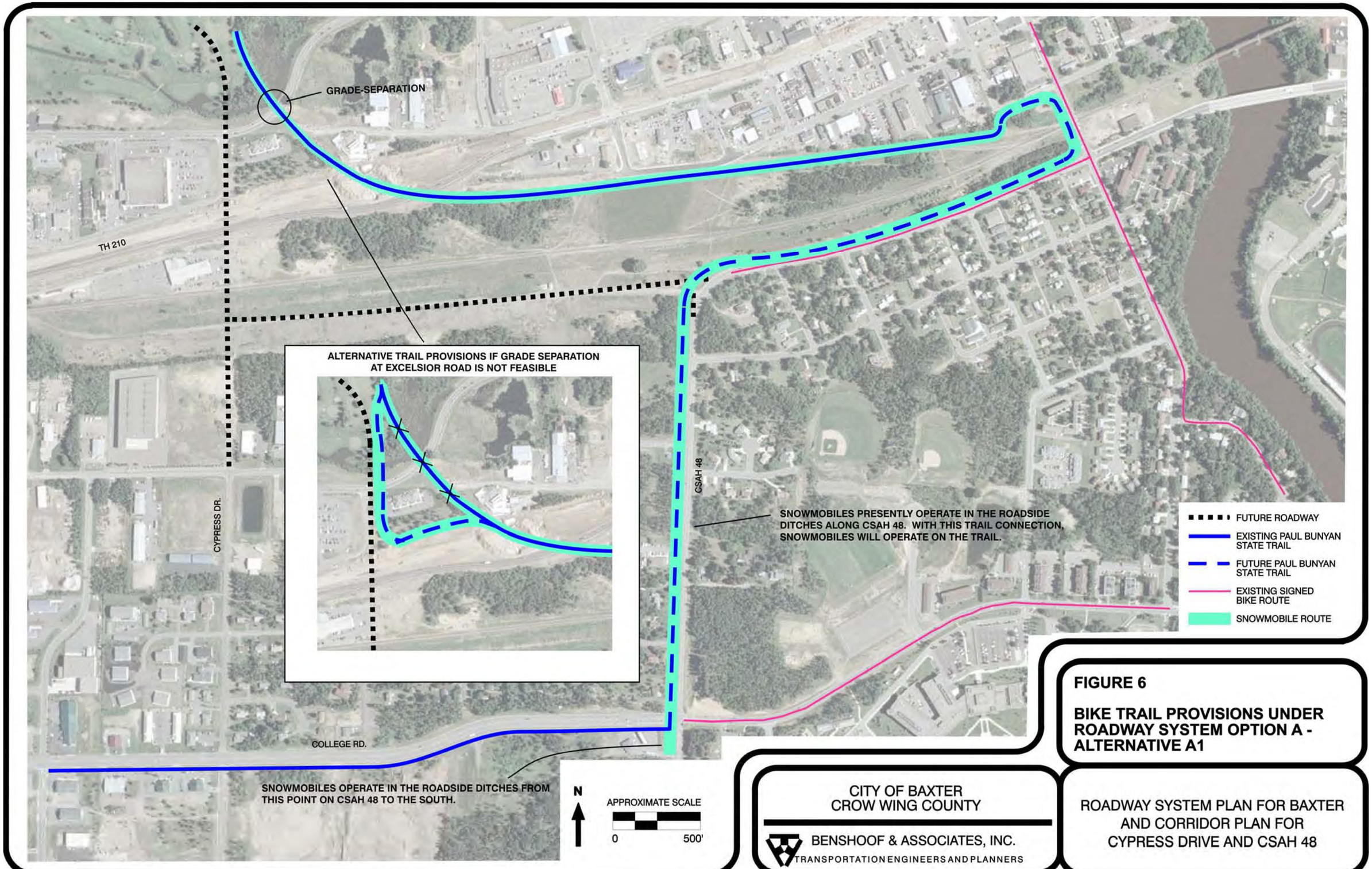


FIGURE 6

BIKE TRAIL PROVISIONS UNDER ROADWAY SYSTEM OPTION A - ALTERNATIVE A1

CITY OF BAXTER
CROW WING COUNTY

BENSHOOF & ASSOCIATES, INC.
TRANSPORTATION ENGINEERS AND PLANNERS

ROADWAY SYSTEM PLAN FOR BAXTER AND CORRIDOR PLAN FOR CYPRESS DRIVE AND CSAH 48

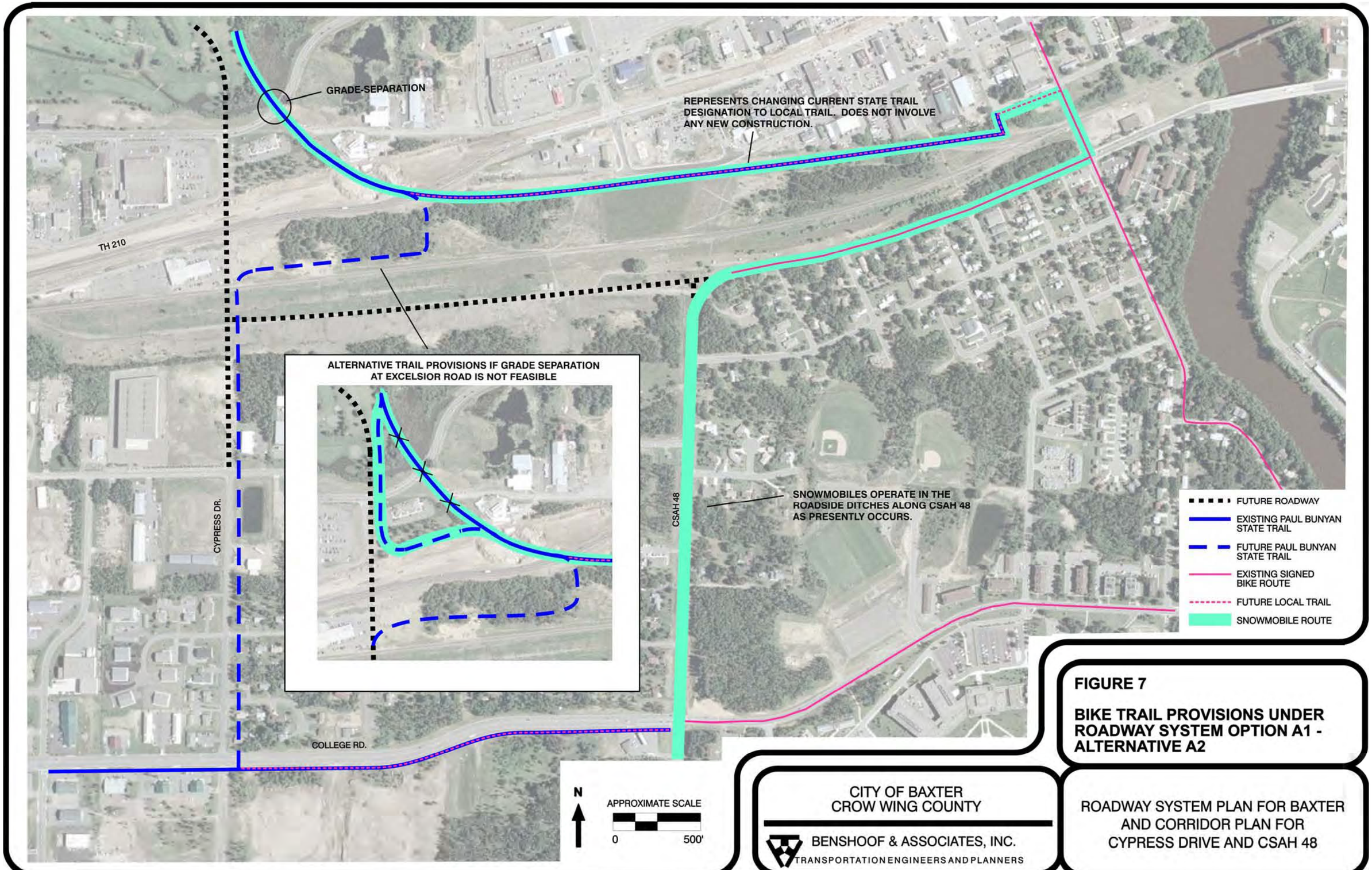


FIGURE 7

BIKE TRAIL PROVISIONS UNDER ROADWAY SYSTEM OPTION A1 - ALTERNATIVE A2

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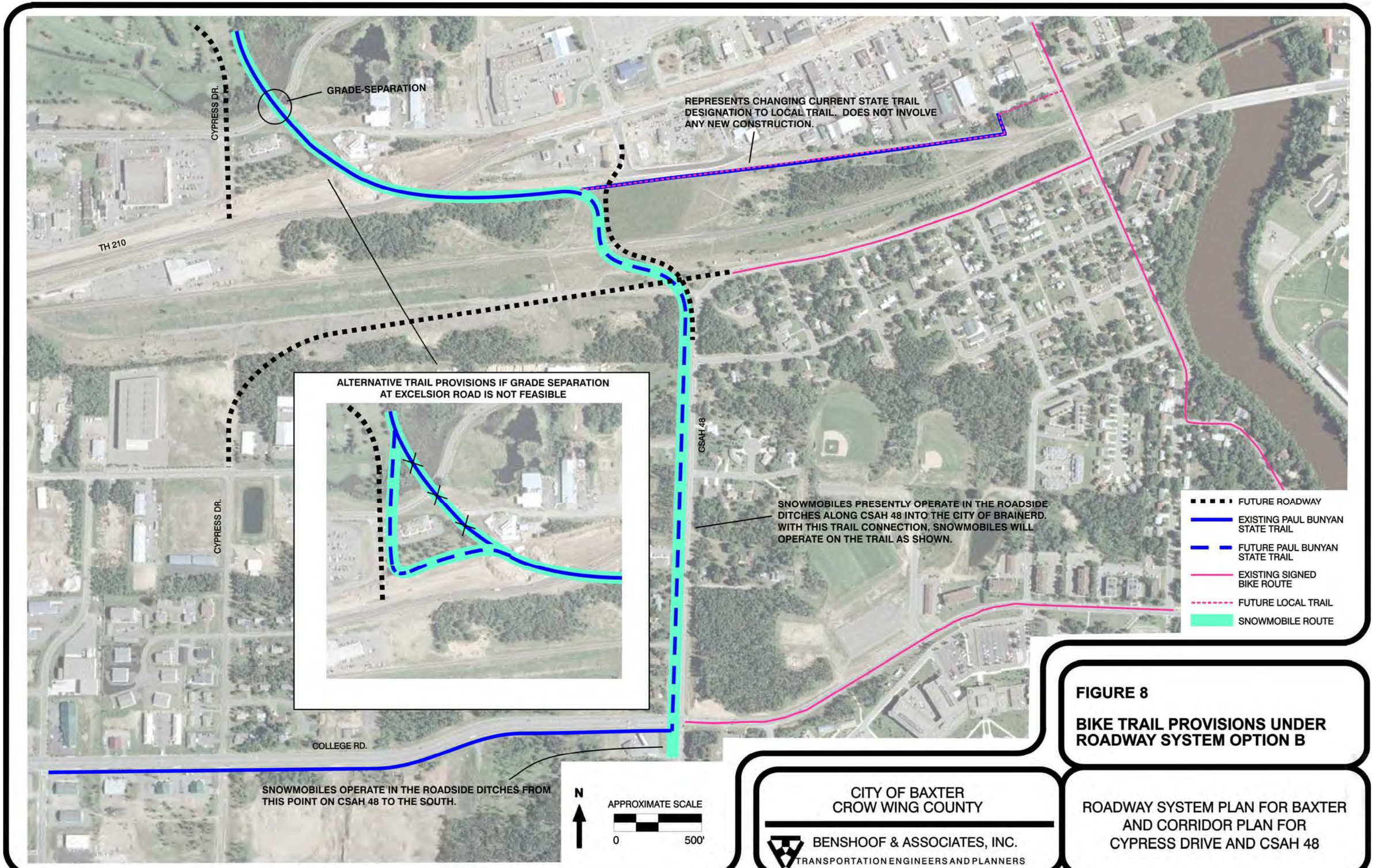

FIGURE 8

BIKE TRAIL PROVISIONS UNDER ROADWAY SYSTEM OPTION B

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EVALUATION AND RECOMMENDED ROADWAY SYSTEM PLAN

The two roadway system options presented in Figures 1 and 2 were initially evaluated to determine the extent to which they meet roadway system objectives previously presented. The evaluation focused on the two principal areas of differences between the two roadway options: a) CSAH 48 extension in the west area and b) Cypress Drive/CSAH 48 corridor. Evaluation of each of these two areas and findings are presented next.

EVALUATION OF WESTERN PORTION OF STUDY AREA

Evaluation of the western portion of the study area is presented in Table 1. Based on this evaluation, option B was determined to best meet the roadway system plan objectives. In addition to meeting the system-wide objectives, option B fulfills the following specific needs more effectively compared to option A:

- *Connection between Olivewood Drive and Mapleton Road across TH 210.* This connection is needed to adequately serve the planned industrial office uses south of TH 210 near the western City boundary and to serve the low-density residential development north and south of Mapleton Road. Option A shows an extension of CSAH 48 across TH 210 to CSAH 77. Although this option serves the preceding purpose, the CSAH 48 extension all the way to CSAH 77 provides limited benefit due to the following reasons:
  - Limited opportunity for development along the CSAH 48 alignment shown in option A.
  - Limited demand for travel between TH 210 and CSAH 77
  - Presence of large wetlands

  Therefore, option B will serve the preceding purpose well and is not subjected to the above limitations of option A.

- *Mapleton Road between Ironwood Drive and Cass County CSAH 36.* As shown in option B, this roadway segment should be retained on its current alignment. Based on discussions with the key stakeholders, benefits exist to change Mapleton Road to CSAH 48. Such a jurisdiction change will provide the following three principal benefits:
  - Higher level roadway to adequately serve the future residential development north and south of Mapleton Road.
  - Higher level east-west roadway that will help relieve traffic on TH 210
  - Higher level roadway that ties major roadways, including TH 371 with Cass County CSAH 36.

Through discussions regarding preliminary findings, project participants expressed concurrence that option B described above is preferred for the western portion of the study area.

TABLE 1
EVALUATION OF ROADWAY NETWORK OPTIONS A AND B REGARDING WEST PORTION OF CSAH 48

OBJECTIVE	ROADWAY SYSTEM OPTION A	ROADWAY SYSTEM OPTION B
a) Provide a roadway system that serves the following needs: connectivity, accessibility, and mobility.	Objective well met.	Objective met nearly as well as under Option A, given limited future development along possible CSAH 48 corridor north of TH 210 and low travel demand along this corridor between TH 210 and CSAH 77.
b) Provide a safe and efficient roadway system that is cost effective.	Safety and efficiency objectives well met. Cost effectiveness objective not well met due to high cost for right-of-way and construction of CSAH 48 segment between TH 210 and CSAH 48. The benefits of this roadway segment likely are not as great as these costs.	Objective well met. This option will provide a safe and efficient roadway system that is cost effective.
c) Establish a roadway system that does not cause significant negative impacts on environment or affected properties.	Extensive wetlands exist along corridor between TH 210 and CSAH 77, though road alignment likely could be established that would avoid significant impacts on these wetlands. Major impacts would occur to homes along Mile Lake Drive.	No significant impacts on wetlands. Slightly greater volume impacts for homes along Olivewood Drive, Cedar Scenic Road, and Welton Road.
d) Provide a roadway system plan that is effectively coordinated with plans of the following agencies: Crow Wing County (including unorganized territory north of Baxter), City of Brainerd, Sylvan Township, East Gull Lake Township, Cass County, Mn/DOT, Burlington Northern Railroad.	Changes to CSAH 48 have major implications for Crow Wing County.	No significant implications on other agencies.
e) Provide and support a roadway system that enhances quality economic development within the City.	Objective well met.	Objective well met.
f) Provide a roadway system plan that effectively correlates with the planned pedestrian/bicycle trail system.	Objective well met.	Objective well met.
g) Provide a system of minor arterials and collectors that enhances the ability of TH 371 and TH 210 to serve as principal arterials.	Objective well met.	Objective well met.
h) Provide a roadway system plan that offers improved alternatives to traffic use of the TH 210/Fourth Street intersection in the City of Brainerd.	Not applicable. Discussed in Table 2	Not applicable. Discussed in Table 2.

EVALUATION OF EASTERN PORTION OF STUDY AREA

Regarding the Cypress Drive/CSAH 48 corridor, there are a total of three possible options: a) Cypress Drive extension across the railroad tracks, b) CSAH 48 extension across the railroad tracks, and c) both Cypress Drive and CSAH 48 extensions across the railroad tracks. Both Cypress Drive and CSAH 48 can be extended across the railroad tracks (option c above) in the following two different ways:

- At-grade crossings on both Cypress Drive and CSAH 48.
- At-grade crossing on Cypress Drive and grade-separation on CSAH 48.

The first of the above two options presents a safety problem as two railroad crossings would double the number of conflict points compared to one crossing. For that reason, and the likelihood that the railroad would not approve two railroad crossings, further consideration has not been given for two at-grade crossings. Although the second option above avoids the safety problem, it only offers limited benefits at a high cost.

The initial evaluation of the two roadway system options presented in Table 2 regarding the Cypress Drive/CSAH 48 corridor focused on the remaining two options for a railroad crossing – Cypress Drive or CSAH 48. This evaluation clearly indicates, on an overall basis, that the Cypress Drive extension best meets the roadway system plan objectives. Two significant points in support of this conclusion are the following:

- The Cypress Drive extension meets objective a) well by providing a continuous north-south minor arterial roadway from CSAH 48 to CSAH 49, which will provide major benefits for north-south travel in the eastern portion of Baxter.

- The Cypress Drive extension meets objective g) well by providing relatively greater relief for TH 371 and TH 210. Thus, the Cypress Drive extension would better preserve the principal arterial function of these roadways.

TABLE 2
EVALUATION OF ROADWAY SYSTEM OPTIONS A AND B REGARDING CYPRESS DRIVE/CSAH 48 CORRIDOR

OBJECTIVE	ROADWAY SYSTEM OPTION A	ROADWAY SYSTEM OPTION B
a) Provide a roadway system that serves the following needs: connectivity, accessibility, and mobility.	Objective well met. Provision of Cypress Drive as a continuous route between CSAH 49 and CSAH 48 provides a high level of continuity to serve local north-south trips and to relieve use of TH 371.	Meets objective better than existing roadway system, but not as well as option A due to lack of route continuity across TH 210.
b) Provide a safe and efficient roadway system that is cost effective.	Objective well met.	Objective well met.
c) Establish a roadway system that does not cause significant negative impacts on environment or affected properties.	No significant environmental impacts. Impacts to Dondelinger property and to residential properties along Cypress Drive between Industrial Park Road and College Road.	Potential issues regarding relationship with contaminated site in railroad corridor.
d) Provide a roadway system plan that is effectively coordinated with plans of the following agencies: Crow Wing County (including unorganized territory north of Baxter), City of Brainerd, Sylvan Township, East Gull Lake Township, Cass County, Mn/DOT, Burlington Northern Railroad.	Better relates with Mn/DOT's objectives due to greater reduction in traffic volumes through TH 210/TH 371 intersection. Leaves question regarding northern terminus of CSAH 48, whether it should continue to terminate at an intersection of two MSA streets (i.e. Laurel St. and 4th St.).	Does not provide as much relief to traffic use of TH 371 or TH 210/TH 371 intersection. Provides a better northern terminus for CSAH 48 at intersection with TH 210.
e) Provide and support a roadway system that enhances quality economic development within the City.	Offers access opportunities for future development on properties in railroad corridor. Questions regarding impacts on development opportunities for Dondelinger property.	Offers access opportunities for future development in railroad corridor.
f) Provide a roadway system plan that effectively correlates with the planned pedestrian/bicycle trail system.	Connects southern and northern segments of Paul Bunyan Trail with new trail either along Cypress Drive or CSAH 48. Preferred options would maintain use of TH 210 underpass as part of Paul Bunyan Trail. Two alternatives are available for crossing Excelsior Road.	Connects southern and northern segments of Paul Bunyan Trail with new trail along CSAH 48. Maintains use of TH 210 underpass as part of Paul Bunyan Trail. Two options are available for crossing Excelsior Rd.
g) Provide a system of minor arterials and collectors that enhances the ability of TH 371 and TH 210 to serve as principal arterials.	Provides greater relief to traffic use of TH 371 and through the TH 371/TH 210 intersection.	Does not provide as much relief to use of TH 371. Would increase use of TH 210 between Cypress Dr. and CSAH 48 for north-south trips on these roadways.
h) Provide a roadway system plan that offers improved alternatives to traffic use of the TH 210/Fourth Street intersection in the City of Brainerd.	Provides relief for certain movements through the TH 210/Fourth Street intersection, with results similar to option B.	Provides relief for certain movements through the TH 210/Fourth Street intersection, with results similar to option A.

Based on the preceding initial evaluation, a draft conclusion regarding the eastern portion of the study area was that Cypress Drive extension best meets the roadway system objectives described at the beginning of this report. Upon reviewing this draft conclusion, the Brainerd City Engineer questioned which of the two options for Cypress Drive and CSAH 48 would provide the most benefit for the overall roadway system in the area. He expressed his perception that the CSAH 48 extension likely would provide greater benefits for the overall roadway system.

To address the preceding question, additional evaluation was completed regarding the Cypress Drive and CSAH 48 extensions. The additional evaluation focused on the following three key items that are particularly important regarding implications on the overall roadway system:

- Use of potential Cypress Drive and CSAH 48 extensions by trips to/from the major traffic generators on the north and the south sides of TH 210 east of TH 371.
- Impacts of the two roadway extension options on traffic movements crossing TH 210.
- Impacts of the two roadway options on the TH 210/Fourth Street intersection.

Evaluation and findings regarding the preceding three key traffic items are presented next.

- *Use of Cypress Drive and CSAH 48 extensions by trips to/from major traffic generators on the north and the south sides of TH 210 east of TH 371.* The CSAH 48 extension would provide a new route to/from the West Gate Mall area. As shown in Figure 9, this route would serve trips between the West Gate Mall area and the following locations: Baxter Industrial Park, Southeastern parts of Brainerd, south on TH 371, and west on CSAH 48.

  By comparison, the Cypress Drive extension would provide a new route to serve multiple origin-destination combinations. Figure 10 shows the use of the potential Cypress Drive extension for trips between the commercial strip along the east side of TH 371 north of TH 210 and the following: Baxter Industrial Park, southeastern parts of Brainerd, south on TH 371, and west on CSAH 48. The patterns represented in Figures 9 and 10 are similar. However, the commercial area on the north side of TH 210 shown in Figure 10 generates significantly greater number of trips compared to the West Gate Mall area shown in Figure 9. Thus, the use of the Cypress Drive extension for the trips illustrated in Figure 9 would be much greater than the use of the CSAH 48 extension for the trips shown in Figure 8.

  In addition to serving local trips shown in Figure 10, the Cypress Drive extension also would provide an attractive route for longer distance trips to/from the north. As shown in Figure 11, the Cypress Drive extension would provide an attractive, alternative route for trips between the north on TH 371 (including trips using CSAH 49 and CSAH 77) and the following: Baxter Industrial Park and southeastern parts of Brainerd. The travel patterns illustrated in Figures 9, 10, and 11 clearly demonstrate two points: 1) the Cypress Drive extension would serve more extensive origin-destination combinations and associated higher traffic volumes than would the CSAH 48 extension and 2) the Cypress Drive extension would relieve traffic use of TH 371 to a greater extent than would the CSAH 48 extension.

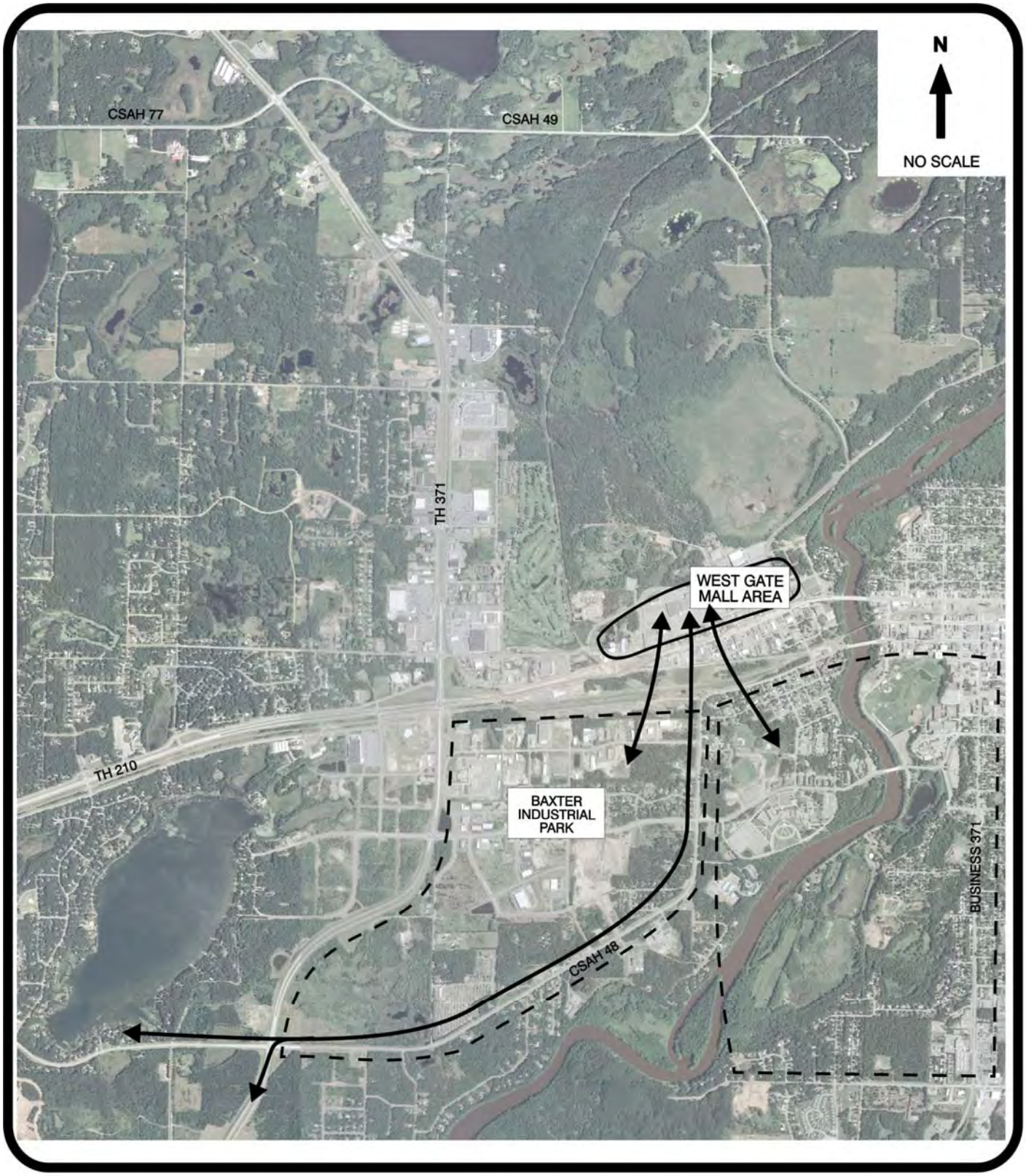

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FIGURE 9

**USE OF POTENTIAL
CSAH 48 EXTENSION FOR
TRIPS TO/FROM
WEST GATE MALL AREA**

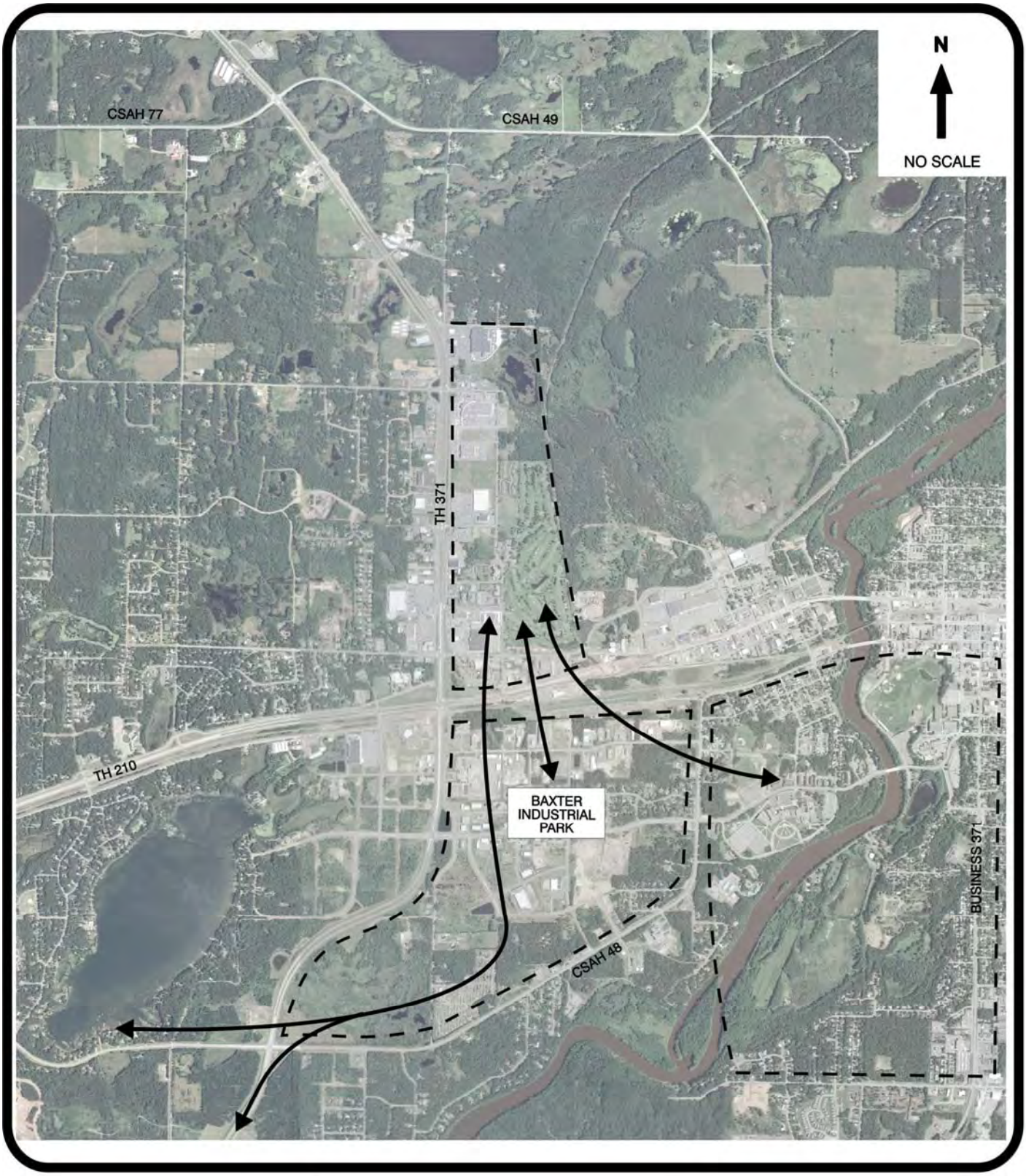

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FIGURE 10

USE OF POTENTIAL CYPRESS DR. EXTENSION FOR TRIPS TO/FROM COMMERCIAL AREA EAST OF TH 371

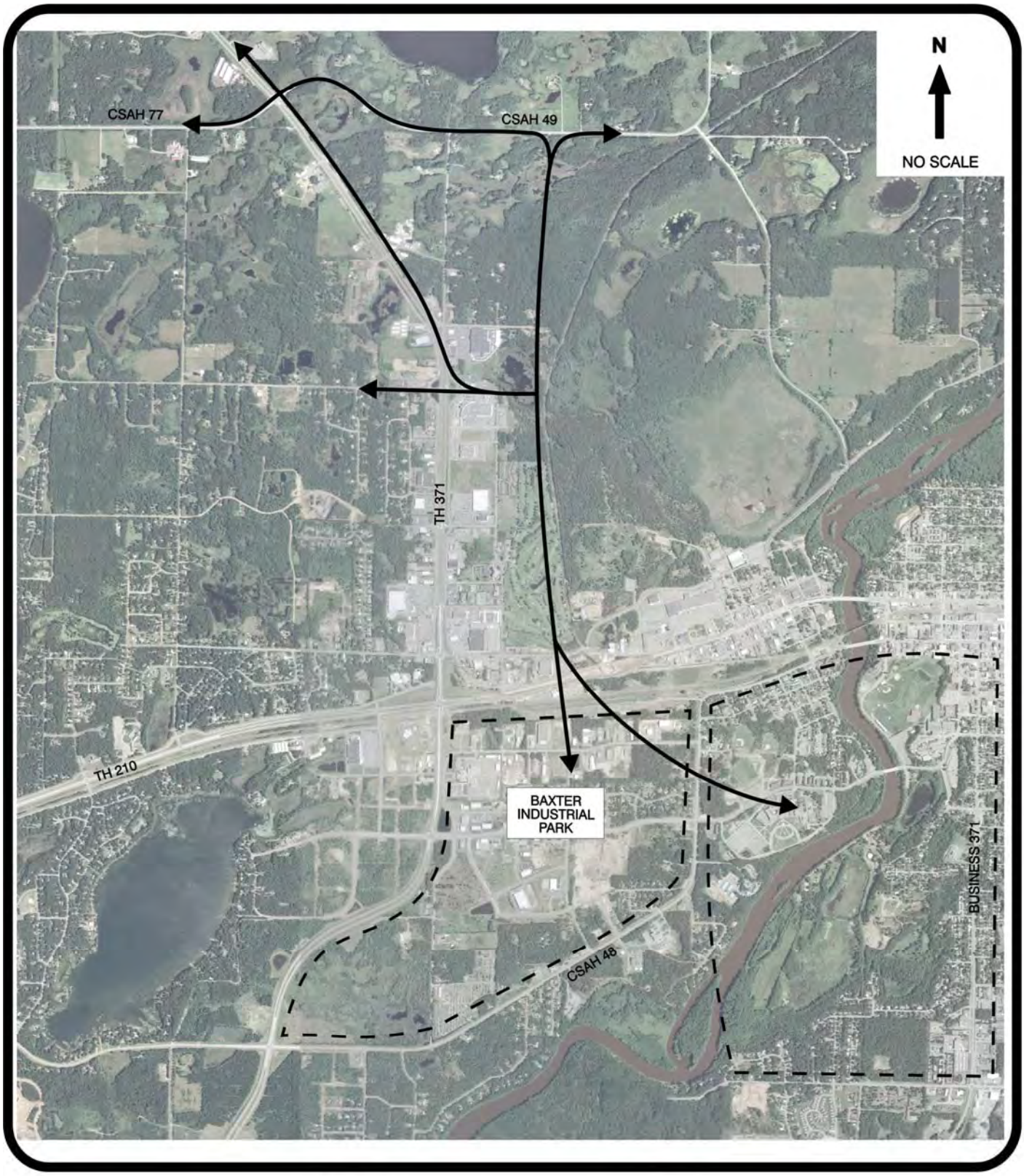

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FIGURE 11

USE OF POTENTIAL CYPRESS DR. EXTENSION FOR TRIPS TO/FROM WEST ON CSAH 77, NORTH ON TH 371, AND EAST ON CSAH 49

- *Impacts of the two roadway extension options on traffic movements crossing TH 210.* As shown in Figure 1, the Cypress Drive extension across the railroad tracks will provide a continuous north-south minor arterial roadway between Cass County CSAH 49 and CSAH 48. With the CSAH 48 extension, the TH 210/CSAH 48 intersection would be located at Baxter Drive, which is about ½ mile east of the TH 210/Cypress Drive intersection location. Thus, with the CSAH 48 extension, a significant portion of the traffic crossing TH 210 to travel between the north and the south sides of TH 210 would use the section of TH 210 between CSAH 48 and Cypress Drive on the north side. This offset situation, as illustrated in Figure 12, will result in increased congestion and increased number of safety conflicts on TH 210, which would diminish the ability of this roadway to serve its principal arterial function.

- *Impacts of the two roadway extension options on the TH 210/Fourth Street intersection.* The intersection of TH 210 and Fourth Street is currently experiencing congestion at busy times of day. Opportunities for increasing capacity are limited due to development on all four corners of the intersection. Therefore, as described at the beginning of the report, one of the key objectives of the roadway system plan is to provide relief to the TH 210/Fourth Street intersection through greater use of other routes. In that context, a detailed evaluation and comparison of the impacts of the two roadway extension options on each movement at the TH 210/Fourth Street intersection was completed. Findings from this comparison are presented in Table 3. Results presented in this table indicate that both options would provide about the same extent of relief to traffic movements through the TH 210/Fourth Street intersection.

The preceding supplemental investigation of three key traffic items affecting the Cypress Drive/CSAH 48 corridor clearly demonstrates that the Cypress Drive extension would provide greater benefits for the overall roadway system than would the CSAH 48 extension.

WITH CYPRESS DR. EXTENSION

WITH CSAH 48 EXTENSION

CONCLUSION: CSAH 48 EXTENSION WOULD RESULT IN GREATER USE OF TH 210 FOR TRIPS CROSSING TH 210 AND THEREFORE WOULD CAUSE GREATER CONGESTION AND SAFETY CONFLICTS.

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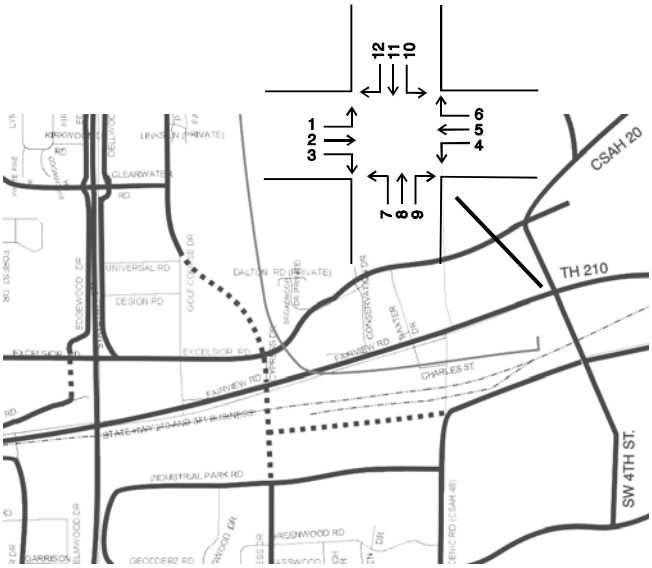
FIGURE 12

TRAFFIC MOVEMENTS CROSSING TH 210 UNDER TWO ALTERNATIVES

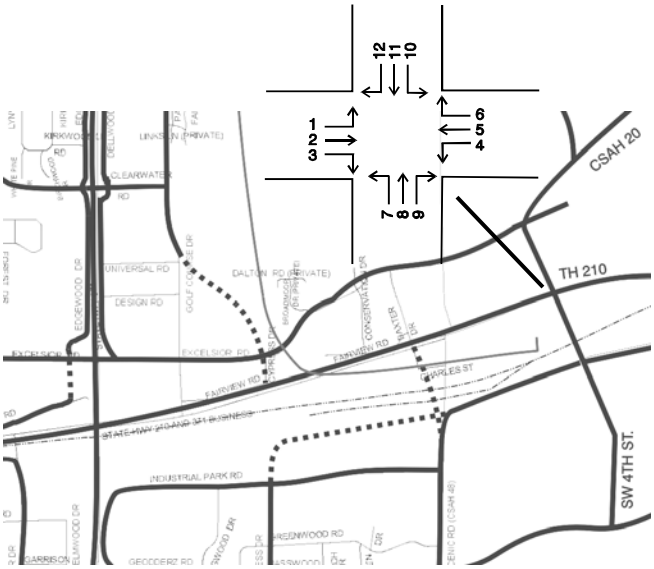
TABLE 3
COMPARISON OF IMPACTS OF TWO ROADWAY SYSTEM OPTIONS ON TH 210/FOURTH STREET INTERSECTION

Movement through TH 210/Fourth Street Intersection	Comments Regarding Ability of Two Roadway Options to Reduce Volume for this Movement
1. Eastbound left turn	Both options provide an alternative for these movements to turn left at the TH 210/Cypress Drive intersection. No difference between the two options.
2. Eastbound through	No significant impact under either option.
3. Eastbound right turn	Option A provides alternative to turn right at the TH 210/Cypress Drive intersection. Option B provides the alternative to turn right at the TH 210/CSAH 48 intersection. No significant difference between the two options.
4. Westbound left turn	No significant impact under either option.
5. Westbound through	No significant impact under either option.
6. Westbound right turn	No significant impact under either option.
7. Northbound left turn	Option A provides opportunity to turn left at the TH 210/Cypress Drive intersection. Option B provides opportunity to turn left at the TH 210/CSAH 48 intersection. No significant difference between the two options.
8. Northbound through	No significant impact under either option.
9. Northbound right turn	No significant impact under either option.
10. Southbound left turn	No significant impact under either option.
11. Southbound through	No significant impact under either option.
12. Southbound right turn	Both options provide an alternative for these movements to turn right at the TH 210/Cypress Drive intersection. No difference between the two options.

OPTION A



OPTION B



RECOMMENDED ROADWAY SYSTEM PLAN

From the evaluation of the western and the eastern portions of the study area, the recommended roadway system plan represents a combination of options A and B. For the western portion, it is recommended that option B be implemented. For the eastern portion, it is recommended that option A be implemented. Figure 13 shows the overall recommended roadway system plan that combines the recommendations for the eastern and the western portions of the study area. With the recommended roadway system plan, CSAH 48 will be retained on its current alignment east of TH 371. It is to be noted that this recommendation leaves two alternatives for bicycle trails – alternatives A1 and A2.

As presented earlier, one of the principal objectives of the roadway system plan is to enhance the ability of TH 210 and TH 371 to serve as principal arterials. Key features of the recommended roadway system plan presented in Figure 13 that contribute to this objective are the following:

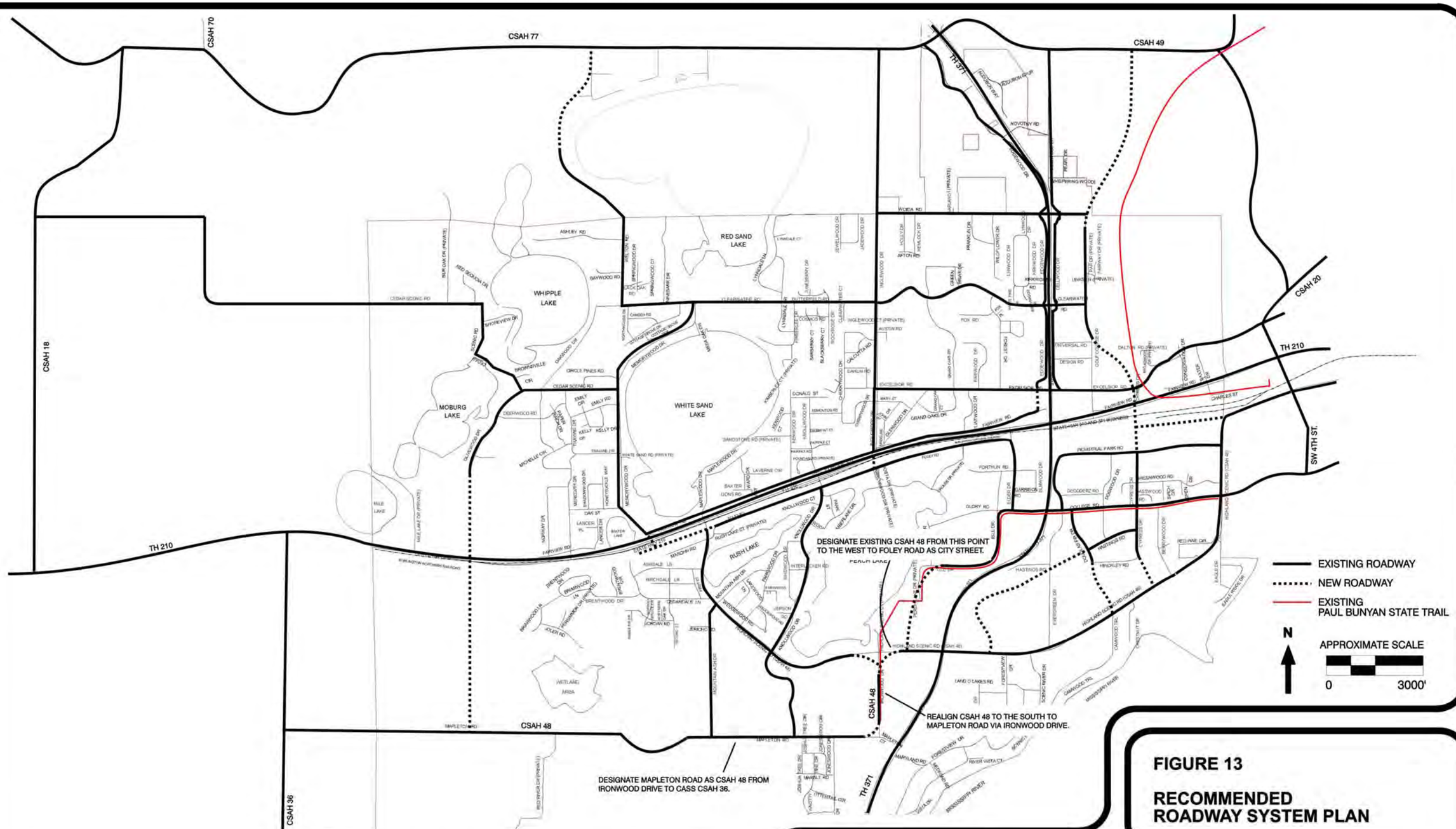
- Restricting the TH 210/Golf Course Drive intersection to a ¾ access will result in more even and adequate spacing between signalized intersections on TH 210.

- Cypress Drive provides a continuous parallel minor arterial route for TH 371.

- Extension of Isle Road to CSAH 48 provides relief to TH 371 at this location.

- The realignment and extension of CSAH 48 west to Cass County CSAH 36 provides a parallel reliever roadway for TH 210.

- Connection between Edgewood Drive and Fairview Road in the northwest quadrant of the TH 210/TH 371 intersection will reduce turning movements between the west on TH 210 and the north on TH 371.



NOTES:

- FULL ACCESS INTERSECTIONS ON TH 210 IN CITY OF BAXTER WEST OF TH 371 ARE AT THE FOLLOWING LOCATIONS: NEW ROADWAY CONNECTING OLIVEWOOD DRIVE AND MAPLETON ROAD, MEMORYWOOD DRIVE, INGLEWOOD DRIVE, AND ELDER DRIVE.
- TWO ALIGNMENT OPTIONS ARE AVAILABLE FOR CYPRESS DRIVE NORTH OF TH 210:
  A) ALONG GOLF COURSE DRIVE ALIGNMENT AS SHOWN IN THIS FIGURE, AND
  B) ALONG THE WEST SIDE OF THE PAUL BUNYAN TRAIL.

FIGURE 13

RECOMMENDED ROADWAY SYSTEM PLAN

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PRELIMINARY RECOMMENDED LAYOUT FOR CYPRESS DRIVE

In the previous chapter, it was recommended that Cypress Drive be extended across the railroad tracks to TH 210. A preliminary recommended layout was prepared for Cypress Drive between Excelsior Road and Industrial Park Road to illustrate the number of lanes needed, sidewalk/trail provisions, and widths. In preparing this plan, consideration was given to the existing and expected future development along the railroad corridor to ensure that reasonable access opportunities are available for these developments when Cypress Drive is extended across the railroad tracks. Figure 14 shows properties that could be developed in the future and potential access provisions for these properties with Cypress Drive extended across the railroad tracks. Considering the proximity of the railroad crossing, safety, and the minor arterial function of Cypress Drive, only one access intersection should be allowed between TH 210 and Industrial Park Road as shown in Figure 14.

As shown in Figure 14, south of the railroad tracks, the access roadway east of Cypress Drive connects to CSAH 48 and allows access from both the east and the west ends. The roadway on the west side would be a dead-end road with access only via Cypress Drive. The access roadway north of the railroad tracks is also a dead-end roadway and provides access only via the Charles Street/Baxter Drive intersection.

Figure 15 shows the preliminary recommended layout for Cypress Drive between Excelsior Road and Industrial Park Road. Further investigation and detailed analyses should be completed to determine what traffic lanes and traffic controls would be needed through the intersections of Cypress Drive with Excelsior Road and TH 210 in order to provide satisfactory operations given the limited spacing between these intersections. The general cross section for Cypress Drive should provide two lanes in each direction with a raised median and turn lanes at intersections. With the Cypress Drive layout shown in Figure 15, the existing right turn access on TH 210 for the Dondelinger property should be closed. Access for this property will be available via the TH 210/Golf Course Drive intersection, which will provide ¾ access in the future. Access for the office development in the southeast quadrant of the Excelsior Road/Cypress Drive intersection should be revised to accommodate the recommended layout for Cypress Drive. Two options regarding access for this development are:

- Retain existing driveway on Cypress Drive and restrict it to right turns only, or
- Relocate the driveway on Cypress Drive to Excelsior Road.

Detailed traffic forecasts and capacity analyses should be completed to determine whether a second left turn lane is needed on any of the intersection approaches and to determine the necessary lengths of turn lanes. The right-of-way needed for Cypress Drive between Industrial Park Road and Excelsior Road is in the range of 120 to 150 feet depending on whether or not the Paul Bunyan Trail is aligned along Cypress Drive and depending on whether or not more than one left turn lane is needed on Cypress Drive at any of its intersections.

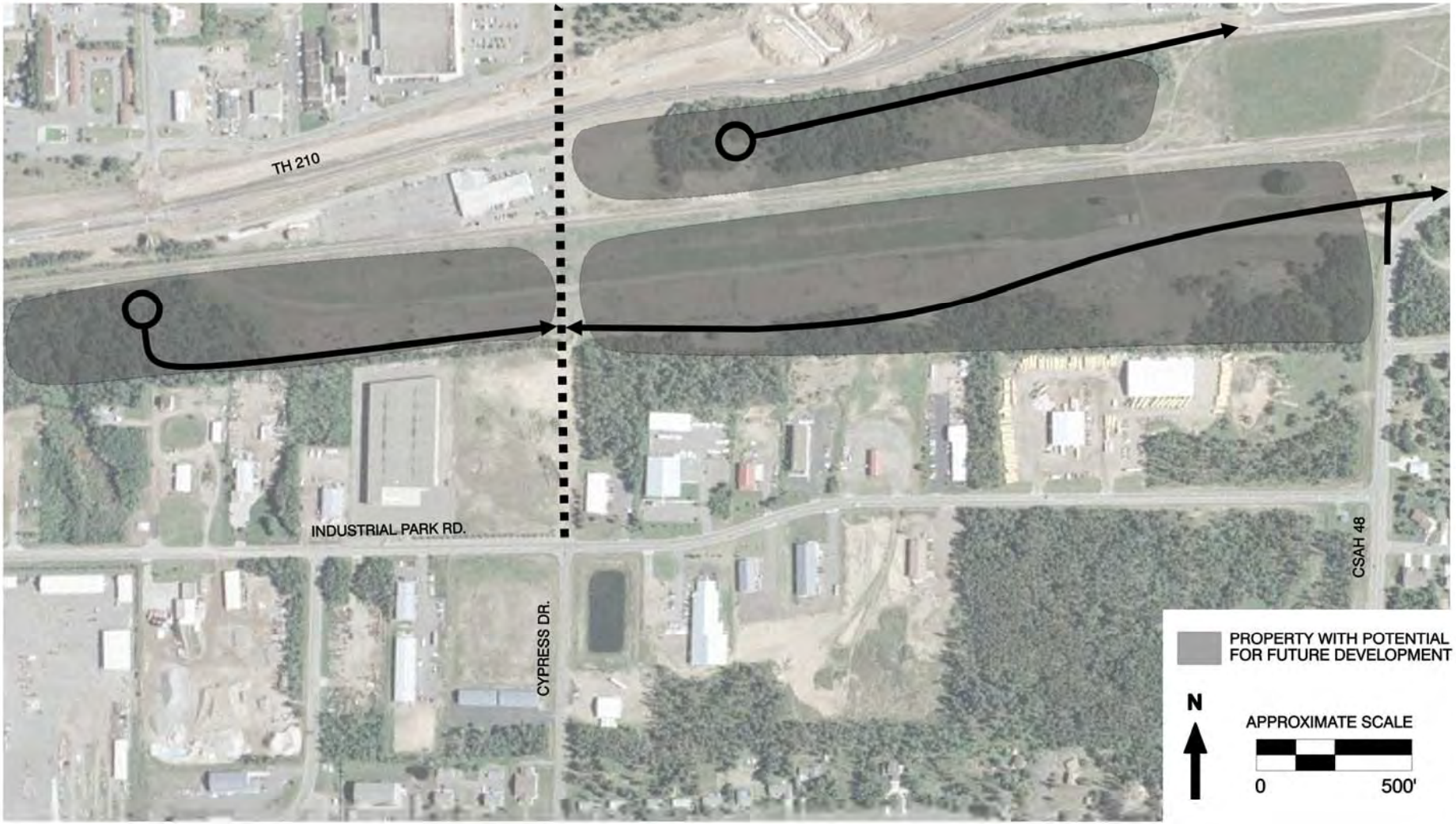

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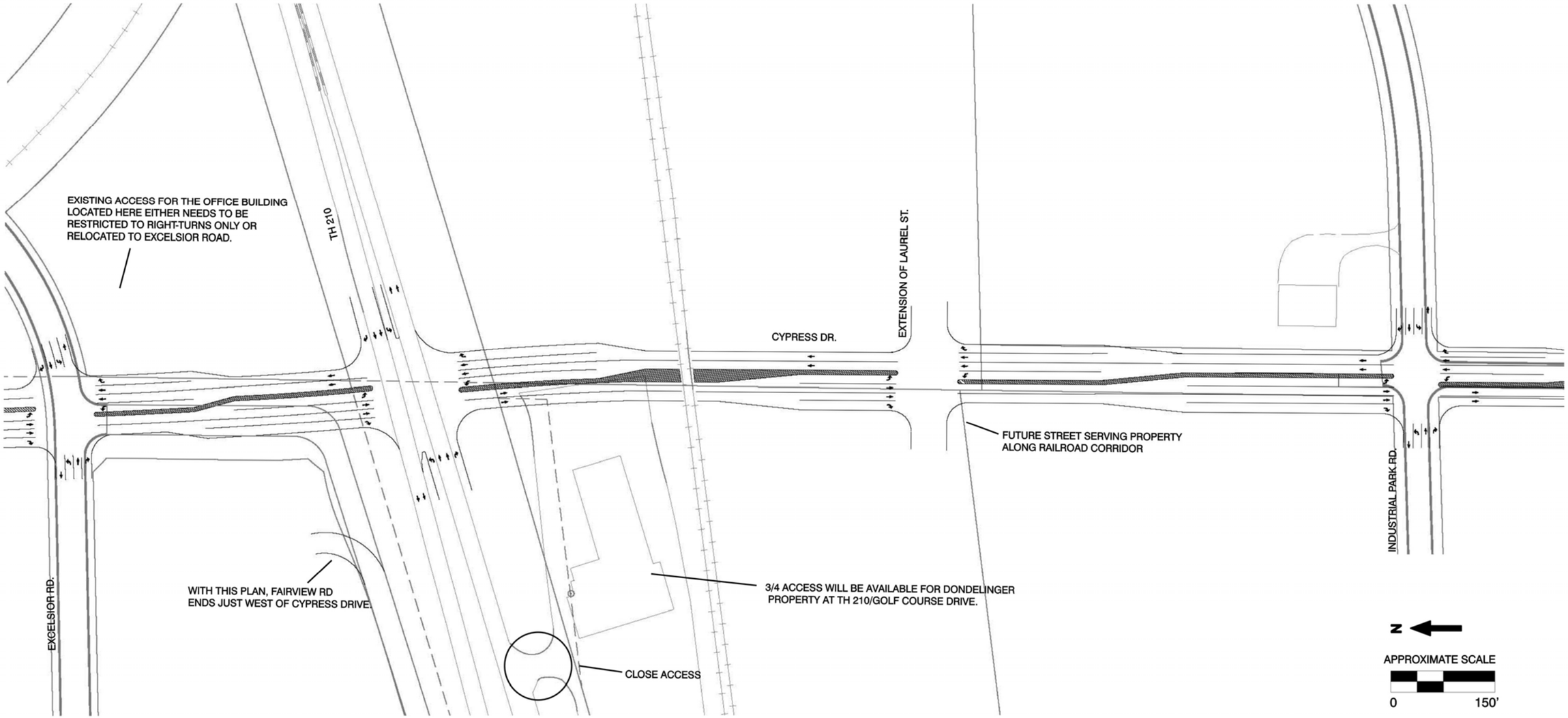
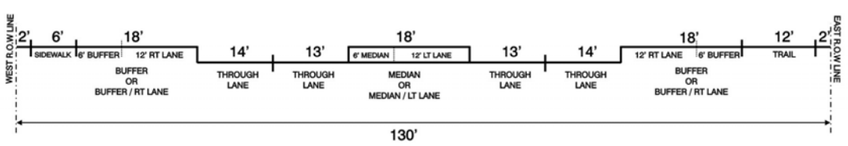
FIGURE 14

POTENTIAL ACCESS PROVISIONS FOR FUTURE PROPERTIES ALONG RAILROAD CORRIDOR



TYPICAL CROSS-SECTION

(NOT TO SCALE)



NOTE: IF ALTERNATIVE A1 IS IMPLEMENTED FOR TRAIL PROVISIONS, PROVIDE A 6' SIDEWALK ON THE EAST SIDE IN PLACE OF THE TRAIL SHOWN. DEPENDING ON WHETHER A TRAIL OR A SIDEWALK IS IMPLEMENTED ON THE EAST SIDE AND DEPENDING ON WHETHER DOUBLE LEFT TURN LANES ARE NEEDED, THE RIGHT-OF-WAY NEEDED CAN EITHER BE SLIGHTLY GREATER OR LOWER THAN THE 130 FEET SHOWN ABOVE.

NOTE: PRIOR TO DESIGN AND CONSTRUCTION, DETAILED TRAFFIC FORECASTS AND CAPACITY ANALYSES SHOULD BE COMPLETED TO DETERMINE WHETHER A SECOND LEFT TURN LANE IS NEEDED ON ANY OF THE APPROACHES AND TO DETERMINE NECESSARY LENGTHS OF TURN LANES.

FIGURE 15

PRELIMINARY RECOMMENDED LAYOUT FOR CYPRESS DRIVE BETWEEN EXCELSIOR RD. AND INDUSTRIAL PARK RD.

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IMPLEMENTATION GUIDELINES

The following suggested guidelines are intended to assist the City of Baxter, Crow Wing County, and other affected agencies in effectively implementing the recommendations presented in this report:

a) Follow-through by County staff in the near-term to investigate alignment alternatives, to coordinate with residents in the nearby area, and to conduct a feasibility study regarding the extension of Welton Road to CSAH 77.

b) Follow-through by City and County staff regarding realignment of CSAH 48 west of TH 371. Right-of-way needed to implement this recommendation should be preserved and/or acquired. The exact time when jurisdiction of Mapleton Road should be changed can be established based on factors important to the City and County, including development along this roadway. CSAH 48 realignment should be accomplished only after all roadway improvements and jurisdiction changes are completed.

c) The City of Baxter should coordinate with property owners north of Excelsior Road and establish a definitive alignment for Cypress Drive between CSAH 49 and Excelsior Road. Necessary right-of-way should be acquired and preserved.

d) The City of Baxter should confirm the exact location of access on Cypress Drive to serve properties along the railroad corridor.

e) Detailed peak hour volumes and capacity analyses should be completed for Cypress Drive between CSAH 49 and CSAH 48 to confirm the cross-section shown in Figure 15 between Excelsior Road and Industrial Park Road and to determine the cross-section needed for the remainder of Cypress Drive. The findings from this process should be used to determine the right-of-way needed for Cypress Drive.

f) It is desirable for the County to officially relinquish plans for a CSAH 48 extension across the railroad tracks in order for the City of Baxter to successfully implement the recommended Cypress Drive extension.

g) The City of Baxter, Crow Wing County, and other affected agencies should further review the trail alternatives A1 and A2 and decide on a trail plan for implementation.

Intersection Control Evaluation Report

Cypress Drive at College Road and Industrial Park Road

Baxter, Minnesota

MN SP 1805-79
SEH No. BAXTE 138944

November 30, 2016

DRAFT

SEH

Building a Better World
for All of Us®

Engineers | Architects | Planners | Scientists

Cypress Drive at College Road and Industrial Park Road
Intersection Control Evaluation Report
Baxter, Minnesota

MN S.P. NO. 1805-79
SEH No. BAXTE 138944

November 30, 2016

I hereby certify that this 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.

Graham Johnson, PE

Date: _____ Lic. No.: 45429

Approved:

City of Baxter Engineer Date

MnDOT District 3 Traffic Engineer Date

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Intersection Control Evaluation Report

Cypress Drive at College Road and Industrial Park Road

Prepared for the City of Baxter, Minnesota.

1.0 Background and Purpose

The City of Baxter, Minnesota has a long-range plan to create a north/south arterial roadway along the Cypress Drive alignment between CSAH 49 and CSAH 48.

In 2009, the City proposed to construct a segment of the planned Cypress Drive from Excelsior Road to the BNSF railroad tracks south of TH 210. The project would create a new at-grade intersection at TH 210 and Cypress Drive. The City of Baxter and Mn/DOT developed a layout for the new intersection as well as the Cypress Drive and Excelsior Road intersection. An Intersection Control Evaluation (ICE) was developed for the project and it was determined that traffic signal control at TH 210 and Cypress Drive would be most appropriate and a roundabout design at Cypress Drive and Excelsior Road would be most appropriate.

Complimentary to the above mentioned project, the City is developing the extension of Cypress Drive over the BNSF railroad with a connection to existing Cypress Drive from Industrial Park Road to College Road. As part of the project, Cypress Drive will be constructed as a 4-lane roadway down to College Road.

The purpose of this study is to determine the appropriate type of intersection control needed for the Cypress Drive/College Road intersection and the Cypress Drive/Industrial Park Road intersection. The MnDOT ICE process will be used to investigate what type of traffic control should be provided. The investigation includes analyzing traffic operations at both intersections during the PM peak hour for forecast 2038 traffic conditions.

Figure 1 represents the Project Location within the project area and highlights the current proposed project area as well as the two future Cypress Drive extension projects being planned.

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Figure 1 – Project Location Map

2.0 Existing Conditions

Currently the intersection of Cypress Drive at College Road operates under minor street stop control with College Road uncontrolled. The intersection of Cypress Drive at Industrial Park Road also operates under minor street stop control with Industrial Park Road uncontrolled; the existing intersection operates as a T-configuration with the north leg being "stubbed" in anticipation of a future street extension.

Cypress Drive is a 2-lane local collector roadway that currently only extends approximately 1,600 feet north and 1,600 feet south of College Drive, with a posted speed of 30 mph. The existing roadway limits of Cypress Drive are at Industrial Park Road to the north and Hinckley Road to the south.

College Road is a minor arterial roadway that connects from west of TH 371 to the east over the Mississippi River and into the City of Brainerd. Through the project area, College Road has 4 through lanes plus a continuous two way center left turn lane; the posted speed limit is 40 mph. All connecting roadways and driveways to College Road in the project area are minor street stop controlled with College Road operating under free flow conditions. The two closest signalized intersections are at TH 371 and at CSAH 48/Highland Scenic Road; both are approximately ½ mile away east and west of Cypress Drive. East of CSAH 48, College Road has 3 existing multi-lane roundabouts within one mile of CSAH 48.

At Cypress Drive and Industrial Park Road, all three existing approaches operates from a single shared left-through-right approach lane. At Cypress Drive and College Road, southbound Cypress Drive operates from a single approach lane, while northbound Cypress Drive has a shared left-through lane and a separated right turn lane. The City of Baxter recently constructed an eastbound right turn lane at College Road and Cypress Drive; the eastbound approach now has a left, two through lanes and a separate right turn lane. The westbound approach as a left, a through, and a shared through-right lane.

2.1 Existing Crash Analysis

Crash data from January 1st, 2011 through December 31st, 2015 was obtained from MnDOT's crash mapping analysis software (MnCMAT). The type and severity of the crashes were reviewed and crash rates, severity rates, and critical rates were calculated for the study intersection. The crash information is summarized in Table 1.

Crash rates are expressed as the number of crashes per million entering vehicles at an intersection or along a segment; severity rates are a weighted average rate based on the different severity types. Crash severity is comprised of 5 separate types including fatal, an incapacitating injury (Severity A), a non-incapacitating injury (Severity B), a possible injury (Severity C), or a property damage crash.

The critical crash rate is a statistical value that is unique to each intersection based on vehicular exposure and the statewide average crash rate for similar intersections; an intersection with a crash or severity rate higher than the critical rates indicates a sustained crash problem at the intersection.

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Table 1
Crash History 2011 - 2015

Intersection:	Crash Severity						Crash Rates	
	Fatal	Sev A	Sev B	Sev C	Property Damage	Total	Int. Rate	Critical
Cypress at College Rd	0	0	0	1	1	2	0.10	0.47
Cypress at Industrial Park Rd	0	0	0	0	0	0	0.00	1.31

The intersection of Cypress Drive at College Road has experienced only 2 reported crashes during the 5-year analysis period and has a crash rate well below the calculated critical rate. There were no crashes at the existing Cypress Drive and Industrial Park Road intersection.

2.2 Existing Traffic Demands

As part of the current project, 13-hour intersection turning movement counts were collected in October of 2016 along Cypress Drive at both College Road and Industrial Park Road. Data was collected from 6:00 am to 7:00 pm. The existing AM and PM peak hour turning movement counts can be found in Appendix C.

Average Annual Daily Traffic (AADT) was obtained from MnDOT traffic flow maps for the most current AADT's from 2015. The current AADT along College Road is 9600 vehicles per day (vpd) through the project area. The only listed AADT along Cypress Drive is south of College Road with 445 vpd; no information is given for the segment north of College Road.

With limited data for existing daily traffic volumes, the 13-hour traffic data was utilized to extrapolate to a 24-hour daily number. The 24-hour estimated numbers were based on travel data from the National Cooperative Highway Research Program (NCHRP) Report 716, *Travel Demand Forecasting: Parameters and Techniques*. Table C11 from NCHRP 716 suggests that approximately 85% of all trips occur within the 13-hour turning movement data collected as part of this project. Therefore, remaining 15% was based on the existing counts in order to estimate the ADT on each leg of the study intersections.

The following Table 2 represents the estimated 2016 daily traffic numbers.

Table 2
Existing Traffic Demands ADT

Intersection	Intersection Leg	Roadway	2016 13-Hour Data	2016 24-Hour Estimation
College Road at Cypress Drive	North Leg	Cypress Drive	924	1,090
	South Leg	Cypress Drive	734	860
	East Leg	College Road	9,105	10,700
	West Leg	College Road	9,595	11,290
Cypress Drive at Industrial Park Road	North Leg	Cypress Drive	0	0
	South Leg	Cypress Drive	466	550
	East Leg	Industrial Park Road	1,065	1,250
	West Leg	Industrial Park Road	707	830

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3.0 Future Conditions

This study includes evaluation of the study intersections of Cypress Drive at both College Road and Industrial Park Road to determine the most appropriate type of intersection control under the future 2038 conditions.

3.1 Traffic Forecasts

Traffic Forecasts were previously developed as part of an earlier project for the City of Baxter. In 2005, Benshoof & Associates, Inc. developed 2025 traffic forecasts for the entire City of Baxter based on future land use growth and roadway network changes. The forecasts provided a range of ADT levels for low (3%) and high growth (6%) for the area. The full traffic forecasts report entitled *Roadway System Plan for City of Baxter and Corridor Plan for Cypress Drive and CSAH 48*; dated April 2005.

Additional forecast information was developed in the ICE Report for *TH 210 at Cypress Drive and Excelsior Road at Cypress Drive*; dated June 8, 2009. This report, which has been approved by the City of Baxter and MnDOT District 3, utilized the lower range daily forecasts from the 2005 forecasts in order to develop turning movement level forecast demands for use in the ICE analysis.

In review of the previous forecasting work, the conclusion to utilize the previous 2025 forecast demands as design year 2038 forecasts for this project was determined to be appropriate. The previous forecasts were developed during the thriving economic times of the early 2000's that were ultimately set back during the recession that followed in the late 2000's. Therefore the previously anticipated growth was never realized as traffic demands stayed stagnate for many years. Traffic forecasts are further detail in the full traffic memorandum entitled *2018 Cypress Drive Improvements Project – Traffic Memorandum*; dated November 2016.

The PM peak hour for Industrial Park Road is at 3:00 pm and there is almost no traffic during the evaluated PM peak period at 4:30 pm. Therefore the 3:00 pm peak demands were assumed to occur at 4:30 pm to account for fluctuations in driving patterns in the future year analysis.

The AM and PM peak hour existing and forecast turning movement counts can be found in Appendix C.

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4.0 Analysis of Alternatives

The Minnesota Manual of Uniform Traffic Control Devices (MnMUTCD) provides guidance on when it may be appropriate to use all-way stop or signal control at an intersection. This MnMUTCD guidance is provided in the form of "warrants", or criteria, for when all-way stop or signal control may be justified. Though all-way stop or signal control should not be installed at an intersection unless a MnMUTCD warrant is met, meeting a warrant at an intersection does not in itself require the installation of that particular type of control. Under the MnDOT ICE process, roundabouts are considered to be warranted if traffic volumes meet the criteria for either all-way stops or traffic signals.

MnDOT typically relies on either Warrant 1 (8-hour volume) or Warrant 7 (crash experience) to justify the installation of a traffic signal; however, other warrants can be used as indicators of need to consider a traffic control change. An engineering study that considers factors, including warrants, should be performed to determine the "best" type of control at an intersection.

4.1 Warrant Analysis

MnDOT guidelines suggests removing 100% of right turning traffic from the minor leg since this movement typically is able to enter the traffic stream with minimal conflicts. Therefore, a traffic signal would not be needed to reduce delay or improve safety for this right turn movement. In certain circumstances (i.e. high right turn volume, minimum mainline gaps etc.), MnDOT allows for the inclusion of 50% of the minor street right turning traffic in the analysis. The MnDOT guidance states if "right turning volume exceeds 70% of its potential capacity for any hour for each approach, 50% of the right turning volume for all hours should be added back in."

Based upon MnDOT guidance, the analysis for both intersections along Cypress Drive includes the removal of 100% of the right turning traffic from the minor approach. Under the existing 2016 traffic data, both intersections along Cypress Drive do not meet either the All-Way Stop or Traffic Signal warrants.

With the extension of Cypress Drive, from College Road across TH 210, the future 2018 and 2038 forecast traffic demands at the intersection College Road intersection meet both the all-way stop thresholds and traffic signal thresholds from the MnMUTCD.

With the extension of Cypress Drive, Industrial Park Road will see only minor growth and therefore the future 2018 and 2038 forecast traffic demands at the intersection will not meet the all-way stop thresholds or traffic signal thresholds from the MnMUTCD due to the low demands along Industrial Park Road.

Tables 3 and 4 provides both the all-way stop warrant and the traffic signal warrant summary for multiple volume conditions. The full all-way stop warrant analysis and the traffic signal warrant analysis can be found in Appendix A.

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Table 3
Warrant Analysis Results – Cypress Drive at College Road

Demand Scenario	Minor St Right Turn Reduction[1]	Alternative (Existing or Build)	ALL WAY STOP[2]	Signal			Appendix Exhibit:
				8 Hour	4 Hour	Peak Hour	
2016	100%	Existing	**Not Met 0/8 Hours**	**Not Met 0/8 Hours**	**Not Met 0/4 Hours**	**Not Met 0/1 Hours**	**A1 (a & b)**
2018	100%	Build	**Met 16/8 Hours**	**Met 13/8 Hours**	**Met 12/4 Hours**	**Met 9/1 Hours**	**A2 (a & b)**
2038	100%	Build	**Met 16/8 Hours**	**Met 13/8 Hours**	**Met 12/4 Hours**	**Met 9/1 Hours**	**A3 (a & b)**

All scenarios assume 2-lanes of approach for each approach with the exception of the existing southbound Cypress Drive which is 1 lane.

1) Typical Right Turn reductions for minor street are up to 100% for a separate turn lane; 100% was removed in this analysis.

2) All Way Stop Warrants include all traffic, no right turn reductions are taken.

Table 4
Warrant Analysis Results – Cypress Drive at Industrial Park Road

Demand Scenario	Minor St Right Turn Reduction[1]	Alternative (Existing or Build)	ALL WAY STOP[2]	Signal			Appendix Exhibit:
				8 Hour	4 Hour	Peak Hour	
2016	100%	Existing	**Not Met 0/8 Hours**	**Not Met 0/8 Hours**	**Not Met 0/4 Hours**	**Not Met 0/1 Hours**	**A4 (a & b)**
2018	100%	Build	**Not Met 0/8 Hours**	**Not Met 3/8 Hours**	**Not Met 0/4 Hours**	**Not Met 0/1 Hours**	**A5(a & b)**
2038	100%	Build	**Not Met 4/8 Hours**	**Not Met 4/8 Hours**	**Not Met 0/4 Hours**	**Not Met 0/1 Hours**	**A6 (a & b)**

Existing Scenario assume single lane approaches on all legs

All Future scenarios assume 2-lanes of approach for each Cypress approach with Industrial Park Road as a single lane.

1) Typical Right Turn reductions for minor street are up to 100% for a separate turn lane; 100% was removed in this analysis.

2) All Way Stop Warrants include all traffic, no right turn reductions are taken.

4.2 Safety Analysis

Future vehicular crash estimates were determined by applying varying crash rates to the entering traffic for the study intersections. The No Build estimates are based on the existing crash rates as described in Section 2. Signalized intersections are based on the MnDOT Statewide average crash rates for a signalized intersection with 15,000 or less Average Daily Traffic for the highest volume leg of the intersection and a speed limit below 45 mph.

Future crash estimates were determined by applying the MnDOT Statewide average crash rates to the forecast 2018 and 2038 average entering traffic for each intersection.

Roundabout crash estimation was done using the calculations recommended in *the NCHRP Report 672, Roundabouts: An Informational Guide, Second Edition*. Exhibit 5-19, page 5-23, provides calculations for crash estimation based on the number of approach legs, number of circulating lanes and total entering ADT. For both the 2018 and 2038 analysis, a 4-legged, two lane roundabout was assumed at the intersection.

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Table 5 shows the projected numbers of total annual crashes for each traffic control type analyzed for the forecast 2018 and 2038 traffic conditions.

Table 5
Future Annual Crash Estimate

Year		Annual Crash Estimate[1]	Total Annual Crash Estimates by Control Type[2]				Total Intersection Entering Volume
		No Build	Thru/Stop	All-Way Stop	Traffic Signal	Roundabout	
2018	Cypress at College Rd	< 1.0	1.3	2.5	3.7	6.3	19,830
	Cypress at Industrial Rd	0.0	0.7	1.3	2.0	3.9	10,430
2038	Cypress at College Rd	< 1.0	1.8	3.5	7.0	8.0	27,500
	Cypress at Industrial Rd	0.0	1.1	2.1	4.2	5.5	16,500

1: Existing Intersection Crash Rate (2011 to 2015 5-year data)

2: MnDOT Statewide Average Crash Rates (2015 5-year data)

Under the No Build conditions, the existing connection over TH 210 would not exist and therefore the entering volume would be much lower. With the Build conditions, the entering demands significantly increase and therefore crashes would also increase.

The existing minor street stop control would have the least number of projected crashes with an all-way stop control the next fewest number of projected crashes. A signalized intersection would have more projected crashes than either stop control condition, but would have fewer crashes than a multi-lane roundabout.

A roundabout controlled intersection would actually incur the highest number of crashes at both study intersections due to the multiple circulating lanes. However, these crashes would be less severe than the other control types due to the reduced speeds approaching and departing the intersections.

4.3 Traffic Operations Analysis

Traffic operations analyses were conducted to determine the level of service (LOS), delay, and queueing information for the PM peak hour conditions of each scenario. The AM peak hour has significantly less traffic demands and therefore was not evaluated; however the following existing conditions table does include the AM peak hour.

LOS is a qualitative rating system used to describe the efficiency of traffic operations at an intersection. Six LOS are defined, designated by letters A through F. LOS A represents the best operating conditions (no congestion), and LOS F represents the worst operating conditions (severe congestion). For the study intersections it was assumed that LOS D or better represents acceptable operating conditions.

LOS for intersections is determined by the average control delay per vehicle. The range of control delay for each LOS is different for signalized and unsignalized intersections. The expectation is that a signalized intersection is designed to carry higher traffic volumes and will experience greater delays than an unsignalized intersection; driver tolerance for delay is greater at a signal than at a stop sign. Therefore the LOS thresholds for each LOS category are lower for unsignalized intersections than for signalized intersections

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The traffic operations analyses were performed using the Synchro/SimTraffic (version 9) software package for the signalized and unsignalized analysis; an average of 5 simulation runs were used for each modeling result. LOS for intersections is determined by the average control delay per vehicle.

For the roundabout capacity analysis, the RODEL software package was used to evaluate the operations of the intersection design.

The attached Appendix B includes all relevant operational tables for the existing and future 2018 and 2038 scenarios that follow.

4.3.1 Existing 2016 Conditions

The existing operations at both study intersections are acceptable based on the existing traffic control and traffic demands. Without the Cypress Drive connection across TH 210, the traffic demands along Cypress Drive today are very low and are easily handled by the current lane configurations and traffic control.

During both peak hours, the minor street approaches operating under stop control can find adequate gaps in the mainline traffic to proceed. Table 6 shows the existing approaches at both intersections operate at a LOS A.

Table 6
Existing 2016 Conditions (SimTraffic)

Peak Hour	Intersection	Approach (Delay/LOS)				Intersection (Delay/LOS)
		NB	SB	EB	WB	
AM	Cypress Drive at College Road	6.9 / A	5.8 / A	1.3 / A	1.2 / A	1.7 / A
	Cypress Drive at Industrial Park Road	2.8 / A		0.2 / A	0.8 / A	1.3 / A
PM	Cypress Drive at College Road	9.4 / A	6.6 / A	1.2 / A	1.5 / A	1.9 / A
	Cypress Drive at Industrial Park Road	1.5 / A		0 / A	0 / A	0.8 / A

4.3.2 Traffic Control Alternatives

The No Build alternative by definition is the same as existing conditions and will not be analyzed in the future years. The base “build” condition will include a 5-lane Cypress Drive north of College Road and a 3-lane Cypress Drive to the south. At College Road, Cypress Drive will operate under minor street stop control. The following sections will run through the different traffic control operations analysis of the base condition.

Cypress Drive and College Road meets both the all-way stop and signal warrants under the year of opening 2018 and design year 2038 demands. Therefore all control types, including a roundabout, will be evaluated.

Cypress Drive and Industrial Park Road did not meet any traffic control warrant, therefore it will only be analyzed as a minor street, two way stop control in all scenarios.

Southbound Cypress Drive at College Road will include a left turn lane, a through lane, and a full length right lane. Northbound Cypress Drive at College Road will include restriping the existing approach to include a left turn lane and a shared through-right lane. This geometric configuration was used in the two-way stop, all-way stop, and signalized intersection analysis. The roundabout geometrics will be described in its specific section. Both configurations can be found in Figures 2 and 3 following the results.

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4.3.2.1 Two-Way Stop Control

A two-way stop control (TWSC) analysis was conducted to test if the intersection could operate acceptably. At College Road, Cypress Drive would still operate under minor stop control; however at Industrial Park Road, Cypress Drive would become the mainline movement and Industrial Park Road would become the minor stop.

In both the year of opening and design years, represented in Table 7, the overall intersection delays result in failing operations with significant delays along Cypress Drive. By 2038, the queues along Cypress Drive would extend through adjacent intersections and create additional delays at the surrounding intersections. Therefore two-way stop control at College Road is not recommended.

Table 7
Two Way Stop Control Conditions (SimTraffic)

Forecast Year	Intersection	Approach (Delay/LOS)				Intersection (Delay/LOS)
		NB	SB	EB	WB	
2018	Cypress Drive at College Road	**638.7 / F**	**95.8 / F**	3 / A	2.3 / A	**67.7 / F**
	Cypress Drive at Industrial Park Road	0.4 / A	1.9 / A	8.8 / A	9.1 / A	1.9 / A
2038	Cypress Drive at College Road	**1752.4 / F**	**411.8 / F**	4.1 / A	2.8 / A	**111.2 / F**
	Cypress Drive at Industrial Park Road	0.5 / A	**348.1 / F**	**61.4 / F**	**238.9 / F**	**133.7 / F**

4.3.2.2 All-Way Stop Control

The all-way stop warrants were met for Cypress Drive at College Road in both 2018 and 2038. The following Table 8 represents the traffic operations for each forecast condition under an all-way stop control.

Table 8
All Way Stop Control Conditions (SimTraffic)

Forecast Year	Intersection	Approach (Delay/LOS)				Intersection (Delay/LOS)
		NB	SB	EB	WB	
2018	Cypress Drive at College Road	14.1 / B	9.3 / A	12.4 / B	14.3 / B	12.7 / B
	Cypress Drive at Industrial Park Road (TWSC)	0.3 / A	2 / A	9.2 / A	10.2 / B	1.9 / A
2038	Cypress Drive at College Road	**455.2 / F**	23.1 / C	22.1 / C	**252.9 / F**	**145.2 / F**
	Cypress Drive at Industrial Park Road (TWSC)	0.5 / A	2.6 / A	14.7 / B	15.5 / C	2.6 / A

Under the all-way stop condition, the year of opening demands would be adequately served by an all way stop condition. However, the 2038 demands for westbound College Road and northbound Cypress Drive are not able to be served effectively and it results in long queuing and delays. The overall delays result in failing intersection operations and therefore all-way stop control at College Road is not recommended.

With Cypress Drive operating without major queue stacking as compared to the two-way stop control, the intersection at Industrial Park Road is able to fully function and the result is acceptable operations with minor street stop control and Cypress Drive operating freely. Therefore, a minor street stop control at Industrial Park Road is acceptable.

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4.3.2.3 Traffic Signal Control

The traffic signal warrants were met for Cypress Drive at College Road in both 2018 and 2038. The following Table 9 represents the traffic operations for each forecast condition under an all-way stop control.

Both the 2018 and 2038 traffic demands operate at a LOS C for the overall intersection and for all approaches.

Table 9
Traffic Signal Control Conditions (SimTraffic)

Forecast Year	Intersection	Approach (Delay/LOS)				Intersection (Delay/LOS)
		NB	SB	EB	WB	
2018	Cypress Drive at College Road	22.9 / C	13.6 / B	13.7 / B	18.8 / B	16.4 / B
	Cypress Drive at Industrial Park Road (TWSC)	0.6 / A	2 / A	9.2 / A	9.6 / A	2 / A
2038	Cypress Drive at College Road	34.1 / C	19.5 / B	18.8 / B	28.2 / C	24.1 / C
	Cypress Drive at Industrial Park Road (TWSC)	1 / A	2.7 / A	16.4 / C	15.8 / C	3 / A

4.3.2.4 Roundabout

To evaluate roundabout operations, RODEL software was used to understand the operations of a multi-lane roundabout.

The existing College Road corridor is a 5-lane section, it includes 3 existing multi-lane roundabouts within 1 ½ miles of Cypress Drive. All of these roundabout include 2-through lanes in each direction for College Road. Therefore for continuity along the corridor, College Road would include 2-through lanes in each direction at Cypress Drive.

Along Cypress Drive, the proposed roadway will also be a 5-lane section to the north and a 3-lane section to the south. The forecasted turning movements at the study intersection remove a high portion of the traffic demands to and from College Road which results in lower demands traveling through along Cypress Drive. The Cypress Drive approaches were therefore analyzed with a single entering lane to the roundabout. To maintain two lanes along southbound Cypress Drive, the right most lane will become a right turn bypass lane approaching College Road.

This configuration performs at LOS A for the intersection and all approaches. There is not a need to provide 2 continuous through lanes through the roundabout for Cypress Drive crossing College Road; however the roundabout could be design to accommodate this configuration if desired.

Table 10
Roundabout Control Conditions (RODEL)

Forecast Year	Intersection	Approach (Delay/LOS)				Intersection (Delay/LOS)
		NB	SB	EB	WB	
2018	Cypress Drive at College Road	5.7 / A	4.8 / A	3.5 / A	3.7 / A	4.0 / A
2038	Cypress Drive at College Road	8.3 / A	6.4 / A	5.5 / A	5.9 / A	6.2 / A

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Figure 2 – Standard Intersection Design

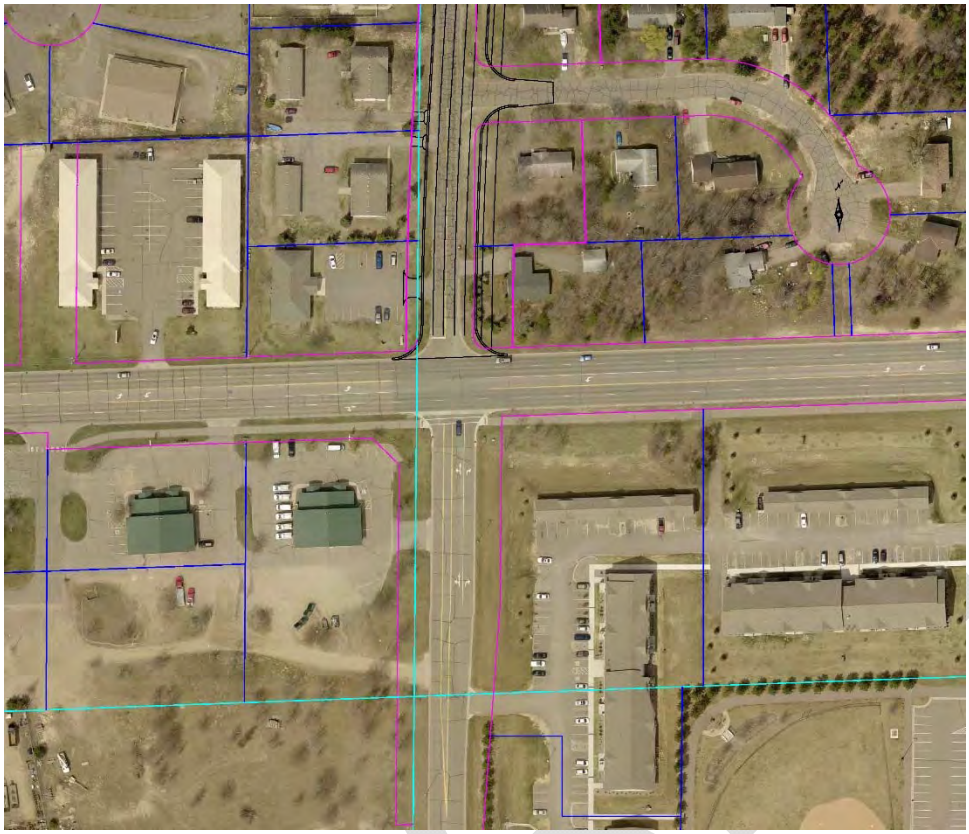
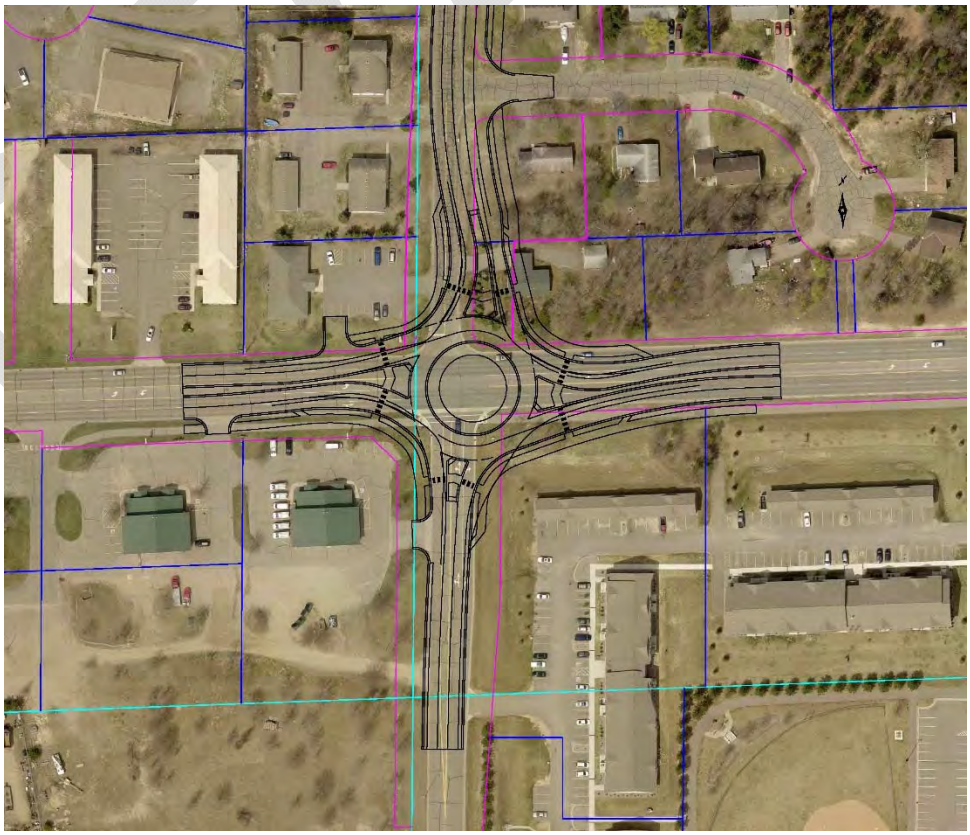


Figure 3 – Roundabout Design



5.0 Conclusion

Based on the review of the previous forecast efforts compared to actual historical traffic information, it was concluded that the previous 2025 forecast are representative of the current proposed design year of 2038 for this project.

5.1 Cypress Drive at College Road

At College Road and Cypress Drive, both the all-way stop and traffic signal warrants are met for both the 2018 and 2038 forecast years. A minor street stop control evaluation was also conducted to evaluate the potential for a year of opening control.

The two-way stop control resulted in failing intersection operations in both the year of opening and design year and is therefore not recommended.

Under an all-way stop control, the year of opening traffic would result in acceptable traffic operations. As traffic increases, the intersection would begin to fail and by the design year would be unacceptable and therefore is not recommended.

Both a traffic signal and roundabout would provide acceptable intersection operations from the year of opening through the design year. A traffic signal would operate with all approaches at a LOS C or better through 2038; while a roundabout would continue to operate at a LOS A.

The traffic signal would require less construction cost for the project as only the north leg of the intersection would need to be fully reconstructed to accommodate the installation of a traffic signal. The roundabout would require significantly more reconstruction of the College Road intersection as the approach legs to the roundabout would require changes.

The roundabout intersection control is recommended due to the highest traffic operations performance and the decrease in severity of crashes at the intersection. However, should the estimated construction costs during the project design exceed budget, a traffic signal would provide acceptable traffic safety and operations through the design year.

5.2 Cypress Drive at Industrial Park Road

At Cypress Drive and Industrial Park Road, there are no traffic control warrants met for this intersection through the design year. The analysis resulted in acceptable intersection operations for a minor street stop control for the Industrial Park Road approaches through the 2038 design year. Therefore it is recommended this intersection be controlled with Industrial Park Road as a minor street stop and Cypress Drive uncontrolled.

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Appendix A

All Way Stop and Signal Warrants

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SHORT ELLIOTT HENDRICKSON INC.

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

Exhibit A1a

Existing 2016 - College Road at Cypress Drive
ALL WAY STOP
WARRANT ANALYSIS

LOCATION: College Road at Cypress Drive
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach Total
40	Major App1:	College Rd EB	2	4822
40	Major App3:	College Rd WB	2	4525
30	Minor App2:	Cypress Dr NB	2	386
30	Minor App4:	Cypress Dr SB	1	446

0.70 SPEED FACTOR USED? **No**

Minimum Volume Requirement
210 **140**

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR APPROACH TOTAL Σ (APP.1 + APP. 3)	MINOR APPROACH TOTAL Σ (APP.2 + APP. 4)	WARRANT MET MAJOR / MINOR
0:00 - 1:00	0	0	0	0	0	0	NO / NO
1:00 - 2:00	0	0	0	0	0	0	NO / NO
2:00 - 3:00	0	0	0	0	0	0	NO / NO
3:00 - 4:00	0	0	0	0	0	0	NO / NO
4:00 - 5:00	0	0	0	0	0	0	NO / NO
5:00 - 6:00	0	0	0	0	0	0	NO / NO
6:00 - 7:00	134	153	24	27	287	51	YES / NO
7:00 - 8:00	466	332	36	39	798	75	YES / NO
8:00 - 9:00	391	311	25	44	702	69	YES / NO
9:00 - 10:00	319	264	27	16	583	43	YES / NO
10:00 - 11:00	295	295	20	23	590	43	YES / NO
11:00 - 12:00	335	370	36	35	705	71	YES / NO
12:00 - 13:00	419	382	29	41	801	70	YES / NO
13:00 - 14:00	355	342	29	32	697	61	YES / NO
14:00 - 15:00	386	432	37	29	818	66	YES / NO
15:00 - 16:00	426	478	44	54	904	98	YES / NO
16:00 - 17:00	506	492	35	47	998	82	YES / NO
17:00 - 18:00	467	437	30	39	904	69	YES / NO
18:00 - 19:00	323	237	14	20	560	34	YES / NO
19:00 - 20:00	0	0	0	0	0	0	NO / NO
20:00 - 21:00	0	0	0	0	0	0	NO / NO
21:00 - 22:00	0	0	0	0	0	0	NO / NO
22:00 - 23:00	0	0	0	0	0	0	NO / NO
23:00 - 24:00	0	0	0	0	0	0	NO / NO
Daily	**4822**	**4525**	**386**	**446**			

	Met (Hr)	Required (Hr)
Hours met for warrant:	**0**	**8**

All-way Stop Warrant: **Not satisfied**

REMARKS:

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressCollege 2016.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

Exhibit A1b

Existing 2016 - College Road at Cypress Drive
SIGNAL WARRANT
ANALYSIS

LOCATION: College Road at Cypress Drive
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach
40	Major App1:	College Rd EB	2	4822
40	Major App3:	College Rd WB	2	4525
30	Minor App2:	Cypress Dr NB	2	196
30	Minor App4:	Cypress Dr SB	1	92

41 MPH OR FASTER?	NO
POPULATION < 10,000?	YES
VOLUME REQ. AT 70%?	**YES**
CORRECTABLE CRASHES: (12-month period)	0

	Minimum Volume Requirement		
	1A	1B	1A&B (80%)
Major Total	420	630	504
Minor Approach	140	70	112

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR APPROACH TOTAL Σ (APP.1 + APP. 3)	MAX MINOR APPROACH (APP. 2 or 4)	WARRANT 1A - 8 hr MAJOR/MINOR	WARRANT 1B - 8 hr MAJOR/MINOR	WARRANT 1A & B MAJOR/MINOR
0:00 - 1:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
1:00 - 2:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
2:00 - 3:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
3:00 - 4:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
4:00 - 5:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
5:00 - 6:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
6:00 - 7:00	134	153	13	5	287	13	NO / NO	NO / NO	NO / NO
7:00 - 8:00	466	332	15	12	798	15	YES / NO	YES / NO	YES / NO
8:00 - 9:00	391	311	13	10	702	13	YES / NO	YES / NO	YES / NO
9:00 - 10:00	319	264	14	4	583	14	YES / NO	NO / NO	YES / NO
10:00 - 11:00	295	295	9	7	590	9	YES / NO	NO / NO	YES / NO
11:00 - 12:00	335	370	19	9	705	19	YES / NO	YES / NO	YES / NO
12:00 - 13:00	419	382	13	9	801	13	YES / NO	YES / NO	YES / NO
13:00 - 14:00	355	342	15	4	697	15	YES / NO	YES / NO	YES / NO
14:00 - 15:00	386	432	15	3	818	15	YES / NO	YES / NO	YES / NO
15:00 - 16:00	426	478	27	14	904	27	YES / NO	YES / NO	YES / NO
16:00 - 17:00	506	492	21	7	998	21	YES / NO	YES / NO	YES / NO
17:00 - 18:00	467	437	15	5	904	15	YES / NO	YES / NO	YES / NO
18:00 - 19:00	323	237	7	3	560	7	YES / NO	NO / NO	YES / NO
19:00 - 20:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
20:00 - 21:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
21:00 - 22:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
22:00 - 23:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
23:00 - 24:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
Daily	**4822**	**4525**	**196**	**92**					

		Met (Hr)	Required (Hr)	WARRANT MET:
Warrant 1	**Eight Hour Volumes**	0	8	Not satisfied
Warrant 1A	Minimum Vehicular Volume	0	8	Not satisfied
Warrant 1B	Interruption of Continuous Flow	0	8	Not satisfied
1A & 1B	Combination of Warrants	0	8	Not satisfied
Warrant 2	**Four Hour Volumes**	0	4	Not satisfied
Warrant 3	**Peak Hour Volumes**	0	1	Not satisfied
Warrant 7	**Crash Experience**	0	8	Not satisfied

COMMENTS:

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressCollege 2016.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

Existing 2016 - College Road at Cypress Drive
SIGNAL WARRANT
ANALYSIS

LOCATION: College Road at Cypress Drive
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach
40	Major App1:	College Rd EB	2	4822
40	Major App3:	College Rd WB	2	4525
30	Minor App2:	Cypress Dr NB	2	196
30	Minor App4:	Cypress Dr SB	1	92

40 MPH OR FASTER?	YES
POPULATION < 10,000?	YES
VOLUME REQ. AT 70%?	**YES**

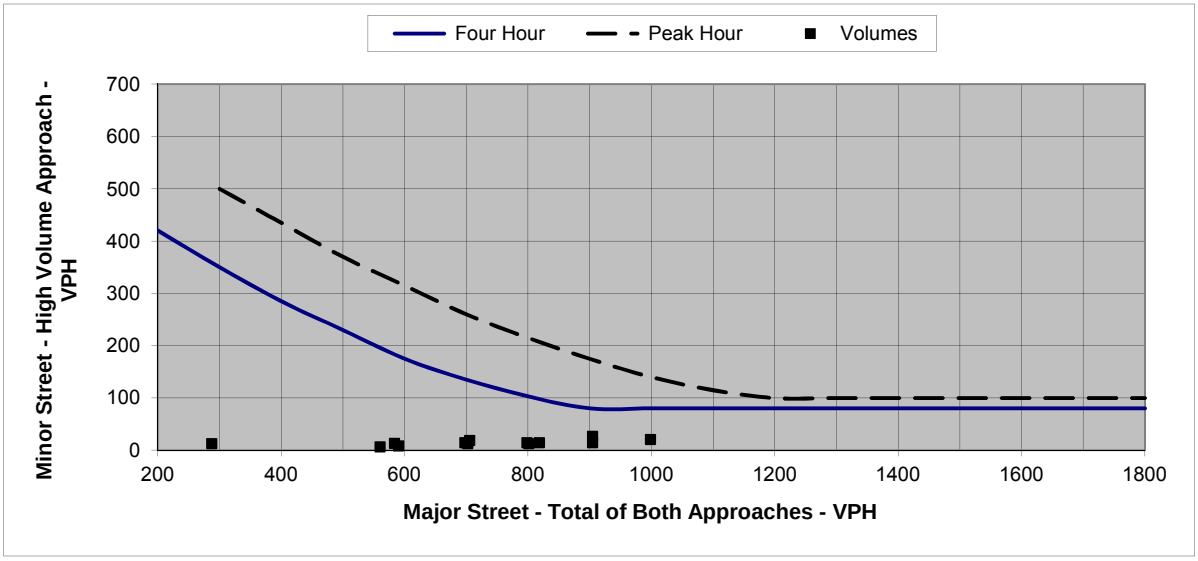


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds

Warrant Criteria (Graph)		
Major	Minor App.	Minor App.
Approach	Four Hour	Peak Hour
200	420	
300	350	500
400	285	435
500	230	370
600	175	315
700	135	260
800	103	215
900	80	175
1000	80	140
1100	80	115
1200	80	100
1300	80	100
1400	80	100
1500	80	100
1600	80	100
1700	80	100
1800	80	100

Actual Hourly Count			Warrants Met:	
			Warrant 2	Warrant 3
HOUR	Sum Major App.	Max Minor App.	Four Hour	Peak Hour
0:00 - 1:00	0	0	NO	NO
1:00 - 2:00	0	0	NO	NO
2:00 - 3:00	0	0	NO	NO
3:00 - 4:00	0	0	NO	NO
4:00 - 5:00	0	0	NO	NO
5:00 - 6:00	0	0	NO	NO
6:00 - 7:00	287	13	NO	NO
7:00 - 8:00	798	15	NO	NO
8:00 - 9:00	702	13	NO	NO
9:00 - 10:00	583	14	NO	NO
10:00 - 11:00	590	9	NO	NO
11:00 - 12:00	705	19	NO	NO
12:00 - 13:00	801	13	NO	NO
13:00 - 14:00	697	15	NO	NO
14:00 - 15:00	818	15	NO	NO
15:00 - 16:00	904	27	NO	NO
16:00 - 17:00	998	21	NO	NO
17:00 - 18:00	904	15	NO	NO
18:00 - 19:00	560	7	NO	NO
19:00 - 20:00	0	0	NO	NO
20:00 - 21:00	0	0	NO	NO
21:00 - 22:00	0	0	NO	NO
22:00 - 23:00	0	0	NO	NO
23:00 - 24:00	0	0	NO	NO

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressCollege 2016.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

Exhibit A2a

2018 Build Conditions - College Road at Cypress Drive
ALL WAY STOP
WARRANT ANALYSIS

LOCATION: College Road at Cypress Drive
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach Total
40	Major App1:	College Rd EB	2	5406
40	Major App3:	College Rd WB	2	5285
40	Minor App2:	Cypress Dr NB	2	3260
40	Minor App4:	Cypress Dr SB	2	4700

0.70 SPEED FACTOR USED? **No**

Minimum Volume Requirement
210 **140**

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR APPROACH TOTAL Σ (APP.1 + APP. 3)	MINOR APPROACH TOTAL Σ (APP.2 + APP. 4)	WARRANT MET MAJOR / MINOR
0:00 - 1:00	16	16	8	16	32	24	NO / NO
1:00 - 2:00	4	4	0	4	8	4	NO / NO
2:00 - 3:00	4	4	0	4	8	4	NO / NO
3:00 - 4:00	4	4	0	4	8	4	NO / NO
4:00 - 5:00	20	20	16	20	40	36	NO / NO
5:00 - 6:00	64	64	48	68	128	116	NO / NO
6:00 - 7:00	131	155	92	132	286	224	**YES / YES**
7:00 - 8:00	453	336	236	340	789	576	**YES / YES**
8:00 - 9:00	380	315	212	304	695	516	**YES / YES**
9:00 - 10:00	311	268	168	244	579	412	**YES / YES**
10:00 - 11:00	287	299	172	248	586	420	**YES / YES**
11:00 - 12:00	325	374	212	304	699	516	**YES / YES**
12:00 - 13:00	408	386	236	340	794	576	**YES / YES**
13:00 - 14:00	347	346	204	296	693	500	**YES / YES**
14:00 - 15:00	375	437	236	344	812	580	**YES / YES**
15:00 - 16:00	414	484	272	392	898	664	**YES / YES**
16:00 - 17:00	492	498	296	424	990	720	**YES / YES**
17:00 - 18:00	453	442	268	380	895	648	**YES / YES**
18:00 - 19:00	314	241	164	232	555	396	**YES / YES**
19:00 - 20:00	224	220	152	224	444	376	**YES / YES**
20:00 - 21:00	164	164	112	164	328	276	**YES / YES**
21:00 - 22:00	112	108	80	112	220	192	**YES / YES**
22:00 - 23:00	64	64	48	68	128	116	NO / NO
23:00 - 24:00	40	36	28	36	76	64	NO / NO
Daily	**5406**	**5285**	**3260**	**4700**			

	Met (Hr)	Required (Hr)
Hours met for warrant:	**16**	**8**

All-way Stop Warrant: **Satisfied**

REMARKS:

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressCollege 2018 Build.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

Exhibit A2b

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

2018 Build Conditions - College Road at Cypress Drive
SIGNAL WARRANT
ANALYSIS

LOCATION: College Road at Cypress Drive
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach
40	Major App1:	College Rd EB	2	5406
40	Major App3:	College Rd WB	2	5285
40	Minor App2:	Cypress Dr NB	2	2472
40	Minor App4:	Cypress Dr SB	2	3104

41 MPH OR FASTER?	NO
POPULATION < 10,000?	YES
VOLUME REQ. AT 70%?	**YES**
CORRECTABLE CRASHES: (12-month period)	0

	Minimum Volume Requirement		
	1A	1B	1A&B (80%)
Major Total	420	630	504
Minor Approach	140	70	112

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR APPROACH TOTAL Σ (APP.1 + APP. 3)	MAX MINOR APPROACH (APP. 2 or 4)	WARRANT 1A - 8 hr MAJOR/MINOR	WARRANT 1B - 8 hr MAJOR/MINOR	WARRANT 1A & B MAJOR/MINOR
0:00 - 1:00	16	16	4	12	32	12	NO / NO	NO / NO	NO / NO
1:00 - 2:00	4	4	0	4	8	4	NO / NO	NO / NO	NO / NO
2:00 - 3:00	4	4	0	4	8	4	NO / NO	NO / NO	NO / NO
3:00 - 4:00	4	4	0	4	8	4	NO / NO	NO / NO	NO / NO
4:00 - 5:00	20	20	12	12	40	12	NO / NO	NO / NO	NO / NO
5:00 - 6:00	64	64	36	44	128	44	NO / NO	NO / NO	NO / NO
6:00 - 7:00	131	155	68	88	286	88	NO / NO	NO / YES	NO / NO
7:00 - 8:00	453	336	180	224	789	224	**YES / YES**	**YES / YES**	**YES / YES**
8:00 - 9:00	380	315	160	200	695	200	**YES / YES**	**YES / YES**	**YES / YES**
9:00 - 10:00	311	268	128	160	579	160	**YES / YES**	NO / YES	**YES / YES**
10:00 - 11:00	287	299	132	164	586	164	**YES / YES**	NO / YES	**YES / YES**
11:00 - 12:00	325	374	160	200	699	200	**YES / YES**	**YES / YES**	**YES / YES**
12:00 - 13:00	408	386	180	224	794	224	**YES / YES**	**YES / YES**	**YES / YES**
13:00 - 14:00	347	346	156	196	693	196	**YES / YES**	**YES / YES**	**YES / YES**
14:00 - 15:00	375	437	180	228	812	228	**YES / YES**	**YES / YES**	**YES / YES**
15:00 - 16:00	414	484	208	260	898	260	**YES / YES**	**YES / YES**	**YES / YES**
16:00 - 17:00	492	498	224	280	990	280	**YES / YES**	**YES / YES**	**YES / YES**
17:00 - 18:00	453	442	204	252	895	252	**YES / YES**	**YES / YES**	**YES / YES**
18:00 - 19:00	314	241	124	152	555	152	**YES / YES**	NO / YES	**YES / YES**
19:00 - 20:00	224	220	116	148	444	148	**YES / YES**	NO / YES	NO / YES
20:00 - 21:00	164	164	84	108	328	108	NO / NO	NO / YES	NO / NO
21:00 - 22:00	112	108	60	72	220	72	NO / NO	NO / YES	NO / NO
22:00 - 23:00	64	64	36	44	128	44	NO / NO	NO / NO	NO / NO
23:00 - 24:00	40	36	20	24	76	24	NO / NO	NO / NO	NO / NO
Daily	**5406**	**5285**	**2472**	**3104**					

		Met (Hr)	Required (Hr)	WARRANT MET:
Warrant 1	**Eight Hour Volumes**	13	8	**Satisfied**
Warrant 1A	Minimum Vehicular Volume	13	8	**Satisfied**
Warrant 1B	Interruption of Continuous Flow	9	8	**Satisfied**
1A & 1B	Combination of Warrants	12	8	**Satisfied**
Warrant 2	**Four Hour Volumes**	9	4	**Satisfied**
Warrant 3	**Peak Hour Volumes**	6	1	**Satisfied**
Warrant 7	**Crash Experience**	11	8	Crashes Insufficient

COMMENTS:

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressCollege 2018 Build.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

2018 Build Conditions - College Road at Cypress Drive
SIGNAL WARRANT
ANALYSIS

LOCATION: College Road at Cypress Drive
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach
40	Major App1:	College Rd EB	2	5406
40	Major App3:	College Rd WB	2	5285
40	Minor App2:	Cypress Dr NB	2	2472
40	Minor App4:	Cypress Dr SB	2	3104

40 MPH OR FASTER?	YES
POPULATION < 10,000?	YES
VOLUME REQ. AT 70%?	**YES**

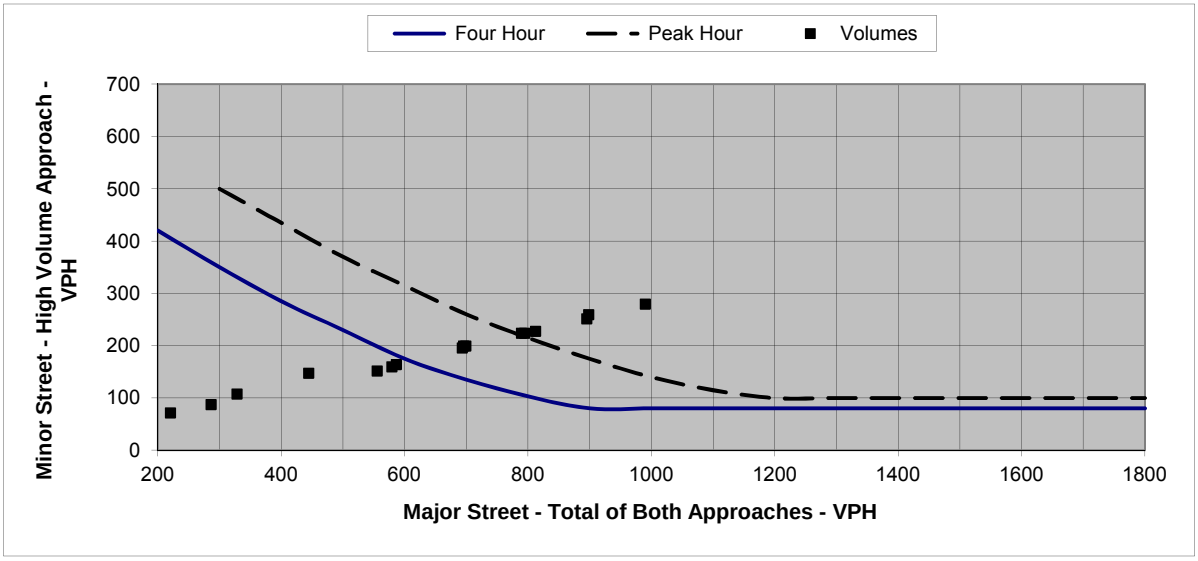


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds

Warrant Criteria (Graph)		
Major	Minor App.	Minor App.
Approach	Four Hour	Peak Hour
200	420	
300	350	500
400	285	435
500	230	370
600	175	315
700	135	260
800	103	215
900	80	175
1000	80	140
1100	80	115
1200	80	100
1300	80	100
1400	80	100
1500	80	100
1600	80	100
1700	80	100
1800	80	100

Actual Hourly Count			Warrants Met:	
			Warrant 2	Warrant 3
HOUR	Sum Major App.	Max Minor App.	Four Hour	Peak Hour
0:00 - 1:00	32	12	NO	NO
1:00 - 2:00	8	4	NO	NO
2:00 - 3:00	8	4	NO	NO
3:00 - 4:00	8	4	NO	NO
4:00 - 5:00	40	12	NO	NO
5:00 - 6:00	128	44	NO	NO
6:00 - 7:00	286	88	NO	NO
7:00 - 8:00	789	224	**YES**	**YES**
8:00 - 9:00	695	200	**YES**	NO
9:00 - 10:00	579	160	NO	NO
10:00 - 11:00	586	164	NO	NO
11:00 - 12:00	699	200	**YES**	NO
12:00 - 13:00	794	224	**YES**	**YES**
13:00 - 14:00	693	196	**YES**	NO
14:00 - 15:00	812	228	**YES**	**YES**
15:00 - 16:00	898	260	**YES**	**YES**
16:00 - 17:00	990	280	**YES**	**YES**
17:00 - 18:00	895	252	**YES**	**YES**
18:00 - 19:00	555	152	NO	NO
19:00 - 20:00	444	148	NO	NO
20:00 - 21:00	328	108	NO	NO
21:00 - 22:00	220	72	NO	NO
22:00 - 23:00	128	44	NO	NO
23:00 - 24:00	76	24	NO	NO

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressCollege 2018 Build.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

Exhibit A3a

2038 Build Conditions - College Road at Cypress Drive
ALL WAY STOP
WARRANT ANALYSIS

LOCATION: College Road at Cypress Drive
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach Total
40	Major App1:	College Rd EB	2	7396
40	Major App3:	College Rd WB	2	8071
40	Minor App2:	Cypress Dr NB	2	5000
40	Minor App4:	Cypress Dr SB	2	7528

0.70 SPEED FACTOR USED? **No**

Minimum Volume Requirement
210 **140**

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR APPROACH TOTAL Σ (APP.1 + APP. 3)	MINOR APPROACH TOTAL Σ (APP.2 + APP. 4)	WARRANT MET MAJOR / MINOR
0:00 - 1:00	20	24	16	24	44	40	NO / NO
1:00 - 2:00	4	8	4	8	12	12	NO / NO
2:00 - 3:00	4	8	4	8	12	12	NO / NO
3:00 - 4:00	4	8	4	8	12	12	NO / NO
4:00 - 5:00	28	32	20	32	60	52	NO / NO
5:00 - 6:00	92	100	68	108	192	176	NO / YES
6:00 - 7:00	179	236	140	212	415	352	**YES / YES**
7:00 - 8:00	620	513	364	548	1133	912	**YES / YES**
8:00 - 9:00	519	482	320	484	1001	804	**YES / YES**
9:00 - 10:00	424	408	260	392	832	652	**YES / YES**
10:00 - 11:00	392	456	268	400	848	668	**YES / YES**
11:00 - 12:00	446	570	320	484	1016	804	**YES / YES**
12:00 - 13:00	558	591	364	544	1149	908	**YES / YES**
13:00 - 14:00	472	528	316	472	1000	788	**YES / YES**
14:00 - 15:00	513	666	372	552	1179	924	**YES / YES**
15:00 - 16:00	568	737	420	624	1305	1044	**YES / YES**
16:00 - 17:00	671	760	448	672	1431	1120	**YES / YES**
17:00 - 18:00	620	673	404	608	1293	1012	**YES / YES**
18:00 - 19:00	430	367	248	376	797	624	**YES / YES**
19:00 - 20:00	308	332	236	360	640	596	**YES / YES**
20:00 - 21:00	224	248	176	264	472	440	**YES / YES**
21:00 - 22:00	156	168	120	180	324	300	**YES / YES**
22:00 - 23:00	92	100	68	108	192	176	NO / YES
23:00 - 24:00	52	56	40	60	108	100	NO / NO
Daily	**7396**	**8071**	**5000**	**7528**			

	Met (Hr)	Required (Hr)
Hours met for warrant:	**16**	**8**

All-way Stop Warrant: **Satisfied**

REMARKS:

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressCollege 2038 Build.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

Exhibit A3b

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

2038 Build Conditions - College Road at Cypress Drive
SIGNAL WARRANT
ANALYSIS

LOCATION: College Road at Cypress Drive
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach
40	Major App1:	College Rd EB	2	7396
40	Major App3:	College Rd WB	2	8071
40	Minor App2:	Cypress Dr NB	2	3808
40	Minor App4:	Cypress Dr SB	2	4972

41 MPH OR FASTER?	NO
POPULATION < 10,000?	NO
VOLUME REQ. AT 70%?	**NO**
CORRECTABLE CRASHES: (12-month period)	0

	Minimum Volume Requirement		
	1A	1B	1A&B (80%)
Major Total	600	900	720
Minor Approach	200	100	160

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR APPROACH TOTAL Σ (APP.1 + APP. 3)	MAX MINOR APPROACH (APP. 2 or 4)	WARRANT 1A - 8 hr MAJOR/MINOR	WARRANT 1B - 8 hr MAJOR/MINOR	WARRANT 1A & B MAJOR/MINOR
0:00 - 1:00	20	24	12	16	44	16	NO / NO	NO / NO	NO / NO
1:00 - 2:00	4	8	4	4	12	4	NO / NO	NO / NO	NO / NO
2:00 - 3:00	4	8	4	4	12	4	NO / NO	NO / NO	NO / NO
3:00 - 4:00	4	8	4	4	12	4	NO / NO	NO / NO	NO / NO
4:00 - 5:00	28	32	16	20	60	20	NO / NO	NO / NO	NO / NO
5:00 - 6:00	92	100	52	72	192	72	NO / NO	NO / NO	NO / NO
6:00 - 7:00	179	236	108	140	415	140	NO / NO	NO / YES	NO / NO
7:00 - 8:00	620	513	276	364	1133	364	**YES / YES**	**YES / YES**	**YES / YES**
8:00 - 9:00	519	482	244	320	1001	320	**YES / YES**	**YES / YES**	**YES / YES**
9:00 - 10:00	424	408	196	260	832	260	**YES / YES**	NO / YES	**YES / YES**
10:00 - 11:00	392	456	204	264	848	264	**YES / YES**	NO / YES	**YES / YES**
11:00 - 12:00	446	570	244	320	1016	320	**YES / YES**	**YES / YES**	**YES / YES**
12:00 - 13:00	558	591	276	360	1149	360	**YES / YES**	**YES / YES**	**YES / YES**
13:00 - 14:00	472	528	240	312	1000	312	**YES / YES**	**YES / YES**	**YES / YES**
14:00 - 15:00	513	666	284	364	1179	364	**YES / YES**	**YES / YES**	**YES / YES**
15:00 - 16:00	568	737	320	412	1305	412	**YES / YES**	**YES / YES**	**YES / YES**
16:00 - 17:00	671	760	340	444	1431	444	**YES / YES**	**YES / YES**	**YES / YES**
17:00 - 18:00	620	673	308	400	1293	400	**YES / YES**	**YES / YES**	**YES / YES**
18:00 - 19:00	430	367	188	248	797	248	**YES / YES**	NO / YES	**YES / YES**
19:00 - 20:00	308	332	180	236	640	236	**YES / YES**	NO / YES	NO / YES
20:00 - 21:00	224	248	132	176	472	176	NO / NO	NO / YES	NO / YES
21:00 - 22:00	156	168	92	120	324	120	NO / NO	NO / YES	NO / NO
22:00 - 23:00	92	100	52	72	192	72	NO / NO	NO / NO	NO / NO
23:00 - 24:00	52	56	32	40	108	40	NO / NO	NO / NO	NO / NO
Daily	**7396**	**8071**	**3808**	**4972**					

		Met (Hr)	Required (Hr)	WARRANT MET:
Warrant 1	**Eight Hour Volumes**	13	8	**Satisfied**
Warrant 1A	Minimum Vehicular Volume	13	8	**Satisfied**
Warrant 1B	Interruption of Continuous Flow	9	8	**Satisfied**
1A & 1B	Combination of Warrants	12	8	**Satisfied**
Warrant 2	**Four Hour Volumes**	10	4	**Satisfied**
Warrant 3	**Peak Hour Volumes**	6	1	**Satisfied**
Warrant 7	**Crash Experience**	13	8	Crashes Insufficient

COMMENTS:

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressCollege 2038 Build.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

2038 Build Conditions - College Road at Cypress Drive
SIGNAL WARRANT
ANALYSIS

LOCATION: College Road at Cypress Drive
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach
40	Major App1:	College Rd EB	2	7396
40	Major App3:	College Rd WB	2	8071
40	Minor App2:	Cypress Dr NB	2	3808
40	Minor App4:	Cypress Dr SB	2	4972

40 MPH OR FASTER?	YES
POPULATION < 10,000?	NO
VOLUME REQ. AT 70%?	**YES**

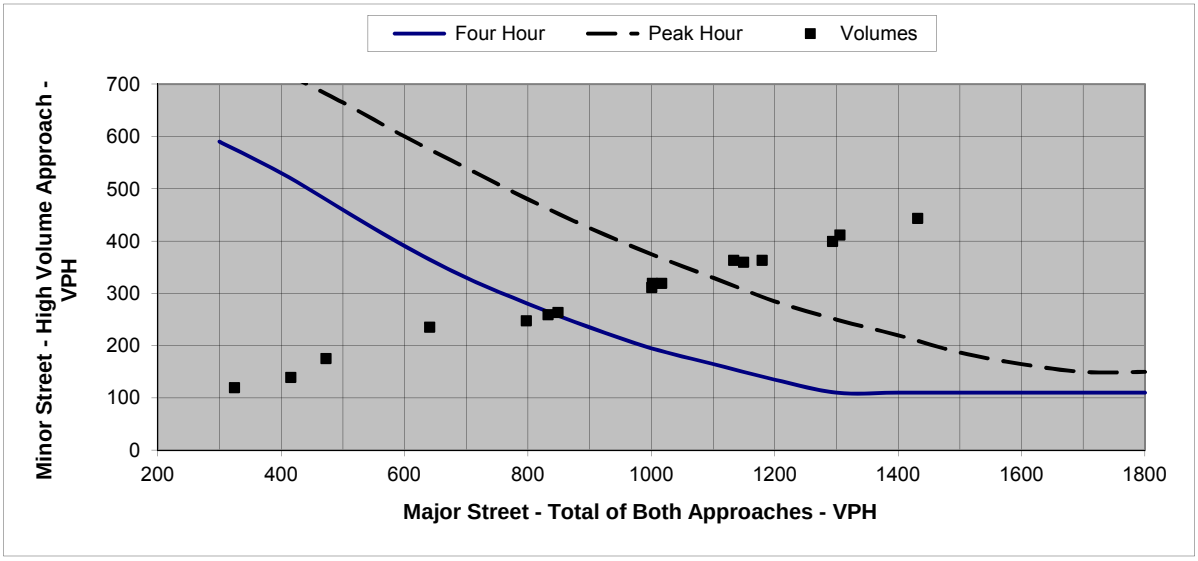


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds

Warrant Criteria (Graph)		
Major	Minor App.	Minor App.
Approach	Four Hour	Peak Hour
200		
300	590	
400	530	725
500	460	665
600	390	600
700	330	540
800	280	480
900	235	425
1000	195	375
1100	165	330
1200	135	285
1300	110	250
1400	110	220
1500	110	187
1600	110	165
1700	110	150
1800	110	150

Actual Hourly Count			Warrants Met:	
			Warrant 2	Warrant 3
HOUR	Sum Major App.	Max Minor App.	Four Hour	Peak Hour
0:00 - 1:00	44	16	NO	NO
1:00 - 2:00	12	4	NO	NO
2:00 - 3:00	12	4	NO	NO
3:00 - 4:00	12	4	NO	NO
4:00 - 5:00	60	20	NO	NO
5:00 - 6:00	192	72	NO	NO
6:00 - 7:00	415	140	NO	NO
7:00 - 8:00	1133	364	**YES**	**YES**
8:00 - 9:00	1001	320	**YES**	NO
9:00 - 10:00	832	260	NO	NO
10:00 - 11:00	848	264	**YES**	NO
11:00 - 12:00	1016	320	**YES**	NO
12:00 - 13:00	1149	360	**YES**	**YES**
13:00 - 14:00	1000	312	**YES**	NO
14:00 - 15:00	1179	364	**YES**	**YES**
15:00 - 16:00	1305	412	**YES**	**YES**
16:00 - 17:00	1431	444	**YES**	**YES**
17:00 - 18:00	1293	400	**YES**	**YES**
18:00 - 19:00	797	248	NO	NO
19:00 - 20:00	640	236	NO	NO
20:00 - 21:00	472	176	NO	NO
21:00 - 22:00	324	120	NO	NO
22:00 - 23:00	192	72	NO	NO
23:00 - 24:00	108	40	NO	NO

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressCollege 2038 Build.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

Exhibit A4a

Existing 2016 - Cypress Drive at Industrial Park Road
ALL WAY STOP
WARRANT ANALYSIS

LOCATION: Cypress Drive at Industrial Park Road
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach Total
40	Major App1:	Industrial Park Rd EB	1	320
40	Major App3:	Industrial Park Rd WB	1	529
30	Minor App2:	Cypress Dr NB	1	270
30	Minor App4:	Cypress Dr SB	1	0

0.70 SPEED FACTOR USED? **No**

Minimum Volume Requirement
210 **140**

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR APPROACH TOTAL Σ (APP.1 + APP. 3)	MINOR APPROACH TOTAL Σ (APP.2 + APP. 4)	WARRANT MET MAJOR / MINOR
0:00 - 1:00	0	0	0	0	0	0	NO / NO
1:00 - 2:00	0	0	0	0	0	0	NO / NO
2:00 - 3:00	0	0	0	0	0	0	NO / NO
3:00 - 4:00	0	0	0	0	0	0	NO / NO
4:00 - 5:00	0	0	0	0	0	0	NO / NO
5:00 - 6:00	0	0	0	0	0	0	NO / NO
6:00 - 7:00	10	51	25	0	61	25	NO / NO
7:00 - 8:00	18	69	45	0	87	45	NO / NO
8:00 - 9:00	56	59	38	0	115	38	NO / NO
9:00 - 10:00	22	36	22	0	58	22	NO / NO
10:00 - 11:00	25	34	15	0	59	15	NO / NO
11:00 - 12:00	53	49	16	0	102	16	NO / NO
12:00 - 13:00	37	64	29	0	101	29	NO / NO
13:00 - 14:00	15	49	30	0	64	30	NO / NO
14:00 - 15:00	34	50	23	0	84	23	NO / NO
15:00 - 16:00	45	61	23	0	106	23	NO / NO
16:00 - 17:00	5	4	4	0	9	4	NO / NO
17:00 - 18:00	0	2	0	0	2	0	NO / NO
18:00 - 19:00	0	1	0	0	1	0	NO / NO
19:00 - 20:00	0	0	0	0	0	0	NO / NO
20:00 - 21:00	0	0	0	0	0	0	NO / NO
21:00 - 22:00	0	0	0	0	0	0	NO / NO
22:00 - 23:00	0	0	0	0	0	0	NO / NO
23:00 - 24:00	0	0	0	0	0	0	NO / NO
Daily	**320**	**529**	**270**	**0**			

	Met (Hr)	Required (Hr)
Hours met for warrant:	**0**	**8**

All-way Stop Warrant: **Not satisfied**

REMARKS:

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressIndustrial 2016.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

Exhibit A4b

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

Existing 2016 - Cypress Drive at Industrial Park Road
SIGNAL WARRANT
ANALYSIS

LOCATION: Cypress Drive at Industrial Park Road
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016
OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach
40	Major App1:	Industrial Park Rd EB	1	320
40	Major App3:	Industrial Park Rd WB	1	529
30	Minor App2:	Cypress Dr NB	1	36
30	Minor App4:	Cypress Dr SB	1	0

41 MPH OR FASTER?	NO
POPULATION < 10,000?	YES
VOLUME REQ. AT 70%?	**YES**
CORRECTABLE CRASHES: (12-month period)	0

	Minimum Volume Requirement		
	1A	1B	1A&B (80%)
Major Total	350	525	420
Minor Approach	105	53	84

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR APPROACH TOTAL Σ (APP.1 + APP. 3)	MAX MINOR APPROACH (APP. 2 or 4)	WARRANT 1A - 8 hr MAJOR/MINOR	WARRANT 1B - 8 hr MAJOR/MINOR	WARRANT 1A & B MAJOR/MINOR
0:00 - 1:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
1:00 - 2:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
2:00 - 3:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
3:00 - 4:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
4:00 - 5:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
5:00 - 6:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
6:00 - 7:00	10	51	1	0	61	1	NO / NO	NO / NO	NO / NO
7:00 - 8:00	18	69	4	0	87	4	NO / NO	NO / NO	NO / NO
8:00 - 9:00	56	59	4	0	115	4	NO / NO	NO / NO	NO / NO
9:00 - 10:00	22	36	7	0	58	7	NO / NO	NO / NO	NO / NO
10:00 - 11:00	25	34	1	0	59	1	NO / NO	NO / NO	NO / NO
11:00 - 12:00	53	49	3	0	102	3	NO / NO	NO / NO	NO / NO
12:00 - 13:00	37	64	3	0	101	3	NO / NO	NO / NO	NO / NO
13:00 - 14:00	15	49	5	0	64	5	NO / NO	NO / NO	NO / NO
14:00 - 15:00	34	50	5	0	84	5	NO / NO	NO / NO	NO / NO
15:00 - 16:00	45	61	3	0	106	3	NO / NO	NO / NO	NO / NO
16:00 - 17:00	5	4	0	0	9	0	NO / NO	NO / NO	NO / NO
17:00 - 18:00	0	2	0	0	2	0	NO / NO	NO / NO	NO / NO
18:00 - 19:00	0	1	0	0	1	0	NO / NO	NO / NO	NO / NO
19:00 - 20:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
20:00 - 21:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
21:00 - 22:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
22:00 - 23:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
23:00 - 24:00	0	0	0	0	0	0	NO / NO	NO / NO	NO / NO
Daily	**320**	**529**	**36**	**0**					

		Met (Hr)	Required (Hr)	WARRANT MET:
Warrant 1	**Eight Hour Volumes**	0	8	Not satisfied
Warrant 1A	Minimum Vehicular Volume	0	8	Not satisfied
Warrant 1B	Interruption of Continuous Flow	0	8	Not satisfied
1A & 1B	Combination of Warrants	0	8	Not satisfied
Warrant 2	**Four Hour Volumes**	0	4	Not satisfied
Warrant 3	**Peak Hour Volumes**	0	1	Not satisfied
Warrant 7	**Crash Experience**	0	8	Not satisfied

COMMENTS:

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressIndustrial 2016.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

Existing 2016 - Cypress Drive at Industrial Park Road
SIGNAL WARRANT
ANALYSIS

LOCATION: Cypress Drive at Industrial Park Road
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach
40	Major App1:	Industrial Park Rd EB	1	320
40	Major App3:	Industrial Park Rd WB	1	529
30	Minor App2:	Cypress Dr NB	1	36
30	Minor App4:	Cypress Dr SB	1	0

40 MPH OR FASTER?	YES
POPULATION < 10,000?	YES
VOLUME REQ. AT 70%?	**YES**

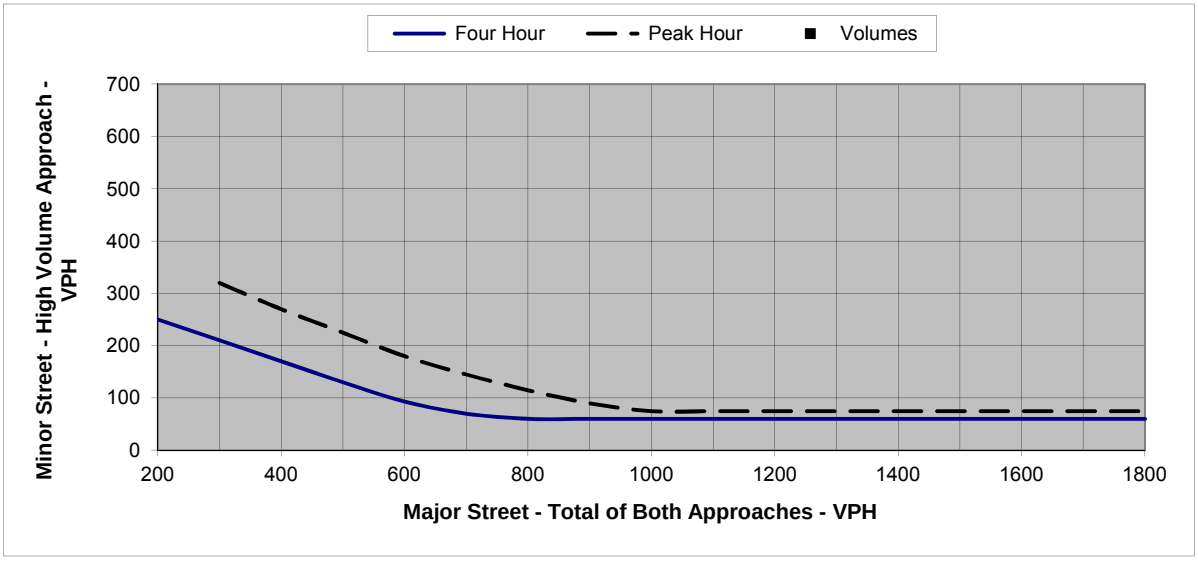


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds

Warrant Criteria (Graph)		
Major	Minor App.	Minor App.
Approach	Four Hour	Peak Hour
200	250	
300	210	320
400	170	270
500	130	225
600	93	180
700	70	145
800	60	115
900	60	90
1000	60	75
1100	60	75
1200	60	75
1300	60	75
1400	60	75
1500	60	75
1600	60	75
1700	60	75
1800	60	75

Actual Hourly Count			Warrants Met:	
			Warrant 2	Warrant 3
HOUR	Sum Major App.	Max Minor App.	Four Hour	Peak Hour
0:00 - 1:00	0	0	NO	NO
1:00 - 2:00	0	0	NO	NO
2:00 - 3:00	0	0	NO	NO
3:00 - 4:00	0	0	NO	NO
4:00 - 5:00	0	0	NO	NO
5:00 - 6:00	0	0	NO	NO
6:00 - 7:00	61	1	NO	NO
7:00 - 8:00	87	4	NO	NO
8:00 - 9:00	115	4	NO	NO
9:00 - 10:00	58	7	NO	NO
10:00 - 11:00	59	1	NO	NO
11:00 - 12:00	102	3	NO	NO
12:00 - 13:00	101	3	NO	NO
13:00 - 14:00	64	5	NO	NO
14:00 - 15:00	84	5	NO	NO
15:00 - 16:00	106	3	NO	NO
16:00 - 17:00	9	0	NO	NO
17:00 - 18:00	2	0	NO	NO
18:00 - 19:00	1	0	NO	NO
19:00 - 20:00	0	0	NO	NO
20:00 - 21:00	0	0	NO	NO
21:00 - 22:00	0	0	NO	NO
22:00 - 23:00	0	0	NO	NO
23:00 - 24:00	0	0	NO	NO

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressIndustrial 2016.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

Exhibit A5a

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

2018 Build Conditions - Cypress Drive at Industrial Park Road
ALL WAY STOP
WARRANT ANALYSIS

LOCATION: Cypress Drive at Industrial Park Road
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach Total
40	Major App1:	Cypress Dr NB	2	4660
40	Major App3:	Cypress Dr SB	2	4660
30	Minor App2:	Industrial Park Rd EB	1	326
30	Minor App4:	Industrial Park Rd WB	1	536

0.70 SPEED FACTOR USED? **No**

Minimum Volume Requirement
210 **140**

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR APPROACH TOTAL Σ (APP.1 + APP. 3)	MINOR APPROACH TOTAL Σ (APP.2 + APP. 4)	WARRANT MET MAJOR / MINOR
0:00 - 1:00	12	12	0	0	24	0	NO / NO
1:00 - 2:00	4	4	0	0	8	0	NO / NO
2:00 - 3:00	4	4	0	0	8	0	NO / NO
3:00 - 4:00	4	4	0	0	8	0	NO / NO
4:00 - 5:00	16	16	0	0	32	0	NO / NO
5:00 - 6:00	68	68	0	0	136	0	NO / NO
6:00 - 7:00	128	128	10	52	256	62	YES / NO
7:00 - 8:00	336	336	18	72	672	90	YES / NO
8:00 - 9:00	300	300	58	60	600	118	YES / NO
9:00 - 10:00	240	240	22	36	480	58	YES / NO
10:00 - 11:00	244	244	25	34	488	59	YES / NO
11:00 - 12:00	304	304	55	49	608	104	YES / NO
12:00 - 13:00	336	336	38	65	672	103	YES / NO
13:00 - 14:00	296	296	15	49	592	64	YES / NO
14:00 - 15:00	340	340	34	50	680	84	YES / NO
15:00 - 16:00	392	392	46	62	784	108	YES / NO
16:00 - 17:00	420	420	5	4	840	9	YES / NO
17:00 - 18:00	380	380	0	2	760	2	YES / NO
18:00 - 19:00	228	228	0	1	456	1	YES / NO
19:00 - 20:00	224	224	0	0	448	0	YES / NO
20:00 - 21:00	168	168	0	0	336	0	YES / NO
21:00 - 22:00	112	112	0	0	224	0	YES / NO
22:00 - 23:00	68	68	0	0	136	0	NO / NO
23:00 - 24:00	36	36	0	0	72	0	NO / NO
Daily	**4660**	**4660**	**326**	**536**			

	Met (Hr)	Required (Hr)
Hours met for warrant:	**0**	**8**

All-way Stop Warrant: **Not satisfied**

REMARKS:

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressIndustrial 2018.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

Exhibit A5b

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

2018 Build Conditions - Cypress Drive at Industrial Park Road
SIGNAL WARRANT
ANALYSIS

LOCATION: Cypress Drive at Industrial Park Road
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016
OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach
40	Major App1:	Cypress Dr NB	2	4660
40	Major App3:	Cypress Dr SB	2	4660
30	Minor App2:	Industrial Park Rd EB	1	308
30	Minor App4:	Industrial Park Rd WB	1	536

41 MPH OR FASTER?	NO
POPULATION < 10,000?	YES
VOLUME REQ. AT 70%?	**YES**
CORRECTABLE CRASHES: (12-month period)	0

	Minimum Volume Requirement		
	1A	1B	1A&B (80%)
Major Total	420	630	504
Minor Approach	105	53	84

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR APPROACH TOTAL Σ (APP.1 + APP. 3)	MAX MINOR APPROACH (APP. 2 or 4)	WARRANT 1A - 8 hr MAJOR/MINOR	WARRANT 1B - 8 hr MAJOR/MINOR	WARRANT 1A & B MAJOR/MINOR
0:00 - 1:00	12	12	0	0	24	0	NO / NO	NO / NO	NO / NO
1:00 - 2:00	4	4	0	0	8	0	NO / NO	NO / NO	NO / NO
2:00 - 3:00	4	4	0	0	8	0	NO / NO	NO / NO	NO / NO
3:00 - 4:00	4	4	0	0	8	0	NO / NO	NO / NO	NO / NO
4:00 - 5:00	16	16	0	0	32	0	NO / NO	NO / NO	NO / NO
5:00 - 6:00	68	68	0	0	136	0	NO / NO	NO / NO	NO / NO
6:00 - 7:00	128	128	10	52	256	52	NO / NO	NO / NO	NO / NO
7:00 - 8:00	336	336	17	72	672	72	YES / NO	**YES / YES**	YES / NO
8:00 - 9:00	300	300	54	60	600	60	YES / NO	NO / YES	YES / NO
9:00 - 10:00	240	240	21	36	480	36	YES / NO	NO / NO	NO / NO
10:00 - 11:00	244	244	23	34	488	34	YES / NO	NO / NO	NO / NO
11:00 - 12:00	304	304	53	49	608	53	YES / NO	NO / YES	YES / NO
12:00 - 13:00	336	336	36	65	672	65	YES / NO	**YES / YES**	YES / NO
13:00 - 14:00	296	296	15	49	592	49	YES / NO	NO / NO	YES / NO
14:00 - 15:00	340	340	32	50	680	50	YES / NO	YES / NO	YES / NO
15:00 - 16:00	392	392	42	62	784	62	YES / NO	**YES / YES**	YES / NO
16:00 - 17:00	420	420	5	4	840	5	YES / NO	YES / NO	YES / NO
17:00 - 18:00	380	380	0	2	760	2	YES / NO	YES / NO	YES / NO
18:00 - 19:00	228	228	0	1	456	1	YES / NO	NO / NO	NO / NO
19:00 - 20:00	224	224	0	0	448	0	YES / NO	NO / NO	NO / NO
20:00 - 21:00	168	168	0	0	336	0	NO / NO	NO / NO	NO / NO
21:00 - 22:00	112	112	0	0	224	0	NO / NO	NO / NO	NO / NO
22:00 - 23:00	68	68	0	0	136	0	NO / NO	NO / NO	NO / NO
23:00 - 24:00	36	36	0	0	72	0	NO / NO	NO / NO	NO / NO
Daily	**4660**	**4660**	**308**	**536**					

		Met (Hr)	Required (Hr)	WARRANT MET:
Warrant 1	**Eight Hour Volumes**	3	8	Not satisfied
Warrant 1A	Minimum Vehicular Volume	0	8	Not satisfied
Warrant 1B	Interruption of Continuous Flow	3	8	Not satisfied
1A & 1B	Combination of Warrants	0	8	Not satisfied
Warrant 2	**Four Hour Volumes**	0	4	Not satisfied
Warrant 3	**Peak Hour Volumes**	0	1	Not satisfied
Warrant 7	**Crash Experience**	1	8	Not satisfied

COMMENTS:

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressIndustrial 2018.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

2018 Build Conditions - Cypress Drive at Industrial Park Road
SIGNAL WARRANT
ANALYSIS

LOCATION: Cypress Drive at Industrial Park Road
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach
40	Major App1:	Cypress Dr NB	2	4660
40	Major App3:	Cypress Dr SB	2	4660
30	Minor App2:	Industrial Park Rd EB	1	308
30	Minor App4:	Industrial Park Rd WB	1	536

40 MPH OR FASTER?	YES
POPULATION < 10,000?	YES
VOLUME REQ. AT 70%?	**YES**

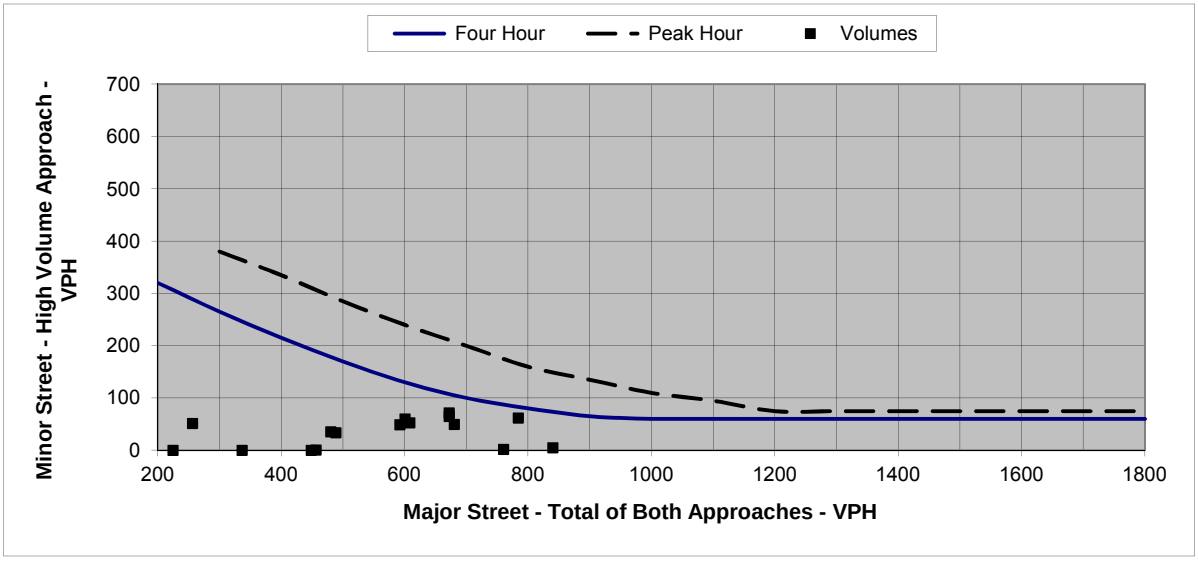


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds

Warrant Criteria (Graph)		
Major	Minor App.	Minor App.
Approach	Four Hour	Peak Hour
200	320	
300	265	380
400	215	335
500	170	285
600	130	240
700	100	200
800	80	160
900	65	135
1000	60	110
1100	60	95
1200	60	75
1300	60	75
1400	60	75
1500	60	75
1600	60	75
1700	60	75
1800	60	75

Actual Hourly Count			Warrants Met:	
			Warrant 2	Warrant 3
HOUR	Sum Major App.	Max Minor App.	Four Hour	Peak Hour
0:00 - 1:00	24	0	NO	NO
1:00 - 2:00	8	0	NO	NO
2:00 - 3:00	8	0	NO	NO
3:00 - 4:00	8	0	NO	NO
4:00 - 5:00	32	0	NO	NO
5:00 - 6:00	136	0	NO	NO
6:00 - 7:00	256	52	NO	NO
7:00 - 8:00	672	72	NO	NO
8:00 - 9:00	600	60	NO	NO
9:00 - 10:00	480	36	NO	NO
10:00 - 11:00	488	34	NO	NO
11:00 - 12:00	608	53	NO	NO
12:00 - 13:00	672	65	NO	NO
13:00 - 14:00	592	49	NO	NO
14:00 - 15:00	680	50	NO	NO
15:00 - 16:00	784	62	NO	NO
16:00 - 17:00	840	5	NO	NO
17:00 - 18:00	760	2	NO	NO
18:00 - 19:00	456	1	NO	NO
19:00 - 20:00	448	0	NO	NO
20:00 - 21:00	336	0	NO	NO
21:00 - 22:00	224	0	NO	NO
22:00 - 23:00	136	0	NO	NO
23:00 - 24:00	72	0	NO	NO

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressIndustrial 2018.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

Exhibit A5a

2038 Build Conditions - Cypress Drive at Industrial Park Road
ALL WAY STOP
WARRANT ANALYSIS

LOCATION: Cypress Drive at Industrial Park Road
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach Total
40	Major App1:	Cypress Dr NB	2	7524
40	Major App3:	Cypress Dr SB	2	7524
30	Minor App2:	Industrial Park Rd EB	1	458
30	Minor App4:	Industrial Park Rd WB	1	760

0.70 SPEED FACTOR USED? **No**

Minimum Volume Requirement
210 **140**

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR APPROACH TOTAL Σ (APP.1 + APP. 3)	MINOR APPROACH TOTAL Σ (APP.2 + APP. 4)	WARRANT MET MAJOR / MINOR
0:00 - 1:00	20	20	0	0	40	0	NO / NO
1:00 - 2:00	8	8	0	0	16	0	NO / NO
2:00 - 3:00	8	8	0	0	16	0	NO / NO
3:00 - 4:00	8	8	0	0	16	0	NO / NO
4:00 - 5:00	28	28	0	0	56	0	NO / NO
5:00 - 6:00	104	104	0	0	208	0	NO / NO
6:00 - 7:00	212	212	14	72	424	86	YES / NO
7:00 - 8:00	544	544	26	99	1088	125	YES / NO
8:00 - 9:00	484	484	80	85	968	165	**YES / YES**
9:00 - 10:00	392	392	31	52	784	83	YES / NO
10:00 - 11:00	396	396	35	48	792	83	YES / NO
11:00 - 12:00	488	488	76	71	976	147	**YES / YES**
12:00 - 13:00	540	540	53	93	1080	146	**YES / YES**
13:00 - 14:00	476	476	22	71	952	93	YES / NO
14:00 - 15:00	556	556	49	72	1112	121	YES / NO
15:00 - 16:00	624	624	65	88	1248	153	**YES / YES**
16:00 - 17:00	676	676	7	6	1352	13	YES / NO
17:00 - 18:00	608	608	0	2	1216	2	YES / NO
18:00 - 19:00	376	376	0	1	752	1	YES / NO
19:00 - 20:00	364	364	0	0	728	0	YES / NO
20:00 - 21:00	264	264	0	0	528	0	YES / NO
21:00 - 22:00	180	180	0	0	360	0	YES / NO
22:00 - 23:00	104	104	0	0	208	0	NO / NO
23:00 - 24:00	64	64	0	0	128	0	NO / NO
Daily	**7524**	**7524**	**458**	**760**			

	Met (Hr)	Required (Hr)
Hours met for warrant:	**4**	**8**

All-way Stop Warrant: **Not satisfied**

REMARKS:

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressIndustrial 2038.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

Exhibit A5b

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

2038 Build Conditions - Cypress Drive at Industrial Park Road
SIGNAL WARRANT
ANALYSIS

LOCATION: Cypress Drive at Industrial Park Road
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016
OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach
40	Major App1:	Cypress Dr NB	2	7524
40	Major App3:	Cypress Dr SB	2	7524
30	Minor App2:	Industrial Park Rd EB	1	435
30	Minor App4:	Industrial Park Rd WB	1	760

41 MPH OR FASTER?	NO
POPULATION < 10,000?	NO
VOLUME REQ. AT 70%?	**NO**
CORRECTABLE CRASHES: (12-month period)	0

	Minimum Volume Requirement		
	1A	1B	1A&B (80%)
Major Total	600	900	720
Minor Approach	150	75	120

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR APPROACH TOTAL Σ (APP.1 + APP. 3)	MAX MINOR APPROACH (APP. 2 or 4)	WARRANT 1A - 8 hr MAJOR/MINOR	WARRANT 1B - 8 hr MAJOR/MINOR	WARRANT 1A & B MAJOR/MINOR
0:00 - 1:00	20	20	0	0	40	0	NO / NO	NO / NO	NO / NO
1:00 - 2:00	8	8	0	0	16	0	NO / NO	NO / NO	NO / NO
2:00 - 3:00	8	8	0	0	16	0	NO / NO	NO / NO	NO / NO
3:00 - 4:00	8	8	0	0	16	0	NO / NO	NO / NO	NO / NO
4:00 - 5:00	28	28	0	0	56	0	NO / NO	NO / NO	NO / NO
5:00 - 6:00	104	104	0	0	208	0	NO / NO	NO / NO	NO / NO
6:00 - 7:00	212	212	14	72	424	72	NO / NO	NO / NO	NO / NO
7:00 - 8:00	544	544	25	99	1088	99	YES / NO	**YES / YES**	YES / NO
8:00 - 9:00	484	484	75	85	968	85	YES / NO	**YES / YES**	YES / NO
9:00 - 10:00	392	392	30	52	784	52	YES / NO	NO / NO	YES / NO
10:00 - 11:00	396	396	33	48	792	48	YES / NO	NO / NO	YES / NO
11:00 - 12:00	488	488	74	71	976	74	YES / NO	YES / NO	YES / NO
12:00 - 13:00	540	540	50	93	1080	93	YES / NO	**YES / YES**	YES / NO
13:00 - 14:00	476	476	22	71	952	71	YES / NO	YES / NO	YES / NO
14:00 - 15:00	556	556	46	72	1112	72	YES / NO	YES / NO	YES / NO
15:00 - 16:00	624	624	59	88	1248	88	YES / NO	**YES / YES**	YES / NO
16:00 - 17:00	676	676	7	6	1352	7	YES / NO	YES / NO	YES / NO
17:00 - 18:00	608	608	0	2	1216	2	YES / NO	YES / NO	YES / NO
18:00 - 19:00	376	376	0	1	752	1	YES / NO	NO / NO	YES / NO
19:00 - 20:00	364	364	0	0	728	0	YES / NO	NO / NO	YES / NO
20:00 - 21:00	264	264	0	0	528	0	NO / NO	NO / NO	NO / NO
21:00 - 22:00	180	180	0	0	360	0	NO / NO	NO / NO	NO / NO
22:00 - 23:00	104	104	0	0	208	0	NO / NO	NO / NO	NO / NO
23:00 - 24:00	64	64	0	0	128	0	NO / NO	NO / NO	NO / NO
Daily	**7524**	**7524**	**435**	**760**					

		Met (Hr)	Required (Hr)	WARRANT MET:
Warrant 1	**Eight Hour Volumes**	4	8	Not satisfied
Warrant 1A	Minimum Vehicular Volume	0	8	Not satisfied
Warrant 1B	Interruption of Continuous Flow	4	8	Not satisfied
1A & 1B	Combination of Warrants	0	8	Not satisfied
Warrant 2	**Four Hour Volumes**	0	4	Not satisfied
Warrant 3	**Peak Hour Volumes**	0	1	Not satisfied
Warrant 7	**Crash Experience**	7	8	Not satisfied

COMMENTS:

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressIndustrial 2038.xlsx]Warrant Volume Data

SHORT ELLIOTT HENDRICKSON INC.

10901 Red Circle Drive, Suite 200
Minnetonka, MN 55343

2038 Build Conditions - Cypress Drive at Industrial Park Road
SIGNAL WARRANT
ANALYSIS

LOCATION: Cypress Drive at Industrial Park Road
COUNTY: Crow Wing
REF. POINT: 0
DATE: 11/18/2016

OPERATOR: GTJ

85th% Speed	Approach Description		Lanes	Approach
40	Major App1:	Cypress Dr NB	2	7524
40	Major App3:	Cypress Dr SB	2	7524
30	Minor App2:	Industrial Park Rd EB	1	435
30	Minor App4:	Industrial Park Rd WB	1	760

40 MPH OR FASTER?	YES
POPULATION < 10,000?	NO
VOLUME REQ. AT 70%?	**YES**

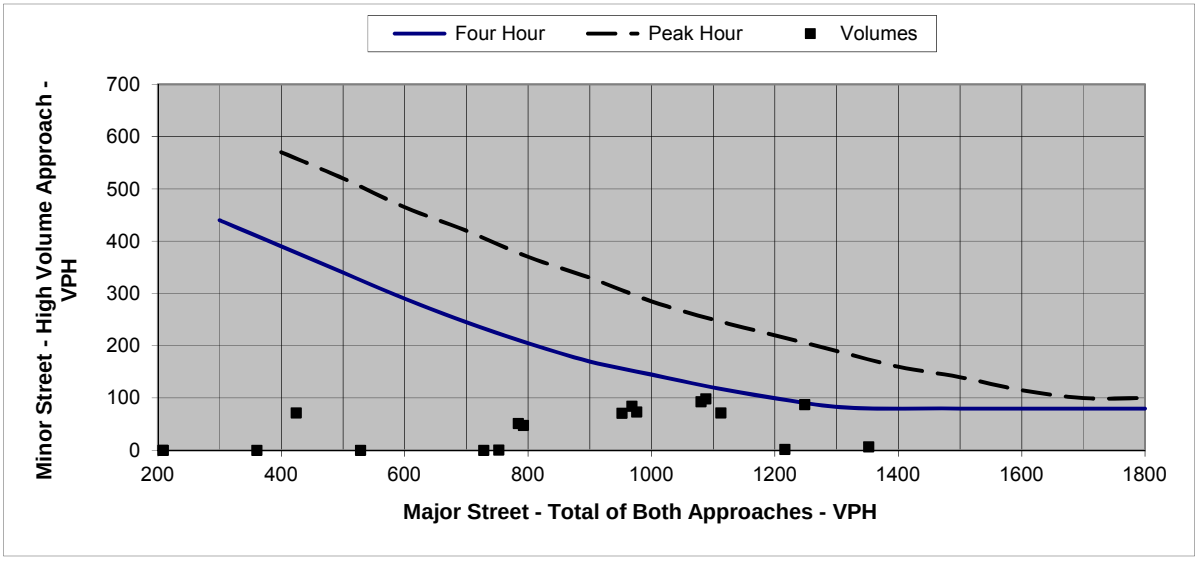


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds

Warrant Criteria (Graph)		
Major	Minor App.	Minor App.
Approach	Four Hour	Peak Hour
200		
300	440	
400	390	570
500	340	520
600	290	465
700	245	420
800	205	370
900	170	330
1000	145	285
1100	120	250
1200	100	220
1300	83	190
1400	80	160
1500	80	140
1600	80	115
1700	80	100
1800	80	100

Actual Hourly Count			Warrants Met:	
			Warrant 2	Warrant 3
HOUR	Sum Major App.	Max Minor App.	Four Hour	Peak Hour
0:00 - 1:00	40	0	NO	NO
1:00 - 2:00	16	0	NO	NO
2:00 - 3:00	16	0	NO	NO
3:00 - 4:00	16	0	NO	NO
4:00 - 5:00	56	0	NO	NO
5:00 - 6:00	208	0	NO	NO
6:00 - 7:00	424	72	NO	NO
7:00 - 8:00	1088	99	NO	NO
8:00 - 9:00	968	85	NO	NO
9:00 - 10:00	784	52	NO	NO
10:00 - 11:00	792	48	NO	NO
11:00 - 12:00	976	74	NO	NO
12:00 - 13:00	1080	93	NO	NO
13:00 - 14:00	952	71	NO	NO
14:00 - 15:00	1112	72	NO	NO
15:00 - 16:00	1248	88	NO	NO
16:00 - 17:00	1352	7	NO	NO
17:00 - 18:00	1216	2	NO	NO
18:00 - 19:00	752	1	NO	NO
19:00 - 20:00	728	0	NO	NO
20:00 - 21:00	528	0	NO	NO
21:00 - 22:00	360	0	NO	NO
22:00 - 23:00	208	0	NO	NO
23:00 - 24:00	128	0	NO	NO

C:\TSIS6 Projects\Baxter\ICE\Warrants\[01 Warrant Worksheet - Signal and All Way CypressIndustrial 2038.xlsx]Warrant Volume Data

Appendix B

Operational Tables

DRAFT

Table B1a

Cypress Drive
2016 Existing
AM and PM Peak Hour

	Intersection	Approach	AM Peak LOS By Approach Delay (S/Veh)	AM Peak LOS By Approach LOS	AM Peak LOS By Intersection Delay (S/Veh)	AM Peak LOS By Intersection LOS	PM Peak LOS By Approach Delay (S/Veh)	PM Peak LOS By Approach LOS	PM Peak LOS By Intersection Delay (S/Veh)	PM Peak LOS By Intersection LOS
Peak Hour	Cypress Dr at College Road	NB	6.9	A	1.7	A	9.4	A	1.9	A
		SB	5.8	A			6.6	A		
		EB	1.3	A			1.2	A		
		WB	1.2	A			1.5	A		
	Cypress Dr at Greenwood Road	NB	0.5	A	1.2	A	1.3	A	2.6	A
		SB	0.1	A			0.0	A		
		EB	2.5	A			2.7	A		
		WB	4.2	A			4.6	A		
	Cypress Dr at Industrial Road	NB	2.8	A	1.3	A	1.5	A	0.8	A
		SB	0.0	A			0.0	A		
		EB	0.2	A			0.0	A		
		WB	0.8	A			0.0	A		

Table B1b

Cypress Drive
2016 Existing
AM Peak Hour

SimTraffic Ver 9 Results

	Intersection	Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection		Queing Information (feet)								
																	Through			Left Turn			Right Turn		
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Link Length	Avg.	Max	Storage	Avg.	Max	Storage	Avg.	Max
AM Peak Hour	Cypress Dr at College Road	NB	12	2	18	32	13.4	B	11.9	B	3.1	A	6.9	A	1.7	A	1562	7	33	0		0	300	8	26
		SB	11	1	36	48	12.1	B	27.2	D	3.8	A	5.8	A			653	27	52	0		0	0		
		EB	47	469	7	523	3.4	A	1.1	A	0.3	A	1.3	A			0			300	8	40	0		
		WB	16	355	14	385	4.8	A	1.1	A	0.5	A	1.2	A			0			300	4	25	0		
	Cypress Dr at Greenwood Road	NB	6	54	3	63	1.9	A	0.4	A	0.1	A	0.5	A	1.2	A	0			0		0	0		
		SB	0	20	0	20	0.0	A	0.1	A	0.0	A	0.1	A			0			0		0	0		
		EB	0	0	14	14	0.0	A	0.0	A	2.5	A	2.5	A			1243	12	35	0		0	0		
		WB	14	0	0	14	4.2	A	0.0	A	0.0	A	4.2	A			976	13	35	0		0	0		
	Cypress Dr at Industrial Road	NB	2	0	52	54	6.1	A	0.0	A	2.7	A	2.8	A	1.3	A	0	23	57	0		0	0		
		SB	0	0	0	0	0.0	A	0.0	A	0.0	A	0.0	A			0			0		0	0		
		EB	0	37	1	38	0.0	A	0.2	A	0.0	A	0.2	A			0			0		0	0		
		WB	19	48	0	67	1.9	A	0.3	A	0.0	A	0.8	A			0			0		0	0		

Table B1c

Cypress Drive
2016 Existing
PM Peak Hour

SimTraffic Ver 9 Results

	Intersection	Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection		Queing Information (feet)								
																	Through			Left Turn			Right Turn		
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Link Length	Avg.	Max	Storage	Avg.	Max	Storage	Avg.	Max
PM Peak Hour	Cypress Dr at College Road	NB	19	1	15	35	15.7	C	11.2	B	3.3	A	9.4	A	1.9	A	1562	12	38	0		0	300	9	23
		SB	8	0	41	49	13.9	B	0.9	A	4.9	A	6.6	A			653	24	66	0		0	0		
		EB	34	500	23	557	4.4	A	1.1	A	0.5	A	1.2	A			0			300	9	36	0		
		WB	18	504	10	532	4.0	A	1.4	A	0.4	A	1.5	A			0			300	7	30	0		
	Cypress Dr at Greenwood Road	NB	23	1	21	45	2.1	A	0.6	A	0.5	A	1.3	A	2.6	A	0			0		0	0		
		SB	0	1	0	1	0.0	A	0.0	A	0.0	A	0.0	A			0			0		0	0		
		EB	0	0	25	25	0.0	A	0.0	A	2.7	A	2.7	A			1243	19	60	0		0	0		
		WB	23	0	0	23	4.6	A	0.0	A	0.0	A	4.6	A			976	15	40	0		0	0		
	Cypress Dr at Industrial Road	NB	0	0	1	1	0.0	A	0.0	A	1.5	A	1.5	A	0.8	A	0	1	18	0		0	0		
		SB	0	0	0	0	0.0	A	0.0	A	0.0	A	0.0	A			0			0		0	0		
		EB	0	1	0	1	0.0	A	0.0	A	0.0	A	0.0	A			0			0		0	0		
		WB	1	1	0	2	0.0	A	0.0	A	0.0	A	0.0	A			0			0		0	0		

Table B2a

Cypress Drive
2018 Build Demands
Traffic Control Summary
PM Peak Hour

	Intersection	Approach	PM Peak Minor Street Stop LOS By Approach Delay (S/Veh)	LOS	PM Peak Minor Street Stop LOS By Intersection Delay (S/Veh)	LOS	PM Peak All Way Stop LOS By Approach Delay (S/Veh)	LOS	PM Peak All Way Stop LOS By Intersection Delay (S/Veh)	LOS	PM Peak Traffic Signal LOS By Approach Delay (S/Veh)	LOS	PM Peak Traffic Signal LOS By Intersection Delay (S/Veh)	LOS	PM Peak Roundabout LOS By Approach Delay (S/Veh)	LOS	PM Peak Roundabout LOS By Intersection Delay (S/Veh)	LOS
Peak Hour	Cypress Dr at College Road	NB	638.7	F	67.7	F	14.1	B	12.7	B	22.9	C	16.4	B	5.7	A	4.0	A
		SB	95.8	F			9.3	A			13.6	B			4.8	A		
		EB	3.0	A			12.4	B			13.7	B			3.5	A		
		WB	2.3	A			14.3	B			18.8	B			3.7	A		
	Cypress Dr at Greenwood Road (Minor Street Stop Control - all scenarios)	NB	1.2	A	2.4	A	1.6	A	1.6	A	1.3	A	1.5	A				
		SB	2.3	A			0.6	A			0.6	A						
		EB	7.5	A			4.3	A			4.9	A						
		WB	12.8	B			7.4	A			7.9	A						
	Cypress Dr at Industrial Road (Minor Street Stop Control - all scenarios)	NB	0.4	A	1.9	A	0.3	A	1.9	A	0.6	A	2.0	A				
		SB	1.9	A			2.0	A			2.0	A						
		EB	8.8	A			9.2	A			9.2	A						
		WB	9.1	A			10.2	B			9.6	A						
	Cypress Dr at TH 210 (Signal)	NB	32.0	C	24.4	C	31.6	C	25.5	C	33.2	C	25.5	C				
		SB	28.3	C			31.1	C			29.0	C						
		EB	23.2	C			23.6	C			24.2	C						
		WB	20.8	C			22.3	C			21.9	C						

Table B2b

Cypress Drive
2018 Build Scenario 1
PM Peak Hour

SimTraffic Ver 9 Results

College Drive at Cypress - Minor Street Stop Control

	Intersection	Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection		Queing Information (feet)								
																	Through			Left Turn			Right Turn		
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Link Length	Avg.	Max	Storage	Avg.	Max	Storage	Avg.	Max
AM Peak Hour	Cypress Dr at College Road	NB	30	167	26	223	491.7	F	663.5	F	664.3	F	638.7	F			1562	929	1583	300	120	325	0		
		SB	108	75	143	326	221.7	F	106.4	F	6.5	A	95.8	F	67.7	F	651	142	485	300	164	302	0	66	324
		EB	155	520	74	749	8.0	A	1.7	A	1.0	A	3.0	A			2190		5	300	40	103	300	1	15
		WB	39	474	135	648	6.4	A	2.1	A	1.6	A	2.3	A			2475	2	21	300	14	50	0		
	Cypress Dr at Greenwood Road	NB	24	411	22	457	3.5	A	1.1	A	1.1	A	1.2	A			0			200	4	34	0		
	(Minor Street Stop Control)	SB	5	276	5	286	3.0	A	2.3	A	0.2	A	2.3	A	2.4	A	863	6	59	200	1	23	0		
		EB	10	0	26	36	6.8	A	0.0	A	7.8	A	7.5	A			1225	19	44	0		0	0		
		WB	24	0	10	34	15.2	C	0.0	A	6.9	A	12.8	B			958	25	74	0		0	0		
	Cypress Dr at Industrial Road	NB	10	410	11	431	3.5	A	0.3	A	0.4	A	0.4	A			863		8	200	3	24	0		
	(Minor Street Stop Control)	SB	10	270	10	290	4.5	A	1.8	A	1.5	A	1.9	A	1.9	A	1342		5	200	2	19	0		
		EB	5	36	5	46	9.2	A	9.8	A	2.9	A	8.8	A			1190	23	58	0		0	300	5	30
		WB	11	31	5	47	9.4	A	9.7	A	3.0	A	9.1	A			1144	25	67	0		0	300	3	30
	Cypress Dr at TH 210 (Signal)	NB	40	315	65	420	42.2	D	35.4	D	12.5	B	32.0	C			1342	70	143	275	21	81	185	15	68
		SB	235	140	90	465	38.5	D	25.3	C	8.3	A	28.3	C	24.4	C	1097	42	101	230	100	190	340	25	82
		EB	50	880	50	980	44.2	D	23.1	C	3.8	A	23.2	C			2281	193	311	500	35	86	500	19	70
		WB	100	830	50	980	43.7	D	19.1	B	4.3	A	20.8	C			1987	155	253	500	71	178	500	18	61

Table B2c

Cypress Drive
2018 Build Scenario 2
PM Peak Hour

SimTraffic Ver 9 Results

College Drive at Cypress - All Way Stop Control

	Intersection	Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection		Queing Information (feet)								
																	Through			Left Turn			Right Turn		
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Link Length	Avg.	Max	Storage	Avg.	Max	Storage	Avg.	Max
PM Peak Hour	Cypress Dr at College Road	NB	30	167	26	223	8.2	A	15.7	C	10.4	B	14.1	B	12.7	B	1562	49	135	300	14	54	0		
		SB	108	75	143	326	12.6	B	10.6	B	6.1	A	9.3	A			651	38	74	300	45	118	0	44	83
		EB	155	520	74	749	13.8	B	13.1	B	4.8	A	12.4	B			2190	53	97	300	49	111	300	24	51
		WB	39	474	135	648	9.4	A	15.7	C	10.7	B	14.3	B			2475	78	137	300	19	53	0		
	Cypress Dr at Greenwood Road	NB	24	411	22	457	4.1	A	1.5	A	1.5	A	1.6	A	1.6	A	651		4	200	6	30	0		
	(Minor Street Stop Control)	SB	5	276	5	286	3.6	A	0.6	A	0.7	A	0.6	A			0			200	1	12	0		
		EB	10	0	26	36	7.4	A	0.0	A	3.2	A	4.3	A			1225	21	44	0		0	0		
		WB	24	0	10	34	8.8	A	0.0	A	4.5	A	7.4	A			958	23	58	0		0	0		
	Cypress Dr at Industrial Road	NB	10	410	11	431	2.8	A	0.3	A	0.3	A	0.3	A	1.9	A	863		1	200	1	19	0		
	(Minor Street Stop Control)	SB	10	270	10	290	4.5	A	2.0	A	1.4	A	2.0	A			0			200	2	24	0		
		EB	5	36	5	46	7.3	A	10.5	B	2.9	A	9.2	A			1190	23	67	0		0	300	5	30
		WB	11	31	5	47	10.2	B	10.8	B	3.9	A	10.2	B			1144	29	65	0		0	300	3	30
	Cypress Dr at TH 210 (Signal)	NB	40	315	65	420	41.2	D	34.6	C	12.6	B	31.6	C	25.5	C	1342	78	144	275	21	78	185	15	83
		SB	235	140	90	465	42.6	D	26.6	C	8.0	A	31.1	C			1097	43	102	230	111	196	340	22	67
		EB	50	880	50	980	47.1	D	23.4	C	4.3	A	23.6	C			2281	182	299	500	37	103	500	20	56
		WB	100	830	50	980	44.0	D	20.8	C	4.3	A	22.3	C			1987	171	284	500	70	162	500	18	54

Table B2d

Cypress Drive
2018 Build Scenario 3
PM Peak Hour

SimTraffic Ver 9 Results

College Drive at Cypress - Traffic Signal Control

	Intersection	Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection		Queing Information (feet)								
																	Through			Left Turn			Right Turn		
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Link Length	Avg.	Max	Storage	Avg.	Max	Storage	Avg.	Max
PM Peak Hour	Cypress Dr at College Road (Signal)	NB	30	167	26	223	20.4	C	24.5	C	15.6	B	22.9	C	16.4	B	1562	79	185	300	17	50	0		
		SB	108	75	143	326	21.9	C	17.4	B	5.1	A	13.6	B			651	36	97	300	56	123	0	40	97
		EB	155	520	74	749	17.4	B	13.9	B	3.3	A	13.7	B			2190	78	160	300	62	144	300	17	53
		WB	39	474	135	648	16.8	B	20.2	C	13.9	B	18.8	B			2475	115	203	300	20	61	0		
	Cypress Dr at Greenwood Road	NB	24	411	22	457	3.9	A	1.2	A	1.1	A	1.3	A	1.5	A	0			200	5	28	0		
	(Minor Street Stop Control)	SB	5	276	5	286	4.0	A	0.6	A	0.3	A	0.6	A			0			200	1	12	0		
		EB	10	0	26	36	8.8	A	0.0	A	3.2	A	4.9	A			1225	19	50	0		0	0		
		WB	24	0	10	34	9.3	A	0.0	A	3.9	A	7.9	A			958	24	54	0		0	0		
	Cypress Dr at Industrial Road	NB	10	410	11	431	2.9	A	0.6	A	0.5	A	0.6	A	2.0	A	863		2	200	2	28	0		
	(Minor Street Stop Control)	SB	10	270	10	290	4.7	A	1.9	A	1.8	A	2.0	A			1342		2	200	2	24	0		
		EB	5	36	5	46	8.7	A	10.0	B	2.5	A	9.2	A			1190	24	70	0		0	300	3	30
		WB	11	31	5	47	9.2	A	10.5	B	4.3	A	9.6	A			1144	25	62	0		0	300	4	30
	Cypress Dr at TH 210 (Signal)	NB	40	315	65	420	43.1	D	36.3	D	13.4	B	33.2	C	25.5	C	1342	82	170	275	22	66	185	14	83
		SB	235	140	90	465	38.9	D	26.0	C	8.3	A	29.0	C			1097	36	96	230	103	179	340	22	71
		EB	50	880	50	980	43.2	D	24.2	C	4.2	A	24.2	C			2281	187	335	500	38	103	500	18	64
		WB	100	830	50	980	46.5	D	19.8	B	4.9	A	21.9	C			1987	156	254	500	75	162	500	19	64

Table B3a

Cypress Drive
2038 Build Demands
PM Peak Hour

	Intersection	Approach	PM Peak Minor Street Stop LOS By Approach Delay (S/Veh)	LOS	PM Peak Minor Street Stop LOS By Intersection Delay (S/Veh)	LOS	PM Peak All Way Stop LOS By Approach Delay (S/Veh)	LOS	PM Peak All Way Stop LOS By Intersection Delay (S/Veh)	LOS	PM Peak Traffic Signal LOS By Approach Delay (S/Veh)	LOS	PM Peak Traffic Signal LOS By Intersection Delay (S/Veh)	LOS	PM Peak Roundabout LOS By Approach Delay (S/Veh)	LOS	PM Peak Roundabout LOS By Intersection Delay (S/Veh)	LOS
Peak Hour	Cypress Dr at College Road	NB	1752.4	F	111.2	F	455.2	F	145.2	F	34.1	C	24.1	C	8.3	A	6.2	A
		SB	411.8	F			23.1	C			19.5	B			6.4	A		
		EB	4.1	A			22.1	C			18.8	B			5.5	A		
		WB	2.8	A			252.9	F			28.2	C			5.9	A		
	Cypress Dr at Greenwood Road (Minor Street Stop Control - all scenarios)	NB	1.4	A	221.2	F	1.9	A	2.2	A	1.6	A	2.2	A				
		SB	593.1	F			0.9	A			1.1	A						
		EB	803.2	F			7.3	A			6.5	A						
		WB	661.7	F			13.9	B			16.0	C						
	Cypress Dr at Industrial Road (Minor Street Stop Control - all scenarios)	NB	0.5	A	133.7	F	0.5	A	2.6	A	1.0	A	3.0	A				
		SB	348.1	F			2.6	A			2.7	A						
		EB	61.4	F			14.7	B			16.4	C						
		WB	238.9	F			15.5	C			15.8	C						
	Cypress Dr at TH 210 (Signal)	NB	44.0	D	40.3	D	49.9	D	41.2	D	87.9	F	45.6	D				
		SB	65.0	E			59.9	E			58.1	E						
		EB	37.8	D			39.0	D			36.1	D						
		WB	30.3	C			31.0	C			30.8	C						

Table B3b

Cypress Drive
2038 Build Scenario 1
PM Peak Hour

SimTraffic Ver 9 Results

College Drive at Cypress - Minor Street Stop Control

	Intersection	Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection		Queing Information (feet)								
																	Through			Left Turn			Right Turn		
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Link Length	Avg.	Max	Storage	Avg.	Max	Storage	Avg.	Max
AM Peak Hour	Cypress Dr at College Road	NB	40	290	35	365	1607.5	F	1767.5	F	1768.7	F	1752.4	F	111.2	F	1562	1577	1597	300	66	325	0		
		SB	175	125	210	510	933.6	F	565.9	F	57.5	F	411.8	F			651	657	673	300	321	325	0	421	675
		EB	225	615	100	940	10.8	B	1.9	A	1.4	A	4.1	A			0			300	60	149	300	2	16
		WB	55	560	215	830	8.3	A	2.5	A	2.0	A	2.8	A			2475	3	33	300	20	57	0		
	Cypress Dr at Greenwood Road (Minor Street Stop Control)	NB	35	665	30	730	16.2	C	0.8	A	0.8	A	1.4	A	221.2	F	0			200	5	46	0		
		SB	5	440	5	450	832.6	F	593.6	F	304.6	F	593.1	F			863	684	903	200	14	225	0		
		EB	15	0	35	50	713.6	F	0.0	A	839.1	F	803.2	F			1225	270	610	0		0	0		
		WB	35	0	15	50	660.3	F	0.0	A	666.0	F	661.7	F			958	233	523	0		0	0		
	Cypress Dr at Industrial Road (Minor Street Stop Control)	NB	15	665	15	695	3.8	A	0.5	A	0.3	A	0.5	A	133.7	F	863		3	200	1	24	0		
		SB	15	430	15	460	380.8	F	348.7	F	305.3	F	348.1	F			1342	490	1357	200	12	144	0		
		EB	5	50	5	60	11.8	B	31.6	D	702.4	F	61.4	F			1190	35	112	0		0	300	20	64
		WB	15	40	5	60	295.5	F	247.1	F	80.4	F	238.9	F			1144	117	371	0		0	300	6	94
	Cypress Dr at TH 210 (Signal)	NB	70	500	105	675	53.3	D	46.7	D	23.7	C	44.0	D	40.3	D	1342	109	192	275	33	90	185	24	152
		SB	370	225	150	745	79.8	E	69.0	E	23.3	C	65.0	E			1097	145	686	230	183	254	340	60	232
		EB	80	1420	80	1,580	58.5	E	36.7	D	37.9	D	37.8	D			2281	370	619	500	75	220	500	65	300
		WB	155	1340	80	1,575	98.8	F	25.1	C	6.0	A	30.3	C			1987	281	464	500	149	389	500	27	65

Table B3c

Cypress Drive
2038 Build Scenario 2
PM Peak Hour

SimTraffic Ver 9 Results

College Drive at Cypress - All Way Stop Control

	Intersection	Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection		Queing Information (feet)								
																	Through			Left Turn			Right Turn		
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Link Length	Avg.	Max	Storage	Avg.	Max	Storage	Avg.	Max
PM Peak Hour	Cypress Dr at College Road	NB	40	290	35	365	338.4	F	470.9	F	439.8	F	455.2	F	145.2	F	1562	1181	1599	300	204	325	0		
		SB	175	125	210	510	44.6	E	14.4	B	10.2	B	23.1	C			651	50	99	300	101	207	0	67	142
		EB	225	615	100	940	35.7	E	19.8	C	7.0	A	22.1	C			2190	81	169	300	95	196	300	32	59
		WB	55	560	215	830	212.6	F	259.8	F	245.2	F	252.9	F			2475	823	1669	300	190	325	0		
	Cypress Dr at Greenwood Road	NB	35	665	30	730	5.0	A	1.7	A	1.6	A	1.9	A	2.2	A	0			200	10	44	0		
	(Minor Street Stop Control)	SB	5	440	5	450	5.5	A	0.9	A	0.8	A	0.9	A			0			200	2	18	0		
		EB	15	0	35	50	12.5	B	0.0	A	4.9	A	7.3	A			1225	26	66	0		0	0		
		WB	35	0	15	50	17.3	C	0.0	A	6.1	A	13.9	B			958	29	66	0		0	0		
	Cypress Dr at Industrial Road	NB	15	665	15	695	4.2	A	0.4	A	0.6	A	0.5	A	2.6	A	0			200	4	24	0		
	(Minor Street Stop Control)	SB	15	430	15	460	5.9	A	2.5	A	2.6	A	2.6	A			1342		2	200	5	24	0		
		EB	5	50	5	60	14.1	B	15.7	C	5.2	A	14.7	B			1190	30	66	0		0	300	4	35
		WB	15	40	5	60	17.5	C	16.2	C	3.6	A	15.5	C			1144	31	78	0		0	300	4	30
	Cypress Dr at TH 210 (Signal)	NB	70	500	105	675	51.8	D	54.4	D	26.4	C	49.9	D	41.2	D	1342	148	239	275	45	111	185	47	186
		SB	370	225	150	745	89.6	F	38.8	D	20.1	C	59.9	E			1097	136	351	230	200	251	340	59	158
		EB	80	1420	80	1,580	65.7	E	39.2	D	8.3	A	39.0	D			2281	394	631	500	96	384	500	63	347
		WB	155	1340	80	1,575	79.9	E	26.7	C	7.1	A	31.0	C			1987	300	473	500	147	295	500	28	73

Table B3d

Cypress Drive
2038 Build Scenario 3
PM Peak Hour

SimTraffic Ver 9 Results

College Drive at Cypress - Traffic Signal Control

	Intersection	Approach	Demand Volumes				Delay (s/veh)						LOS By Approach		LOS By Intersection		Queing Information (feet)								
																	Through			Left Turn			Right Turn		
			L	T	R	Total	L	LOS	T	LOS	R	LOS	Delay (S/Veh)	LOS	Delay (S/Veh)	LOS	Link Length	Avg.	Max	Storage	Avg.	Max	Storage	Avg.	Max
PM Peak Hour	Cypress Dr at College Road (Signal)	NB	40	290	35	365	20.8	C	36.4	D	28.4	C	34.1	C	24.1	C	1562	170	362	300	24	114	0		
		SB	175	125	210	510	31.2	C	23.0	C	7.7	A	19.5	B			651	71	152	300	96	207	0	62	157
		EB	225	615	100	940	25.5	C	18.4	B	5.2	A	18.8	B			2190	101	196	300	99	191	300	25	56
		WB	55	560	215	830	20.5	C	30.5	C	24.4	C	28.2	C			2475	179	318	300	29	62	0		
	Cypress Dr at Greenwood Road (Minor Street Stop Control)	NB	35	665	30	730	4.2	A	1.5	A	1.3	A	1.6	A	2.2	A	651		5	200	10	39	0		
		SB	5	440	5	450	4.2	A	1.1	A	0.4	A	1.1	A			863		4	200	1	24	0		
		EB	15	0	35	50	9.9	A	0.0	A	5.4	A	6.5	A			1225	26	59	0		0	0		
		WB	35	0	15	50	18.5	C	0.0	A	9.5	A	16.0	C			958	32	86	0		0	0		
	Cypress Dr at Industrial Road (Minor Street Stop Control)	NB	15	665	15	695	4.5	A	0.9	A	0.8	A	1.0	A	3.0	A	863		6	200	4	28	0		
		SB	15	430	15	460	7.8	A	2.6	A	2.5	A	2.7	A			1342		12	200	6	24	0		
		EB	5	50	5	60	21.7	C	17.3	C	4.1	A	16.4	C			1190	32	79	0		0	300	5	31
		WB	15	40	5	60	17.8	C	16.3	C	5.2	A	15.8	C			1144	32	80	0		0	300	4	30
	Cypress Dr at TH 210 (Signal)	NB	70	500	105	675	66.4	E	98.5	F	49.6	D	87.9	F	45.6	D	1342	273	524	275	93	269	185	112	210
		SB	370	225	150	745	85.8	F	39.3	D	18.8	B	58.1	E			1097	129	389	230	190	254	340	50	122
		EB	80	1420	80	1,580	62.7	E	36.1	D	7.3	A	36.1	D			2281	368	544	500	68	225	500	35	336
		WB	155	1340	80	1,575	68.9	E	28.0	C	7.4	A	30.8	C			1987	310	522	500	125	229	500	27	79

Scheme Summary

Control Data

Control Data and Model Parameters

Baxter _ Cypress Dr Project	2018 Synthetic Flow Profile (veh)
College Roundabout	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
PM Peak Hour	Peak 60/15 min Results
Full Geometry	Output flows: Vehicles
English Units (ft)	50% Confidence Level

Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	Yes
Bypass Calibration	No
Global Results	Yes

Operational Data

Main Geometry (ft)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle ?
1	NB Cypress	0	0	12.00	1	14.00	1	175.00	66.00	30.00
2	WB College	90	0	24.00	2	26.00	2	175.00	66.00	30.00
3	SB Cypress	180	0	12.00	1	14.00	1	175.00	66.00	30.00
4	EB College	270	0	24.00	2	26.00	2	175.00	66.00	30.00

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	NB Cypress	170.00	32.00	2	14.00	1	12.00	1
2	WB College	150.00	22.00	1	26.00	2	24.00	2
3	SB Cypress	170.00	32.00	2	14.00	1	12.00	1
4	EB College	150.00	22.00	1	26.00	2	24.00	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (ft)	Default Capacity	Calib Capacity	V (ft)	Default Capacity	Calib Capacity
1	NB Cypress	0	1.000	0	1.000	24.00	1792	0	12.00	1792	0
2	WB College	0	1.000	0	1.000	24.00	3584	0	24.00	3584	0
3	SB Cypress	0	1.000	0	1.000	24.00	3584	0	12.00	1792	0
4	EB College	0	1.000	0	1.000	20.00	3584	0	24.00	3584	0

Bypass Geometry

Bypass Approach Geometry (ft)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
3	SB Cypress	Exclusive	143	12	1	12	1	24	2

Bypass Entry and Exit Geometry (ft)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
3	SB Cypress	12	1	0	130	66.00007814	30	4	EB College	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
3	SB Cypress	0	1.000	0	1.000

Traffic Flow Data (veh/hr)

2018 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers	
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor
1	NB Cypress	0	30	177	26	0	5.0	1.00
2	WB College	0	39	474	135	0	5.0	1.00
3	SB Cypress	0	108	60	0	143	5.0	1.00
4	EB College	0	155	520	74	0	5.0	1.00

2018 PM Peak Synthetic Flow Profile - Timeslice 7.5 mins

Leg	Leg Names	Flow Ratios			Flow Times		
		Ratio 1	Ratio 2	Ratio 3	Time 1	Time 2	Time 3
1	NB Cypress	0.750	1.125	0.750	0	30	60
2	WB College	0.750	1.125	0.750	0	30	60
3	SB Cypress	0.750	1.125	0.750	0	30	60
4	EB College	0.750	1.125	0.750	0	30	60

Operational Results

2018 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	NB Cypress	None	233		783		173	824		0.2928	
2	WB College	None	648		362		654	1808		0.3679	
3	SB Cypress	Exclusive	168	143	543	543	467	908	867	0.1904	0.1698
4	EB College	None	749		207		647	1964		0.3903	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	NB Cypress	None	5.74		5.74	1.20		A		A
2	WB College	None	3.67		3.67	2.12		A		A
3	SB Cypress	Exclusive	4.58	4.97	4.76	0.67	0.62	A	A	A
4	EB College	None	3.48		3.48	2.29		A		A

Approach Flow Profile

2018 PM Peak - Approach Flows (Veh / Hour)

Time Slice	NB Cypress	WB College	SB Cypress	EB College
0.0 - 7.5	24.23	67.39	32.34	77.89
7.5 - 15.0	28.21	78.45	37.65	90.68
15.0 - 22.5	31.22	86.82	41.67	100.36
22.5 - 30.0	32.84	91.34	43.84	105.57
30.0 - 37.5	32.84	91.34	43.84	105.57
37.5 - 45.0	31.22	86.82	41.67	100.36
45.0 - 52.5	28.21	78.45	37.65	90.68
52.5 - 60.0	24.23	67.39	32.34	77.89
Peak 15 min	32.84	91.34	43.84	105.57
Peak 60 min	29.13	81.00	38.88	93.63

Exit Flow Profile

2018 PM Peak - Exit Flows (Veh / Hour)

Time Slice	NB Cypress	WB College	SB Cypress	EB College
0.0 - 7.5	17.98	67.98	48.54	67.24
7.5 - 15.0	20.93	79.11	56.48	78.24
15.0 - 22.5	23.16	87.57	62.52	86.61
22.5 - 30.0	24.37	92.15	65.79	91.15
30.0 - 37.5	24.38	92.18	65.82	91.19
37.5 - 45.0	23.19	87.66	62.60	86.73
45.0 - 52.5	20.96	79.24	56.60	78.42
52.5 - 60.0	18.01	68.08	48.63	67.38
0-60	173	654	467	647
%Trucks	5.00	5.00	5.00	5.00

Global Results

Performance and Accidents

2018 PM Peak Global Performance

Parameter	Units	Entries	Bypasses	Total
Arrive Flows	veh/hr	1798	143	1941
Capacity	veh/hr	5503	867	6370
Average Delay	sec/veh	3.94	4.97	4.02
L.O.S. (Signal)	A – F	A	A	A
L.O.S. (Unsig)	A – F	A	A	A
Total Delay	veh.hrs	1.97	0.20	2.17

Scheme Summary

Control Data

Control Data and Model Parameters

Baxter _ Cypress Dr Project	2038 Synthetic Flow Profile (veh)
College Roundabout	7.5 min Time Slice
Rodel-Win1	Queuing Delays (sec)
Right Hand Drive	Daylight conditions
PM Peak Hour	Peak 60/15 min Results
Full Geometry	Output flows: Vehicles
English Units (ft)	50% Confidence Level

Available Data

Entry Capacity Calibrated	No
Entry Capacity Modified	No
Crosswalks	No
Flows Factored	No
Approach/Exit Road Capacity Calibrated	No
Accidents	No
Accident Costs	No
Bypass Model	Yes
Bypass Calibration	No
Global Results	Yes

Operational Data

Main Geometry (ft)

Approach and Entry Geometry

Leg	Leg Names	Approach Bearing (deg)	Grade Separation G	Half Width V	Approach Lanes n	Entry Width E	Entry Lanes n	Flare Length L'	Entry Radius R	Entry Angle ?
1	NB Cypress	0	0	12.00	1	14.00	1	175.00	66.00	30.00
2	WB College	90	0	24.00	2	26.00	2	175.00	66.00	30.00
3	SB Cypress	180	0	12.00	1	14.00	1	175.00	66.00	30.00
4	EB College	270	0	24.00	2	26.00	2	175.00	66.00	30.00

Circulating and Exit Geometry

Leg	Leg Names	Inscribed Diameter D	Circulating Width C	Circulating Lanes nc	Exit Width Ex	Exit Lanes nex	Exit Half Width Vx	Exit Half Width Lanes nvx
1	NB Cypress	170.00	32.00	2	14.00	1	12.00	1
2	WB College	150.00	22.00	1	26.00	2	24.00	2
3	SB Cypress	170.00	32.00	2	14.00	1	12.00	1
4	EB College	150.00	22.00	1	26.00	2	24.00	2

Capacity Modifiers and Capacity Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Entry Calibration		Approach Road			Exit Road		
		Capacity + or -	XWalk Factor	Intercept + or -	Slope Factor	V (ft)	Default Capacity	Calib Capacity	V (ft)	Default Capacity	Calib Capacity
1	NB Cypress	0	1.000	0	1.000	24.00	3584	0	12.00	1792	0
2	WB College	0	1.000	0	1.000	24.00	3584	0	24.00	3584	0
3	SB Cypress	0	1.000	0	1.000	24.00	3584	0	12.00	1792	0
4	EB College	0	1.000	0	1.000	20.00	3584	0	24.00	3584	0

Bypass Geometry

Bypass Approach Geometry (ft)

Leg	Leg Names	Bypass Type	Bypass Flows	V	nv	Vb	nvb	Vt	nvt
1	NB Cypress	Yield	35	12	1	12	1	24	2
3	SB Cypress	Exclusive	210	12	1	12	1	24	2

Bypass Entry and Exit Geometry (ft)

Leg	Leg Names	Entry Geometry						Leg	Leg Names	Exit Lanes	
		Eb	neb	Lb	Lt	Rb	Phib			nex	Nmx
1	NB Cypress	12	1	0	130	66.00004224	30	2	WB College	2	2
3	SB Cypress	12	1	0	130	66.00004224	30	4	EB College	2	2

Bypass Entry Capacity Modifiers and Calibration (veh/hr)

Leg	Leg Names	Entry Capacity		Calibration	
		Capacity + or -	Cross Walk Factor	Intercept + or -	Slope Factor
1	NB Cypress	0	1.000	0	1.000
3	SB Cypress	0	1.000	0	1.000

Traffic Flow Data (veh/hr)

2038 PM Peak Peak Hour Flows

Leg	Leg Names	Turning Flows					Flow Modifiers	
		U-Turn	Exit-3	Exit-2	Exit-1	Bypass	Trucks %	Flow Factor
1	NB Cypress	0	40	305	0	35	5.0	1.00
2	WB College	0	55	555	215	0	5.0	1.00
3	SB Cypress	0	175	195	0	210	5.0	1.00
4	EB College	0	225	615	100	0	5.0	1.00

2038 PM Peak Synthetic Flow Profile - Timeslice 7.5 mins

Leg	Leg Names	Flow Ratios			Flow Times		
		Ratio 1	Ratio 2	Ratio 3	Time 1	Time 2	Time 3
1	NB Cypress	0.750	1.125	0.750	0	30	60
2	WB College	0.750	1.125	0.750	0	30	60
3	SB Cypress	0.750	1.125	0.750	0	30	60
4	EB College	0.750	1.125	0.750	0	30	60

Operational Results

2038 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	NB Cypress	Yield	345	35	1015	1015	350	743	703	0.4863	0.0518
2	WB College	None	825		570		825	1599		0.5349	
3	SB Cypress	Exclusive	370	210	650	650	745	870	830	0.4401	0.2615
4	EB College	None	940		425		805	1744		0.5560	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	NB Cypress	Yield	8.57	5.40	8.28	2.84	0.17	A	A	A
2	WB College	None	5.92		5.92	4.61		A		A
3	SB Cypress	Exclusive	6.72	5.83	6.39	2.27	1.09	A	A	A
4	EB College	None	5.48		5.48	4.80		A		A

Approach Flow Profile

2038 PM Peak - Approach Flows (Veh / Hour)

Time Slice	NB Cypress	WB College	SB Cypress	EB College
0.0 - 7.5	39.52	85.79	60.32	97.75
7.5 - 15.0	46.01	99.88	70.22	113.81
15.0 - 22.5	50.91	110.54	77.71	125.95
22.5 - 30.0	53.56	116.29	81.75	132.49
30.0 - 37.5	53.56	116.29	81.75	132.49
37.5 - 45.0	50.91	110.54	77.71	125.95
45.0 - 52.5	46.01	99.88	70.22	113.81
52.5 - 60.0	39.52	85.79	60.32	97.75
Peak 15 min	53.56	116.29	81.75	132.49
Peak 60 min	47.50	103.13	72.50	117.50

Exit Flow Profile

2038 PM Peak - Exit Flows (Veh / Hour)

Time Slice	NB Cypress	WB College	SB Cypress	EB College
0.0 - 7.5	36.37	85.73	77.40	83.63
7.5 - 15.0	42.30	99.72	90.02	97.27
15.0 - 22.5	46.82	110.37	99.63	107.66
22.5 - 30.0	49.28	116.17	104.87	113.33
30.0 - 37.5	49.33	116.27	104.99	113.45
37.5 - 45.0	46.93	110.63	99.92	107.96
45.0 - 52.5	42.45	100.06	90.41	97.67
52.5 - 60.0	36.47	85.97	77.67	83.92
0-60	350	825	745	805
%Trucks	5.00	5.00	5.00	5.00

Global Results

Performance and Accidents

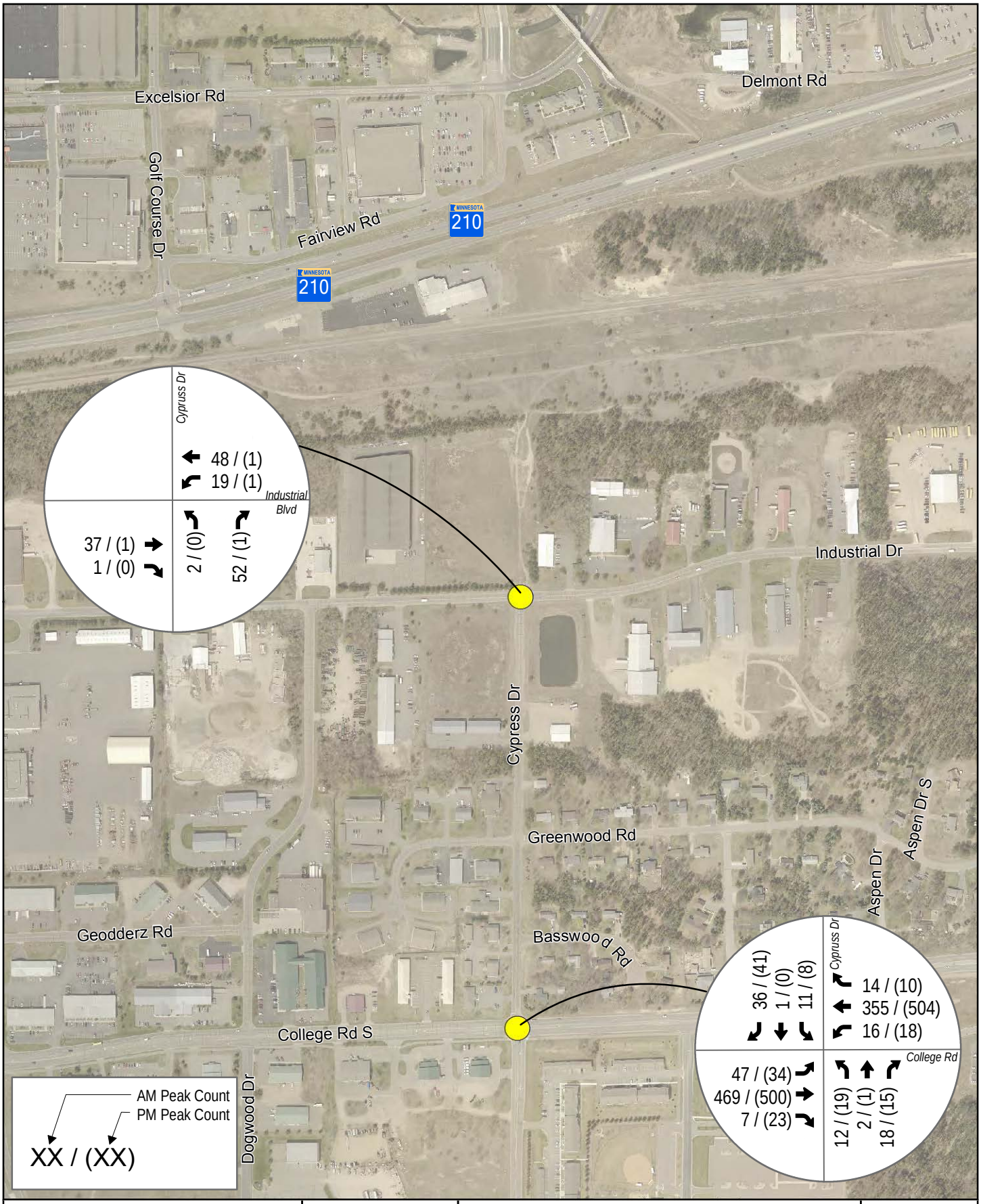
2038 PM Peak Global Performance

Parameter	Units	Entries	Bypasses	Total
Arrive Flows	veh/hr	2480	245	2725
Capacity	veh/hr	4956	1533	6489
Average Delay	sec/veh	6.24	5.77	6.20
L.O.S. (Signal)	A – F	A	A	A
L.O.S. (Unsig)	A – F	A	A	A
Total Delay	veh.hrs	4.30	0.39	4.69

Appendix C

Existing and Future Turning Movement Figures

DRAFT



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SEH

416 South 6th Street Suite 200
Brainerd, MN 56401-3540
218-855-1700
866-852-8880 toll free
www.sehinc.com

Project: BAXTE 138944
Print Date: 11/29/2016

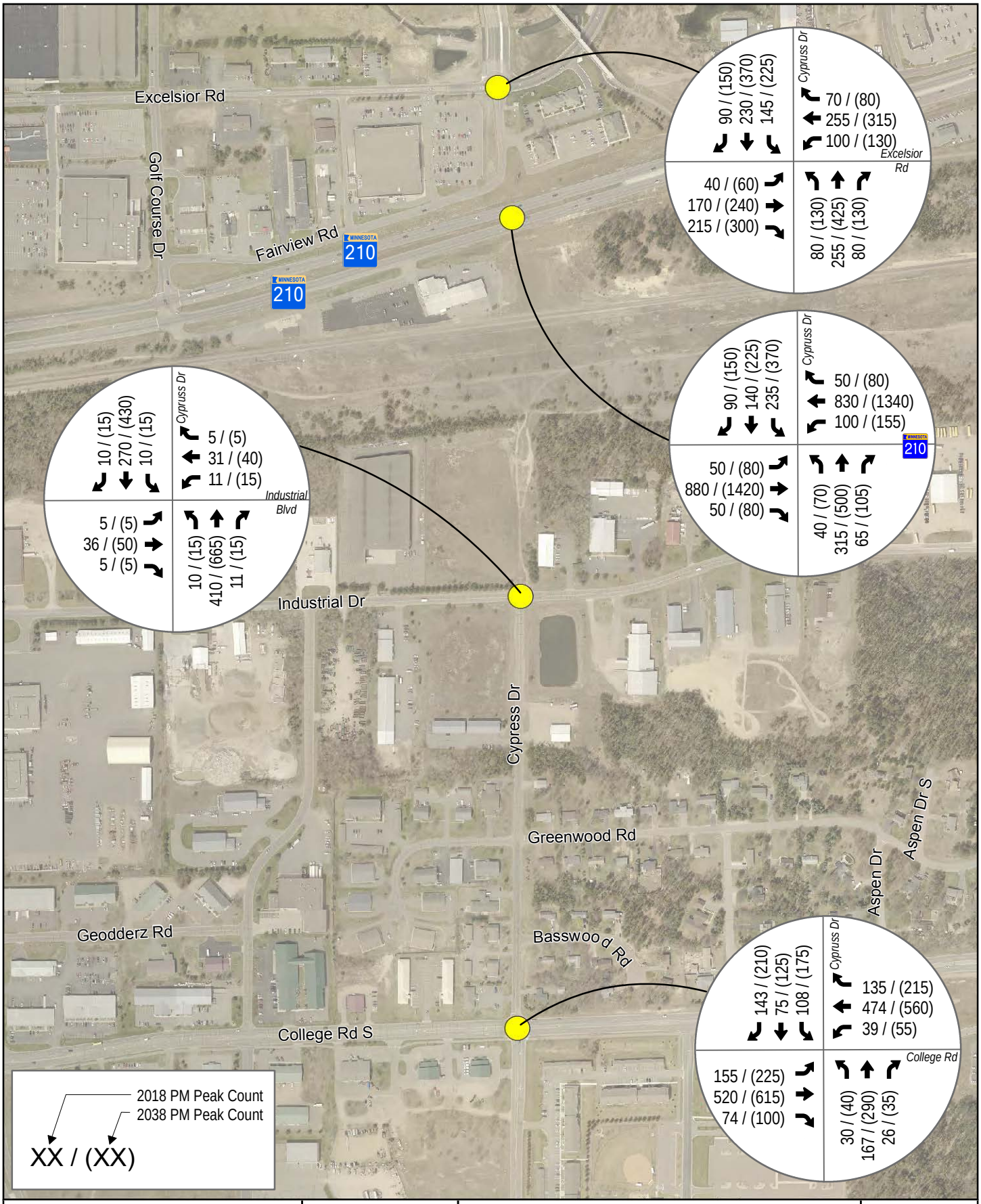
Map by: msteuernagel
Projection: Crow Wing County
Source: Crow Wing County, ESRI, SEH

2016 EXISTING COUNTS

PROJECT NAME
Baxter, Minnesota

Figure 1

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.



Path: P:\AE\B\BAXTE\138944\5-final-dsgn\51-drawings\90-GIS\FuturePMCounts.mxd

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Project: BAXTE 138944
Print Date: 11/30/2016

Map by: msteuernagel
Projection: Crow Wing County
Source: Crow Wing County, ESRI, SEH

FUTURE PM COUNTS

PROJECT NAME
Baxter, Minnesota

Figure 2

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

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MEMORANDUM

TO: Honorable Mayor and City Council and Utilities Commission
c/o Trevor Walter, PE
City of Baxter, Minnesota

FROM: Scott Hedlund, PE

DATE: November 30, 2016

RE: 2018 Cypress Drive Improvements
Modified Phase 1 Environmental Site Assessment
SEH No. BAXTE 138944 16.00

Attached is the draft Modified Phase 1 Environmental Site Assessment (ESA) for this project for City review. It is marked draft because it was submitted to MnDOT and we anticipate some minor comments back.

The attachment contains only the report executive summary, text, figures, tables, and Appendices A and B. Not attached are Appendices C, D, E, F, G, H and I consisting of 8,000+ pages of collected background data. After MNDOT comments have been addressed, a signed final draft of the entire document will be submitted to the City. In the interim, a copy of the entire draft document can be made available upon request.

We plan to bring recommendations for proceeding with project Phase 2 ESA work to the January Utilities Commission and City Council meetings.

Attachment
c: Kelly Steele – City of Baxter
sh
p:\ae\b\baxte\138944\1-genl\16-meet\2016.12.07 utilities commission\m seh to city 2018 cypress drive ph1 esa review 113016.docx

Modified Phase I Environmental Site Assessment

2018 Cypress Drive Improvements

Baxter, Minnesota

State Aid Project No. 230-113-04
SEH No. BAXTE 138944

November 2016

SEH

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November 22, 2016

RE: 2018 Cypress Drive Improvements
Modified Phase I Environmental Site Assessment
Baxter, Minnesota
State Aid Project No. 230-113-04
SEH No. BAXTE 138944

Mr. Trevor Walter, PE
Public Works Director/City Engineer
416 South 6th Street
Suite 200
Brainerd, MN 56401

Dear Mr. Walter:

Please find enclosed the **DRAFT** Modified Phase I Environmental Site Assessment (ESA) for the 2018 Cypress Drive Improvements located in Baxter, Minnesota. We have included a copy of the full report on CD. Please feel free to contact me directly at 651.490.2135 if you have any questions or comments.

Sincerely,

Allen H. Sunderman, PG
Project Manager

eeb
s:\ae\b\baxte\138944\3-env-stdy-regs\30-env-doc\14-phase1\phase i final report\sap 230-113-02_cypress dr ph 1_baxte 138944_reviewed.docx

DRAFT

2018 Cypress Drive Improvements
Modified Phase I Environmental Site Assessment
Baxter, Minnesota

State Aid Project No. 230-113-04
SEH No. BAXTE 138944

November 22, 2016

Allen H. Sunderman, PG
Project Manager

Erin E. Borgschatz
Environmental Geologist

Short Elliott Hendrickson Inc.
3535 Vadnais Center Drive
Saint Paul, MN 55110-5196

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Distribution List

No. of Copies	Sent to
1	Trevor Walter, PE Public Works Director/City Engineer 416 South 6th Street Suite 200 Brainerd, MN 56401
	Carolyn Boben Hydrogeologist MnDOT Office of Environmental Stewardship 395 John Ireland Blvd St. Paul, MN 55155

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Executive Summary

Modified Phase I Environmental Site Assessment

Short Elliott Hendrickson Inc. (SEH®) was retained by City of Baxter to conduct a Modified Phase I Environmental Site Assessment (Phase I ESA) for the 2018 Cypress Drive Improvements project corridor. 2018 Cypress Drive Improvements corridor is located in Baxter, Minnesota, Minnesota (**Figure 1**). This report was also prepared for use by Minnesota Department of Transportation (MnDOT). The area of interest will herein be referred to as "project corridor" and includes the proposed construction area and a buffer area. The buffer area is a 500 foot radius from the proposed construction limits and includes a 1250 foot radius from Intersection of the Trunk Highway (TH) 210 and the Cypress Drive alignment. The project corridor and buffer are depicted on **Figure 2**.

The Cypress Drive alignment intersects TH 210 at approximately MnDOT Reference Point 120.25, in the City of Baxter, Crow Wing County, Minnesota. The project has been assigned State Aid Project No. 230-113-04. The proposed improvements consisting of a 4-lane urban roadway, turn lanes, raised concrete medians, roundabout, traffic and railroad signals, gate arms, and pedestrian accommodations will address the local access and connectivity need as well as provide relief to congested TH 371 taking local trips off the state highway system. Drainage improvements include new storm sewer and stormwater ponds. New water main utilities are proposed from Fairview Road south to Industrial Park Road. Long range plans call for Cypress Drive to ultimately connect Crow Wing County, County State Aid Highway (CSAH) 48 and CSAH 49.

SEH followed MnDOT Office of Environmental Stewardship (OES) guidelines for completion of the Phase I ESA using a modified version of the American Society of Testing and Materials (ASTM) methodology E 1527-13. The purpose of the Phase I ESA is to identify, to the extent feasible pursuant to the processes described in ASTM E 1527-13 and in a manner consistent with good commercial or customary practice, Recognized Environmental Conditions (RECs), Historical (RECs) and Controlled (RECs) in connection with the project corridor. Specifically, sites are identified as "high", "medium", "low", or "de minimis" risk sites.

Seven high, fifteen medium and ten low risk sites were identified for the project corridor. The sites are summarized on site specific data sheet included as **Appendix A** and on attached tables and figures.

BNSF had two railroad corridors that were present as early as 1915, when our historical record begins. One corridor extended east-west through the central portion of the project corridor (present as a single track corridor today), and a spur traveled through the northeastern portion of the project. The railroad operated a wood tie treating plant with a process area east of project corridor (Site 06). The plant was used to chemically treat wood railroad ties and adjacent sites (Sites 16 and 07) were used for drying and outdoor storage of the ties. Processes at the plant led to significant soil and groundwater contamination that continues to be treated under the State and Federal Superfund Programs (SR16) to date. A detailed account of the BNSF tie plant is available in the introduction to **Appendix A**. The BNSF tie plant and other associated features were razed around 1990.

The BNSF spur (reconstructed as Paul Bunyan State Trail around 2003) intersects the northeastern portion of the project corridor. Ferrell Gas operated a propane plant northeast of the intersection of the railroad and TH 210 (Site 03) from the 1950s through 2003. A second propane plant was located at Site 08 from the 1960s through the 1990s.

Railroad activities and surrounding industry account for the high risk sites identified in this report. Additionally, railroads are known to sometimes use chemicals associated with controlling encroaching vegetation along the railroad. Historically removed structures and the railroads are depicted on **Figure 2** and historic aerials photographs in **Appendix A**.

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Executive Summary (Continued)

TH 210 was constructed by the 1930s as a two lane highway, and aside from railroad operations, the project corridor was undeveloped and wooded. Transit areas, specifically the intersection of Cypress Drive and Excelsior Road, were identified to be built up or filled in and are summarized on specific data sheets.

In the 1950s, the golf course and Paul Bunyan Amusement Center (no longer in operation) were constructed. A few commercial properties were added over time, but major development of the project corridor did not occur until the 1980s and 1990s. The majority of medium risk sites are commercial automobile repair facilities, petroleum release sites, and/or sites with tanks. Other than the BNSF Tie Plant Superfund site, there are no open investigations or files.

The purpose of this study was to identify sites with potential soil or groundwater contamination, and sites with soil vapor or debris impacted sites that are within the project corridor. It was not within the scope to evaluate the level of or confirm contamination. SEH recommends that a Phase II investigation be conducted in construction and acquisition areas within or adjacent to high and medium risk sites that will be involved with future project phases.

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List of Abbreviations

Abbreviation	Meaning
amsl	Above Mean Sea Level
AST	Above -ground Storage Tank
ASTM	American Society for Testing and Materials
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CREC	Controlled Recognized Environmental Condition
CSAH	County State-Aid Highway
DRO	Diesel Range Organics
EPA (USEPA)	Environmental Protection Agency (USEPA)
ESA	Environmental Site Assessment
GIS	Geographical Information System
GRO	Gasoline Range Organics
GWISV	Groundwater Screening Values for Vapor Intrusion Pathway
GWV	Groundwater Values
HIG	Historical Information Gatherers
HREC	Historical Recognized Environmental Condition
Leak	Leaking Underground Storage Tank Site
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MERLA	Minnesota Environmental Response & Liability Act
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MGS	Minnesota Geological Survey
MN	Minnesota
MnDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
MWI	Minnesota Well Index
NPL	National Priority List
NSP	Northern States Power
OES	Office of Environmental Stewardship
PAH	Polyaromatic Hydrocarbons
Phase II	Phase II Investigation
PCE	Tetrachloroethylene
PCB	Polychlorinated Biphenyl
PID	Photo-Ionization Detector
PRP	Petroleum Remediation Program
RCRA GEN	Resource Conservation and Recovery Act Hazardous Waste Generator
RCRA 8 Metals	List of 8 RCRA Metals, including Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, and Silver

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List of Abbreviations (Continued)

REC	Recognized Environmental Condition
SEH	Short Elliott Hendrickson Inc.
SQG	Small Quantity Generator
SRS	Site Remediation Section
SRV	Soil Reference Value
SVOC	Semi-Volatile Organic Compound
SWL	Permitted Solid Waste Management Facilities
TH	Trunk Highway
TSD	Treatment, Storage, and Disposal
USGS	United States Geological Survey
UST	Underground Storage Tank
VIC	Voluntary Investigation and Cleanup
VOC	Volatile Organic Compounds
WIMN	What's in My Neighborhood (MPCA and MDA online mapping)
µg/L	Micrograms per liter

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Modified Phase I Environmental Site Assessment

2018 Cypress Drive Improvements

Prepared for City of Baxter

1.0 Introduction

Short Elliott Hendrickson Inc. (SEH®) was retained by City of Baxter to conduct a Modified Phase I Environmental Site Assessment (Phase I ESA) for the 2018 Cypress Drive Improvements project. The project (State Aid Project 230-113-04) is located in the City of Baxter, Minnesota (**Figure 1**). A detailed project description is presented in **Section 2.0**. Minnesota Department of Transportation (MnDOT) is also a user of this report.

The area of interest will herein be referred to as "project corridor" and includes the proposed construction area and a buffer area. The buffer area is a 500 foot radius from the proposed construction limits and includes a 1250 foot radius from Intersection of the Trunk Highway (TH) 210 and the Cypress Drive alignment. The project corridor and buffer are depicted on **Figure 2**.

SEH identified environmental risk sites within the project corridor using a numeric identification number that corresponds to the sites referenced in the report and on site specific data sheets (included as **Appendix A**), tables, and figures. **Figure 2** depicts environmental sites identified during the completion of this assessment. **Table 1** summarizes the environmental sites. This report summarizes the findings of the Phase I ESA.

1.1 Purpose

This Phase I ESA is being performed to identify environmental conditions associated with the project corridor. Summary information and conclusions from this report may be used for future project stages, including investigation activities, design, and land acquisition.

SEH followed MnDOT Office of Environmental Stewardship (OES) guidelines for completion of the Phase I ESA using a modified version of the American Society of Testing and Materials (ASTM) methodology E 1527-13. The purpose of the Phase I ESA is to identify, to the extent feasible pursuant to the processes described in ASTM E 1527-13 and in a manner consistent with good commercial or customary practice, Recognized Environmental Conditions (RECs) in connection with the project corridor. Specifically, sites are identified as "high", "medium", "low", or "de minimis" risk sites. The following definitions of "high," "medium," "low," or "de minimis" environmental risk are standard categories utilized by MnDOT to rank sites within the project corridor.

High Environmental Risk –All active and inactive VIC and Minnesota Environmental Response & Liability Act (MERLA) sites, all active and inactive dump sites, all active Leak

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sites, dry cleaners (with on-site or unknown chemical processing), bulk oil facilities, all active agricultural release sites, and all historical industrial sites with likely chemical use on the premises.

Medium Environmental Risk – All closed Leak sites, all sites with USTs or ASTs, machine shops, all sites with historical vehicle repair activities, and all closed agricultural release sites.

Low Environmental Risk – All sites that are hazardous waste generators and possibly some farmsteads and residences with poor housekeeping practices.

De Minimis Environmental Risk – Properties that do not qualify by definition as low, medium, or high ranked sites and are considered unlikely for contamination (ranked "de minimis").

The following topics are discussed in **Appendix B**.

- ASTM and MnDOT OES Risk Definitions
- Scope of Services
- Special Terms and Conditions
- User Reliance
- Limitations and Standard of Care

1.2 Significant Assumptions

The following significant assumption has been incorporated into this report:

- The local groundwater flow at the project corridor and in the vicinity of the project corridor is expected to be to the east (see **Section 2.3.3**).

2.0 Project Description

The proposed Cypress Drive alignment intersects TH 210 at approximately MnDOT Reference Point 120.25, in the City of Baxter, Crow Wing County, Minnesota. The project has been assigned State Aid Project No. 230-113-04. The proposed improvements consisting of a 4-lane urban roadway, turn lanes, raised concrete medians, roundabout, traffic and railroad signals, gate arms, and pedestrian accommodations will address the local access and connectivity need as well as provide relief to congested TH 371 taking local trips off the state highway system. Drainage improvements include new storm sewer and stormwater ponds. New water main utilities are proposed from Fairview Road south to Industrial Park Road. Long range plans call for Cypress Drive to ultimately connect Crow Wing County, County State Aid Highway (CSAH) 48 and CSAH 49.

2.1 Location and Legal Description

Figure 1 illustrates the extent of the project corridor. The property is located in Baxter, Minnesota, in Crow Wing County. The project corridor is located in portions of Sections 5 and 8, of Township 133 North, Range 28 West.

2.2 Current Use of the Project Corridor

The project corridor is currently developed with primarily commercial warehouses, retailers, restaurants and railroad properties. Residential properties are located on the southern portion of the project corridor around Greenwood Road. General features observed during the site reconnaissance are summarized in **Section 2.2.1.2**. Individual sites are discussed in greater detail on site specific data sheets included as **Appendix A**. Project corridor features are depicted on **Figure 2**.

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2.2.1 Reconnaissance

An SEH representative visited the site on November 17 and 18, 2016. During the reconnaissance, existing conditions were noted. General comments regarding existing conditions are noted below. Select photographs of the project corridor and significant observations are discussed in detail within site specific data sheets in **Appendix A**.

2.2.1.1 Methodology

The reconnaissance of the project corridor was conducted under limited access conditions. SEH personnel made observations from public road right-of-ways, parking lots and other publicly-accessible properties. Interior inspections of buildings within the project corridor were not within the scope of this Phase I ESA. Contaminant sources and/or environmentally hazardous materials/substances may potentially exist within any structure. Limiting conditions were also observed where topographic divides prevented observation of areas distant from public right-of-ways.

Due to the fall climate at the time of reconnaissance, vegetation was dormant. Observations for stressed vegetation could not be made.

2.2.1.2 General Site Reconnaissance Observations

The project corridor is currently developed with primarily commercial warehouses, retailers, restaurants, residential, and railroad properties. The Burlington Northern Santa Fe (BNSF) railroad intersects the central portion of the project corridor and travels generally parallel to TH 210. The Paul Bunyan State Trail intersects the western portion of the project corridor and also generally parallels TH 210 through the project corridor.

Several areas were identified where the roadway, trail, or railroad were observed to be built up. As expected by the presence of the BNSF Tie Plant Superfund Site (discussed in detail later in this report), numerous monitoring wells were observed on sites within the project corridor. Most of the buildings within the project corridor appeared to be fairly recently developments. A few automobile or recreational vehicle sales/repair facilities were noted within the project corridor. No major industrial sites were observed. These features are described in detail on site specific data sheets in **Appendix A**.

2.3 Physical Setting

SEH reviewed the physical setting of the project corridor from various sources.

2.3.1 Topography

The project corridor and surrounding area is generally flat with an elevation of approximately 1200 feet above mean sea level (amsl). The northern end of the project corridor has low marshy areas at approximately 1190 feet amsl. Regional topography is gently rolling to flat and includes marshes, water bodies, and waterways. The Mississippi River flows south approximately ¾ mile east of the project corridor. Topography is depicted on **Figure 1**.

2.3.2 Geology and Soils

Quaternary deposits in the vicinity of the subject property consist of Glacial Lake Brainerd deposits of the Brainerd assemblage. Glacial Lake Brainerd formed as Rainy-lobe ice retreated northeast. Sediments consist of poorly graded, very fine to medium grained noncalcareous sand. At depths greater than 10 feet below the ground surface (bgs), sediment may contain interbedded silt and clay layers, with underlying till or clayey lake sediment. Unconsolidated deposits in the vicinity of the subject are property are expected to be approximately 150 to 200 feet thick (MGS, 2004).

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Soil types encountered in borings completed for the previous Cypress Drive improvements and prior assessments (**Section 5.3**) were consistent with published geology. Fill was encountered generally between 1 and 10 feet thick, and primarily consisted of silty sand and poorly graded sand. Peat was also encountered at several locations to depths of 4 to 11 feet bgs. Below surface layers of pavement, topsoil, fill, peat and/or buried topsoil, poorly graded sand, silty sand or silt was encountered. Poorly graded, fine grained sand was the predominant soil type.

The uppermost bedrock geology in the vicinity of the project corridor is expected to occur at depths between 150 and 200 feet bgs. The Upper member of the Mahnomen Formation consists of gray to light-gray siltstone, argillite, and fine-grained quartz-rich sandstone. The unit includes irregularly distributed beds and lenses of iron-formation and allied anomalously iron-rich sedimentary rocks (MGS, 2004).

2.3.3 Hydrogeology

According to previous environmental documents reviewed by SEH (**Section 5.3**), groundwater was consistently reported as shallow. Soil boring and monitoring well logs indicate groundwater is expected to be encountered as shallow as 4 feet bgs within the project corridor. Several Leak files with groundwater monitoring activities within the project corridor indicate shallow groundwater flow direction is generally east. Well records and wellhead protection areas are discussed in **Section 5.4** and **Section 5.5**.

3.0 Historical Land Use Review

A historical review was conducted to identify historical land uses in order to assess whether past uses may have impacted the project corridor. The historical review is completed by examining available historical topographic maps, plat maps, aerial photographs, fire insurance maps, and city directories. Available resources are identified in **Section 3.1**. The Historical Land Use Summary provided in **Section 3.2** is a general overview of the project corridor history. Site specific historical summaries are presented in **Appendix A**.

3.1 Sources

The historical review was completed by examining available historical aerial photographs, MnDOT right-of-way maps, topographic maps, and city directories. Historical information was also obtained through interviews (**Section 6.0**). Wells and wellhead protection areas are discussed in **Section 5.4** and **Section 5.5**.

3.1.1 Aerial Photographs

Reasonably ascertainable historical aerial photographs showing the project corridor and surrounding areas were obtained for review from the years 1939, 1954, 1969, 1973, 1984, 1992, 2003, 2010, and 2015. Due to the scale and quality of some of the photographs, it is difficult to determine minor activities that may have occurred on the project corridor. Site specific historical aerial photographs are included after each data sheet in **Appendix A**. Copies of historical aerial photographs for the project corridor were reviewed are included as **Appendix C**.

3.1.2 Topographic Maps

The United States Geological Survey (USGS), 7.5 Minute Series topographic taps were reviewed from the years 1915, 1918, 1973, and 2013. Copies of topographic maps reviewed are included as **Appendix D**.

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3.1.3 Historical Maps

Sanborn and Rasher fire Insurance maps consist of a uniform series of large-scale detailed maps, dating from 1867 through 1969 and depict the commercial, industrial, and residential sections of urban areas. Fire Underwriters Inspection Bureau Maps, or Fisher maps, are useful for searching smaller communities in Minnesota and North Dakota. The maps were designed to assist fire insurance agents in determining the degree of hazard associated with a particular property. These maps illustrate, in outline form, the size, shape, construction and building material of dwellings, commercial buildings, and factories.

Fire insurance maps, covering the BNSF Tie Plant, were available for the project. MnDOT right-of-way maps and a BNSF right-of-way map were also reviewed. Historic maps and the research summary are available in **Appendix E**.

3.1.4 City Directories

City directories provide a means to investigate the past use of a site by reviewing information for a specific address in incorporated areas. City directories for various years were obtained for Cypress Drive, Excelsior Road, Fairview Road, and TH 210. The city directory review results are reported on site specific data sheets (**Appendix A**) and copies of city directories are included as **Appendix F**.

3.2 Historical Land Use Summary

Two railroad corridors were present as early as 1915. The BNSF railroad (present as a single track corridor today) travels through the central portion of the project corridor. The BNSF railroad had a tie plant with an operational area located just east of the project corridor on site 06. The plant was used to chemically treat wood railroad ties. Sites within the project corridor adjacent to the railroad (07 and 16) included BNSF property where railroad ties were dried and stored on the ground. The plant and other associated features were razed around 1990. Historically removed structures can be seen on site specific aerial photographs in **Appendix A** and their locations are depicted on **Figure 2**.

The second BNSF corridor (reconstructed as Paul Bunyan State Trail around 2003) intersected the northeastern portion of the project corridor. Ferrell Gas operated a propane plant on Site 03, northeast of the intersection of the railroad and TH 210, from the 1950s through 2003.

TH 210 was constructed by the 1930s as a two lane highway and aside from railroad operations, the project corridor was undeveloped and wooded. TH 210 was accessed by TH 371 (later realigned and expanded), and Golf Course Drive. Excelsior Road and Delmont Road were previously connected. In the 1950s, the golf course and Paul Bunyan Amusement Center (no longer in operation) were constructed. A few commercial properties were added over time, but major development of the project corridor did not occur until 1980s and 1990s.

Cypress Drive south of TH 210 was constructed in the 1980s. Cypress Drive north of TH 210 was constructed in 2006. The intersection of Excelsior Road and Cypress Drive was previously low-lying and was significantly filled for construction of the current alignment.

The network of roads and commercial/residential development south of TH 210 began in the 1980s. Commercial properties have been primarily concentrated adjacent to Industrial Drive. Non-commercial properties south of TH 210 have been mostly residential.

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4.0 Regulatory Database Review

SEH reviewed reasonably ascertainable records from standard sources such as publicly-available federal, tribal, state, county and/or city records as appropriate to assist in identifying environmental conditions in connection with the project corridor. Environmental database listings identified within the project corridor are summarized on site specific data sheets in **Appendix A**.

SEH used the Minnesota Pollution Control Agency (MPCA) "What's in My Neighborhood" (WIMN) and associated files as the primary source of environmental site information. Data sources and definitions are available in **Appendix B**. Additional state, county and/or federal database websites, as well as a database report provided by a third party, were reviewed as secondary sources of information. Additional information identified from these sources is presented in this section and included on **Tables 2 and 3**.

Please note that in many cases listing information on site specific data sheets and in tables throughout this report is unedited from the environmental database records and may contain typos such as misspellings or abbreviations. These data have not been edited to remain consistent with regulatory database records.

4.1 MPCA WIMN Listings

SEH used the MPCA WIMN website and associated databases as the primary source of environmental site information. Environmental information was downloaded directly from MPCA databases into a SEH database and Geographical Information System (GIS). Data sources and definitions are available in **Appendix B**.

Environmental database listings identified during the MPCA WIMN database review for the project corridor are summarized in **Table 2** and described in greater detail on site specific data sheets included as **Appendix A**. Registered above and underground storage tanks in the project corridor are summarized on **Table 3**.

SEH also reviewed WIMN sites with poor location information. MPCA site locations were field verified and locations were reassigned to the correct property parcel if necessary. No orphan sites remained after the review.

4.2 MPCA Spill Listings

SEH reviewed the MPCA Spills database for listings with a general location similar to the project corridor. MPCA Spills are listed in **Table 2** and described in greater detail on site specific data sheets included as **Appendix A**.

5.0 Additional Records Review

SEH reviewed records from the additional resources summarized in this section.

5.1 Environmental Database Report

SEH retained GeoSearch to perform an electronic database search of documents published by the EPA and the MPCA. A summary of all records retrieved by the search, the minimum search distances, and the date that source information was last updated is included in the environmental database report in **Appendix G**. A list of data sources is also provided in the report.

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The GeoSearch database report review did not include a comprehensive, exhaustive review of all records. Listings identified with additional information for the project corridor are summarized in **Table 2** and described in greater detail on site specific data sheets included as **Appendix A**.

5.1.1 Unlocatable Listings

Environmental database reports typically include a number of "unlocatable" listings. No unlocatable listings are identified in the environmental database report.

5.2 Additional Environmental Databases

SEH reviewed additional environmental record sources, including the Minnesota Department of Agriculture (MDA) County Spill Records, the MDA WIMN interactive mapping program, the MPCA *Petroleum Remediation Program Maps Online*, MPCA *Contaminated Sites Data Online*, MPCA *Landfill Cleanup Act Participants*, MPCA *VIC Site Online Search for Sites with Institutional Controls,* and the *National Pipeline Mapping System*.

Additional listings identified in the project corridor are summarized in **Table 2** and described in greater detail on site specific data sheets included as **Appendix A**.

5.3 Prior Assessments

A number of sites warranted an additional file review based on their complexity and/or size to evaluate the degree of potential impact to the project corridor. SEH completed MPCA file reviews for available Superfund, VIC, and Leak site files for the project corridor. File review information is summarized by site on site specific data sheets in **Appendix A**. Copies of reviewed reports are attached as **Appendix H**.

The following files were reviewed by SEH.

SEH ID	File Name	Database Type/ID	Status
02	Larson's Sports	VIC VP4470	*Reviewed*
03	MNDOT BNSF North Track	VIC VP19720	*Reviewed*
06	BNSF Railway Co - Tie Plant	Superfund Project SR16	*Reviewed*
13	Baxter Ico	Leak Site 15211	*Reviewed*
15	Dondelinger Chevrolet	Leak Site 11882	*Reviewed*
15	Dondelinger Chevrolet-Cadillac Inc	Leak Site 14163	*Reviewed*
26	City of Baxter	VIC VP9250	*Reviewed*

The following additional files were reviewed; however, they were determined to not be located with the project corridor.

SEH ID	File Name	Database Type/ID	Status
Not a site	Brainerd Former City Dump	Superfund Project SR74	*Reviewed*
Not a site	Brainerd Golf Club	Leak 7505	*Reviewed*
Not a site	Mills GM	Leak 15267	*Reviewed*

5.4 Well Records Review

A review of wells listed in the Minnesota Department of Health (MDH) Minnesota Well Index (MWI) was conducted. Wells are listed on site specific data sheets (**Appendix A**) and depicted on **Figure 2**. Occasionally, wells identified during the MPCA file reviews cannot be

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associated with specific wells listed in the MWI. Information regarding wells obtained in the file review is included on file review excerpts in **Appendix A**.

Numerous monitoring wells were identified on sites are likely associated with the BNSF Tie Plant Superfund site; however, they were not included on the list of monitoring wells network provided in the site file. This has been noted on site specific data sheets in **Appendix A**. SEH interviewed the MPCA for additional information (**Section 6.0**).

Unmapped abandoned (AB) and monitoring (MW) wells from the MWI data were reviewed. It was not within the scope of this Phase I ESA to field verify all located and unlocated wells with a location description similar to the project corridor. A full list of abandoned and monitoring wells that were extracted for review are included in **Appendix I**.

5.5 Wellhead Protection Areas

According to MPCA PRP and MDH MWI online mapping programs, the project corridor does not fall within any wellhead protection areas. One site within the project corridor (Site ID 15) has a Transient Non-Community Inner Wellhead Management Zone. Additional details are presented on the site specific data sheet.

5.6 Title Records, Environmental Liens, or Activity and Use Limitations

SEH did not review title records or records pertaining to environmental liens against properties within the project corridor because it was beyond the scope of work for this modified Phase I ESA.

5.7 Parcel-specific Information

Parcel-specific information including property name, address and photos are included on the site specific data sheets in **Appendix A**. The parcels are outlined on **Figure 2**. Parcel specific information for all parcels identified as de minimis are included on **Table 4**.

6.0 Interviews

Interviews were conducted with persons familiar with the area to obtain information regarding the presence or possible presence of environmental conditions in connection with the proposed corridor. Interviews were completed with government officials. Site specific details are included in **Appendix A**. General information is included below.

6.1 City of Baxter

SEH interviewed Trevor Walter, City Engineer for the City of Baxter, on Wednesday, November 2, and November 14, 2016. Mr. Walter provided the following information. The former BNSF Tie Plant process area (Site 06) was located east of the proposed Cypress Drive project area. Leachate from this area is collected and disposed of in the sanitary sewer. Contamination is not known to be located where construction is expected to occur (Sites 16 and 07). It is his understanding that the extent of soil and groundwater contamination has not been delineated to date.

Additional site specific information obtained from the City of Baxter interviews is available on data sheets in **Appendix A**.

6.2 Crow Wing County

SEH interviewed Rob Hall with the Crow Wing County Highway Department on October 27, 2016. Mr. Hall indicated the County had no additional information for the project.

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6.3 MPCA Site Remediation and Redevelopment

SEH interviewed Kurt Schroeder, with the MPCA Site Remediation Division on November 3 and November 8, 2016. Mr. Schroeder confirmed information already summarized in this report regarding the BNSF Superfund site. He also indicated that he was not aware of any contamination issues in the area where they dried/stored the treated ties (Sites 07 and 16). He was not aware of any soil sampling or cleanup actions in that portion of the site. The main plant and remediation area was located east and downgradient of the proposed Cypress Avenue project. Currently a shed and a network of monitoring wells are present. He understood that contaminated soil and groundwater from the site have not been fully delineated.

A list of monitoring wells suspected to be associate with the BNSF Superfund site, but are not listed on the site's network of wells, were submitted to Mr. Schroeder for review. He indicated it was a coincidence that the well numbers were similar to those installed for the Superfund site, but they were not associated. These wells are identified on site specific data sheets (**Appendix A**).

6.4 MnDOT OES

SEH interviewed Carolyn Boben and Alyssa Boock with MnDOT OES. MnDOT provided previous environmental documentation completed in the vicinity of the project corridor on October 3, 2016. Prior assessments are summarized in **Section 5.3** of this report.

7.0 Vapor Consideration

SEH reviewed all available MPCA Superfund, Leak, and VIC files for sites within the project corridor. Site specific information regarding soil vapor is included in **Appendix A**. In general, soil vapor screening and sampling results are discussed, and groundwater analytical results can be compared to MPCA Ground Water Screening Values for Vapor Intrusion Pathway (GWISVs). GWISVs are available on the MPCA Guidance Document, *Risk-Based Guidance for the Vapor Intrusion Pathway* (MPCA, 2008). SEH also reviewed the MPCA online map *Sites with Identified or Potential Vapor Risks* where no additional information was found.

8.0 Evaluation

SEH has completed the Modified Phase I ESA and has identified high, medium, low, and de minimis risk sites for the project corridor. This section documents the findings, opinions, and conclusions of the Phase I ESA, as well as, data gaps/failures, limitations, exceptions, and deviations.

SEH identified suspect sites that required a detailed review. Based on the findings of this Phase I ESA, some of these sites were determined to not qualify as high, medium, or low risk for this project. All properties within the project corridor that did not qualify by definition as low, medium, or high risk are considered de minimis (unlikely for contamination) and are summarized in **Table 4**. Site specific details are captured on data sheets (**Appendix A**), and are summarized on **Figure 2** and **Table 1**. Additional database listings and tank information are summarized by database type and/or database identification number on **Tables 2** and **3**.

8.1 Findings and Opinions

This section summarizes general environmental concerns for the project corridor and lists sites identified as environmental conditions for the project corridor. This section also includes discussion regarding listings that are potentially located within the project corridor, but could not be adequately located and data gaps of the Modified Phase I ESA.

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8.1.1 General Overview

BNSF had two railroad corridors that were present as early as 1915, when our historical record begins. One corridor extended east-west through the central portion of the project corridor (present as a single track corridor today), and a spur traveled through the northeastern portion of the project. The railroad operated a wood tie treating plant with a process area east of project corridor (Site 06). The plant was used to chemically treat wood railroad ties and adjacent sites (Sites 07 and 16) were used for drying and outdoor storage of the ties. Processes at the plant led to significant soil and groundwater contamination that continues to be treated under the State and Federal Superfund Programs (SR16) to date. A detailed account of the BNSF tie plant is available in the introduction to **Appendix A**. The BNSF tie plant and other associated features were razed around 1990.

The BNSF spur (reconstructed as Paul Bunyan State Trail around 2003) intersected the northeastern portion of the project corridor. Ferrell Gas operated a propane plant northeast of the intersection of the railroad and TH 210 (Site 03) from the 1950s through 2003. A second propane plant was located at Site 08 from the 1960s through the 1990s.

Railroad activities and surrounding industry account for the high risk sites identified in this report. Additionally, railroads are known to sometimes use chemicals associated with controlling encroaching vegetation along the railroad. Historically removed structures and the railroads are depicted on **Figure 2** and historic aerials photographs in **Appendix A**.

TH 210 was constructed by the 1930s as a two lane highway, and aside from railroad operations, the project corridor was undeveloped and wooded. Transit areas, specifically the intersection of Cypress Drive and Excelsior Road, were identified to be built up or filled in and are summarized on specific data sheets.

In the 1950s, the golf course and Paul Bunyan Amusement Center (no longer in operation) were constructed. A few commercial properties were added over time, but major development of the project corridor did not occur until the 1980s and 1990s. The majority of medium risk sites are commercial automobile repair facilities, petroleum release sites, and/or sites with tanks. Other than the BNSF Tie Plant Superfund site, there are no open investigations or files.

8.1.2 Areas With De Minimis Sites

The Scope of Services provided in **Section 11.0** (**Appendix B**) was completed for all sites within the project corridor. In some cases no concerns were identified and the sites did not meet the definition of high, medium, or low rank. All sites that did not meet the definition of high, medium, or low risk are considered unlikely for contamination, and ranked de minimis. De minimis sites were not assigned an SEH identification number or specifically called out on figures. De minimis sites are summarized on **Table 4**.

8.1.3 Filled Marshes/Low-lying Areas and Removed Structures

Historically marshy areas and other suspect low lying areas that have been subsequently filled are apparent on historical aerial photographs and are identified on site specific data sheets in **Appendix A**. It is noted that fill material of unknown origin may be located in these areas. Historical razed structures are also depicted on **Figure 2**. In the absence of additional concerns these sites do not meet the definition of high, medium, or low ranked sites and are ranked de minimis.

Historical structures such as residential properties, apartment buildings, etc., may have remnants of historical structures, such as demolition debris or foundations associated with

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the removed buildings. The potential exists that buried materials are present within the project corridor that require management as solid waste or waste with hazardous materials or regulated substances. Additionally, churches, hotels and other structures historically may have used undocumented heating oil tanks.

8.1.4 Environmental Risk Sites

SEH identified 7 high, 15 medium and 10 low risk sites for the project corridor. Sites are depicted on **Figure 2** and details are included on site specific data sheets in **Appendix A**. High and medium risk sites are listed in **Section 8.3**. De minims sites are summarized in **Table 4**. The following low risk sites were identified during the completion of this modified Phase I ESA.

Site ID	Site Name	Rank	Rationale for Ranking
01	Westport Shopping Center	Low	RCRA SQG.
09	Excelsior Dental Care	Low	RCRA SQG.
10	Salon El Rio	Low	RCRA SQG.
14	Fleet Farm Indoor Shooting Range, Kohls store	Low	RCRA SQG.
19	Unmarked Commercial building	Low	RCRA SQG.
20	Culligan	Low	Spill to air.
22	LCL Electronics Inc. offices	Low	RCRA SQG.
27	Ultra Paws	Low	RCRA SQG, commercial printing.
28	Silent Power Inc. Energy Conservation Equipment	Low	Small stockpile.
32	Navillus Court/Center offices	Low	RCRA SQG.

8.2 Data Gaps and Data Failures

No significant data gaps were identified in completion of the ESA.

8.3 Conclusions and Recommendations

SEH has performed a Modified Phase I ESA in general conformance with the scope and limitations of ASTM Practice E 1527-13 of the project corridor specifically described in **Section 2.0**. Any exceptions to, or deletions or deviations from, this practice are described in **Section 8.4** of this report.

The purpose of this study was to identify potential soil, groundwater and sites with soil vapor or debris impacted sites that are within the project corridor. It was not within the scope of this Phase I ESA to evaluate the level of contamination or confirm contamination. SEH recommends that a Phase II investigation be conducted in construction and acquisition areas within or adjacent to high and medium risk sites.

This Modified Phase I ESA has identified the following 22 high or medium risk sites within the project corridor. For detailed information please refer to **Appendix A**.

Site ID	Site Name	Rank	Rationale for Ranking
02	Brothers Motorsports Service	High	VIC, closed Spill, poor housekeeping/junk yard, auto repair.

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Site ID	Site Name	Rank	Rationale for Ranking
03	Marsh, Paul Bunyan State Trail	High	Former propane plant, ASTs, former railroad.
04	Former Imgrund Motors	Medium	Former auto repair.
05	Paul Bunyan State Trail	Medium	Former rail yard.
06	Railroad corridor and greenspace (former BNSF Tie Plant)	High	BNSF Tie Plant Superfund site, primary plant operations/land treatment area.
07	Railroad corridor and greenspace	High	Former BNSF Tie Plant Superfund, drying/outdoor storage area.
08	Vacant grass lot, parking lot	High	Former propane plant, RCRA GEN.
11	Papa Murphy's	Medium	Removed AST, former auto center, RCRA SQG.
12	MnDOT storage building, cell tower	Medium	Monitoring well, RCRA SQG.
13	Fleet Farm car wash	Medium	Former fuel station, closed Leak, removed USTs.
15	Harley Davidson sales and repair	Medium	Closed Leaks, auto repair, removed USTs, RCRA SQG.
16	Railroad corridor and greenspace	High	Former BNSF Tie Plant Superfund, drying/outdoor storage area.
17	Intersection of TH 210 and TH 371	Medium	Closed Spill.
18	Jim's Electric	Medium	Monitoring well, AST, RCRA SQG.
21	Randy's Plumbing and Heating	Medium	ASTs, suspect auto repair.
23	Schwanns	Medium	Closed Spill, unregistered tank.
24	Waste Management	Medium	Permit-by-rule solid waste facility, active ASTs, RCRA SQG.
25	Baxter Snowmobile Club and public hazardous materials disposal point	Medium	Public hazardous materials disposal point, active UST.
26	Cell tower	High	VIC, monitoring well, public hazardous materials disposal point.
29	Spray Foam Insulators	Medium	ASTs, spray foam insulators.
30	Vitale Development	Medium	Suspect small engine repair.
31	Knife River Corporation	Medium	Removed/active ASTs, RCRA SQG, stockpiles.

8.4 Limitations, Exceptions and Deviations

Other than the limitations and exceptions listed in **Section 8.2**, the following modifications to the ASTM E 1527-13 standard were used in this report.

- The User did not fill out a User Questionnaire, therefore the section “User Provided Information” and associated subparagraphs have been eliminated.
- Title records or records pertaining to environmental liens against properties were not reviewed; however, the MPCA online VIC site search for sites with institutional controls was reviewed.
- Interviews may be conducted with city and county staff; State project personnel; and possibly neighbors/tenants/owners of properties within the project corridor.

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- The site reconnaissance is performed from public drives and right-of-ways. Observations of sites may be restricted by private property, physical barriers, or other limiting factors.
- Due to the climate at the time of reconnaissance, some vegetation was dormant and did not allow observations for stressed vegetation.
- Interior Observations are not completed for the properties within the project corridor.
- This project only requires that the Environmental Database Report include database listings within 0.25 mile of the centerline of the project corridor. Typically, only listings identified on properties that are located at least partially within the project corridor are summarized in this report.
- The methodology and consideration for vapors are as described in **Section 7.0**.
- Data gaps and failures are discussed in **Section 8.2**.

9.0 References

GeoSearch, October 7, 2016, *Radius Report – Target Property, TH 210 & Cypress Drive, Baxter, Crow Wing County, Minnesota 56425*

Historical Information Gatherers (HIG), October 7, 2016, *HIG Research Summary – Site Location, TH 210 & Cypress Drive, Baxter, Crow Wing County, Minnesota 56425*

Minnesota Department of Agriculture (MDA), 2011, *Crow Wing County Spill Report*

MDA *What's In My Neighborhood*, interactive online mapping, www.mda.state.mn.us/chemicals/spills/incidentresponse/disclaimer.htm

Minnesota Department of Health (MDH), *Minnesota Well Index*, http://www.health.state.mn.us/divs/eh/cwi/

Minnesota Geological Survey (MGS), 2004, *Geologic Atlas of Crow Wing County, Minnesota,* County Atlas Series, Atlas C-16

Minnesota Pollution Control Agency (MPCA) *Contaminated Sites Data online*, https://www.pca.state.mn.us/data/contaminated-sites-data

MPCA *Landfill Cleanup Act Participants*, http://mpca.maps.arcgis.com/apps/Solutions/s2.html?appid=6470bb44bd83497993da5836333d1cb3

MPCA *Petroleum Remediation Program Maps* online, http://pca-gis02.pca.state.mn.us/prp/index.html

MPCA, 2008, *Risk-Based Guidance for the Vapor Intrusion Pathway,* Guidance Document c-s4-06

MPCA *Sites with Identified or Potential Vapor Risks* online map, http://www.pca.state.mn.us/index.php/waste/waste-and-cleanup/cleanup/superfund/vapor-intrusion/map-vapor-risk-sites.html

MPCA *What's In My Neighborhood*, online database, https://www.pca.state.mn.us/data/whats-my-neighborhood

Pipeline and Hazardous Materials Safety Administration (PHMSA), 2012, *National Pipeline Mapping System Public Map Viewer,* https://www.npms.phmsa.dot.gov/PublicViewer/composite.jsf

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10.0 Signature(s) of Environmental Professional(s)

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental professional as defined in §312.10 of 40 CFR 312.

I have the specific qualification based on education, training, and experience to assess a property of the nature, history, and setting of the project corridor. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in §312.10 of 40 CFR 312.

_____

Allen H. Sunderman, PG
Project Manager

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Table 1

Environmental Sites Summary
Modified Phase I Environmental Site Assessment
2018 Cypress Drive Improvements
Baxter, Minnesota (SAP 230-113-04)

Site ID	Site Name/Current Use	Rank	Ranking Rationale
01	Westport Shopping Center	Low	RCRA SQG.
02	Brothers Motorsports Service	High	VIC, closed Spill, poor housekeeping/junk yard, auto repair.
03	Marsh, Paul Bunyan Trail	High	Former propane plant, ASTs, former railroad.
04	Former Imgrund Motors	Medium	Former auto repair.
05	Paul Bunyan Trail	Medium	Former rail yard.
06	Railroad corridor and greenspace (former BNSF Tie Plant)	High	BNSF Tie Plant Superfund site, primary plant operations/land treatment area.
07	Railroad corridor and greenspace	High	Former BNSF Tie Plant Superfund, drying/outdoor storage area.
08	Vacant grass lot, parking lot	High	Former propane plant, RCRA GEN.
09	Excelsior Dental Care	Low	RCRA SQG.
10	Salon El Rio	Low	RCRA SQG.
11	Papa Murphy's	Medium	Removed AST, former auto center, RCRA SQG.
12	MnDOT storage building, cell tower	Medium	Monitoring well, RCRA SQG.
13	Fleet Farm car wash	Medium	Former fuel station, closed Leak, removed USTs.
14	Fleet Farm Indoor Shooting Range, Kohls store	Low	RCRA SQG.
15	Harley Davidson sales and repair	Medium	Closed Leaks, auto repair, removed USTs, RCRA SQG.
16	Railroad corridor and greenspace	High	Former BNSF Tie Plant Superfund, drying/outdoor storage area.
17	Intersection of TH 210 and TH 371	Medium	Closed Spill.
18	Jim's Electric	Medium	Monitoring well, AST, RCRA SQG.
19	Unmarked Commercial building	Low	RCRA SQG.
20	Culligan	Low	Spill to air.
21	Randy's Plumbing and Heating	Medium	ASTs, suspect auto repair.
22	LCL Electronics Inc. offices	Low	RCRA SQG.
23	Schwanns	Medium	Closed Spill, unregistered tank.
24	Waste Management	Medium	Permit-by-rule solid waste facility, active ASTs, RCRA SQG.
25	Baxter Snowmobile Club and public hazardous materials disposal point	Medium	Public hazardous materials disposal point, active UST.
26	Cell tower	High	VIC, monitoring well, public hazardous materials disposal point.
27	Ultra Paws	Low	RCRA SQG, commercial printing.
28	Silent Power Inc. Energy Conservation Equipment	Low	Small stockpile.
29	Spray Foam Insulators	Medium	ASTs, spray foam insulators.
30	Vitale Development	Medium	Suspect small engine repair.
31	Knife River Corporation	Medium	Removed/active ASTs, RCRA SQG, stockpiles.
32	Navillus Court/Center offices	Low	RCRA SQG.

Note: A summary of acronyms and abbreviations is available at the beginning of the report.

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Table 2
Environmental Database Summary
Modified Phase I Environmental Site Assessment
2018 Cypress Drive Improvements
Baxter, Minnesota (SAP 230-113-04)

Database	Activity	Database ID	Name of Listing	Source	Site ID
Institutional Controls	Integrated Compliance Information System (formerly DOCKETS)	110009292871	BURLINGTON NORTHERN RAILROAD COMPANY	GeoSearch	06
Investigation & Cleanup	CERCLIS Site	MND000686196	BNSF - Tie Plant	MPCA	06
Investigation & Cleanup	CERCLIS Sites	57026	BNSF RAILWAY CO - TIE PLANT	GeoSearch	07
Investigation & Cleanup	RCRA Cleanup	MND000686196	BN Tie Plant	MPCA	06
Investigation & Cleanup	Superfund Project	SR16	BURLINGTON NORTHERN (Tie plant, Brainerd)	MPCA	06
Investigation & Cleanup	Superfund Site Information Listing	SR16	BURLINGTON NORTHERN (TIE PLANT, BRAINERD)	GeoSearch	07
Investigation & Cleanup	Voluntary Investigation & Cleanup (VIC)	VP19720	MNDoT BNSF North Track	MPCA	06
Investigation & Cleanup	Voluntary Investigation & Cleanup (VIC)	VP19720	MNDOT BNSF NORTH TRACK	GeoSearch	06
Investigation & Cleanup	Voluntary Investigation & Cleanup (VIC)	VP21200	BNSF - WEST LAUREL STREET	GeoSearch	06
Investigation & Cleanup	Voluntary Investigation & Cleanup (VIC)	VP4470	Larson's Sports	MPCA	02
Investigation & Cleanup	Voluntary Investigation & Cleanup (VIC)	VP9250	City of Baxter	MPCA	26
Investigation & Cleanup	Voluntary Investigation & Cleanup (VIC)	VP9250	CITY OF BAXTER	GeoSearch	26
CERCLIS	RCRA Sites with Controls	MND000686196	BRAINERD-TIE PLANT SITE - BURLINGTON NOR	GeoSearch	07
CERCLIS	Record of Decision System	MND000686196	BURLINGTON NORTHERN (BRAINERD/BAXTER PLANT)	GeoSearch	06
National Priorities List	National Priorities List	MND000686196	BURLINGTON NORTHERN (BRAINERD/BAXTER PLANT)	GeoSearch	07
Site Response Section Database	Site Response Section Database	RCRA42	BN TIE PLANT	GeoSearch	06
Site Response Section Database	Site Response Section Database	SR16	BURLINGTON NORTHERN (TIE PLANT, BRAINERD)	GeoSearch	06
Site Response Section Database	Site Response Section Database	VP19720	MNDOT BNSF NORTH TRACK	GeoSearch	06
Site Response Section Database	Site Response Section Database	VP21200	BNSF - WEST LAUREL STREET	GeoSearch	06
Site Response Section Database	Site Response Section Database	VP4470	LARSONS SPORTS	GeoSearch	02
Site Response Section Database	Site Response Section Database	VP9250	CITY OF BAXTER	GeoSearch	26
Sites with Institutional Controls	Sites with Institutional Controls	RCRA42	BN TIE PLANT	GeoSearch	06
State Assessment Sites	State Assessment Sites	74189654	STATEWIDE ARSENIC ABOVEGROUND STORAGE/BURIAL SITES	GeoSearch	06
Tanks & Leaks	Leak Site	11882	DONDELINGER CHEVROLET	GeoSearch	15
Tanks & Leaks	Leak Site	11882	Dondelinger Chevrolet	MPCA	15
Tanks & Leaks	Leak Site	14163	DONDELINGER CHEVROLET	GeoSearch	15
Tanks & Leaks	Leak Site	14163	Dondelinger Chevrolet	MPCA	15
Tanks & Leaks	Leak Site	15211	Baxter Ico	MPCA	13
MPCA Spills	MPCA Spills	5482	JENKINS TRUCKING	MPCA Spills	17
MPCA Spills	MPCA Spills	26847	CULLIGAN SOFT WATER	MPCA Spills	20
MPCA Spills	MPCA Spills	66277	BNSF Brainerd Tie Plant	MPCA Spills	06
MPCA Spills	MPCA Spills	88148	Bros. Motor Sports	MPCA Spills	02
MPCA Spills	MPCA Spills	55746646	SCHWANNS	GeoSearch	23
Tanks & Leaks	Tank Site	5858	DONDELINGER CHEVROLET-CADILLAC INC	GeoSearch	15
Tanks & Leaks	Tank Site	5858	Dondelinger Chevrolet-Cadillac Inc	MPCA	15
Tanks & Leaks	Tank Site	5893	CROWN AUTO INC	GeoSearch	11
Tanks & Leaks	Tank Site	5904	Baxter Food Mart	MPCA	13
Tanks & Leaks	Tank Site	54933	NORTHERN WASTE SYSTEMS	GeoSearch	24
Tanks & Leaks	Tank Site	121948	KNIFE RIVER NORTH CENTRAL BAXTER	GeoSearch	31
Tanks & Leaks	Tank Site	123039	Brainerd Oil Drop Site	MPCA	09
Tanks & Leaks	Tank Site	125031	WASTE MANAGEMENT INC - BRAINERD	GeoSearch	24
Hazardous Waste	Permitted By Rule Landfills	8436	WASTE MANAGEMENT INC - BRAINERD	GeoSearch	24
Hazardous Waste	Hazardous Waste, Small to Minimal QG	312214679	Lakeland - Redi Mix	MPCA	31
Hazardous Waste	Hazardous Waste, Small to Minimal QG	702183427	Baxter City Of	MPCA	26
Hazardous Waste	Hazardous Waste, Small to Minimal QG	702778630	JOSEPH P DUDDING DDS	GeoSearch	10
Hazardous Waste	Hazardous Waste, Small to Minimal QG	702778630	Joseph P Dudding DDS	MPCA	10
Hazardous Waste	Hazardous Waste, Small to Minimal QG	HWLIC1002464	NATIONAL PROPANE CORP	GeoSearch	08
Hazardous Waste	-	MND000686196	BRAINERD-TIE PLANT SITE - BURLINGTON NOR	GeoSearch	07
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MND000686196	BNSF RAILWAY CO - TIE PLANT	GeoSearch	06
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MND000686196	BNSF Railway Co - Tie Plant	MPCA	06
Hazardous Waste	RCRA	MND000686196	BRAINERD-TIE PLANT SITE - BURLINGTON NOR	GeoSearch	06
Hazardous Waste	RCRA - Generator Facilities	MND000686196	BRAINERD-TIE PLANT SITE - BURLINGTON NOR	GeoSearch	07
Hazardous Waste	Transfer, Storage and Disposal Facilities	MND000686196	BNSF RAILWAY CO - TIE PLANT	GeoSearch	07
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MND045959483	DONDELINGER CHEVROLET-CADILLAC INC	GeoSearch	15
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MND045959483	Dondelinger Chevrolet-Cadillac Inc	MPCA	15
Hazardous Waste	RCRA - Generator Facilities	MND045959483	DONDELINGER CHEVROLET-CADILLAC INC	GeoSearch	15
Hazardous Waste	No Longer Regulated RCRA Generator Facilities	MND058332685	BAXTER CHAMPION AUTO	GeoSearch	11
Hazardous Waste	Resource Conservation & Recovery Act - Non-Generator	MND058332685	BAXTER CHAMPION AUTO	GeoSearch	11
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MND985694108	Crow Wing Press	MPCA	27
Hazardous Waste	No Longer Regulated RCRA Generator Facilities	MND985694108	CROW WING PRESS	GeoSearch	27
Hazardous Waste	Resource Conservation & Recovery Act - Non-Generator	MND985694108	CROW WING PRESS	GeoSearch	27
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MND985748680	WASTE MANAGEMENT - BRAINERD	GeoSearch	24
Hazardous Waste	RCRA - Generator Facilities	MND985748680	WASTE MANAGEMENT - BRAINERD	GeoSearch	24
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNR000016584	KNIFE RIVER CORP N CENTRAL BAXTER	GeoSearch	31
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNR000016584	Knife River Corp N Central Baxter	MPCA	31
Hazardous Waste	RCRA - Generator Facilities	MNR000016584	KNIFE RIVER CORP N CENTRAL BAXTER	GeoSearch	31

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Table 2
Environmental Database Summary
Modified Phase I Environmental Site Assessment
2018 Cypress Drive Improvements
Baxter, Minnesota (SAP 230-113-04)

Database	Activity	Database ID	Name of Listing	Source	Site ID
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNR000035055	Brothers Motorsports	MPCA	02
Hazardous Waste	RCRA - Generator Facilities	MNR000035055	BROTHERS MOTORSPORTS	GeoSearch	02
Hazardous Waste	Resource Conservation & Recovery Act - Non-Generator	MNR000102806	CONWAY CENTRAL EXPRESS - BAXTER	GeoSearch	19
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000130542	JIM'S ELECTRIC CO INC	GeoSearch	18
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000130542	Jim's Electric Co Inc	MPCA	18
Hazardous Waste	Resource Conservation & Recovery Act - Non-Generator	MNS000130542	JIM'S ELECTRIC CO INC	GeoSearch	18
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000147686	LAYNE CHRISTENSEN DTC	GeoSearch	32
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000147686	Layne Christensen DTC	MPCA	32
Hazardous Waste	RCRA - Generator Facilities	MNS000147686	LAYNE CHRISTENSEN DTC	GeoSearch	32
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000171363	KOHL'S DEPARTMENT STORE - STORE 743	GeoSearch	14
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000171363	Kohl's Department Store - Store 743	MPCA	14
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000172825	BAXTER TOWER SITE	GeoSearch	12
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000172825	Baxter Tower Site	MPCA	12
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000173708	LCL ELECTRONICS INC	GeoSearch	22
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000176800	EXCELSIOR DENTAL	GeoSearch	09
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000176800	Excelsior Dental	MPCA	09
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000188839	INDOOR SHOOTING & ARCHERY RANGE	GeoSearch	14
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000188839	Indoor Shooting & Archery Range	MPCA	14
Hazardous Waste	Hazardous Waste, Small to Minimal QG	MNS000203604	DOLLAR TREE 05584	GeoSearch	02
Hazardous Waste	Hazardous Waste Cleanup Sites	RCRA42	BN TIE PLANT	GeoSearch	06
Clandestine Drug Laboratory Locations	Clandestine Drug Laboratory Locations	1061		GeoSearch	26
Facility Registry System	Facility Registry System	110003768539	BAXTER CHAMPION AUTO	GeoSearch	11
Facility Registry System	Facility Registry System	110003871971	WASTE MANAGEMENT INC - BRAINERD	GeoSearch	24
Facility Registry System	Facility Registry System	110003898523	LAKELAND REDI MIX	GeoSearch	31
Facility Registry System	Facility Registry System	110006059718	BROTHERS MOTORSPORTS	GeoSearch	02
Facility Registry System	Facility Registry System	110006738398	BNSF RAILWAY CO - TIE PLANT	GeoSearch	06
Facility Registry System	Facility Registry System	110008731284	CROW WING PRESS	GeoSearch	27
Facility Registry System	Facility Registry System	110008731300	JOSEPH P DUDDING DDS	GeoSearch	10
Facility Registry System	Facility Registry System	110009292871	BURLINGTON NORTHERN RAILROAD COMPANY	GeoSearch	06
Facility Registry System	Facility Registry System	110016665198	SCHWANS SALES ENTERPRISES	GeoSearch	23
Facility Registry System	Facility Registry System	110037419852	JIM'S ELECTRIC CO INC	GeoSearch	18
Facility Registry System	Facility Registry System	110041987874	BNSF RAILWAY CO - TIE PLANT	GeoSearch	06
Facility Registry System	Facility Registry System	110044308629	LCL ELECTRONICS INC	GeoSearch	22
Facility Registry System	Facility Registry System	110046034705	NATIONAL PROPANE CORP	GeoSearch	08
Facility Registry System	Facility Registry System	110046042625	EXCELSIOR DENTAL	GeoSearch	09
Facility Registry System	Facility Registry System	110046050429	KOHL'S STORE 743	GeoSearch	14
Facility Registry System	Facility Registry System	110046070835	BAXTER TOWER SITE	GeoSearch	12
Facility Registry System	Facility Registry System	110057292317	KNIFE RIVER	GeoSearch	31
Facility Registry System	Facility Registry System	110057757994	KNIFE RIVER CORPORATION - NORTH CENTRAL	GeoSearch	31
Facility Registry System	Facility Registry System	110058055296	SILENT POWER INC	GeoSearch	28
Facility Registry System	Facility Registry System	110063575983	VIKING LAND HARLEY-DAVIDSON-CARTRIDGE FILTER	GeoSearch	15
Facility Registry System	Facility Registry System	110064172185	BROTHERS MOTORSPORTS	GeoSearch	02
Facility Registry System	Facility Registry System	110064277786	DONDELINGER CHEVROLET-CADILLAC INC	GeoSearch	15
Tier Two Facility Listing	Tier Two Facility Listing	1949	SCHWAN'S HOME SERVICE, INC - 100980	GeoSearch	23
Tier Two Facility Listing	Tier Two Facility Listing	1952	KNIFE RIVER/ BAXTER	GeoSearch	31
Tier Two Facility Listing	Tier Two Facility Listing	14625	WASTE MANAGEMENT OF BAXTER	GeoSearch	24
Water Quality	Industrial Stormwater Permit	MNR053476	Knife River Corp N Central Baxter - SW	MPCA	31
Water Quality	Integrated Compliance Information System National Pollutant Discharge Elimination System	MN0055387INPDES	BURLINGTON NORTHERN-BAXTER	GeoSearch	06
Water Quality	National Pollutant Discharge Elimination System	MN0055387	BURLINGTON NORTHERN/SANTA FE	GeoSearch	07
Water Quality	Permit Compliance System	MN0003077	CULLIGAN WTR CONDITIONING CO	GeoSearch	20
Water Quality	Wastewater Discharger	4248	BURLINGTON NORTHERN & SANTA FE RAILWAY	GeoSearch	07
Water Quality	Wastewater Discharger	8194	KNIFE RIVER CORP N CENTRAL BAXTER	GeoSearch	31
Water Quality	Wastewater Discharger	8436	WASTE MANAGEMENT INC - BRAINERD	GeoSearch	24
Water Quality	Wastewater Discharger	68211	DONDELINGER CADILLAC CSW	GeoSearch	15
Water Quality	Wastewater Discharger	54715480	SILENT POWER INC	GeoSearch	28
Water Quality	Wastewater Discharger	58040263	BAXTER HAULING	GeoSearch	24
Water Quality	Wastewater Discharger	61197470	LCL ELECTRONICS INC	GeoSearch	22
Water Quality	Wastewater Discharger	74479776	LAKES DETAILING	GeoSearch	32

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Table 3

Tank Details
Modified Phase I Environmental Site Assessment
2018 Cypress Drive Improvements
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Database ID	Tank No.	Above or Under Ground Tank	Stored Product	Capacity (Gallons)	Status of Tank	Registration Date	Site ID
5858	001	Under Ground	Fuel Oil	10000	Removed	31532	15
	002	Under Ground	Gasoline	1000	Removed	31532	15
	003	Under Ground	Used Or Waste Oil	500	Removed	35882	15
5893	022	Under Ground	Used Or Waste Oil	560	Removed	31561	11
5904	167	Under Ground	Gasoline	6000	Removed	31533	13
	168	Under Ground	Diesel	10000	Removed	31533	13
	169	Under Ground	Gasoline	10000	Removed	31533	13
	170	Under Ground	Gasoline	10000	Removed	31533	13
	171	Under Ground	Gasoline	10000	Removed	31533	13
54933	1001	Above Ground	Motor Oil	250	Active	34772	24
	1002	Above Ground	Hydraulic Fluid	250	Active	34772	24
	1003	Above Ground	Used Or Waste Oil	265	Active	34772	24
121948	1001	Above Ground	Diesel	4000	Removed	36874	31
	1002	Above Ground	Diesel	1000	Removed	38460	31
	1003	Above Ground	Diesel	1000	Removed	38460	31
	1004	Above Ground	Diesel	10000	Active	38882	31
123039	001	Under Ground	Used Or Waste Oil	4000	Active	37799	09
125031	`1	Above Ground	Diesel	4000	Active	39881	24

Note: Tank details extracted from data registered with the Minnesota Pollution Control Agency.

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Table 4

De Minimis Sites Summary
Modified Phase I Environmental Site Assessment
2018 Cypress Drive Improvements
Baxter, Minnesota (SAP 230-113-04)

Parcel ID	Address	City	ZIP Code	Land Use Code Description
010054200000009	-	BAXTER	56425	Charitable Institutions
031280010010009	13472 ASPEN DR	BAXTER, MN	56425	Residential 1 unit
031280020010009	8307 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031310010010009	8166 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031310010020009	8176 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031310010030009	8206 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031310010040009	8230 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031310010050009	-	-	-	Residential 1 unit
031310010060009	8280 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031310020030009	8205 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031310020040009	13430 BIRCH DR	BAXTER, MN	56425	Residential 1 unit
031310020050009	13412 BIRCH DR	BAXTER, MN	56425	Residential 1 unit
031310020060009	13384 BIRCH DR	BAXTER, MN	56425	Residential 1 unit
031470010080009	14213 GOLF COURSE RD	BAXTER, MN	56425	Commercial Preferred
031680010010009	8064 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031680010020009	8080 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031680010030009	8100 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031680010040009	8114 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031680010050009	8130 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031680010060009	8150 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031760010010009	8059 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031760010020009	8075 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031760010040009	8111 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031760010050009	8129 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031760010060009	8139 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031760010070009	8155 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
031770010010009	7472 EXCELSIOR RD	BAXTER MN	56425	Commercial Preferred
031770010020009	14092 EDGEWOOD DR	BAXTER MN	56425	Commercial Preferred
031990020010009	8026 BASSWOOD RD	BAXTER, MN	56425	Residential 1 unit
031990020020009	8044 BASSWOOD RD	BAXTER, MN	56425	Residential 1 unit
031990020030009	8060 BASSWOOD RD	BAXTER, MN	56425	Residential 1 unit
031990030010009	8021 BASSWOOD RD	BAXTER, MN	56425	Residential 1 unit
031990030020009	8037 BASSWOOD RD	BAXTER, MN	56425	Residential 1 unit
031990030030009	8049 BASSWOOD RD	BAXTER, MN	56425	Residential 1 unit
031990030040009	8087 BASSWOOD RD	BAXTER, MN	56425	Residential 1 unit
031990030050009	13346 CYPRESS DR	BAXTER, MN	56425	Residential 1 unit
031990040010009	8080 BASSWOOD RD	BAXTER, MN	56425	Residential 1 unit
031990040020009	8086 BASSWOOD RD	BAXTER, MN	56425	Residential 1 unit
032050010060009	7746 GOEDDERZ RD	BAXTER, MN	56425	Commercial Preferred
032050010070009	7782 GOEDDERZ RD	BAXTER, MN	56425	Commercial Preferred
032050020060009	7745 GOEDDERZ RD	BAXTER, MN	56425	Commercial Preferred
032050030070009	7757 COLLEGE RD	BAXTER, MN	56425	Commercial Preferred
032050030080009	7771 COLLEGE RD	BAXTER, MN	56425	Commercial Preferred
032050030090009	13259 DOGWOOD DR	BAXTER, MN	56425	Commercial Preferred
032050040010009	7847 COLLEGE RD	BAXTER, MN	56425	Commercial Preferred
032050040020009	13256 DOGWOOD DR	BAXTER, MN	56425	Commercial Preferred
032050070010009	13394 DOGWOOD DR	BAXTER, MN	56425	Commercial Preferred
032050070020009	-	BAXTER	56425	Commercial Preferred
032050070030009	-	BAXTER	56425	Commercial Preferred
032050070040009	7842 COLLEGE RD	BAXTER, MN	56425	Commercial Preferred
032170010020009	-	BAXTER	56425	Commercial Preferred
032170010030009	-	BAXTER	56425	Commercial Preferred
032450010010009	13225 DOGWOOD DR	BAXTER, MN	56425	Commercial Preferred

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Table 4

De Minimis Sites Summary
Modified Phase I Environmental Site Assessment
2018 Cypress Drive Improvements
Baxter, Minnesota (SAP 230-113-04)

Parcel ID	Address	City	ZIP Code	Land Use Code Description
032540010020009	7789 HASTINGS RD	BAXTER, MN	56425	Industrial Preferred
032540010030009	13143 CYPRESS DR	BAXTER, MN	56425	Industrial Preferred
032560010010009	-	-	-	Residential 1 unit
032560010020009	13345 BIRCH DR	BAXTER, MN	56425	Residential 1 unit
032590010010009	7900 HASTINGS RD	BAXTER, MN	56425	Commercial Preferred
033070020010009	8343 STATE HIGHWAY 210	BAXTER, MN	56425	Commercial Preferred
033090010010009	13056 CYPRESS DR	BAXTER MN	56425	Apartment (4 or more units)
033090010020009	13150 CYPRESS DR	BAXTER, MN	56425	Apartment (4 or more units)
033090010030009	13060 CYPRESS DR	BAXTER, MN	56425	Apartment (4 or more units)
033950010010009	-	-	-	Commercial Preferred
033970010010009	-	-	-	Commercial Preferred
033970010020009	-	-	-	Commercial Preferred
034090010010009	8182 EXCELSIOR RD	BAXTER MN	56425	Apartment (4 or more units)
034160010010009	8186 EXCELSIOR RD	BAXTER MN	56425	Apartment (4 or more units)
034270010020009	-	-	-	Municipal - All Other
036060020010009	-	-	-	Residential 2-3 units or Vacant Land
036060020020009	-	-	-	Residential 2-3 units or Vacant Land
036090010010009	-	-	-	Residential 2-3 units or Vacant Land
036090010020009	-	-	-	Residential 2-3 units or Vacant Land
036090010030009	-	-	-	Residential 2-3 units or Vacant Land
036090010040009	-	-	-	Residential 2-3 units or Vacant Land
036090010050009	-	-	-	Residential 2-3 units or Vacant Land
036090010060009	-	-	-	Residential 2-3 units or Vacant Land
036090010070009	13109 BERRYWOOD DR	BAXTER, MN	56425	Residential 1 unit
036090010080009	13101 BERRYWOOD DR	BAXTER, MN	56425	Residential 1 unit
036090010110009	-	-	-	Assessed Elsewhere
036090020010009	-	-	-	Tax Forfeited-Real Estate/PILT or Sev Min
036090020020009	-	-	-	Tax Forfeited-Real Estate/PILT or Sev Min
036090020030009	-	-	-	Tax Forfeited-Real Estate/PILT or Sev Min
036090020050009	-	-	-	Assessed Elsewhere
039000000070009	-	-	-	Streets and Roadways
010084100E00009	-	BAXTER	56425	Municipal - All Other
0339700090E0009	-	-	-	Commercial Preferred
010053100A00009	-	BAXTER	56425	Charitable Institutions
010053300BC0009	-	BAXTER	56425	Streets and Roadways
010053300CA0009	-	BAXTER	56425	Commercial Preferred
010053300CBA009	-	BAXTER	56425	Commercial Preferred
010053300CBB009	-	-	-	Commercial Preferred
010053300DA0009	-	BAXTER	56425	Streets and Roadways
010053300DB0009	-	-	-	Commercial Preferred
010054300ABB009	-	BAXTER	56425	Commercial Preferred
010054300FZ0009	-	BAXTER	56425	Commercial Preferred
010054400CBB009	8330 FAIRVIEW RD	BAXTER, MN	56425	Commercial Preferred
010054400CD0009	14087 BAXTER DR	BAXTER MN	56425	Commercial Preferred
010071100A00009	7429 EXCELSIOR RD	BAXTER, MN	56425	Commercial Preferred
010071100B00009	7444 FAIRVIEW RD	BAXTER, MN	56425	Commercial Preferred
010071100C00009	7385 EXCELSIOR RD	BAXTER, MN	56425	Commercial Preferred
010071100D00009	-	-	-	Church Properties
010071400C00009	7418 FORTHUN RD	BAXTER, MN	56425	Commercial Preferred
010081100ACB009	-	BAXTER	56425	Commercial Preferred
010081100AD0009	8341 STATE HIGHWAY 210	BAXTER, MN	56425	Commercial Preferred
010081200C00009	-	-	-	County Public Property - All Other
010081300ACF009	-	BAXTER	56425	Municipal - All Other

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Table 4

De Minimis Sites Summary
Modified Phase I Environmental Site Assessment
2018 Cypress Drive Improvements
Baxter, Minnesota (SAP 230-113-04)

Parcel ID	Address	City	ZIP Code	Land Use Code Description
010081400AB0009	8342 INDUSTRIAL PARK RD	BAXTER, MN	56425	Commercial Preferred
010081400ACA009	8342 INDUSTRIAL PARK RD	BAXTER, MN	56425	Commercial Preferred
010081400B00009	-	-	-	Commercial Preferred
010081400CB0009	-	-	-	Commercial Preferred
010082300B00009	7694 INDUSTRIAL PK RD	BAXTER, MN	56425	State Public Property
010082300C00009	-	-	-	State Public Property
010083200B00009	7694 INDUSTRIAL PARK RD	BAXTER, MN	56425	State Public Property
010084100A00009	13490 ASPEN DR	BAXTER, MN	56425	Residential 1 unit
010084100B00009	13489 ASPEN DR	BAXTER, MN	56425	Residential 1 unit
010084100C00009	13378 ASPEN DR	BAXTER, MN	56425	Residential 1 unit
010084100DBB009	-	BAXTER	56425	Municipal - All Other
010084200B00009	13399 ASPEN DR	BAXTER, MN	56425	Residential 1 unit
010084200CZ0009	13198 BERRYWOOD DR	BAXTER, MN	56425	Church Properties
010084400AA0009	8148 HIGHLAND SCENIC RD	BAXTER, MN	56425	Residential 1 unit
03131001005A009	-	-	-	Municipal - All Other
03131002001Z009	13415 ASPEN DR	BAXTER, MN	56425	Residential 1 unit
03131002002A009	8225 GREENWOOD RD	BAXTER, MN	56425	Residential 1 unit
0319900090A0009	-	-	-	Municipal - All Other
03205001008Y009	13499 DOGWOOD DR	BAXTER, MN	56425	Commercial Preferred
03205001008Z009	13461 DOGWOOD DR	BAXTER, MN	56425	Commercial Preferred
03205002006Y009	13377 DOGWOOD DR	BAXTER, MN	56425	Commercial Preferred
03205002006Z009	7756 COLLEGE RD	BAXTER, MN	56425	Commercial Preferred
0321700090A0999	-	-	-	Undivided Interest Assessed Parcel
0325600090A0009	-	-	-	Municipal - All Other
0336100090D0009	-	-	-	Residential 2-3 units or Vacant Land
0336100090H0009	-	-	-	Residential 2-3 units or Vacant Land
0339700090C0009	-	-	-	Commercial Preferred
0339700090D0009	-	-	-	Commercial Preferred
0360600090A0009	-	-	-	Assessed Elsewhere

Note: Information was obtained from the Crow Wing County Parcel Data.

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List of Figures

Figure 1 – Project Corridor Location
Figure 2 – Project Corridor Features

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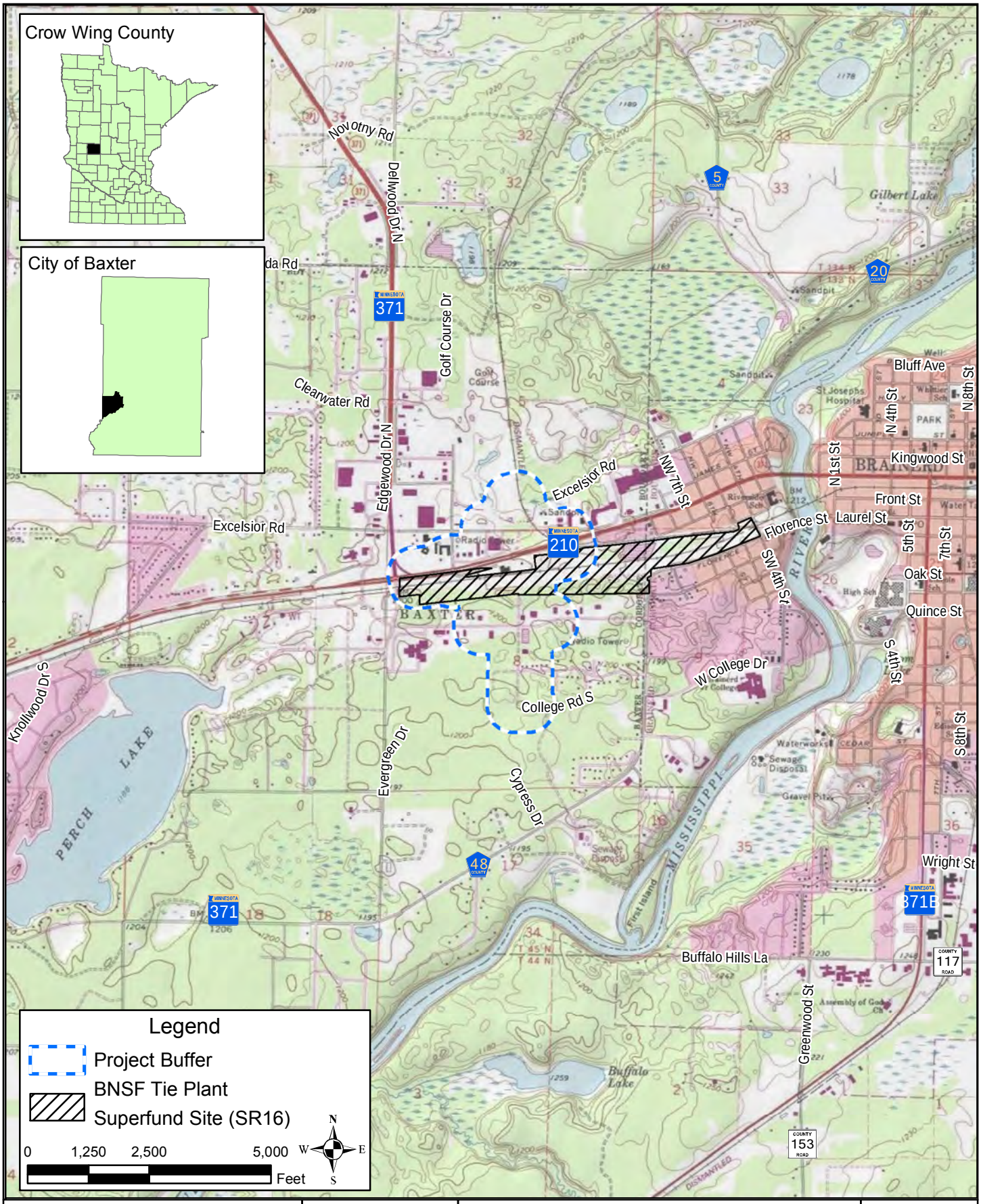

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Project: Baxte 138944
Print Date: 10/28/2016

Map by: MSherrill
Projection: Crow Wing County (ft)
Source:
SEH, MDH, Crow Wing County, ESRI Baselayers

Project Corridor Location

Modified Phase I Environmental Site Assessment
2018 Cypress Drive Improvements (SAP 230-113-04)
Baxter, Minnesota

Figure 1

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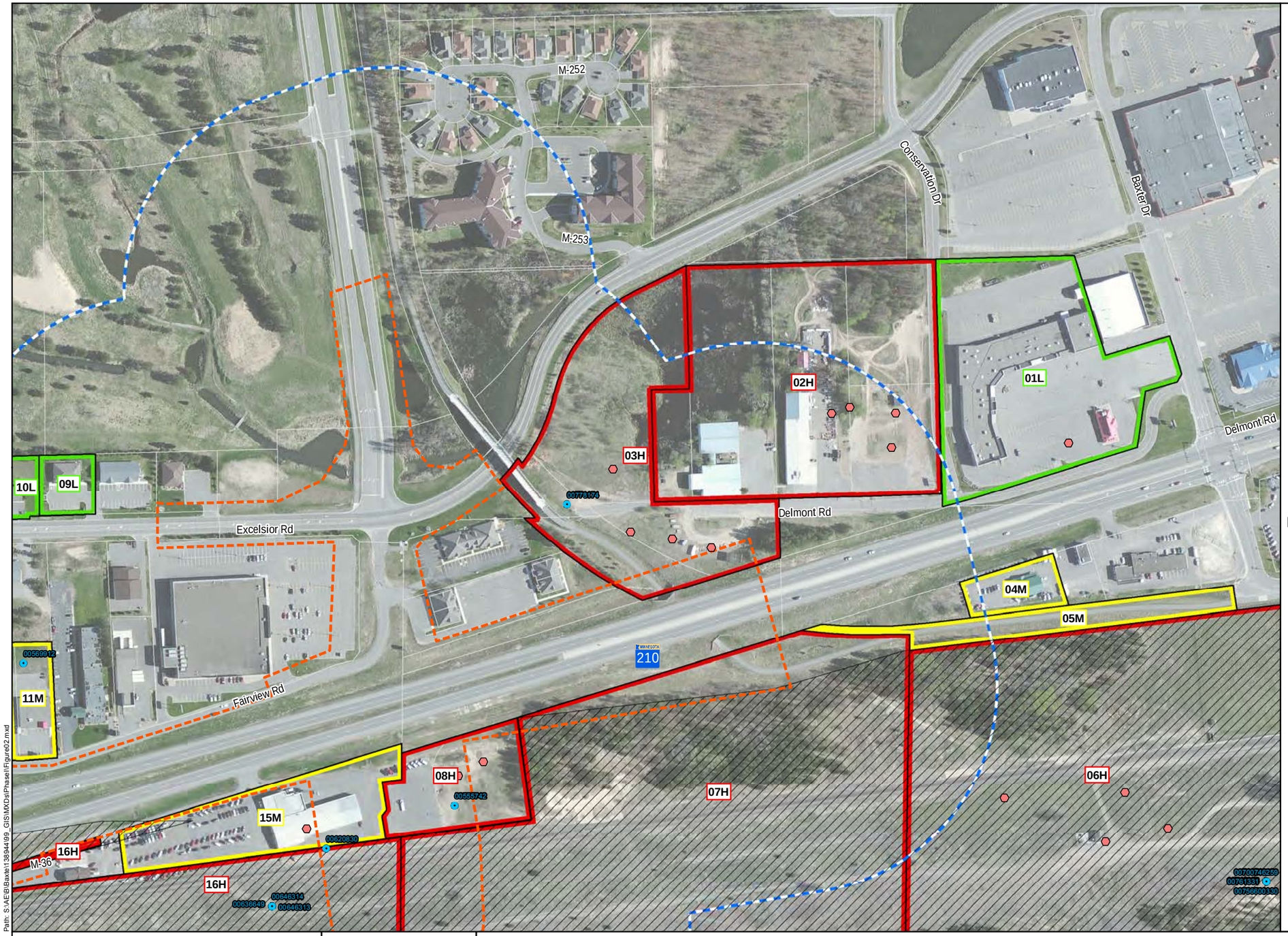


Legend

Phase I ESA Site ID and Risk Ranking (SEH, 2016)

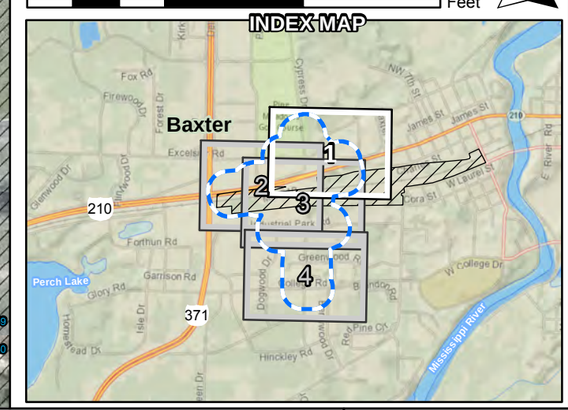
- High Rank Site
- Medium Rank Site
- Low Rank Site
- Project Buffer
- BNSF Tie Plant Superfund Site (SR16)
- Limits of Disturbance (Preliminary)
- County Parcels
- MDH CWI Located Wells
- Historic Structure

SEH ID	Site Name/Current Use	Rank	Ranking Rationale
01	Westport Shopping Center	Low	RCRA SQG.
02	Brothers Motorsports Service	High	VIC, closed Spill, poor housekeeping/junk yard, auto repair.
03	Marsh, Paul Bunyan Trail	High	Former propane plant, ASTs, former railroad.
04	Former Imgrund Motors	Medium	Former auto repair.
05	Paul Bunyan Trail	Medium	Former rail yard.
06	Railroad corridor and greenspace (former BNSF Tie Plant)	High	BNSF Tie Plant Superfund site, primary plant operations/land treatment area.
07	Railroad corridor and greenspace	High	Former BNSF Tie Plant Superfund, drying/outdoor storage area.
08	Vacant grass lot, parking lot	High	Former propane plant, RCRA GEN.
09	Excelsior Dental Care	Low	RCRA SQG.
10	Salon El Rio	Low	RCRA SQG.
11	Papa Murphy's	Medium	Removed AST, former auto center, RCRA SQG.
15	Harley Davidson sales and repair	Medium	Closed Leaks, auto repair, removed USTs, RCRA SQG.
16	Railroad corridor and greenspace	High	Former BNSF Tie Plant Superfund, drying/outdoor storage area.

Notes:
AST - Aboveground Storage Tank
UST - Underground Storage Tank
VIC - Voluntary Investigation and Cleanup Program
MDH - Minnesota Department of Health
CWI - County Well Index
RCRA SQG - Resource Conservation and Recovery Act Small Quantity Hazardous Waste Generator
Note: All parcels partially or wholly within the buffer area were assessed during the modified Phase I ESA.

0 125 250 500 750 Feet

INDEX MAP



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Project: Baxte 138944
Print Date: 11/17/2016

Map by: MSherrill
Projection: Crow Wing County Coords (ft)
Source:
SEH, MDH, Crow Wing County, ESRI Baselayers

Site Features

Modified Phase I Environmental Site Assessment
2018 Cypress Drive Improvements (SAP 230-113-04)
Baxter, Minnesota

Figure 2-1

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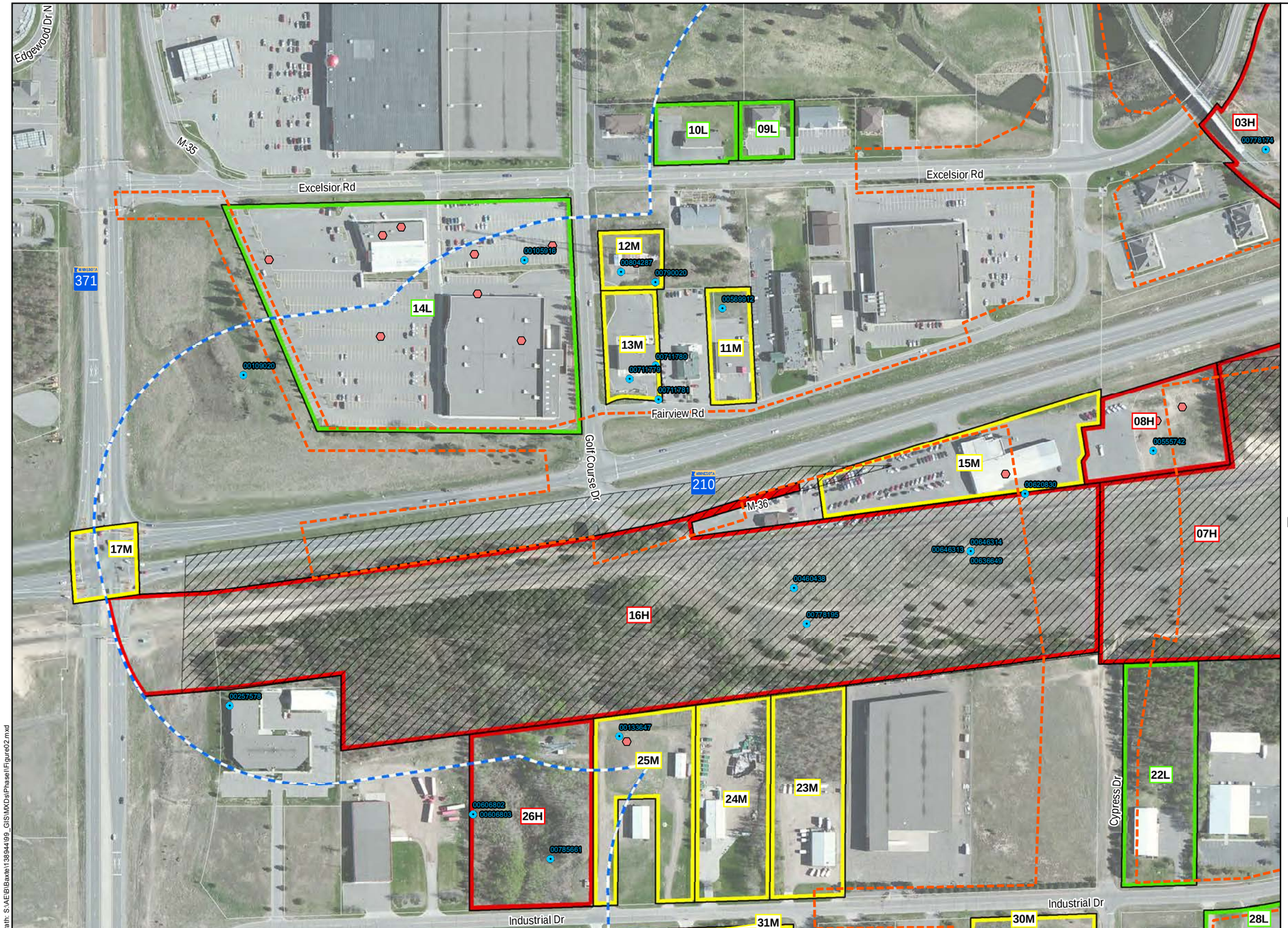

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Legend

Phase I ESA Site ID and Risk Ranking (SEH, 2016)

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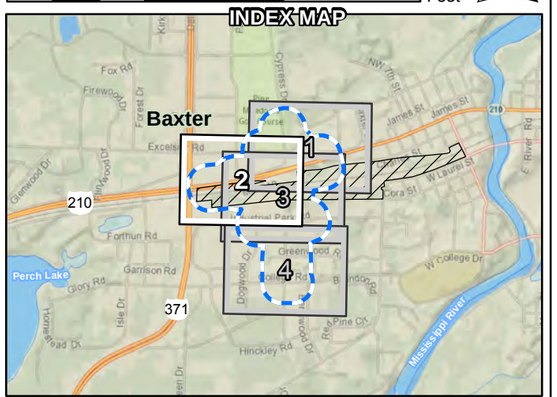
- Limits of Disturbance (Preliminary)
- County Parcels
- MDH CWI Located Wells
- Historic Structure

SEH ID	Site Name/Current Use	Rank	Ranking Rationale
03	Marsh, Paul Bunyan Trail	High	Former propane plant, ASTs, former railroad.
07	Railroad corridor and greenspace	High	Former BNSF Tie Plant Superfund, drying/outdoor storage area.
08	Vacant grass lot, parking lot	High	Former propane plant, RCRA GEN.
09	Excelsior Dental Care	Low	RCRA SQG.
10	Salon El Rio	Low	RCRA SQG.
11	Papa Murphy's	Medium	Removed AST, former auto center, RCRA SQG.
12	MnDOT storage building, cell tower	Medium	Monitoring well, RCRA SQG.
13	Fleet Farm car wash	Medium	Former fuel station, closed Leak, removed USTs.
14	Fleet Farm Indoor Shooting Range, Kohls store	Low	RCRA SQG.
15	Harley Davidson sales and repair	Medium	Closed Leaks, auto repair, removed USTs, RCRA SQG.
16	Railroad corridor and greenspace	High	Former BNSF Tie Plant Superfund, drying/outdoor storage area.
17	Intersection of TH 210 and TH 371	Medium	Closed Spill.
22	LCL Electronics Inc. offices	Low	RCRA SQG.
23	Schwanns	Medium	Closed Spill, unregistered tank.
24	Waste Management	Medium	Permit-by-rule solid waste facility, active ASTs, RCRA SQG.
25	Baxter Snowmobile Club and public hazardous materials disposal point	Medium	Public hazardous materials disposal point, active UST.
26	Cell tower	High	VIC, monitoring well, public hazardous materials disposal point.
28	Silent Power Inc. Energy Conservation Equipment	Low	Small stockpile.
30	Vitale Development	Medium	Suspect small engine repair.
31	Knife River Corporation	Medium	Removed/active ASTs, RCRA SQG, stockpiles.

Notes:
AST - Aboveground Storage Tank
UST - Underground Storage Tank
VIC - Voluntary Investigation and Cleanup Program
MDH - Minnesota Department of Health
CWI - County Well Index
RCRA SQG - Resource Conservation and Recovery Act Small Quantity Hazardous Waste Generator
Note: All parcels partially or wholly within the buffer area were assessed during the modified Phase I ESA.

0 125 250 500 750 Feet

INDEX MAP



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Project: Baxte 138944
Print Date: 11/17/2016

Map by: MSherrill
Projection: Crow Wing County Coords (ft)
Source:
SEH, MDH, Crow Wing County, ESRI Baselayers

Site Features

Modified Phase I Environmental Site Assessment
2018 Cypress Drive Improvements (SAP 230-113-04)
Baxter, Minnesota

Figure 2-2

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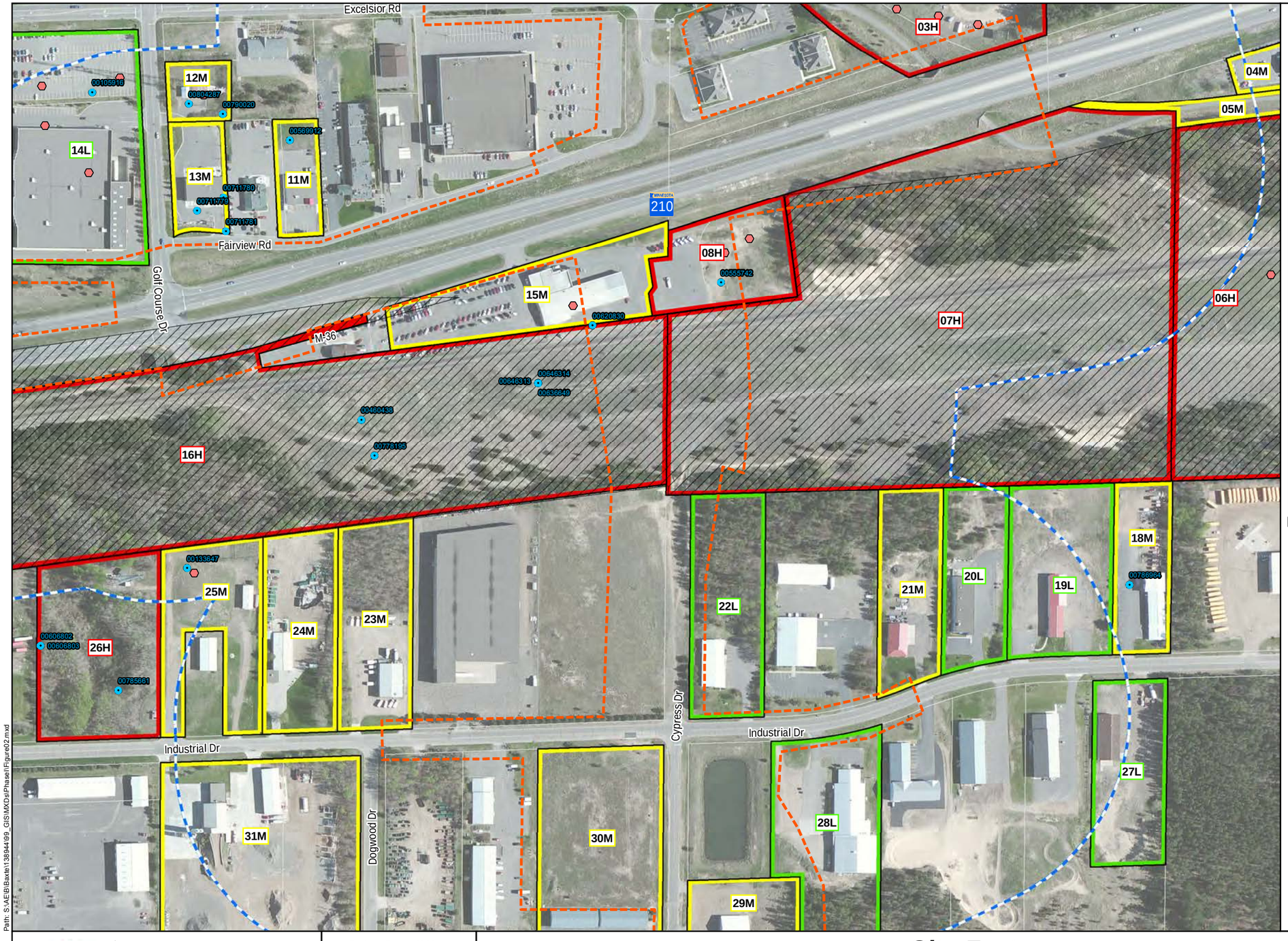

Legend

Phase I ESA Site ID and Risk Ranking (SEH, 2016)

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- MDH CWI Located Wells
- Historic Structure

SEH ID	Site Name/Current Use	Rank	Ranking Rationale
03	Marsh, Paul Bunyan Trail	High	Former propane plant, ASTs, former railroad.
04	Former Imgrund Motors	Medium	Former auto repair.
05	Paul Bunyan Trail	Medium	Former rail yard.
06	Railroad corridor and greenspace (former BNSF Tie Plant)	High	BNSF Tie Plant Superfund site, primary plant operations/land treatment area.
07	Railroad corridor and greenspace	High	Former BNSF Tie Plant Superfund, drying/outdoor storage area.
08	Vacant grass lot, parking lot	High	Former propane plant, RCRA GEN.
11	Papa Murphy's	Medium	Removed AST, former auto center, RCRA SQG.
12	MnDOT storage building, cell tower	Medium	Monitoring well, RCRA SQG.
13	Fleet Farm car wash	Medium	Former fuel station, closed Leak, removed USTs.
14	Fleet Farm Indoor Shooting Range, Kohls store	Low	RCRA SQG.
15	Harley Davidson sales and repair	Medium	Closed Leaks, auto repair, removed USTs, RCRA SQG.
16	Railroad corridor and greenspace	High	Former BNSF Tie Plant Superfund, drying/outdoor storage area.
18	Jim's Electric	Medium	Monitoring well, AST, RCRA SQG.
19	Unmarked Commercial building	Low	RCRA SQG.
20	Culligan	Low	Spill to air.
21	Randy's Plumbing and Heating	Medium	ASTs, suspect auto repair.
22	LCL Electronics Inc. offices	Low	RCRA SQG.
23	Schwanns	Medium	Closed Spill, unregistered tank.
24	Waste Management	Medium	Permit-by-rule solid waste facility, active ASTs, RCRA SQG.
25	Baxter Snowmobile Club and public hazardous materials disposal point	Medium	Public hazardous materials disposal point, active UST.
26	Cell tower	High	VIC, monitoring well, public hazardous materials disposal point.
27	Ultra Paws	Low	RCRA SQG, commercial printing.
28	Silent Power Inc. Energy Conservation Equipment	Low	Small stockpile.
29	Spray Foam Insulators	Medium	ASTs, spray foam insulators.
30	Vitale Development	Medium	Suspect small engine repair.
31	Knife River Corporation	Medium	Removed/active ASTs, RCRA SQG, stockpiles.

Notes:
AST - Aboveground Storage Tank
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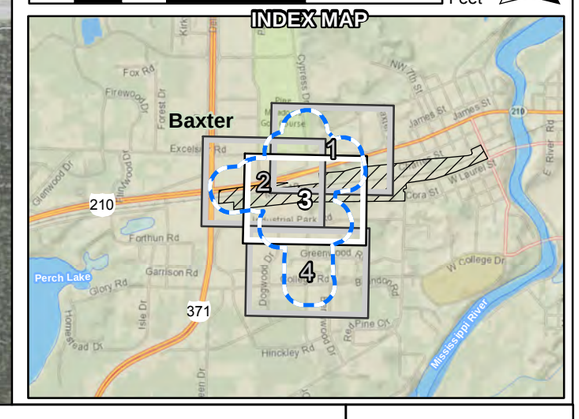
Note: All parcels partially or wholly within the buffer area were assessed during the modified Phase I ESA.

0 125 250 500 750 Feet

INDEX MAP



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Map by: MSherrill
Projection: Crow Wing County Coords (ft)
Source:
SEH, MDH, Crow Wing County, ESRI Baselayers

Site Features

Modified Phase I Environmental Site Assessment
2018 Cypress Drive Improvements (SAP 230-113-04)
Baxter, Minnesota

Figure 2-3

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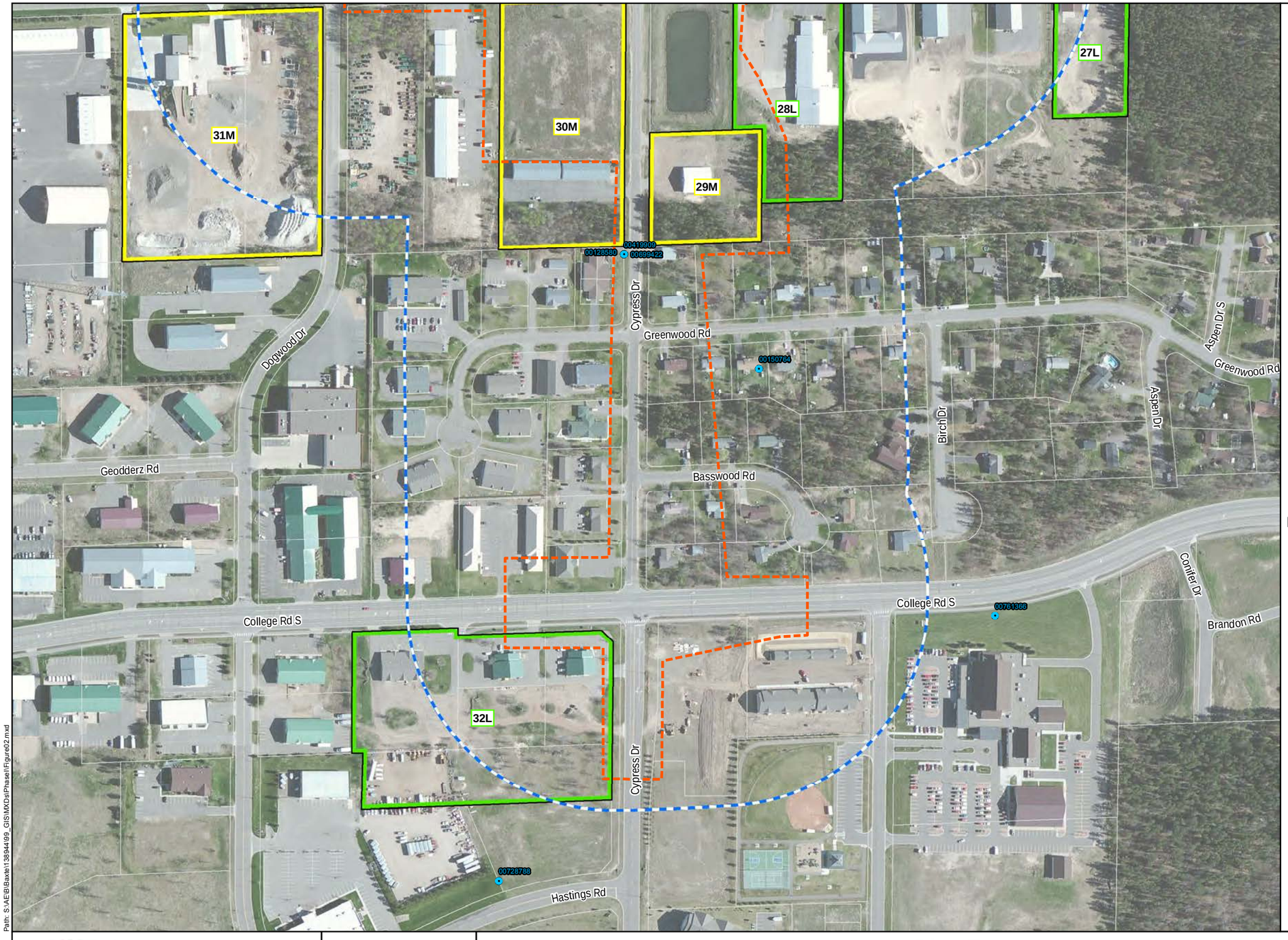

Legend

Phase I ESA Site ID and Risk Ranking (SEH, 2016)

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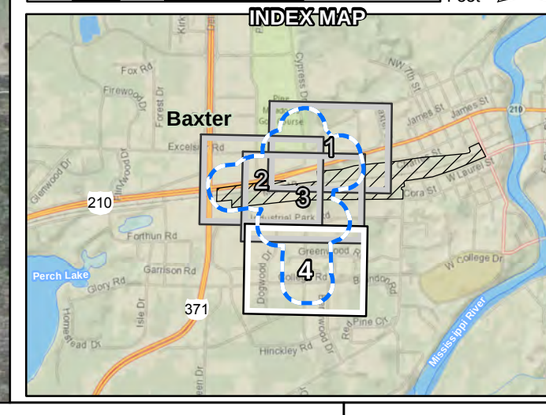
- BNSF Tie Plant Superfund Site (SR16)
- Limits of Disturbance (Preliminary)
- County Parcels
- MDH CWI Located Wells
- Historic Structure

SEH ID	Site Name/Current Use	Rank	Ranking Rationale
27	Ultra Paws	Low	RCRA SQG, commercial printing.
28	Silent Power Inc. Energy Conservation Equipment	Low	Small stockpile.
29	Spray Foam Insulators	Medium	ASTs, spray foam insulators.
30	Vitale Development	Medium	Suspect small engine repair.
31	Knife River Corporation	Medium	Removed/active ASTs, RCRA SQG, stockpiles.
32	Navillus Court/Center offices	Low	RCRA SQG.

Notes:
AST - Aboveground Storage Tank
UST - Underground Storage Tank
VIC - Voluntary Investigation and Cleanup Program
MDH - Minnesota Department of Health
CWI - County Well Index
RCRA SQG - Resource Conservation and Recovery Act Small Quantity Hazardous Waste Generator
Note: All parcels partially or wholly within the buffer area were assessed during the modified Phase I ESA.

0 125 250 500 750 Feet

INDEX MAP



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Project: Baxte 138944
Print Date: 11/17/2016

Map by: MSherrill
Projection: Crow Wing County Coords (ft)
Source:
SEH, MDH, Crow Wing County, ESRI Baselayers

Site Features

Modified Phase I Environmental Site Assessment
2018 Cypress Drive Improvements (SAP 230-113-04)
Baxter, Minnesota

Figure 2-4

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Appendix A

Site Specific Data Sheets

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Area Wide Considerations

The Burlington Northern Santa Fe (BNSF) Tie Treatment Facility Superfund Site (BNSF Superfund site) has been assigned identification number SR16 by the Minnesota Pollution Control Agency (MPCA). The site is approximately 45 acres in size and generally parallels Trunk Highway (TH) 210 on the south, bisecting the Cypress Drive project area in the City of Baxter, and extending into the west end of Brainerd. The site is depicted on **Figure 2**. Historic features and other detailed information on the BNSF Superfund site are included on site specific data sheets in this appendix. Supporting documentation for information obtained during file reviews is included in **Appendix H**.

The Northern Pacific Railroad and Burlington Northern Railroad, predecessors to BNSF, operated a railroad tie treatment plant at the site from approximately 1907 to 1986. The historical land use at the site has included railroad tie treating, loading and unloading of ties and timbers, and multiple rail tracks. Approximately half of the site (east of the Cypress Drive project area) was used in the railroad tie treating process and half for drying treated wood railroad ties (central portion of the Cypress Drive project area). The “Process Locale” consisted of several former treatment areas including the Process Area, Retort Building, Conveyance Trench, Drip Track, and Black Dock. These features are depicted on file review excerpts that follow this introduction. The plant operators used creosote diluted with diesel from on-site tanks as the wood preservative. The ties were pressure-treated in the Process Locale in the Retort Building. Treated ties dried on the Drip Track. At the time the plant was closed in 1986, approximately 110,000 to 120,000 gallons of creosote/fuel oil mixture were being consumed each month (EPA, 2012).

Wastewaters were discharged to a 60,000 square foot unlined surface impoundment for disposal, depicted as CERCLA Pond in the attached figures. In the 1930s, the CERCLA Pond was buried below clean fill and a second impoundment called the RCRA Pond was built. A Conveyance Trench discharged waste water into the RCRA Pond. The RCRA Pond/Lagoon was used until 1982. Soil and groundwater beneath the CERCLA Pond, the Process Locale and the RCRA Lagoon were impacted with multiple contaminants, including polynuclear aromatic hydrocarbons (PAHs), heterocycles, salts, oil and grease, benzene extractable hydrocarbons, and total phenols. The Environmental Protection Agency (EPA) listed the site on the National Priority List (NPL) of hazardous sites in 1982 (EPA, 2012).

Site cleanup work began in 1985 under an agreement between BNSF, the EPA and the MPCA. The agreement detailed specific actions concerning the two surface impoundments and three additional areas of contaminated soil. Activities included site monitoring, treatment and feasibilities studies, closure, post-closure plans, and implementing corrective actions. In 1986, an Enforcement Decision Document (EDD) required control of the source contamination, which included treatment of contaminated soils and sludges. Land treatment of contaminated soils and sludges was completed every year from 1986 to 1994. In 1995, the land treatment area was capped (EPA, 1995). Groundwater was treated using a pump-out system from 1985 to 1992, when a new air sparging system was installed. Groundwater continues to be treated on-site and residual contamination at the site is currently being evaluated (MPCA, 2016). According to the MPCA list of *Remediation Sites with Institutional Controls as of January 11, 2016,* a Restrictive Covenant is in place and will be updated upon completion of the Superfund 5 year review soils work.

As evidenced by the BNSF Superfund site (SR16), general railroad corridors include environmental concerns from property uses directly associated with railroad activities (such as fueling and maintenance) and surrounding industry. Facilities adjacent to railroad corridors have a risk of contamination from spills where loading/unloading of hazardous materials may have historically taken place. A railroad property can have contaminants such as heavy metals, petroleum products and PAHs associated with transport/storage/use of coal, diesel fuel, oil and grease, and other industrial products. Additionally, railroads are known to sometimes use chemicals associated with controlling encroaching vegetation along the railroad.

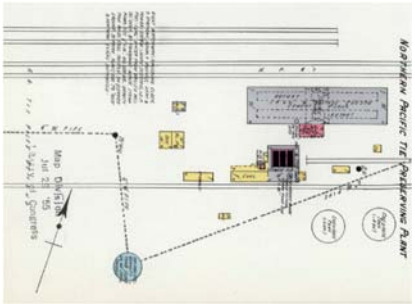

Table 4.3.6-1
Monitoring Well Network Construction Details
Burlington Northern Railroad Tie Treatment Facility Superfund Site
Brainerd and Baxter, Minnesota

Well Identification	Date Constructed	MN Unique Well Number	Measuring Point Elevation (MSL)	Ground Surface Elevation (MSL)	Survey Point X-Coordinate (Northing)	Survey Point Y-Coordinate (Easting)	Total Depth of Soil Boring (feet)	Constructed Depth (feet)	Screen Length (feet)	Top of Screen	Bottom of Screen	Riser Material	Screen Material
MW-1	7/20/1981	245411	1,203.24	1,202.20	171949.10	560009.45	161.5	41.0	10	31	41	Steel	Stainless Steel
MW-3A	7/29/1981	245413	1,195.47	1,196.60	171993.45	561551.80	77.3	66.2	10	56	66	Steel	Stainless Steel
MW-3B	7/31/1981	245414	1,195.59	1,197.00	171993.45	561551.80	49.0	49.0	10	39	49	Steel	Stainless Steel
MW-3C	7/28/1981	245415	1,195.41	1,196.70	171993.45	561551.80	34.5	29.5	10	19.5	29.5	Steel	Stainless Steel
MW-4B	7/13/1981	245417	1,199.86	1,197.90	171777.91	561929.73	36.5	34.2	10	26	36	Steel	Stainless Steel
MW-5	7/23/1981	245419	1,212.15	1,210.00	171204.73	561381.32	41.0	41.0	10	31	41	Steel	Stainless Steel
MW-13B	7/14/1983	245429	1,196.52	1,194.10	171650.48	561510.36	51.0	50.6	10	40.6	50.6	Steel	Carbon Steel
MW-13C	7/14/1983	245430	1,196.28	1,194.00	171650.48	561510.36	25.2	25.2	10	15.2	25.2	Steel	Carbon Steel
MW-14A	7/16/1983	245431	1,201.52	1,199.20	171333.37	562213.59	49.2	49.2	10	39.2	49.2	Steel	Carbon Steel
MW-14B	7/16/1983	NA	1,201.83	1,199.40	171333.37	562213.59	41.0	39.7	10	29.7	39.7	Steel	Carbon Steel
MW-14C	7/16/1983	NA	1,201.66	1,199.30	171333.37	562213.59	31.6	31.6	10	21.6	31.6	Steel	Carbon Steel
MW-15	8/29/1984	245434	1,201.65	1,199.05	171853.01	562262.51	62.0	57.4	30.4	27	57.4	Steel	Stainless Steel
MW-19	3/26/1987	429478	1,202.17	1,200.17	171849.26	561164.98	33.0	31.0	10	21	31	Steel	Stainless Steel
MW-20	3/26/1987	429479	1,202.21	1,200.21	171871.47	561351.14	37.0	35.0	10	25	35	Steel	Stainless Steel
MW-21	9/16/1992	NA	1,194.60	NA	171737.05	561461.52	34.0	34.0	15	19	34	PVC	PVC
MW-22	12/4/1995	568592	1,194.38	1,192.18	171835.67	561738.45	36.0	35.0	10	25	35	PVC	PVC
MW-23A	3/19/1997	583127	1,200.02	NA	171734.83	561824.34	65.0	65.0	15	50	65	Steel	Stainless Steel
MW-23C	3/19/1997	583128	1,199.69	NA	171734.83	561824.34	45.0	45.0	15	30	45	Steel	Stainless Steel
MW-24A	3/19/1997	583129	1,197.70	NA	171687.33	561625.30	65.0	65.0	15	50	65	Steel	Stainless Steel
MW-24C	3/19/1997	583130	1,197.98	NA	171687.33	561625.30	45.0	45.0	15	30	45	Steel	Stainless Steel
MW-25B	2/12/2003	688472	1,191.33	1,189.25	171978.51	561834.76	47.0	47.0	10	37	47	Steel	Stainless Steel
MW-25C	2/12/2003	688473	1,191.36	1,189.46	171978.51	561834.76	30.0	30.0	10	20	30	Steel	Stainless Steel
MW-26	5/13/2003	689390	1,199.23	1,197.30	171959.90	562176.00	46.0	43.0	10	33	43	Steel	Stainless Steel
MW-27	5/14/2003	689391	1,198.81	1,196.74	171938.65	562583.50	51.0	49.0	10	39	49	Steel	Stainless Steel
MW-28	5/13/2003	689394	1,188.78	1,186.72	172141.60	562035.86	35.0	33.0	10	23	24	PVC	PVC
MW-29A	10/16/2007	746258	1,203.03	1,201.73	171525.18	561229.19	60.0	60.0	10	50	60	Steel	Stainless Steel
MW-29B	10/18/2007	746259	1,203.07	1,201.78	171520.68	561234.76	48.0	48.0	10	38	48	Steel	Stainless Steel
MW-29C	10/18/2007	746260	1,203.25	1,201.81	171526.03	561234.95	36.0	36.0	10	26	36	Steel	Stainless Steel
MW-30A	10/26/2007	746263	1,188.52	1,187.30	172130.45	561837.09	54.0	53.0	10	43	53	Steel	Stainless Steel
MW-30B	10/26/2007	746264	1,188.86	1,187.48	172125.23	561836.18	41.0	41.0	10	31	41	Steel	Stainless Steel
MW-30C	10/26/2007	746265	1,188.68	1,187.32	172134.23	561832.38	29.0	29.0	10	19	29	Steel	Stainless Steel
MW-31A	10/26/2007	746266	1,201.63	1,200.60	172274.51	561844.00	74.0	74.0	10	64	74	Steel	Stainless Steel
MW-31B	6/21/2010	779989	1,202.27	1,200.68	172268.46	561840.06	55.00	55.00	10	45.25	55.25	Steel	Stainless Steel
MW-31C	6/21/2010	779988	1,201.95	1,200.77	172269.47	561846.12	35.00	35.00	10	25	35	Steel	Stainless Steel
MW-32B	1/8/2008	756600	1,195.85	1,193.81	171380.58	561390.87	40.0	40.0	10	30	40	Steel	Stainless Steel
MW-33B	1/10/2008	761330	1,196.29	1,194.45	171509.55	561418.24	43.0	43.0	10	33	43	Steel	Stainless Steel
MW-33C	1/10/2008	761331	1,196.87	1,194.91	171517.27	561420.62	31.0	31.0	10	21	31	Steel	Stainless Steel
MW-34B	1/9/2008	761328	1,200.86	1,198.46	171530.66	561628.19	47.0	47.0	10	37	47	Steel	Stainless Steel
MW-34C	1/9/2008	761329	1,200.63	1,198.44	171519.95	561631.56	35.0	35.0	10	25	35	Steel	Stainless Steel
MW-35B	7/24/2008	763280	1,205.36	1,204.12	171589.29	562058.76	51.0	51.0	10	41	51	Steel	Stainless Steel
MW-35C	7/24/2008	763281	1,205.18	1,203.94	171583.81	562062.01	38.0	38.0	10	28	38	Steel	Stainless Steel
MW-36B	9/29/2008	767951	1,199.11	1,197.52	172446.44	561876.71	60.0	50.0	10	40	50	Steel	Stainless Steel
MW-37B	6/29/2009	766150	1,205.93	1,204.27	171586.75	562414.23	54.0	54.0	10	44	54	Steel	Stainless Steel
MW-38B	9/24/2008	767952	1,205.78	1,203.82	171398.50	561914.09	55.0	55.0	10	45	55	Steel	Stainless Steel
MW-39AA	3/2/2014	804285	1,200.13	1,197.46	171671.02	561104.23	100.0	96.0	10	86	96	Steel	Stainless Steel
MW-39A	3/2/2014	804286	1,200.06	1,197.48	171676.48	561102.52	60.0	60.0	10	50	60	Steel	Stainless Steel
MW-39B	2/28/2014	804283	1,200.27	1,197.66	171677.20	561108.03	48.0	48.0	10	38	48	Steel	Stainless Steel
MW-39C	2/28/2014	804284	1,200.19	1,197.66	171672.22	561109.60	38.0	36.0	10	26	36	Steel	Stainless Steel
MW-40B	3/5/2015	804287	1,204.86	1,201.93	171600.49	560443.53	48.0	48.0	10	38	48	Steel	Stainless Steel
TMP-1	7/23/2003	693597	1,187.99	1,186.04	172062.78	562081.01	30.0	30.0	10	20	30	PVC	PVC
TMP-2	7/23/2003	693598	1,201.36	1,199.43	171801.22	562098.33	45.0	45.0	10	35	45	PVC	PVC
TMP-3A	7/6/2006	736128	1,200.06	1,197.99	172029.93	562499.78	65.0	65.0	10	55	65	Steel	Stainless Steel
TMP-3	7/22/2003	693599	1,200.92	1,198.69	172043.23	562497.41	50.0	49.0	10	39	49	PVC	PVC
TMP-3C	7/11/2006	736129	1,199.83	1,198.03	172032.27	562508.26	39.0	39.0	10	29	39	Steel	Stainless Steel
TMP-4	7/23/2003	693600	1,200.43	1,198.57	171887.64	562447.81	50.0	49.0	10	39	49	PVC	PVC
TMP-5A	10/23/2007	746261	1,201.62	1,200.58	172172.63	563038.54	65.0	65.0	10	55	65	Steel	Stainless Steel
TMP-5	11/11/2003	698988	1,201.04	1,199.70	172167.64	563040.79	55.0	53.0	10	43	53	Steel	PVC
TMP-5C	10/26/2007	746262	1,201.20	1,200.19	172166.66	563032.70	39.0	39.0	10	29	39	Steel	Stainless Steel
TMP-6	11/12/2003	698989	1,202.64	1,200.90	172313.61	562078.16	46.0	46.0	10	36	46	PVC	PVC
TMP-6A	10/11/2011	NA	1,203.00	1,201.23	172306.29	562078.45	76.0	69.0	5	64	69	Steel	Stainless Steel
TMP-7	11/12/2003	698990	1,203.86	1,202.00	172371.65	562530.53	50.0	50.0	10	40	50	PVC	PVC
TMP-8	11/13/2003	698991	1,205.00	1,203.00	172358.61	563029.66	56.0	56.0	10	46	56	Steel	PVC
TMP-9	11/13/2003	705500	1,206.23	1,204.60	172378.99	563382.12	60.0	57.0	10	47	57	Steel	PVC
TMP-10	11/14/2003	698992	1,210.81	1,209.00	171881.63	563122.22	61.0	60.0	10	50	60	Steel	PVC
TMP-11	5/19/2004	707739	1,190.02	1,187.80	172222.48	562728.55	35.0	35.0	10	25	35	PVC	PVC
TMP-11C	7/22/2007	736132	1,189.73	1,188.18	172219.91	562720.55	27.0	27.0	10	17	27	Steel	Stainless Steel
TMP-12	6/9/2005	NA	1,193.77	1,191.75	172110.07	561632.35	60.0	53.0	10	43	53	Steel	Stainless Steel
TMP-13	6/8/2005	NA	1,203.36	1,201.53	172239.52	561635.22	69.0	59.0	10	49	59	Steel	Stainless Steel
TMP-14B	7/8/2007	736130	1,197.79	1,196.04	172073.12	562745.72	49.0	49.0	10	39	49	Steel	Stainless Steel
TMP-14C	7/11/2007	736131	1,197.89	1,196.05	172072.01	562751.67	35.0	35.0	10	25	35	Steel	Stainless Steel
TMP-15	7/13/2007	736133	1,208.15	1,206.33	171871.25	562764.25	62.5	62.5	10	52.5	62.5	Steel	Stainless Steel

Notes
MSL - Mean Sea Level
NA - Not available
Note: All wells are 2-inches in diameter except MW-15, which is 4-inches in diameter.

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Table 2-1
Groundwater Chemicals of Potential Concern
Burlington Northern Tie Treatment Facility Superfund Site
Brainerd and Baxter, Minnesota

Compound	Matrix	Regulatory Action Limits (ug/l)	Source of Regulatory Action Limits	Analytical Reporting Limits (ug/L)
List 1 PAHs by Method EPA 8270 SIM				
Benzo(a)anthracene	Water	NA		0.04
Benzo(a)pyrene	Water	0.2	EPA MCL	0.04
Benzo(b)fluoranthene	Water	NA		0.04
Benzo(g,h,i)perylene	Water	NA		0.04
Chrysene	Water	NA		0.04
Dibenz(a,h)anthracene	Water	NA		0.04
Indeno(1,2,3-cd)pyrene	Water	NA		0.04
Total List 1 PAHs	Water	0.028	Consent Order	NA
BaP Equivalents	Water	0.05	MDH HBV	NA
List 2 PAHs by Method EPA 8270 SIM				
1-Methylnaphthalene	Water	NA		0.04
2-Methylnaphthalene	Water	8	MDH RAA	0.04
Acenaphthylene	Water	NA		0.04
Benzo(e)pyrene	Water	NA		0.04
Phenanthrene	Water	NA		0.04
Acenaphthene	Water	400	MDH HRL	0.04
Anthracene	Water	2000/0.035[1]	MDH HRL/SWQS	0.04
Fluoranthene	Water	300	MDH HRL	0.04
Fluorene	Water	300	MDH HRL	0.04
Naphthalene	Water	70	MDH HRL	0.16
Pyrene	Water	200	MDH HRL	0.04
Total List 2 PAHs	Water	0.2	Consent Order	NA
Non-Listed PAHs by Method EPA 8270 SIM				
Benzo(k)fluoranthene	Water	NA		0.04
2-Chloronaphthalene	Water	NA		0.04
Dibenzofuran	Water	NA		0.04
Volatile Organic Compounds by Method EPA 8260B				
Benzene	Water	5	EPA MCL	1
Ethylbenzene	Water	700	EPA MCL	1
Toluene	Water	1,000	EPA MCL	1
Xylenes (Total)	Water	10,000	EPA MCL	3
1,2,4-Trimethlybenzene	Water	100	MDH RAA	1
1,3,5-Trimethlybenzene	Water	100	MDH HRL	1
Total Petroleum Hydrocarbons by Method WI Modified DRO				
Diesel Range Organics	Water	NA		100

NOTES:

NA = No individual standard for this compound

1 = 0.035 ug/L is based on MPCA Class 2B-2C standard for Mississippi River surface water

MCL = Maximum Contaminant Level set by the U.S. EPA

HRL = Health Risk Limit set by MN Dept. of Health (MDH)

HBV = Health Based Value set by MN Dept. of Health

RAA = Regulatory Action dvisory set by MN Dept. of Health

SWQS = Surface Water Quality Standard set by MPCA

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Table 2-2
Groundwater Elevation Data - October 19, 2015
Burlington Northern Tie Treatment Facility Superfund Site
Brainerd and Baxter, Minnesota

		October 19, 2015	
Well Identification	Measuring Point Elevation (MSL) (feet)	Depth to Water (feet)	Water Level Elevation (MSL) (feet)
MW-1	1,203.24	23.35	1,179.89
MW-3A	1,195.47	18.29	1,177.18
MW-3B	1,195.59	18.57	1,177.02
MW-3C	1,195.41	18.22	1,177.19
MW-4B	1,199.86	24.30	1,175.56
MW-5	1,212.15	34.51	1,177.64
MW-13B	1,196.52	19.24	1,177.28
MW-13C	1,196.28	18.70	1,177.58
MW-14B	1,201.83	28.09	1,173.74
MW-14C	1,201.66	27.65	1,174.01
MW-15	1,201.65	26.94	1,174.71
MW-19	1,202.17	24.17	1,178.00
MW-20	1,202.21	24.50	1,177.71
MW-21	1,194.60	17.05	1,177.55
MW-22	1,194.38	17.56	1,176.82
MW-23A	1,200.02	Temp AI Well	Air Injection Well
MW-23C	1,199.69	23.00	1,176.69
MW-24A	1,197.70	20.75	1,176.95
MW-25B	1,191.33	15.78	1,175.55
MW-25C	1,191.36	15.81	1,175.55
MW-26	1,199.23	24.61	1,174.62
MW-27	1,198.81	26.21	1,172.60
MW-28	1,188.78	13.82	1,174.96
MW-29A	1,203.03	25.07	1,177.96
MW-29B	1,203.07	25.12	1,177.95
MW-29C	1,203.25	25.30	1,177.95
MW-30A	1,188.52	13.43	1,175.09
MW-30B	1,188.86	13.83	1,175.03
MW-30C	1,188.68	13.46	1,175.22
MW-31A	1,201.63	25.98	1,175.65
MW-31B	1,202.27	26.59	1,175.68
MW-31C	1,201.95	26.19	1,175.76
MW-32B	1,195.85	18.35	1,177.50
MW-33B	1,196.29	18.66	1,177.63
MW-33C	1,196.87	19.33	1,177.54
MW-34B	1,200.86	23.99	1,176.87
MW-34C	1,200.63	23.68	1,176.95
MW-35B	1,205.36	30.11	1,175.25
MW-36B	1,199.11	23.35	1,175.76
MW-37B	1,205.93	32.42	1,173.51
MW-38B	1,205.78	29.65	1,176.13
MW-39AA	1,200.13	21.50	1,178.63
MW-39A	1,200.06	21.55	1,178.51
MW-39B	1,200.27	21.72	1,178.55
MW-39C	1,200.19	21.66	1,178.53
MW-40B	1,204.86	24.85	1,180.01
TMP-1	1,187.99	13.24	1,174.75
TMP-2	1,201.36	Temp AI Well	Air Injection Well
TMP-3A	1,200.06	26.94	1,173.12
TMP-3	1,200.92	28.22	1,172.70
TMP-3C	1,199.83	27.29	1,172.54
TMP-4	1,200.43	27.40	1,173.03
TMP-5A	1,201.62	32.31	1,169.31
TMP-5	1,201.04	32.11	1,168.93
TMP-5C	1,201.20	30.40	1,170.80
TMP-6	1,202.64	28.27	1,174.37
TMP-6A	1,203.00	28.41	1,174.59
TMP-7	1,203.86	31.46	1,172.40
TMP-8	1,205.00	35.91	1,169.09
TMP-11	1,190.02	18.60	1,171.42
TMP-11C	1,189.73	18.38	1,171.35
TMP-12	1,193.77	17.91	1,175.86
TMP-13	1,203.36	27.36	1,176.00
TMP-14B	1,197.79	26.11	1,171.68
TMP-14C	1,197.89	26.79	1,171.10
TMP-15	1,208.15	36.22	1,171.93

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Table 2-3
Groundwater Sampling Summary - 2015
Burlington Northern Tie Treatment Facility Superfund Site
Brainerd and Baxter, Minnesota

Well ID	2015	Well Description / Location / Sampling Rationale
UPGRADIENT WELLS		
MW-1		Formerly used to monitor background concentrations; replaced by MW-40B in 2014
MW-40B	X	Located upgradient of Operational Area, serves to monitor background concentrations for the Site
SOURCE AREA WELLS		
MW-21		Located downgradient and within influence of Phase II Line; originally installed in 1990s as air sparge observation well
MW-29A	X	Monitors upgradient of Phase II Line along southern plume boundary; MW-29B has highest COI concentrations within nest
MW-29B	X	
MW-29C	X	
MW-39AA	X	Monitors downgradient of the Operational Area and upgradient of Phase II Line; MW-39C has highest COI concentrations in nest
MW-39A	X	
MW-39B	X	
MW-39C	X	
WELLS SURROUNDING FORMER RCRA UNIT (LTU)		
MW-3A		Monitors downgradient of LTU and upgradient of Phase II Line; MW-3B has highest COI concentrations in nest
MW-3B	X	
MW-3C		
MW-19	X	Located adjacent to LTU; long-term monitoring indicates stable concentrations; approved for water levels only in 2012
MW-20		
TMP-12	X	Monitors downgradient of LTU and upgradient of northern Phase II Line
TMP-13	X	
WELLS DOWNGRADIENT OF PHASE II LINE		
MW-4B	X	Monitors along southern property boundary downgradient of CERCLA Pond and Phase II Line
MW-13B	X	Monitors downgradient of Operational Area and Phase II Line near property boundary
MW-13C	X	
MW-15		Located along southern property boundary; long history of non-detects; redundant with MW-4B
MW-22		Located downgradient and within influence of Phase II Line; originally installed in 1990s as air sparge observation well
MW-23A		Temporary air injection point; currently inactive
MW-23C		Not sampled while MW-23A is used as a temporary air injection point
MW-24A	X	Located downgradient of Phase II Line downgradient of MW-13B/C
MW-25B	X	Monitors downgradient of Phase II Line and MW-3 nest; Monitor "B" zone only, consistent with MW-3B upgradient
MW-25C		
MW-26	X	Monitors downgradient of Phase II Line and upgradient of Phase I Line; prior history of detections
MW-27		Located adjacent to Phase I Line; redundant with upgradient wells
MW-28		Monitors downgradient of Phase II Line and upgradient of Phase I Line; redundant with upgradient MW-30 nest
MW-30A		Monitors air injection system performance downgradient of TMP-12; MW-30C has highest COI concentrations within nest
MW-30B		
MW-30C	X	
MW-31A	X	Monitors air injection system performance downgradient of TMP-13; MW-31B has highest COI concentrations in 2014
MW-31B	X	
MW-31C		
MW-33B	X	Monitors downgradient of Phase II Line; no history of detections; located near air injection points
MW-33C		
MW-34B		Monitors downgradient of Phase II Line; no history of detections; located near air injection points
MW-34C		
TMP-1	X	Monitors downgradient of Phase II Line and upgradient of Phase I Line; redundant with upgradient MW-25 nest
TMP-2		Temporary air injection point; inactive as monitoring well
TMP-3A		Monitors upgradient of Phase I Line along plume centerline; redundant with MW-26
TMP-3	X	
TMP-3C		
TMP-4		Monitors southern property boundary; no detections in recent years
TMP-6		Monitors downgradient of Phase II Line along northern property boundary; redundant with MW-31 nest
TMP-6A	X	
TMP-7		Monitors adjacent to Phase I Line; no history of detections except anthracene; redundant with upgradient wells
WELLS DOWNGRADIENT OF PHASE I LINE		
TMP-5A		Located downgradient of Phase I Line; no history of detections
TMP-5		
TMP-5C		
TMP-8		Located downgradient of Phase I Line; no history of detections
TMP-11		Monitors downgradient of Phase I Line; no recent history of detections; redundant with upgradient wells
TMP-11C		
TMP-14B		Monitors downgradient of Phase I Line; no recent history of detections; redundant with upgradient wells
TMP-14C		
TMP-15		Located off-site downgradient of TMP-4; no history of detections
WELLS DOWNGRADIENT OF OFF-SITE LINE		
MW-35B	X	Monitors downgradient of Off-Site Line on off-site property
MW-37B		Off-site well located downgradient of MW-35B; no history of detections; redundant with MW-35B
SIDE-GRADIENT WELLS		
MW-5		Located sidegradient (south) and outside of plume; used for water levels only
MW-14B		Located side gradient and downgradient of Off-Site Line; historically non-detect
MW-14C		
MW-32B	X	Monitors side gradient (south) of Phase II Line; historically non-detect
MW-36B	X	Monitors off-site conditions side gradient (north) of Phase II Line
MW-38B		Monitors side gradient (south) of Off-Site Line; historically non-detect

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Table 2-4
Groundwater Laboratory PAH, VOC, DRO Analytical Results - 2015
Burlington Northern Railroad Tie Treatment Facility Superfund Site
Brainerd and Baxter, Minnesota

Units = ug/L				Sample Location	MW-3B	MW-4B	MW-13B	MW-13D	MW-13C	MW-19	MW-24A	MW-25B	MW-25D	MW-26	MW-29A	MW-29D	MW-29B	MW-29C	MW-30C	MW-31A
				Sample Date	10/31/2015	10/27/2015	10/27/2015	10/27/2015	10/27/2015	10/31/2015	10/26/2015	10/26/2015	10/26/2015	10/27/2015	10/30/2015	10/30/2015	10/30/2015	10/30/2015	10/29/2015	10/29/2015
	Regulatory Criteria			Parent ID				FD of MW-13B					FD of MW-25B			FD of MW-29A				
Analyte	Consent Order	EPA MCL	MDH HRL/HBV	CAS Number																
List 1 Compounds:																				
Benzo(a)anthracene	--	--	--	56-55-3	< 0.043	< 0.041	< 0.044	< 0.042	< 0.045	< 0.043	< 0.042	< 0.045	< 0.04	< 0.042	< 0.043	< 0.043	< 2.1	< 0.044	< 0.044	< 0.041
Benzo(a)pyrene	--	**0.2**	**---/0.06**	50-32-8	< 0.043	< 0.041	< 0.044	< 0.042	< 0.045	< 0.043	< 0.042	< 0.045	< 0.04	< 0.042	< 0.043	< 0.043	< 2.1	< 0.044	< 0.044	< 0.041
Benzo(b)fluoranthene	--	--	--	205-99-2	< 0.043	0.02 J	< 0.044	< 0.042	0.025 J	< 0.043	< 0.042	< 0.045	< 0.04	< 0.042	< 0.043	0.0094 J	< 2.1	< 0.044	< 0.044	< 0.041
Benzo(g,h,i)perylene	--	--	--	191-24-2	< 0.043	< 0.041	< 0.044	< 0.042	< 0.045	< 0.043	< 0.042	< 0.045	< 0.04	< 0.042	< 0.043	< 0.043	< 2.1	< 0.044	< 0.044	< 0.041
Chrysene	--	--	--	218-01-9	< 0.043	< 0.041	< 0.044	< 0.042	0.013 J	< 0.043	< 0.042	< 0.045	< 0.04	< 0.042	< 0.043	0.013 J	< 2.1	< 0.044	< 0.044	< 0.041
Dibenz(a,h)anthracene	--	--	--	53-70-3	< 0.043	< 0.041	< 0.044	< 0.042	< 0.045	< 0.043	< 0.042	< 0.045	< 0.04	< 0.042	< 0.043	< 0.043	< 2.1	< 0.044	< 0.044	< 0.041
Indeno(1,2,3-cd)pyrene	--	--	--	193-39-5	< 0.043	< 0.041	< 0.044	< 0.042	< 0.045	< 0.043	< 0.042	< 0.045	< 0.04	< 0.042	< 0.043	< 0.043	< 2.1	< 0.044	< 0.044	< 0.041
Total List 1 Compounds:	**0.028**	--	--		ND	0.020	ND	ND	**0.038**	ND	ND	ND	ND	ND	ND	0.022	ND	ND	ND	ND
Benzo(a)pyrene Equivalents[a]	--	--	**---/0.05**		ND	0.002	ND	ND	0.0026	ND	ND	ND	ND	ND	ND	0.0015	ND	ND	ND	ND
List 2 Compounds:																				
1-Methylnaphthalene	--	--	--	90-12-0	21	< 0.041	2.8 J	1.5 J	< 0.045	2.9	0.096 J	0.0055 J	< 0.04	0.8	5.8	6.8	88.2	0.22	1.5	0.94
2-Methylnaphthalene	--	--	**---/8[c]**	91-57-6	0.27	0.0056 J	0.035 J	0.023 J	< 0.045	0.29	0.0055 J	0.0062 J	0.0058 J	0.0091 J	0.017 J	0.016 J	< 2.1	0.0066 J	< 0.044	0.006 J
Acenaphthylene	--	--	--	208-96-8	0.99	0.016 J	0.056	0.043 J	0.039 J	0.63	0.0049 J	0.0099 J	0.0078 J	0.058	0.3	0.34	9.9	0.12	0.14	0.013 J
Benzo(e)pyrene	--	--	--	192-97-2	< 0.043	< 0.041	< 0.044	< 0.042	< 0.045	< 0.043	< 0.042	< 0.045	< 0.04	< 0.042	< 0.043	0.0054 J	< 2.1	< 0.044	< 0.044	< 0.041
Phenanthrene	--	--	--	85-01-8	8.3	< 0.041	< 0.044	< 0.042	< 0.045	1.0	< 0.042	< 0.045	< 0.04	< 0.042	0.13	0.15	12.8	< 0.044	0.9	< 0.041
Acenaphthene	--	--	**400/100**	83-32-9	60.9	< 0.041	0.27	0.11 J	< 0.045	6.2	0.15 J	0.021 J	0.018 J	4.5	10.2	13.4	**110**	0.63	4.8	1.5
Anthracene	--	--	**2000/0.035[b]**	120-12-7	0.37	0.082	< 0.044	< 0.042	0.088	0.21	< 0.042	< 0.045	< 0.04	0.055 B	< 0.043	< 0.043	< 2.1	0.11	0.059	< 0.041
Fluoranthene	--	--	**300/70**	206-44-0	< 0.043	< 0.041	0.0082 J	< 0.042	0.018 J	< 0.043	< 0.042	< 0.045	< 0.04	< 0.042	< 0.043	< 0.043	< 2.1	< 0.044	< 0.044	< 0.041
Fluorene	--	--	**300/---**	86-73-7	24.4	< 0.041	0.011 J	< 0.042	< 0.045	0.49	0.015 J	< 0.045	< 0.04	0.05 B	2.2 J	2.7 J	9.5	0.0098 J	0.53	0.096
Naphthalene	--	--	**70/---**	91-20-3	**315**	< 0.041	**94.9**	62.5	< 0.045	**95.1**	1.3 J	< 0.045	< 0.04	0.053	0.19	0.21	**514**	0.68	0.051 B	0.39
Pyrene	--	--	**200/50**	129-00-0	< 0.043	< 0.041	0.007 J	< 0.042	0.016 J	< 0.043	< 0.042	< 0.045	< 0.04	< 0.042	< 0.043	< 0.043	< 2.1	< 0.044	< 0.044	< 0.041
Total List 2 Compounds:	**0.3**	--	**--**		**431**	0.10	**98**	**64**	0.16	**107**	**1.6**	0.043	0.032	**5.5**	**19**	**24**	**744**	**1.8**	**8.0**	**2.9**
Non-Listed PAHs:																				
Benzo(k)fluoranthene	--	--	**--**	207-08-9	< 0.043	< 0.041	< 0.044	< 0.042	< 0.045	< 0.043	< 0.042	< 0.045	< 0.04	< 0.042	< 0.043	0.0041 J	< 2.1	< 0.044	< 0.044	< 0.041
2-Chloronaphthalene	--	--	**--**	91-58-7	< 0.043	< 0.041	< 0.044	< 0.042	< 0.045	0.036 J	< 0.042	< 0.045	< 0.04	< 0.042	< 0.043	< 0.043	< 2.1	< 0.044	< 0.044	< 0.041
Dibenzofuran	--	--	**--**	132-64-9	40.8	< 0.041	0.0092 J	< 0.042	< 0.045	7.2	< 0.042	0.012 J	0.011 J	3.7	4.6 J	5.6 J	29.6	0.26	4.1	0.13
Volatile Organic Compounds:																				
Benzene	--	**5**	**2/---**	71-43-2	**3.6**	< 1	< 1 UJ	< 1	< 1	1 J	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Ethylbenzene	--	**700**	**50/---**	100-41-4	8.2	< 1	6 J	4.7	< 1	3.6	0.79 J	< 1	< 1	< 1	< 1	< 1	7.7	0.27 J	< 1	< 1
Toluene	--	**1000**	**200/---**	108-88-3	2.7 B	< 1	1.3 JB	< 1	< 1	4.3 B	< 1	< 1	< 1	< 1	< 1	< 1	2.2 B	< 1	< 1	< 1
Xylene (Total)	--	**10000**	**300/---**	1330-20-7	19	< 3	7.7 J	6.7	< 3	8.1	< 3	< 3	< 3	< 3	< 3	< 3	26.4	< 3	< 3	< 3
1,2,4-Trimethylbenzene	--	--	**---/100[c]**	95-63-6	5.9	< 1	1.2 J	1.1	< 1	1.6	< 1	< 1	< 1	< 1	< 1	< 1	4.7	< 1	< 1	< 1
1,3,5-Trimethylbenzene	--	--	**100/---**	108-67-8	1.4	< 1	< 1 UJ	< 1	< 1	0.51 J	< 1	< 1	< 1	< 1	< 1	< 1	0.79 J	< 1	< 1	< 1
Diesel Range Organics (DRO)																				
Diesel Range Organics	--	--	--		1300	68 J	150	150	66 J	860	<110	<110	<120	39 J	140	140	1400	85 J	200	59 J

Notes:
ug/l - micrograms per liter
[a] - benzo(a)pyrene equivalents calculated using the MPCA worksheet referenced at http://www.pca.state.mn.us/publications/c-r1-02.xls
[b] - denoted value is the MPCA surface water standard for anthracene
[c] - denoted value is MDH regulatory risk advisory (RAA) criterion, not an HBV
-- - No established value
Bold - analyte concentration exceeds the EPA MCL
Bold - analyte concentration exceeds the MDH HRL, HBV or Consent Order action limits
< - compound was not detected at the laboratory reporting limit shown
EPA MCL - EPA Maximum Contaminant Levels
MDH - Minnesota Department of Health
HRL - Health Risk Limit
HBV - Health Based Value
NA - A HRL or HBV for this compound has not been established by MDH
List 1 PAH Compounds: Included on A.1.1. List 1 of the BN Consent Order, 1985
List 2 PAH Compounds: Included on A.1.2. List 2 of the BN Consent Order, 1985
ND - all results included in the calculation were not detected

Data Qualifiers
J - Estimated concentration; either detected below the laboratory reporting limit or associated with a minor QC outlier.
B - detected above the laboratory reporting limit and associated with blank contamination <5x sample concentration
UJ - Undetected, reporting limit is estimated

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Table 2-4
Groundwater Laboratory PAH, VOC, DRO Analytical Results - 2015
Burlington Northern Railroad Tie Treatment Facility Superfund Site
Brainerd and Baxter, Minnesota

Units = ug/L	Regulatory Criteria			Sample Location	MW-31B	MW-32B	MW-33B	MW-35B	MW-36B	MW-39A	MW-39AA	MW-39B	MW-39C	MW-40B	TMP-1	TMP-3	TMP-6A	TMP-12	TMP-13
				Sample Date	10/27/2015	10/21/2015	10/22/2015	10/22/2015	10/21/2015	10/30/2015	11/1/2015	11/1/2015	11/1/2015	10/21/2015	10/26/2015	10/22/2015	10/22/2015	11/1/2015	11/1/2015
				Parent ID															
Analyte	**Consent Order**	**EPA MCL**	**MDH HRL/HBV**	**CAS Number**															
List 1 Compounds:																			
Benzo(a)anthracene	--	--	--	56-55-3	< 0.043	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	< 0.045	0.76	8.8	< 0.044	< 0.044	< 0.041	< 0.044	8.6	8.0
Benzo(a)pyrene	--	**0.2**	**---/0.06**	50-32-8	0.0037 J	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	< 0.045	**0.78**	**8.7**	< 0.044	< 0.044	< 0.041	< 0.044	**8.7**	**8.4**
Benzo(b)fluoranthene	--	--	--	205-99-2	< 0.043	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	< 0.045	0.75	8.3	< 0.044	< 0.044	< 0.041	0.015 J	8.8	7.8
Benzo(g,h,i)perylene	--	--	--	191-24-2	< 0.043	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	< 0.045	0.84	9.6	< 0.044	< 0.044	< 0.041	< 0.044	9.4	9.1
Chrysene	--	--	--	218-01-9	0.0095 J	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	< 0.045	0.84	9.6	< 0.044	< 0.044	< 0.041	< 0.044	9.7	8.9
Dibenz(a,h)anthracene	--	--	--	53-70-3	< 0.043	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	< 0.045	0.87	9.5	< 0.044	< 0.044	< 0.041	< 0.044	9.4	9.2
Indeno(1,2,3-cd)pyrene	--	--	--	193-39-5	< 0.043	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	< 0.045	0.82	9	< 0.044	< 0.044	< 0.041	< 0.044	9.2	8.4
Total List 1 Compounds:	**0.028**	--	--		0.013	ND	ND	ND	ND	ND	ND	**5.7**	**64**	ND	ND	ND	0.015	**64**	**60**
Benzo(a)pyrene Equivalents[a]	--	--	**---/0.05**		0.0038	ND	ND	ND	ND	ND	ND	**1.6**	**18**	ND	ND	ND	0.0015	**18**	**17**
List 2 Compounds:																			
1-Methylnaphthalene	--	--	--	90-12-0	0.33	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	21.6	1.6	304	0.01 J	2.8	0.11	0.0057 J	258	272
2-Methylnaphthalene	--	--	**---/8[c]**	91-57-6	0.0055 J	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	0.18	0.025 J	**156**	0.015 J	0.086	0.011 J	0.0083 J	**52.9**	**333**
Acenaphthylene	--	--	--	208-96-8	0.022 J	< 0.043	0.052	< 0.043	< 0.045	< 0.044	0.43	0.1 J	28.7	< 0.044	0.2	0.11	0.018 J	13.2	12.3
Benzo(e)pyrene	--	--	--	192-97-2	< 0.043	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	< 0.045	< 0.22	< 2.2	< 0.044	< 0.044	< 0.041	0.0056 J	< 2.1	< 2
Phenanthrene	--	--	--	85-01-8	0.069 B	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	0.36	0.87	96.5	< 0.044	0.087	< 0.041	< 0.044	91.2	76.1
Acenaphthene	--	--	**400/100**	83-32-9	0.96	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	6.1	0.73	**307**	0.0053 J	18.5	7.3	0.02 J	**370**	**356**
Anthracene	--	--	**2000/0.035[b]**	120-12-7	0.048	0.05	0.069	0.051	< 0.045	< 0.044	< 0.045	0.69	8.7	< 0.044	0.082	0.11	< 0.044	9.3	11.3
Fluoranthene	--	--	**300/70**	206-44-0	0.025 J	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	< 0.045	0.79	10.8	< 0.044	0.012 J	< 0.041	< 0.044	8.4	8.4
Fluorene	--	--	**300/---**	86-73-7	0.058	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	0.11	0.16 J	25.6	< 0.044	0.27	0.093	< 0.044	114	100
Naphthalene	--	--	**70/---**	91-20-3	< 0.043	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	**401**	21.7	**9850**	< 0.044	0.06	0.056	< 0.044	**8420**	**9680**
Pyrene	--	--	**200/50**	129-00-0	0.019 J	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	< 0.045	0.7	8.4	< 0.044	0.0098 J	0.048 B	< 0.044	7.6	7.3
Total List 2 Compounds:	**0.3**	--	**--**		**1.5**	0.050	0.12	0.051	ND	ND	**430**	**27**	**10796**	0.030	**22**	**7.8**	0.058	**9345**	**10856**
Non-Listed PAHs:																			
Benzo(k)fluoranthene	--	--	**--**	207-08-9	< 0.043	< 0.043	< 0.044	< 0.043	< 0.045	< 0.044	< 0.045	0.91	9.8	< 0.044	< 0.044	< 0.041	< 0.044	9.4	9.5
2-Chloronaphthalene	--	--	**--**	91-58-7	< 0.043	< 0.043	< 0.044	< 0.043	< 0.045	0.0039 J	0.04 J	< 0.22	< 2.2	< 0.044	< 0.044	< 0.041	< 0.044	< 2.1	< 2
Dibenzofuran	--	--	**--**	132-64-9	0.59	< 0.043	< 0.044	0.17	< 0.045	< 0.044	0.098	9.5	160	0.0069 J	7.8	2.8	< 0.044	171	159
Volatile Organic Compounds:																			
Benzene	--	**5**	**2/---**	71-43-2	< 1	< 1	< 1	< 1	< 1	< 1	**4.6**	**4.5**	**76.3**	< 1	< 1	< 1	< 1	**54.3**	**29.9**
Ethylbenzene	--	**700**	**50/---**	100-41-4	< 1	< 1	< 1	< 1	< 1	< 1	17	6.6	**89.8**	< 1	< 1	< 1	< 1	**57.1**	**53.9**
Toluene	--	**1000**	**200/---**	108-88-3	< 1	< 1	< 1	< 1	< 1	< 1 U	17.2	< 1 U	**224**	< 1	< 1 U	< 1	< 1	119	102
Xylene (Total)	--	**10000**	**300/---**	1330-20-7	< 3	< 3	< 3	< 3	< 3	< 3	28.3	9.8	**312**	< 3	< 3	< 3	< 3	192	170
1,2,4-Trimethylbenzene	--	--	**---/100[c]**	95-63-6	< 1	< 1	< 1	< 1	< 1	< 1	5	1.7	**110**	< 1	< 1 U	< 1	< 1	63.2	73.4
1,3,5-Trimethylbenzene	--	--	**100/---**	108-67-8	< 1	< 1	< 1	< 1	< 1	< 1	0.76 J	0.26 J	44.1	< 1	< 1	< 1	< 1	23.7	30.1
Diesel Range Organics (DRO)																			
Diesel Range Organics	--	--	--		95 J	<110	76 J	<110	<110	200	2100	570	25600	<110	110	120	<110	15100	19500

Notes:
ug/l - micrograms per liter
[a] - benzo(a)pyrene equivalents calculated using the MPCA worksheet referenced at http://www.pca.state.mn.us/publications/c-r1-02.xls
[b] - denoted value is the MPCA surface water standard for anthracene
[c] - denoted value is MDH regulatory risk advisory (RAA) criterion, not an HBV
-- - No established value
Bold - analyte concentration exceeds the EPA MCL
Bold - analyte concentration exceeds the MDH HRL, HBV or Consent Order action limits
< - compound was not detected at the laboratory reporting limit shown
EPA MCL - EPA Maximum Contaminant Levels
MDH - Minnesota Department of Health
HRL - Health Risk Limit
HBV - Health Based Value
NA - A HRL or HBV for this compound has not been established by MDH
List 1 PAH Compounds: Included on A.1.1. List 1 of the BN Consent Order, 1985
List 2 PAH Compounds: Included on A.1.2. List 2 of the BN Consent Order, 1985
ND - all results included in the calculation were not detected

Data Qualifiers
J - Estimated concentration; either detected below the laboratory reporting limit or associated with a minor QC outlier.
B - detected above the laboratory reporting limit and associated with blank contamination <5x sample concentration
UJ - Undetected, reporting limit is estimated

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Table 3-1
Leachate Cycle Counter Readings - 2015
Burlington Northern Former Tie Treatment Facility Superfund Site
Brainerd and Baxter, Minnesota

Date	Sump Counter	Volume (gallons)	Total Volume (gallons)
1/1/2015	113354	105	0
1/15/2015	113501	1,397	1,397
1/27/2015	113603	969	2,366
2/1/2015	113647	418	2,784
2/9/2015	113725	741	3,525
2/10/2015	113730	48	3,572
2/10/2015	113731	10	3,582
2/23/2015	113828	922	4,503
2/28/2015	113862	323	4,826
3/7/2015	113926	608	5,434
3/23/2015	114065	1,321	6,755
3/30/2015	114113	456	7,211
3/31/2015	114119	57	7,268
4/3/2015	114137	171	7,439
4/3/2015	114138	6	7,445
4/7/2015	114158	123	7,567
4/13/2015	114200	257	7,824
5/1/2015	114313	692	8,517
5/7/2015	114348	214	8,731
5/15/2015	114388	245	8,976
5/22/2015	114430	257	9,233
5/31/2015	114484	331	9,564
6/6/2015	114518	208	9,772
6/15/2015	114572	331	10,103
6/22/2015	114615	263	10,366
6/25/2015	114635	123	10,489
7/6/2015	114706	435	10,924
7/8/2015	114724	110	11,034
7/8/2015	114725	6	11,040
7/13/2015	114751	158	11,198
7/20/2015	114800	297	11,495
8/3/2015	114894	570	12,065
8/12/2015	114955	370	12,434
8/12/2015	114956	6	12,440
8/24/2015	115047	546	12,986
8/31/2015	115089	252	13,238
9/1/2015	115094	30	13,268
9/8/2015	115132	228	13,496
9/16/2015	115162	180	13,676
9/28/2015	115186	144	13,820
10/1/2015	115192	36	13,856
10/5/2015	115195	18	13,874
10/8/2015	115204	54	13,928
10/8/2015	115205	7	13,935
10/12/2015	115210	35	13,970
10/19/2015	115231	147	14,117
11/1/2015	115298	469	14,586
11/11/2015	115338	280	14,866
1/16/2015	115363	175	15,041
11/18/2015	115376	91	15,132
11/18/2015	115377	7	15,139
11/18/2015	115378	8	15,147
11/25/2015	115400	176	15,323
12/2/2015	115414	112	15,435
12/10/2015	115452	304	15,739
12/21/2015	115499	376	16,115
12/26/2015	115507	64	16,179
12/26/2015	115508	8	16,187
12/31/2015	115523	120	16,307

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Table 3-1
Leachate Cycle Counter Readings - 2015
Burlington Northern Former Tie Treatment Facility Superfund Site
Brainerd and Baxter, Minnesota

Date	Sump Counter	Volume (gallons)	Total Volume (gallons)
January	113354	2,470	2,470
February	113647	2,461	4,931
March	113926	2,442	7,372
April	114137	557	7,929
May	114313	1,740	9,668
June	114518	925	10,593
July	114706	1,006	11,599
August	114894	1,744	13,343
September	115094	582	13,925
October	115192	297	14,222
November	115298	1,206	15,428
December	115414	984	16,412

DRAFT

Table 3-2
Annual Leachate Volumes 2003 - 2015
Burlington Northern Railroad Tie Treatment Facility Superfund Site, Brainerd and Baxter, Minnesota

Year	Annual Leachate Removal from Sump (gallons)
2003	23,755
2004	27,274
2005	23,216
2006	25,806
2007	21,120
2008	24,608
2009	17,415
2010	20,706
2011	21,547
2012	13,329
2013	13,979
2014	33,209
2015	16,412

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Table 3-3
Leachate Laboratory Analytical Results - 2015
Burlington Northern Railroad Tie Treatment Facility Superfund Site
Brainerd and Baxter, Minnesota

Units = ug/L	Regulatory Criteria			Sample Location	Treated Leachate	Treated Leachate	Untreated Leachate	Treated Leachate	Treated Leachate
				Sample Date	3/31/2015	6/25/2015	9/28/2015	9/28/2015	12/21/2015
				Sample Name	Sump-T 3/31/15	Sump-T 6/25/15	Sump-R 9-28-15	Sump-T 9-28-15	Sump-T 12/21/15
Analytes	**Consent Order**	**EPA MCL**	**MDH HRL/HBV**	**CAS Number**					
List 1 Compounds:									
Benzo(a)anthracene	--	--	--	56-55-3	< 0.043	< 0.046	< 0.045	0.017 J	0.0061 J
Benzo(a)pyrene	--	**0.2**	**---/0.06**	50-32-8	< 0.043	< 0.046	0.013 J	< 0.043	< 0.043 UJ
Benzo(b)fluoranthene	--	--	--	205-99-2	< 0.043	< 0.046	0.025 J	< 0.043	< 0.043 UJ
Benzo(g,h,i)perylene	--	--	--	191-24-2	< 0.043	< 0.046	< 0.045	< 0.043	< 0.043 UJ
Chrysene	--	--	--	218-01-9	< 0.043	< 0.046	0.079	< 0.043	< 0.043 UJ
Dibenz(a,h)anthracene	--	--	--	53-70-3	< 0.043	< 0.046	< 0.045	< 0.043	< 0.043 UJ
Indeno(1,2,3-cd)pyrene	--	--	--	193-39-5	< 0.043	< 0.046	< 0.045	< 0.043	< 0.043 UJ
Total List 1 Compounds:	**0.028**	--	--		ND	ND	**0.117**	0.017	0.0061
List 2 Compounds:									
1-Methylnaphthalene	--	--	--	90-12-0	< 0.043	< 0.046	0.11	0.0055 J	< 0.043 UJ
2-Methylnaphthalene	--	--	**---/8[c]**	91-57-6	< 0.043	< 0.046	< 0.045	< 0.043	< 0.043 UJ
Acenaphthylene	--	--	--	208-96-8	< 0.043	< 0.046	0.43	< 0.043	< 0.043 UJ
Benzo(e)pyrene	--	--	--	192-97-2	< 0.043	< 0.046	0.011 J	< 0.043	< 0.043 UJ
Phenanthrene	--	--	--	85-01-8	< 0.043	< 0.046	< 0.045	< 0.043	< 0.043 UJ
Acenaphthene	--	--	**400/100**	83-32-9	< 0.043	< 0.046	7.9	0.011 J	0.0049 J
Anthracene	--	--	**2000/0.035[b]**	120-12-7	0.0066 J	< 0.046	3.1	< 0.043	< 0.043 UJ
Fluoranthene	--	--	**300/70**	206-44-0	< 0.043	< 0.046	0.98	0.0061 J	< 0.043 UJ
Fluorene	--	--	**300/---**	86-73-7	< 0.043	0.0068 J	2.5	< 0.043	< 0.043 UJ
Naphthalene	--	--	**70/---**	91-20-3	< 0.043	< 0.046	0.032 J	0.024 J	< 0.043 UJ
Pyrene	--	--	**200/50**	129-00-0	< 0.043	< 0.046	0.18	< 0.043	< 0.043 UJ
Total List 2 Compounds:	**0.3**	--	**--**		0.0066	0.0068	**15.2**	0.0466	0.0049
Non-Listed PAHs:									
Benzo(k)fluoranthene	--	--	--	207-08-9	0.0041 J	< 0.046	0.011 J	< 0.043	< 0.043 UJ
2-Chloronaphthalene	--	--	--	91-58-7	< 0.043	< 0.046	< 0.045	< 0.043	< 0.043 UJ
Dibenzofuran	--	--	--	132-64-9	0.0070 J	0.0064 J	1.3	< 0.043	< 0.043 UJ
Volatile Organic Compounds:									
Benzene	--	**5**	**2/---**	71-43-2	< 1.0	< 1.0	< 1.0	< 1.0	< 4
Ethylbenzene	--	**700**	**50/---**	100-41-4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	--	**1000**	**200/---**	108-88-3	< 1.0	< 1.0	< 1.0	< 1.0	< 4
Xylene (Total)	--	**10000**	**300/---**	1330-20-7	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,2,4-Trimethylbenzene	--	--	**---/100[c]**	95-63-6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	--	--	**100/---**	108-67-8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Notes:
< indicates compound was not detected and the laboratory reporting limit is shown
List 1 Compounds: Included on A.1.1. List 1 of the BN Consent Order, 1985
List 2 Compounds: Included on A.1.2. List 2 of the BN Consent Order, 1985
ND - all results included in the calculation were not detected
ug/l - micrograms per liter
J - Estimated concentration; value detected below laboratory reporting limit.
UJ - Estimated reporting limit
[a] - benzo(a)pyrene equivalents calculated using the MPCA worksheet referenced at http://www.pca.state.mn.us/publications/c-r1-02.xls
[b] - denoted value is the MPCA surface water standard for anthracene
[c] - denoted value is MDH regulatory risk advisory (RAA) criterion, not an HBV
-- - No established value
Bold - analyte concentration exceeds the EPA MCL
Bold - analyte concentration exceeds the MDH HRL, HBV or Consent Order action limits

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Matrix Description

Matrix Identification

Type of Matrix Processed Through the Treatment System: soil and sludge

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Contaminant Characterization

Primary Contaminant Group: Polynuclear Aromatic Hydrocarbons (PAHs), Other Semivolatiles - Nonhalogenated

The Enforcement Decision Document identified visibly contaminated soils as being heavily stained, dark brown to black in color, visibly oily, and usually having a pronounced creosote odor. Table 1 shows the average concentration for PAHs, benzene extractables, and total phenols in visibly contaminated soils in the CERCLA (pre-1930s) and RCRA (post-1930s) surface impoundments. In addition, concentrations ranging from 5 to 30 percent for benzene extractables and 3 to 15 percent for total PAHs were reported for the visibly contaminated soils. [3]

No analytical data were contained in the available references on the concentrations of specific constituents in visibly-contaminated soils in the three additional areas of contaminated soil.

Table 1. Average Concentrations for Visibly-Contaminated Soils in Surface Impoundments [3]

Constituent	CERCLA Surface Impoundment (mg/kg)	RCRA Surface Impoundment (mg/kg)
Naphthalene	3,105	6,494
Acenaphthylene	2,280	3,651
Acenaphthene	10,180	21,319
Total 2-Ring PAHs	15,565	31,464
Fluorene	1,505	2,497
Phenanthrene	3,305	7,902
Anthracene	1,085	1,440
Total 3-Ring PAHs	5,895	11,839
Fluoranthene	4,650	10,053
Pyrene	5,015	9,481
Benzo(a)anthracene	722	1,670
Chrysene	889	2,392
Benzo(b)fluoranthene	373	1,756
Benzo(k)fluoranthene	244	461
Benzo(a)pyrene	303	536
Benzo(ghi)perylene	137	671
Dibenz(a,h)anthracene	78	192
Indeno(1,2,3)pyrene	111	120
Total 4- and 5-Ring PAHs	12,522	27,330
Total PAHs	33,982	70,633
Benzene Extractables	66,100	112,500
Total Phenols	16	65

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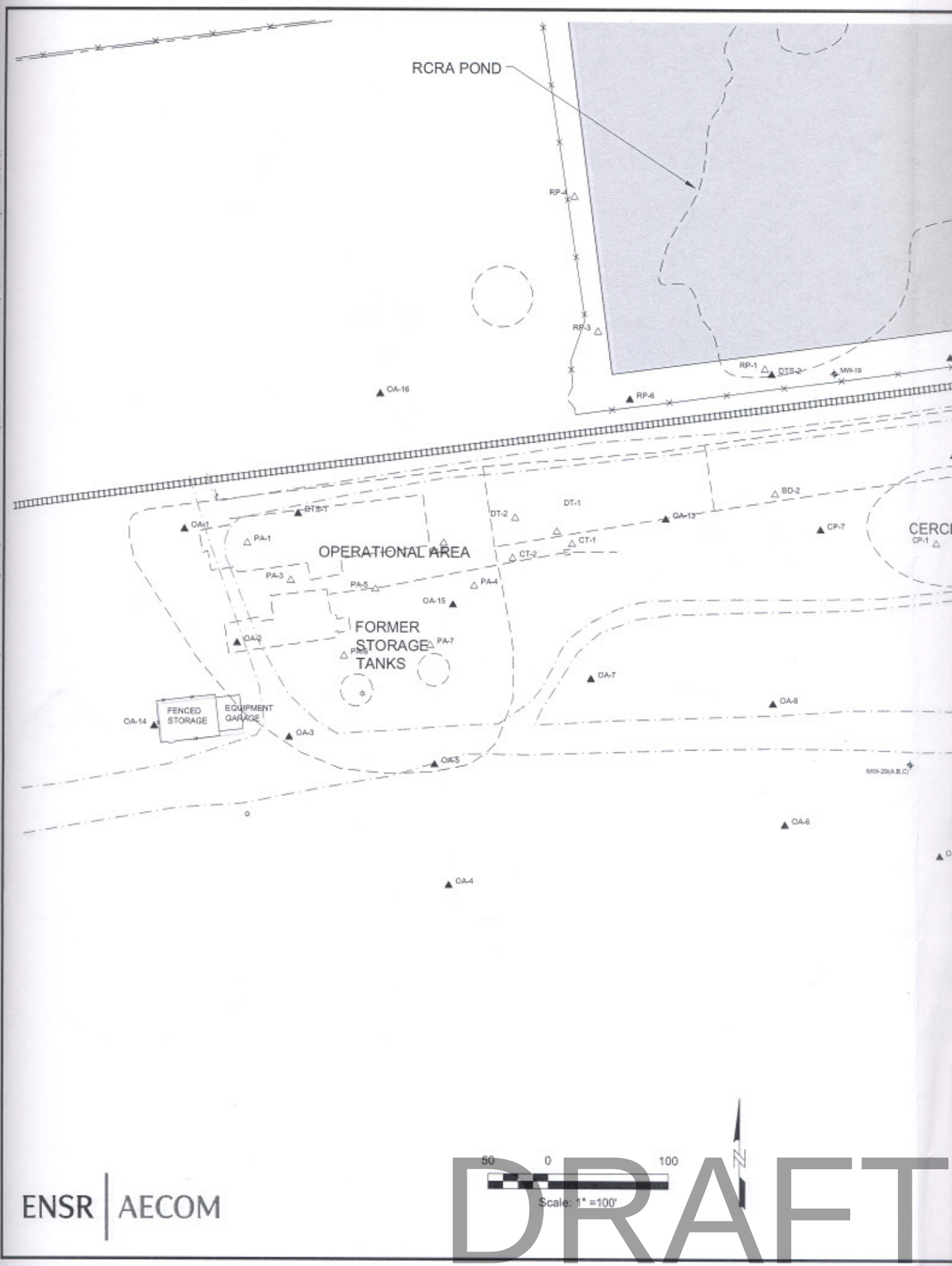

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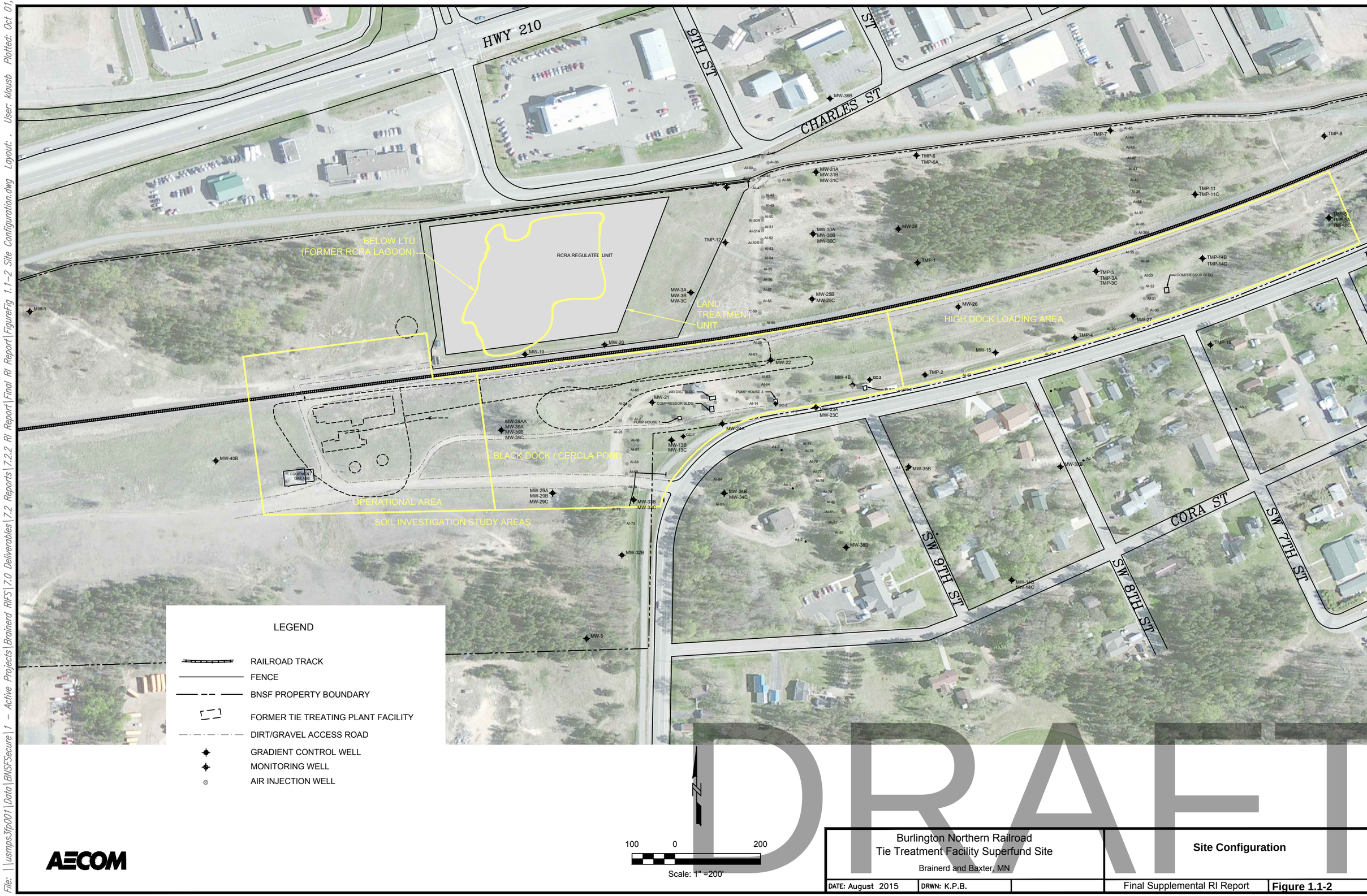

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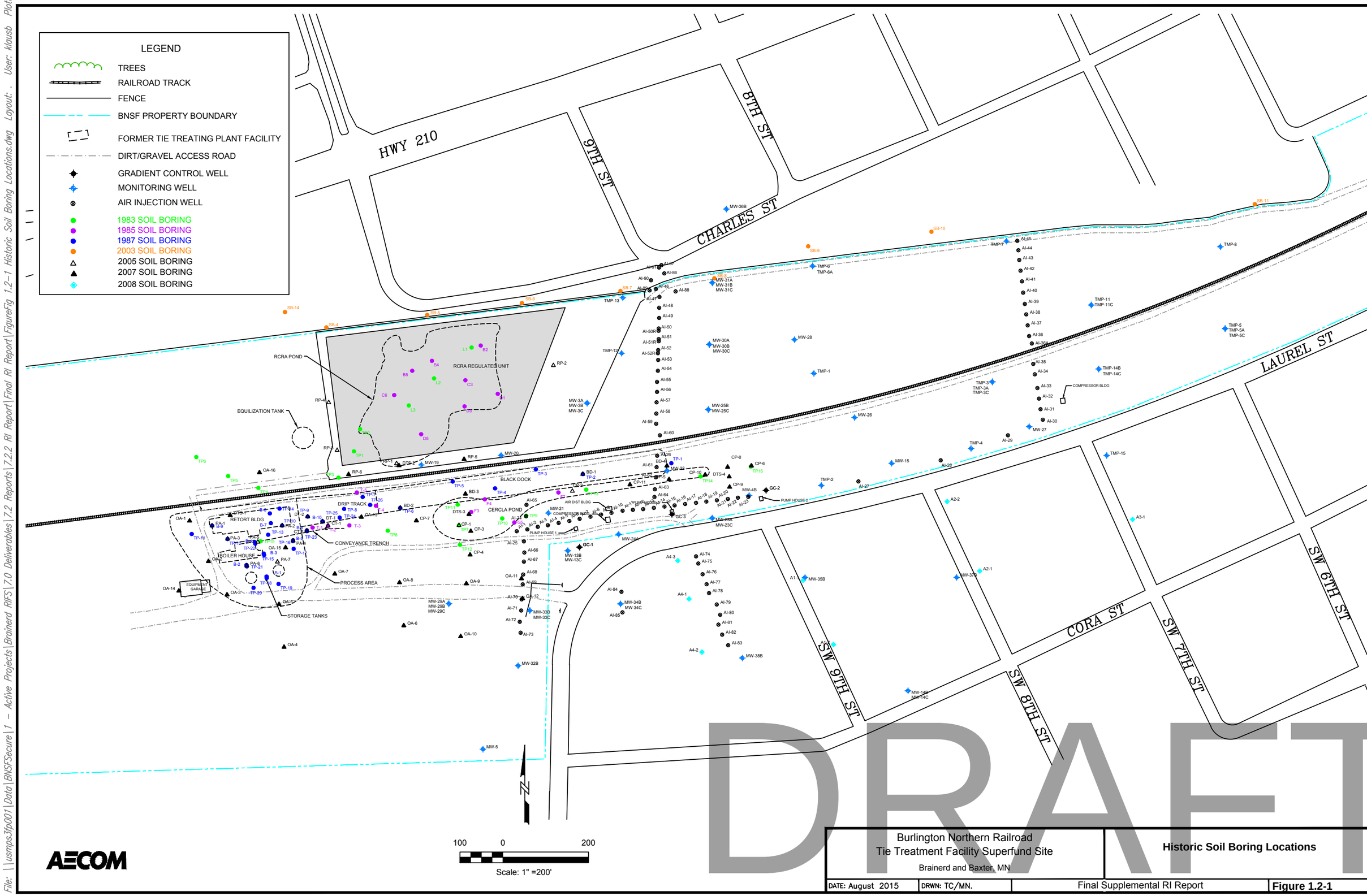
Burlington Northern Railroad
Tie Treatment Facility Superfund Site
Brainerd and Baxter, MN

Site Configuration

DATE: August 2015 | DRWN: K.P.B.

Final Supplemental RI Report | **Figure 1.1-2**

File: \\usmps3fp001\Data\BNSFSecure\1 - Active Projects\Brainerd RI/FS\7.0 Deliverables\7.2 Reports\7.2.2 RI Report\Final RI Report\FigureFig 1.1-2 Site Configuration.dwg Layout: . User: klausb Plotted: Oct 01, 201



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Burlington Northern Railroad
Tie Treatment Facility Superfund Site
Brainerd and Baxter, MN

Historic Soil Boring Locations

DATE: August 2015 | DRWN: TC/MN. | Final Supplemental RI Report | **Figure 1.2-1**

File: \\usmps3fp001\Data\BNSFSecure\1 - Active Projects\Brainerd RIFS\7.0 Deliverables\7.2 Reports\7.2.2 RI Report\Final RI Report\FigureFig 1.2-1 Historic Soil Boring Locations.dwg Layout: . User: klousb Plot:

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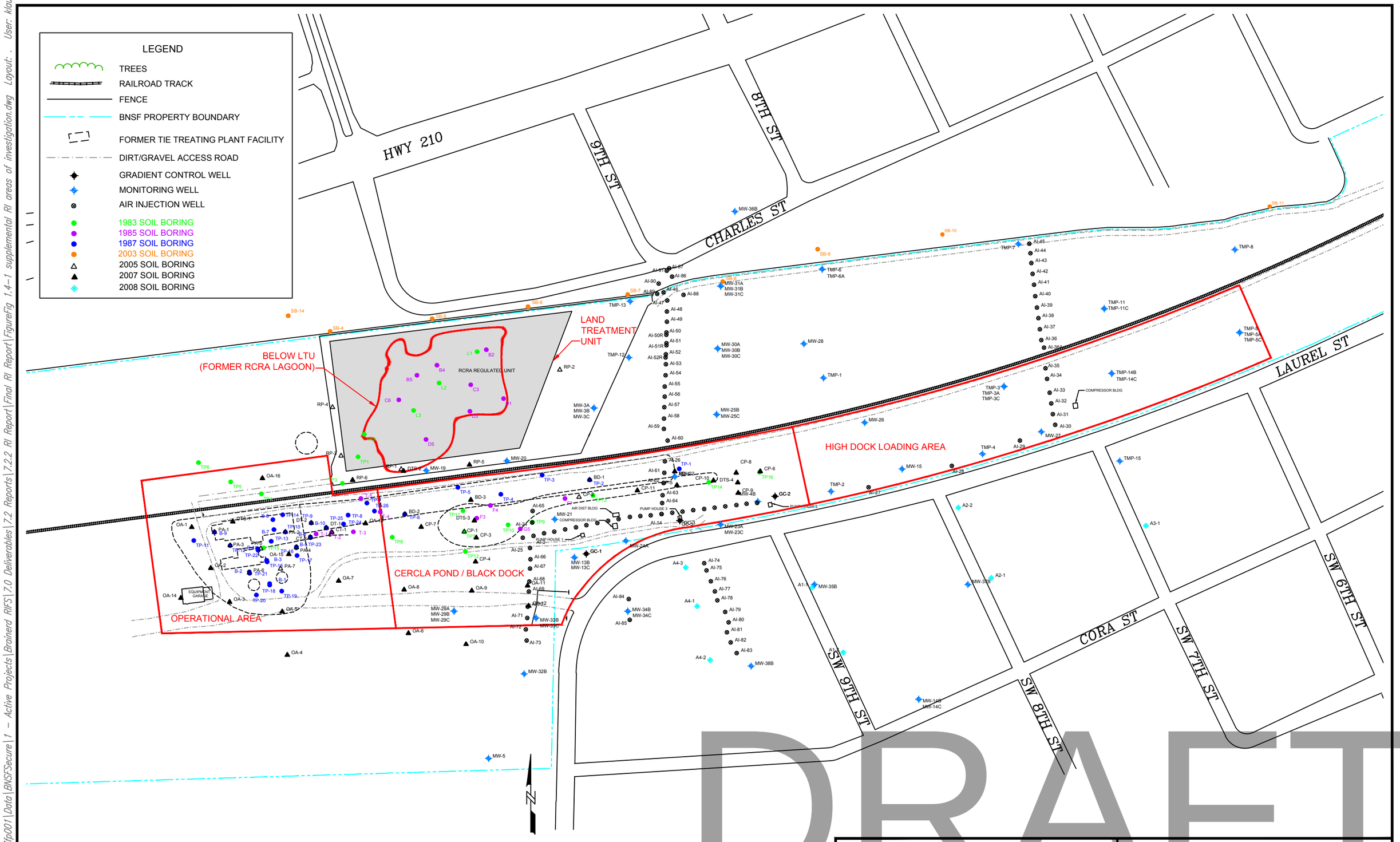
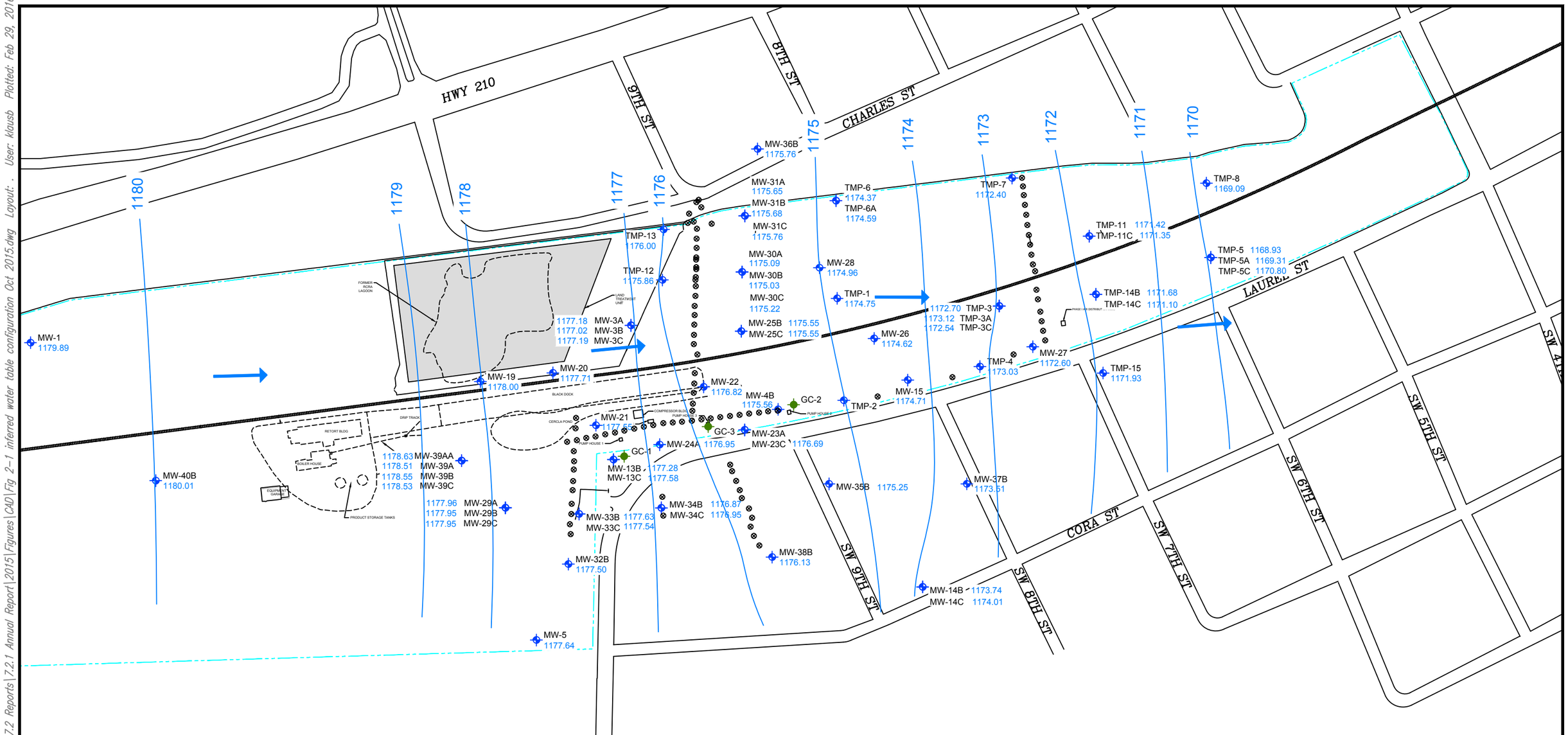


AECOM

Burlington Northern Railroad Tie Treatment Facility Superfund Site Brainerd and Baxter, MN		Supplemental RI Areas of Investigation	
DATE: August 2015	DRWN: TC/MN.	Final Supplemental RI Report	Figure 1.4-1



LEGEND

- RAILROAD TRACK
- FORMER TIE TREATING PLANT FACILITY
- FENCE
- BNSF PROPERTY BOUNDARY (APPROXIMATE)
- GRADIENT CONTROL RECOVERY WELL
- AIR INJECTION POINT
- MW-29C MONITORING WELL
- 1177.62 GROUNDWATER ELEVATION AT WELL (FT MSL)
- 1179 GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR (FT MSL)

N

125' 0 250'

Scale: 1" = 250'

NOTE:
Groundwater level measurements were collected from monitoring wells with the air injection system operating.

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Burlington Northern Railroad
Tie Treatment Facility Superfund Site
Brainerd and Baxter, MN

Inferred Water Table Configuration
October 2015

DATE: 2/26/2016 | DRWN: BJK/MN. | **FIGURE 2-1**

File: Z:\1 - Active Projects\Brainerd RI\FS\7.0 Deliverables\7.2 Reports\7.2.1 Annual Report\2015\Figures\CAD\Fig 2-1 inferred water table configuration Oct 2015.dwg Layout: . User: klousb Plotted: Feb 29, 2016 -

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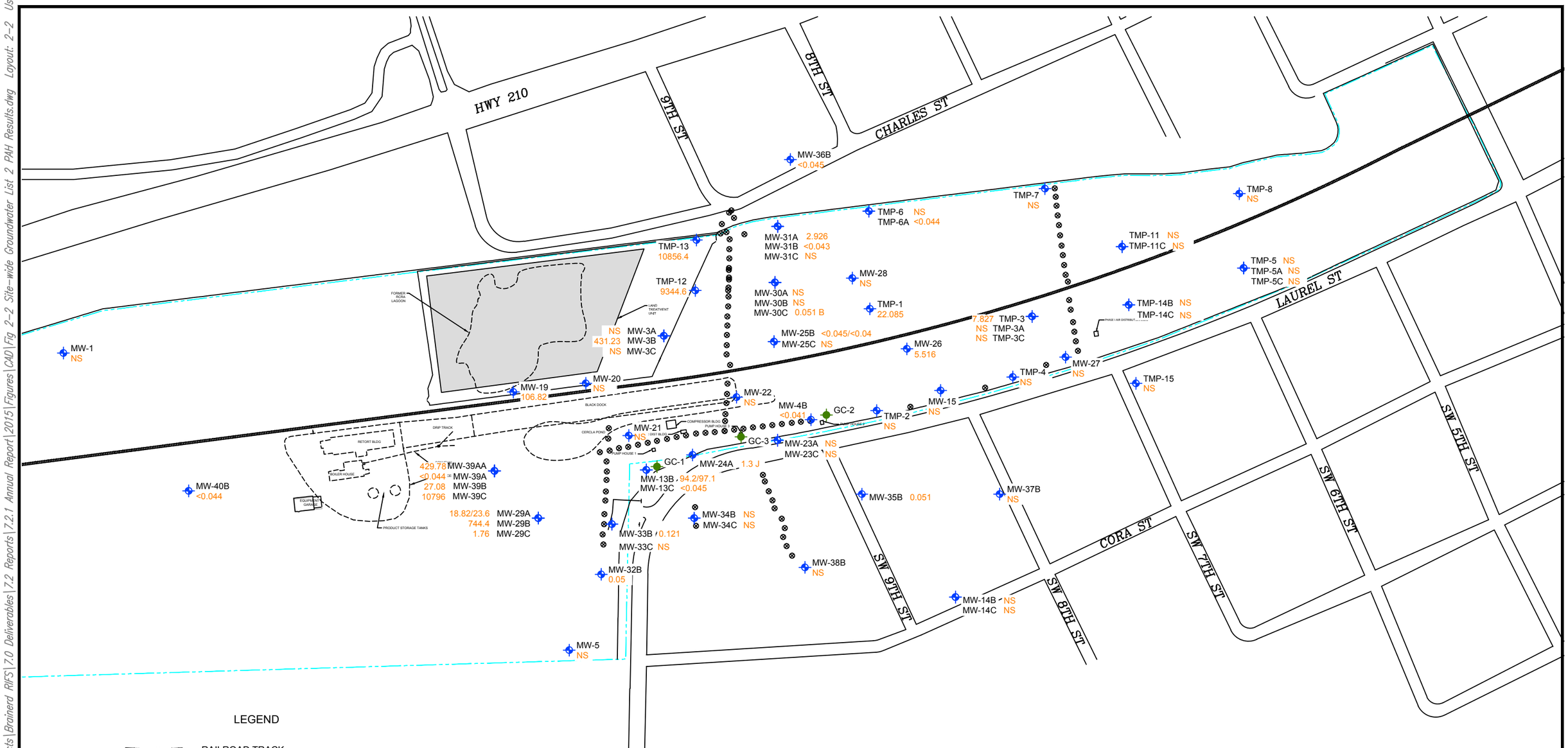

LEGEND

- RAILROAD TRACK
- FORMER TIE TREATING PLANT FACILITY
- FENCE
- BNSF PROPERTY BOUNDARY (APPROXIMATE)
- GRADIENT CONTROL RECOVERY WELL
- AIR INJECTION POINT
- MW-31A MONITORING WELL
- 0.042 TOTAL LIST 2 PAH CONCENTRATION (µg/l)
- 0.05 / 0.038 SECOND VALUE GIVEN IS DUPLICATE RESULT
- NS NOT SAMPLED
- < 0.044 LIST 2 PAHs WERE NOT DETECTED ABOVE LABORATORY LIMITS
- TOTAL LIST 2 PAHs CONSENT ORDER ACTION LIMIT = 300 µg/l

N

125' 0 250'

Scale: 1" = 250'

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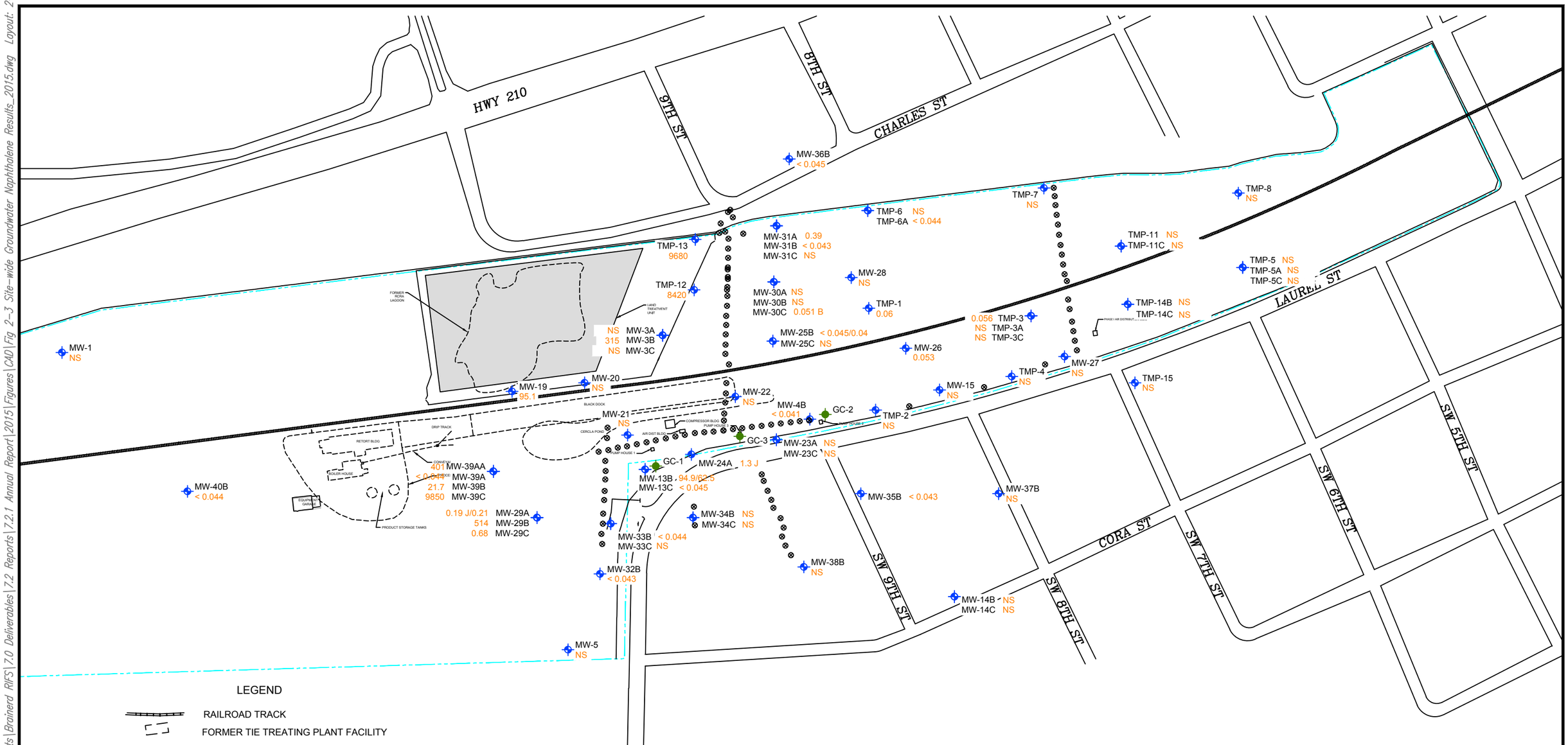
Burlington Northern Railroad
Tie Treatment Facility Superfund Site
Brainerd and Baxter, MN

Site-wide Groundwater
List 2 PAH Results - October/November 2015

DATE: 4/28/2016 | DRWN: BJK/MN

Figure 2-2



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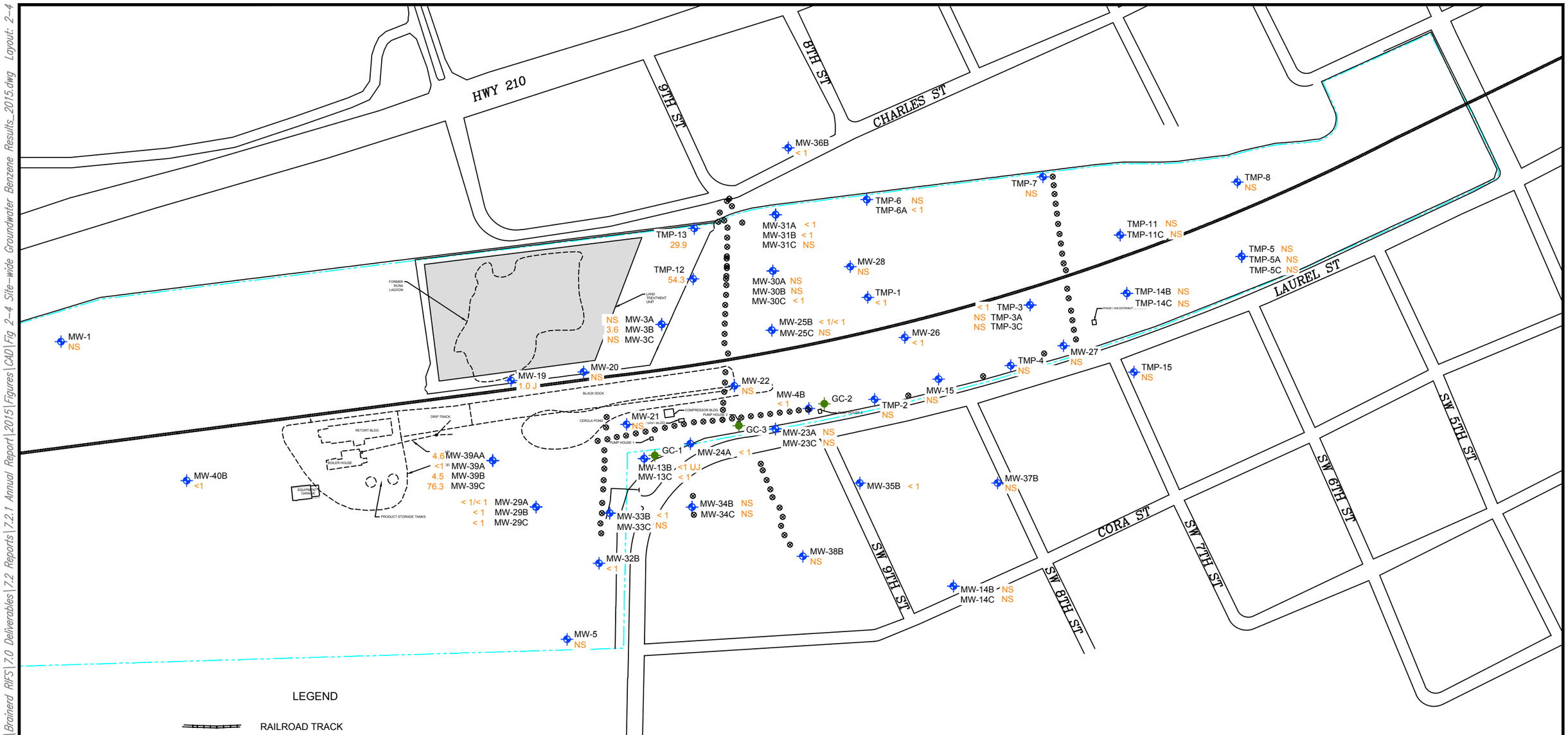

LEGEND

- RAILROAD TRACK
- FORMER TIE TREATING PLANT FACILITY
- FENCE
- BNSF PROPERTY BOUNDARY (APPROXIMATE)
- GRADIENT CONTROL RECOVERY WELL
- AIR INJECTION POINT
- MW-31A MONITORING WELL
- 44.6 BENZENE CONCENTRATION (µg/l)
- 8.4 / 9.6 SECOND VALUE GIVEN IS DUPLICATE RESULT
- NS NOT SAMPLED
- J QUALIFIED AS ESTIMATED CONCENTRATION
- BENZENE MAXIMUM CONTAMINANT LEVEL (MCL) = 5 µg/l

125' 0 250'

Scale: 1" = 250'

DRAFT

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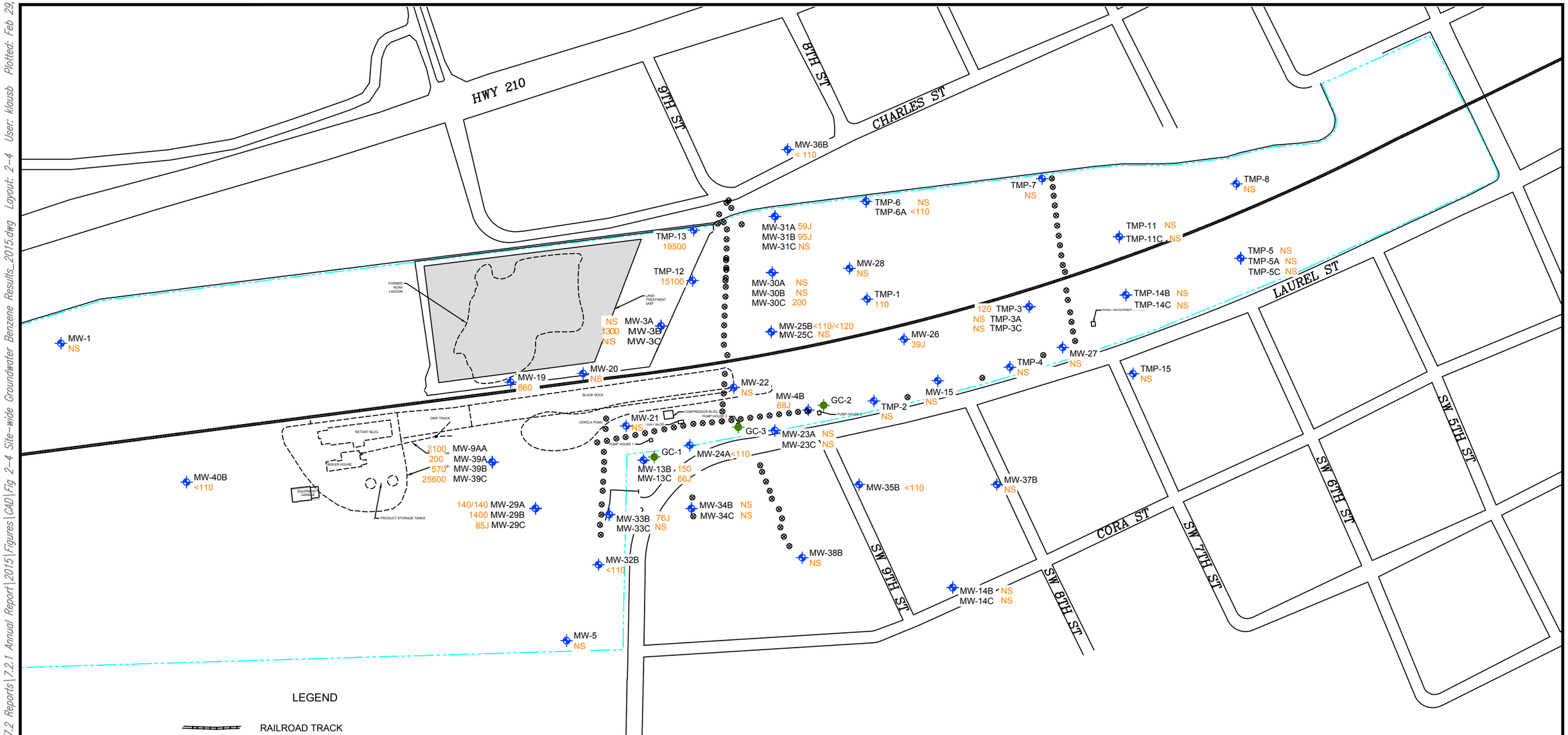
Burlington Northern Railroad
Tie Treatment Facility Superfund Site
Brainerd and Baxter, MN

Site-wide Groundwater Benzene Results October/November 2015

DATE: 4/28/2016 | DRWN: BJK/MN.

Figure 2-4

File: \\usmps3fp001\Data\BNSFSecure\1 - Active Projects\Brainerd RI/FS\7.0 Deliverables\7.2 Reports\7.2.1 Annual Report\2015\Figures\CAD\Fig 2-4 Site-wide Groundwater Benzene Results_2015.dwg Layout: 2-4 User



LEGEND

- RAILROAD TRACK
- FORMER TIE TREATING PLANT FACILITY
- FENCE
- BNSF PROPERTY BOUNDARY (APPROXIMATE)
- GRADIENT CONTROL RECOVERY WELL
- AIR INJECTION POINT
- MW-31A MONITORING WELL
- 44.6 DRO CONCENTRATION (µg/l)
- NS NOT SAMPLED
- J QUALIFIED AS ESTIMATED CONCENTRATION

N

125' 0 250'

Scale: 1" = 250'

DRAFT

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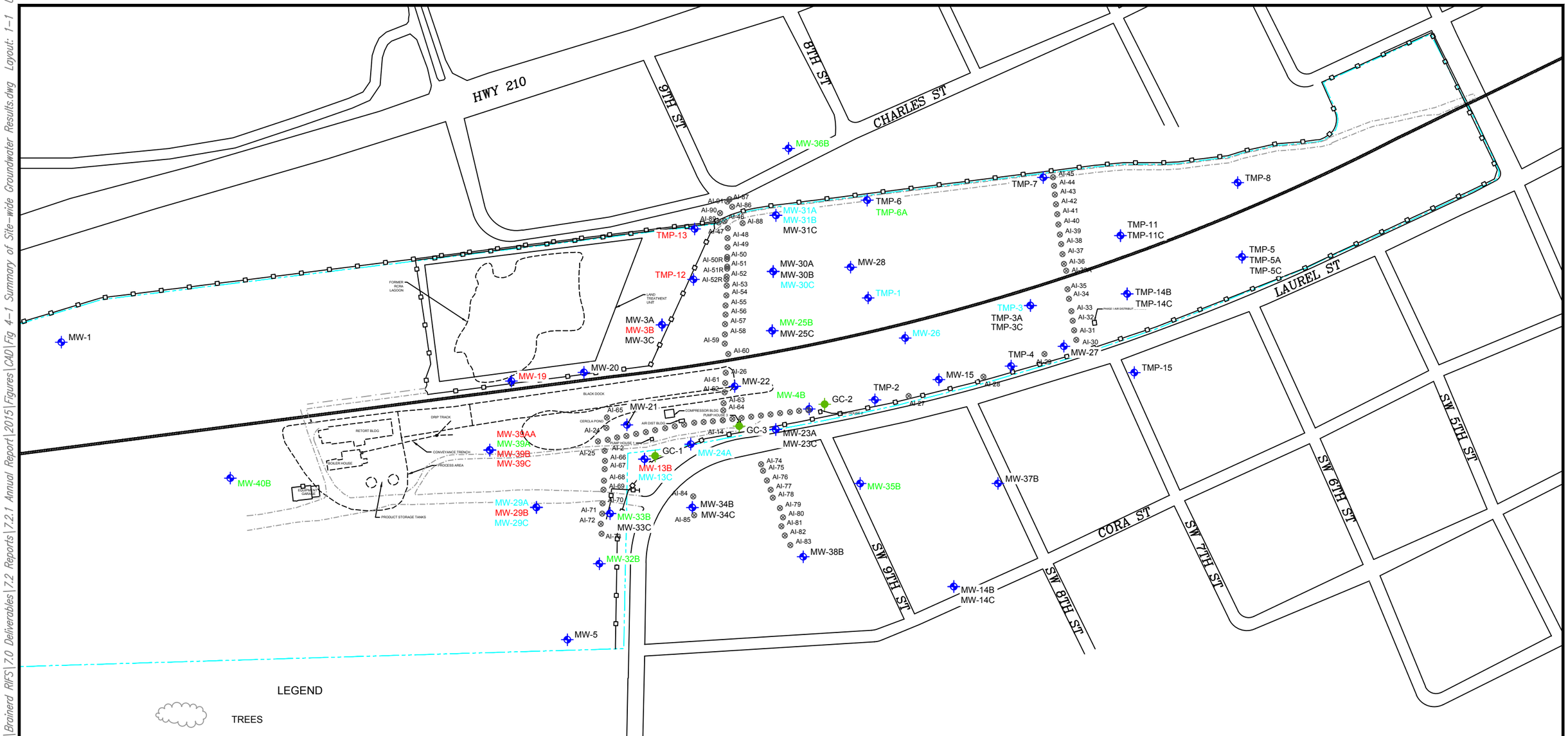
Burlington Northern Railroad
Tie Treatment Facility Superfund Site
Brainerd and Baxter, MN

Site-wide Groundwater
DRO Results October/November 2015

DATE: 2/26/2016 | DRWN: BJK/MN.

Figure 2-5

File: Z:\1 - Active Projects\Brainerd RIFS\7.0 Deliverables\7.2 Reports\7.2.1 Annual Report\2015\Figures\CAD\Fig 2-4 Site-wide Groundwater Benzene Results_2015.dwg Layout: 2-4 User: klausb Plotted: Feb 29, 201



LEGEND

- TREES
- RAILROAD TRACK
- FENCE
- BNSF PROPERTY BOUNDARY (APPROXIMATE)
- FORMER TIE TREATING PLANT FACILITY
- DIRT/GRAVEL ACCESS ROAD
- GRADIENT CONTROL RECOVERY WELL
- PHASE I AIR INJECTION POINT (AI-24 THROUGH AI-45)
- PHASE II AIR INJECTION POINT (AI-46 THROUGH AI-91)
- GRADIENT CONTROL SYSTEM AIR INJECTION POINT (UNLABELED)
- MONITORING WELL
- MW-1 GROUNDWATER RESULTS EXCEED MCL/HRL/HBV AND CONSENT ORDER CRITERIA
- MW-1 GROUNDWATER RESULTS ONLY EXCEED CONSENT ORDER CRITERIA
- MW-1 GROUNDWATER RESULTS BELOW MCL/HRL/HBV/CONSENT ORDER CRITERIA
- MW-1 MONITORING WELL NOT SAMPLED

AECOM

DRAFT

Burlington Northern Railroad
Tie Treatment Facility Superfund Site
Brainerd and Baxter, MN

Summary of Site-wide Groundwater Results
October/November 2015

DATE: 3/1/2016 | DRWN: BJK/MN

Figure 4-1

File: \\usmps3fp001\Data\BNSFSecure\1 - Active Projects\Brainerd RIFS\7.0 Deliverables\7.2 Reports\7.2.1 Annual Report\2015\Figures\CAD\Fig 4-1 Summary of Site-wide Groundwater Results.dwg Layout: 1-1 User:

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 01 RANK: Low

Current Site Use: **Westport Shopping Center**

Site Summary:

The site was wooded until it was developed in the 1960s with a small liquor store adjacent to TH 210. The liquor store was razed and the existing shopping center was constructed. No historic occupants of note were identified. The Dollar Tree store is a small quantity hazardous waste generator.

Ranking Rationale: RCRA SQG.

HISTORICAL REVIEW:

Date	History	Source
1939-1954	The site was undeveloped and partially wooded. Grading on-site was present in 1954, prior to site development.	Aerial photographs
1969-1978	The site was developed with a small commercial structure by 1969. It was occupied by a liquor store. Parking (likely recreational vehicles) from the adjacent sport supply store was present on the east end of the site in the 1970s.	Aerial photographs, MnDOT ROW maps
1984-2015	The site was redeveloped with Westport Shopping Center . No retailers of note were listed in the city directories.	Aerial photographs, topographic map, city directories

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010054400DZ0009	WESTPORT MALL LLC				Commercial Preferred

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS: None

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Hazardous Waste, Small to Minimal QG MNS000203604	The Dollar Tree store is small quantity hazardous waste generator with no listed violations.	Radius Report; GeoSearch (2016)

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End of Record for Site 01

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

1954

1969

1973

1978

1984

1992

2003

2006

2010

2013

2015

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 02 RANK: High

WM008

Current Site Use: **Brothers Motorsports Service**

Site Summary:

The majority of the site was marshy prior to development with the existing commercial structure around 1970. It is likely developed portions of the site that were previously marshy have a significant quantity of fill. The facility has been used for vehicle and recreational equipment sales and repair (ATVs, snow mobiles, etc.). The site was investigated for VOCs in soil in 1994. Low level PCE and xylene were detected. A closed Spill file from 2013 documents reported releases of antifreeze, engine fluids and gasoline with poor housekeeping and cleanup practices. Rain events were carrying fluids into a wetland that is close to the building where dead animals were reported.

Ranking Rationale: VIC, closed Spill, poor housekeeping/junk yard, auto repair.

HISTORICAL REVIEW:

Date	History	Source
1915-1918	The western portion of the site was marshy. No structures are depicted.	Topographic maps
1939-1969	A commercial structure was constructed on the southeast portion of the site. It was used as a restaurant and then a night club. By 1954, a drainage way was constructed through the western portion of the site. The southwest corner of the site was disturbed in 1969, when the adjacent property was being developed.	Aerial photographs, topographic maps, city directories, MnDOT ROW maps
1973-2015	Two commercial structures were added adjacent to Delmont Road by 1973. The night club was razed by 2003. The site was used as a repair shop for jet skis, ATVs, and other small recreational equipment. Significant outdoor storage was present adjacent to the building in 2015.	Aerial photographs, topographic maps

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☑ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

Small engine repair and petroleum/hazardous substance use assumed on-site. Snow mobiles, ATVs, etc. sales and service.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010054300FY0009	VANDEPUTTE PROPERTIES LLC				Commercial Preferred
010054300E00009	VANDEPUTTE PROPERTIES LLC	8168 FAIRVIEW RD	BAXTER, MN	56425	Commercial Preferred
010054300D00009	VANDEPUTTE PROPERTIES LLC	8194 FAIRVIEW RD	BAXTER, MN	56425	Commercial Preferred
010054300CY0009	VANDEPUTTE PROPERTIES, LLC	1360 HIGHWAY 210 W	BAXTER, MN	56425	Commercial Preferred
010054300CX0009	LARSON, GREGORY K & JOSEPHINE E		BAXTER	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS:

Site ID	Name	Activity
MNR000035055	Brothers Motorsports	Hazardous Waste, Small to Minimal QG
VP4470	Larson's Sports	Voluntary Investigation & Cleanup (VIC)

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity

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110006059718	BROTHERS MOTORSPORTS	Facility Registry System
VP4470	LARSONS SPORTS	Site Response Section Database
110064172185	BROTHERS MOTORSPORTS	Facility Registry System
MNS000203604	DOLLAR TREE 05584	Hazardous Waste Generator Sites
MNR000035055	BROTHERS MOTORSPORTS	RCRA - Generator Facilities

MPCA SPILL LISTINGS:

MPCA ID	Name	Quantity	Spilled Product	Spill Date	Closed Date
88148	Bros. Motor Sports	Small Amount	Antifreeze, Glycols, Deicers	09/10/2013	9/11/2013

Caller would like to file a complaint about violations that take place at the Bros Motor Sports; small engine and marine, located next to wetland. Caller stated that antifreeze gets spilled from machines that are being worked on and runs onto the concrete in the shop. RP uses squeegies to push it into the long slot that runs around the shop that goes to a drain. When they spill gasoline they throw rags down on it to absorb it and then the rags get thrown into a barrel. Outside the facility there is engine fluids on the ground from hoses getting pulled off of machines and runs out on the ground when carried by a forklift. When it rains this runs off and into a wetland that is close to the building. Dead animals have showed up in the wetland area. Caller suggests that someone tests the waters.

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Voluntary Investigation & Cleanup (VIC) VP4470	The site was first developed with a commercial structure in 1964. It was occupied by a wholesale marine outlet, a heavy equipment sales and service facility, a truck and trailer sales and service facility, and a sporting goods wholesale outlet. Prior to 1985, the site was connected to an on-site septic system. On-site soils were investigated in 1994. Low concentrations of VOCs were identified in soil. Groundwater was not encountered.	No Action Determination; MPCA (1994)
Voluntary Investigation & Cleanup (VIC) VP4470	Soil samples were analyzed for VOCs and results identified 0.0015 mg/kg PCE in SB-01 and 0.002 mg/kg xylene. No other VOCs were detected.	Phase II Environmental Site Assessment; Wideseth, Smith, Nolting (1994)
Hazardous Waste, Small to Minimal QG MNR000035055	The site is a motorcycle, ATV, and personal watercraft dealers. It is a small quantity hazardous waste generator of ignitable and toxic wastes, lead, benzene and trichloroethylene.	Radius Report; GeoSearch (2016)

End of Record for Site 02

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

1954

1969

1973

1978

1984

1992

2003

2006

2010

2013

2015

DRAFT

TABLE 1

SOIL BORING SUMMARY

Greg Larson Sports
Brainerd, Minnesota

Soil Boring ID	Boring Interval (ft.)	Headspace Results (ppm)	Petroleum Odor	Soil Classification	Soil Type
SB-1	5-6.5	0	No	SP	Alluvium
	10-11.5	0	No	SP	Alluvium
SB-2	5-6.5	4	No	SP	Alluvium
	10-11.5	0.1	No	SP	Alluvium

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TABLE 1

SOIL BORING SUMMARY

Greg Larson Sports
Brainerd, Minnesota

Soil Boring ID	Boring Interval (ft.)	Headspace Results (ppm)	Petroleum Odor	Soil Classification	Soil Type
HA-1	2-2.5	27.2	No	SP	Eolian
	4-4.5	9	No	SP	Eolian
	6-6.5	0	No	SP	Eolian
	6.5-7	0	No	SP	Eolian
	8-8.5	0	No	SP	Eolian
	10-10.5	0	No	SP	Eolian
HA-2	2-2.5	0	No	SP	Eolian
	4-4.5	0	No	SP	Eolian
	6-6.5	0	No	SP	Eolian
	8-8.5	0	No	SP	Eolian
	10-10.5	0	No	SP	Eolian

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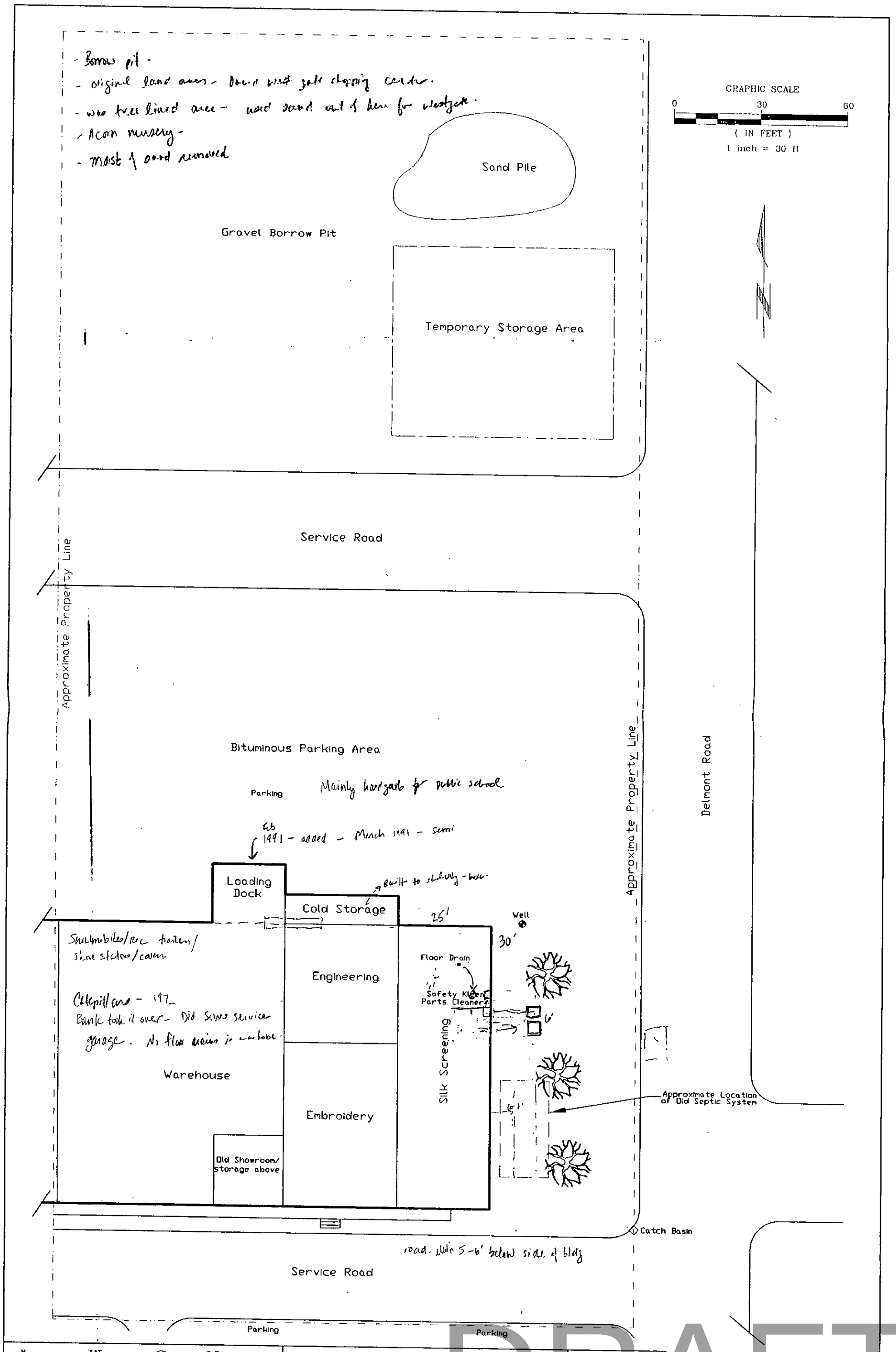
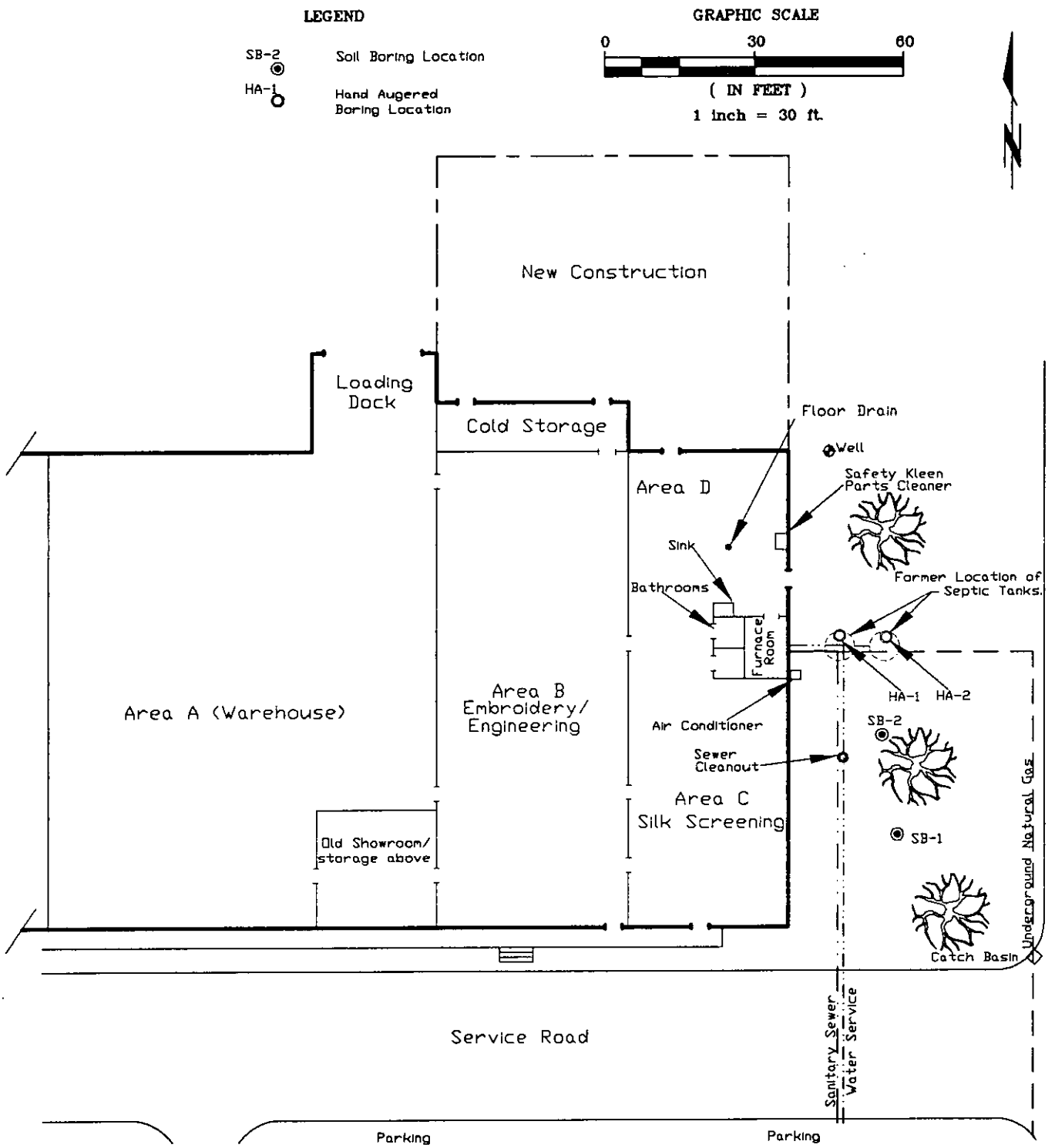

- Borrow pit -
- original land owner - Dave West gate stopping center.
- was tree lined area - used sand out of here for westgate.
- Acorn nursery -
- most of sand removed
Sand Pile
Gravel Borrow Pit
Temporary Storage Area
GRAPHIC SCALE
0
30
60
(IN FEET)
1 inch = 30 ft
Service Road
Approximate Property Line
Bituminous Parking Area
Parking
Mainly hardpack for public school
Feb 1991 - added - March 1991 - semi
Loading Dock
Cold Storage
built to slightly - here.
25'
30'
Well
Shutmobiles/Rec trailers/ Show stadiums/covers
Caterpillar - 197_
Bank took it over - Did some service garage. No floor drains in warehouse.
Warehouse
Engineering
Floor Drain
Safety Kleen Parts Cleaner
Silk Screening
6'
Embroidery
Approximate Location of Old Septic System
Old Showroom/ storage above
Approximate Property Line
Delmont Road
Catch Basin
road. Min 5-6' below side of bldg
Service Road
Parking
Parking
N
W
Engineering
S
WIDSETH SMITH NOLTING
ENGINEERS, ARCHITECTS, LAND SURVEYORS AND PROJECT MANAGERS
CROOKSTON 218-281-6522
BRAINERD 218-829-5117
ALEXANDRIA 612-762-8149
Site Map
Greg Larson Sports
Baxter, Minnesota
Figure 2
Nov. 1993
Note: Location of structures and utilities are approximate. Verify utilities before starting any subsurface work.
DRAFT



NOTE: Location of structures and utilities are approximate. Verify utilities before starting any subsurface work.

WIDSETH SMITH NOLTING Engineering ENGINEERS, ARCHITECTS, LAND SURVEYORS AND PROJECT MANAGERS CROOKSTON 218-281-6522 BRAINERD 218-829-5117 ALEXANDRIA 612-762-8149	HAND AUGER AND SOIL BORING LOCATION MAP GREG LARSON SPORTS BAXTER, MINNESOTA	FIGURE 2 MAR 1994

DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 03 RANK: High

Current Site Use: **Marsh, Paul Bunyan Trail**

Site Summary:

The Paul Bunyan Trail is generally aligned with a former railroad spur that was present as early as 1913. Adjacent to the railroad spur was a propane plant that occupied the southern portion of the site from approximately the 1950s through 2003. It is expected that loading/unloading of potentially hazardous/petroleum products has historically occurred at this site. In general, bulk loading/unloading of hazardous materials at railroad property is associated with a high frequency of spills and releases to the ground surface. The former plant included a pump house, two large ASTs, and several small structures. In 2003, an investigation targeted the proposed trail alignment in the vicinity of the former Ferrell Gas structures. Low-level PAHs and acetone were detected in soil. No parameters were detected in groundwater samples. Non-native fill was historically placed in a marshy area north of the former Ferrell Gas and in areas where the trail was built up.

Ranking Rationale: Former propane plant, ASTs, former railroad.

HISTORICAL REVIEW:

Date	History	Source
1915-1939	The railroad spur was present as early as 1915. Fairview road was present by 1930 and later improved.	Aerial photographs, topographic maps
1954-2003	A drainage way was constructed through the central portion of the site. North of the drainage way was a marsh. South of the drainage way, the site was being developed. It was occupied by Ferrell Gas and included a pump house, two large ASTs, small out buildings and a metal garage. By 1973, significant fill was placed in the marsh, north of Ferrell Gas. The northern end of the site remained marshy.	Aerial photographs, topographic map, city directories, MnDOT ROW maps
2006-2015	The structures were all razed by the time the TH 210 reconstruction project occurred around 2003. The railroad was removed and Paul Bunyan Trail was constructed generally along the former rail alignment. The former location of Farrell Gas was then used for vehicle parking.	Aerial photographs, topographic map, MnDOT ROW maps

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☑ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☑ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

Unique MW No. 778174. Areas of fill where trail has been built up.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010081200B00009	M & I RY CO		BAXTER	56425	Assessed Elsewhere
010050000A00009	STATE OF MINNESOTA DNR-REAL ESTATE				State Acquired Lands-From Taxable/PILT
010050000A00009	STATE OF MINNESOTA DNR-REAL ESTATE				State Acquired Lands-From Taxable/PILT
010050000A00009	STATE OF MINNESOTA DNR-REAL ESTATE				State Acquired Lands-From Taxable/PILT

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS: None

MPCA LISTED SPILLS: None

COUNTY WELL INDEX REGISTERED WELLS:

Unique Well No	Well Name	Depth (ft)	Aquifer	Listed Use	Date Drilled

DRAFT

778174	MW-34	19	Not Listed	Monitor well	2010

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Voluntary Investigation & Cleanup (VIC) VP19720	The site was investigated in 2003 before the Paul Bunyan Trail was constructed. Five borings targeted the proposed trail alignment in the vicinity of the former Ferrell Gas structures. Soil and groundwater samples were analyzed for PAHs, VOCs, and DRO. Soil was also analyzed for metals. Low-level PAHs and acetone were detected in soil. No parameters were detected in groundwater samples.	Soil and Groundwater Assessment Report; Retec (2003)

End of Record for Site 03

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

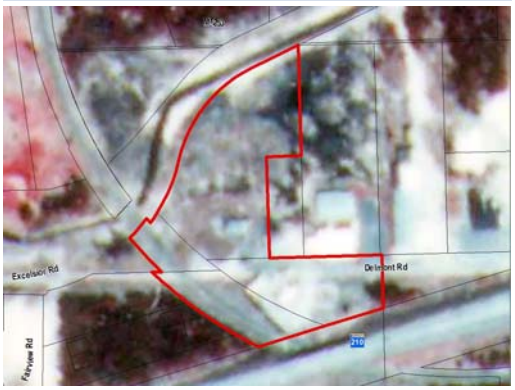
1954

1969

1973

1978

1984



1992

2003

2006

2010

2013

2015

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Table 1
Soil Analytical Results, North Track Assessment
Former BNSF Tie Treating Plant, Brainerd, Minnesota

RETEC

ANALYTE	UNITS	SB-1 (1')	DUP-2	SB-1 (4')	SB-1 (12')	SB-2 (1')	SB-2 (4')	SB-2 (12')	SB-3 (1')	SB-3 (4')	SB-3 (12')	SB-4 (1')	SB-4 (4')	DUP-1	SB-4 (12')
METALS (EPA 6010 and 7471)															
Arsenic	mg/kg	< 2.32	< 2.2	< 2.34		< 2.43	< 2.48		< 2.46	< 2.08		2.66	< 2.17	< 2.05	
Barium	mg/kg	20.5	20.3	8.25		27.5	15.4		37.4	13.8		23	12.5	13.7	
Cadmium	mg/kg	< 0.232	< 0.22	< 0.234		< 0.243	< 0.248		< 0.246	< 0.208		< 0.222	< 0.217	< 0.205	
Chromium	mg/kg	6.33	6.33	3.38		6.27	5.7		6.86	4.38		7.41	6.61	6.05	
Lead	mg/kg	2.3	2.27	< 1.41		2.34	1.85		14.6	1.39		22.9	2.97	1.85	
Selenium	mg/kg	< 3.48	< 3.31	< 3.51		< 3.64	< 3.72		< 3.69	< 3.12		< 3.34	< 3.25	< 3.08	
Silver	mg/kg	< 2.32	< 2.2	< 2.34		< 2.43	< 2.48		< 2.46	< 2.08		< 2.22	< 2.17	< 2.05	
Mercury	mg/kg	< 0.0223	< 0.0212	< 0.0225		< 0.0212	< 0.0211		< 0.0199	< 0.0178		< 0.0175	< 0.0175	< 0.0188	
VOLATILE ORGANIC COMPOUNDS (EPA 8260)															
1,1,1,2-Tetrachloroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1,1-Trichloroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1,2,2-Tetrachloroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1,2-Trichloroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1,2-Trichlorotrifluoroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1-Dichloroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1-Dichloroethene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1-Dichloropropene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2,3-Trichlorobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2,3-Trichloropropane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2,4-Trichlorobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2,4-Trimethylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2-Dibromo-3-chloropropane	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
1,2-Dibromoethane (EDB)	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2-Dichlorobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2-Dichloroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2-Dichloropropane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,3,5-Trimethylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,3-Dichlorobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,3-Dichloropropane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,4-Dichlorobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
2,2-Dichloropropane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
2-Butanone (MEK)	ug/kg	< 28	< 27	< 28	< 30	< 26	< 27	< 28	< 27	< 26	< 27	< 26	< 26	< 26	< 35
2-Chlorotoluene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
4-Chlorotoluene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
4-Methyl-2-pentanone (MIBK)	ug/kg	< 28	< 27	< 28	< 30	< 26	< 27	< 28	< 27	< 26	< 27	< 26	< 26	< 26	< 35
Acetone	ug/kg	54	34	< 28	30	33	< 27	< 28	85	< 26	< 27	< 26	< 26	< 26	< 35
Allyl chloride	ug/kg	< 56	< 55	< 56	< 60	< 53	< 55	< 55	< 55	< 52	< 53	< 51	< 51	< 52	< 69
Benzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Bromobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Bromochloromethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Bromodichloromethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Bromoform	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Bromomethane	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
Carbon tetrachloride	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Chlorobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Chloroethane	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
Chloroform	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Chloromethane	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
cis-1,2-Dichloroethene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
cis-1,3-Dichloropropene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Dibromochloromethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Dibromomethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Dichlorodifluoromethane	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
Diethyl ether (Ethyl ether)	ug/kg	< 56	< 55	< 56	< 60	< 53	< 55	< 55	< 55	< 52	< 53	< 51	< 51	< 52	< 69
Ethylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Hexachloro-1,3-butadiene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Isopropylbenzene (Cumene)	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
m&p-Xylene	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
Methylene chloride	ug/kg	< 5.6	5.6	5.8	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Methyl-tert-butyl ether	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Naphthalene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
n-Butylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
n-Propylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
o-Xylene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
p-Isopropyltoluene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
sec-Butylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Styrene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
tert-Butylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Tetrachloroethene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Tetrahydrofuran	ug/kg	< 56	< 55	< 56	< 60	< 53	< 55	< 55	< 55	< 52	< 53	< 51	< 51	< 52	< 69
Toluene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
trans-1,2-Dichloroethene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
trans-1,3-Dichloropropene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Trichloroethene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Trichlorofluoromethane	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
Vinyl chloride	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
Xylene (Total)	ug/kg	< 17	< 16	< 17	< 18	< 16	< 16	< 17	< 16	< 16	< 16	< 15	< 15	< 16	< 21
POLYNUCLEAR AROMATIC HYDROCARBONS (EPA 8270)															
2-Methylnaphthalene	ug/kg	32	57									< 10	< 10	< 10	< 14
Acenaphthene	ug/kg	< 11	< 11									< 10	< 10	< 10	< 14
Acenaphthylene	ug/kg	26	< 11									< 10	< 10	< 10	< 14
Anthracene	ug/kg	40	51									< 10	< 10	< 10	< 14
Benzo(a)anthracene	ug/kg	280	180									< 10	< 10	< 10	< 14
Benzo(a)pyrene	ug/kg	480	320									< 10	< 10	< 10	< 14
Benzo(b)fluoranthene	ug/kg	350	260									< 10	< 10	< 10	< 14
Benzo(g,h,i)perylene	ug/kg	590	400									< 10	< 10	< 10	< 14
Benzo(k)fluoranthene	ug/kg	170	150									< 10	< 10	< 10	< 14
Chrysene	ug/kg	410	260									< 10	< 10	< 10	< 14
Dibenz(a,h)anthracene	ug/kg	130	96									< 10	< 10	< 10	< 14
Fluoranthene	ug/kg	120	160									< 10	< 10	< 10	< 14
Fluorene	ug/kg	< 11	< 11									< 10	< 10	< 10	< 14
Indeno(1,2,3-cd)pyrene	ug/kg	510	340									< 10	< 10	< 10	< 14
Naphthalene	ug/kg	23	36									< 10	< 10	< 10	< 14
Phenanthrene	ug/kg	39	100									< 10	< 10	< 10	< 14
Pyrene	ug/kg	220	190									< 10	< 10	< 10	< 14
DIESEL RANGE ORGANICS (EPA WI Modified 8015)															
DRO	mg/kg	< 11	< 11	< 11	< 12	< 10	< 11	< 11	29	< 10	< 11	< 8.4	< 8.4	< 8.6	< 5.7

Notes:
Dup-1 was collected at SB-4 (4')
Dup-2 was collected at SB-1 (1')
Dup-3 was collected at SB-8 (24')

DRAFT

Table 1 (Continued)
Soil Analytical Results, North Track Assessment
Former BNSF Tie Treating Plant, Brainerd, Minnesota

ANALYTE	UNITS	SB-11 (4')	SB-11 (12')	SB-11 (32')	SB-12 (1')	SB-12 (4')	SB-12 (12')	SB-13 (1')	SB-13 (4')	SB-13 (12')	SB-14 (1')	SB-14 (4')	SB-14 (10')	SB-14 (20')
METALS (EPA 6010 and 7471)														
Arsenic	mg/kg	< 2.39			< 2.33	< 2.35	< 2.32		< 2.18		< 2.35	< 2.3		
Barium	mg/kg	10.2			42.1	21.7	5.48		11.4		15.6	9.47		
Cadmium	mg/kg	< 0.239			< 0.233	< 0.235	< 0.232		< 0.218		< 0.235	< 0.23		
Chromium	mg/kg	5.27			5.72	5.48	4.56		4.23		9.29	2.9		
Lead	mg/kg	1.92			6.93	1.95	< 1.39		1.44		2.94	< 1.38		
Selenium	mg/kg	< 3.58			< 3.5	< 3.52	< 3.48		< 3.26		< 3.53	< 3.46		
Silver	mg/kg	< 2.39			< 2.33	< 2.35	< 2.32		< 2.18		< 2.35	< 2.3		
Mercury	mg/kg	< 0.0182			< 0.0228	< 0.0191	< 0.0194		< 0.0199		< 0.0182	< 0.0195		
VOLATILE ORGANIC COMPOUNDS (EPA 8260)														
1,1,1,2-Tetrachloroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1,1-Trichloroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1,2,2-Tetrachloroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1,2-Trichloroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1,2-Trichlorotrifluoroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1-Dichloroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1-Dichloroethene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1-Dichloropropene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2,3-Trichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2,3-Trichloropropane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2,4-Trichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2,4-Trimethylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2-Dibromo-3-chloropropane	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
1,2-Dibromoethane (EDB)	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2-Dichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2-Dichloroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2-Dichloropropane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,3,5-Trimethylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,3-Dichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,3-Dichloropropane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,4-Dichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
2,2-Dichloropropane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
2-Butanone (MEK)	ug/kg	< 26	< 26	< 27	< 28	< 26	< 27	< 27	< 26	< 26	< 26	< 26	< 30	< 30
2-Chlorotoluene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
4-Chlorotoluene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
4-Methyl-2-pentanone (MIBK)	ug/kg	< 26	< 26	< 27	< 28	< 26	< 27	< 27	< 26	< 26	< 26	< 26	< 30	< 30
Acetone	ug/kg	< 26	< 26	< 27	30	< 26	< 27	38	< 26	< 26	< 26	< 26	< 30	< 30
Allyl chloride	ug/kg	< 52	< 53	< 54	< 57	< 53	< 53	< 54	< 51	< 53	< 52	< 52	< 60	< 60
Benzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Bromobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Bromochloromethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Bromodichloromethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Bromoform	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Bromomethane	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
Carbon tetrachloride	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Chlorobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Chloroethane	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
Chloroform	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Chloromethane	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
cis-1,2-Dichloroethene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
cis-1,3-Dichloropropene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Dibromochloromethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Dibromomethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Dichlorodifluoromethane	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
Diethyl ether (Ethyl ether)	ug/kg	< 52	< 53	< 54	< 57	< 53	< 53	< 54	< 51	< 53	< 52	< 52	< 60	< 60
Ethylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Hexachloro-1,3-butadiene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Isopropylbenzene (Cumene)	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
m&p-Xylene	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
Methylene chloride	ug/kg	< 5.2	< 5.3	6.3	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Methyl-tert-butyl ether	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Naphthalene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
n-Butylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
n-Propylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
o-Xylene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
p-Isopropyltoluene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
sec-Butylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Styrene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
tert-Butylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Tetrachloroethene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Tetrahydrofuran	ug/kg	< 52	< 53	< 54	< 57	< 53	< 53	< 54	< 51	< 53	< 52	< 52	< 60	< 60
Toluene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
trans-1,2-Dichloroethene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
trans-1,3-Dichloropropene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Trichloroethene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Trichlorofluoromethane	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
Vinyl chloride	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
Xylene (Total)	ug/kg	< 15	< 16	< 16	< 17	< 16	< 16	< 16	< 15	< 16	< 16	< 16	< 18	< 18
POLYNUCLEAR AROMATIC HYDROCARBONS (EPA 8270)														
2-Methylnaphthalene	ug/kg	< 10	< 10	< 11							130	< 10	< 12	< 12
Acenaphthene	ug/kg	< 10	< 10	< 11							< 10	< 10	< 12	< 12
Acenaphthylene	ug/kg	< 10	< 10	< 11							24	< 10	< 12	< 12
Anthracene	ug/kg	< 10	< 10	< 11							24	< 10	< 12	< 12
Benzo(a)anthracene	ug/kg	< 10	< 10	< 11							41	< 10	< 12	< 12
Benzo(a)pyrene	ug/kg	< 10	< 10	< 11							46	< 10	< 12	< 12
Benzo(b)fluoranthene	ug/kg	< 10	< 10	< 11							52	< 10	< 12	< 12
Benzo(g,h,i)perylene	ug/kg	< 10	< 10	< 11							49	< 10	< 12	< 12
Benzo(k)fluoranthene	ug/kg	< 10	< 10	< 11							29	< 10	< 12	< 12
Chrysene	ug/kg	< 10	< 10	< 11							65	< 10	< 12	< 12
Dibenz(a,h)anthracene	ug/kg	< 10	< 10	< 11							13	< 10	< 12	< 12
Fluoranthene	ug/kg	< 10	< 10	< 11							87	< 10	< 12	< 12
Fluorene	ug/kg	< 10	< 10	< 11							< 10	< 10	< 12	< 12
Indeno(1,2,3-cd)pyrene	ug/kg	< 10	< 10	< 11							49	< 10	< 12	< 12
Naphthalene	ug/kg	< 10	< 10	< 11							120	< 10	< 12	< 12
Phenanthrene	ug/kg	< 10	< 10	< 11							120	< 10	< 12	< 12
Pyrene	ug/kg	< 10	< 10	< 11							83	< 10	< 12	< 12
DIESEL RANGE ORGANICS (EPA WI Modified 8015)														
DRO	mg/kg	< 10	< 10	< 11	< 11	< 10	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12

Notes:
Dup-1 was collected at SB-4 (4')
Dup-2 was collected at SB-1 (1')
Dup-3 was collected at SB-8 (24')

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Table 2
Groundwater Anaytical Results, North Track Assessment
Former BNSF Tie Treating Plant, Brainerd, Minnesota

RETEC

ANALYTE	UNITS	GW-2	GW-3	GW-5	GW-6	DUP-1	GW-7	GW-9	GW-10	GW-14	TRIP BLANK
VOLATILE ORGANIC COMPOUNDS (EPA 8260)											
1,1,1,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichlorotrifluoroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloropropene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-chloropropane	ug/l	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
1,2-Dibromoethane (EDB)	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3,5-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2,2-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2-Butanone (MEK)	ug/l	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Methyl-2-pentanone (MIBK)	ug/l	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Acetone	ug/l	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Allyl chloride	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromomethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Carbon tetrachloride	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroform	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,3-Dichloropropene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dibromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dibromomethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorodifluoromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorofluoromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Diethyl ether (Ethyl ether)	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Ethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Hexachloro-1,3-butadiene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Isopropylbenzene (Cumene)	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
m&p-Xylene	ug/l	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Methylene chloride	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Methyl-tert-butyl ether	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Naphthalene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
n-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
n-Propylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
o-Xylene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
p-Isopropyltoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
sec-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Styrene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
tert-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrahydrofuran	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,3-Dichloropropene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichlorofluoromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Vinyl chloride	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
POLYNUCLEAR AROMATIC HYDROCARBONS (EPA 8270 SIM)											
2-Methylnaphthalene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Acenaphthene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Acenaphthylene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Anthracene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(a)anthracene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(a)pyrene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(b)fluoranthene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(g,h,i)perylene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(k)fluoranthene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Chrysene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Dibenz(a,h)anthracene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Fluoranthene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Fluorene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Indeno(1,2,3-cd)pyrene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Naphthalene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Phenanthrene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Pyrene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
DIESEL RANGE ORGANICS (EPA WI Modified 8015)											
DRO	mg/l	< 0.1	< 0.1	< 0.33	0.11	< 0.1	< 0.13	< 0.1	0.11	< 0.1	

Notes:
Dup-1 was collected from SB-6 (GW-6)

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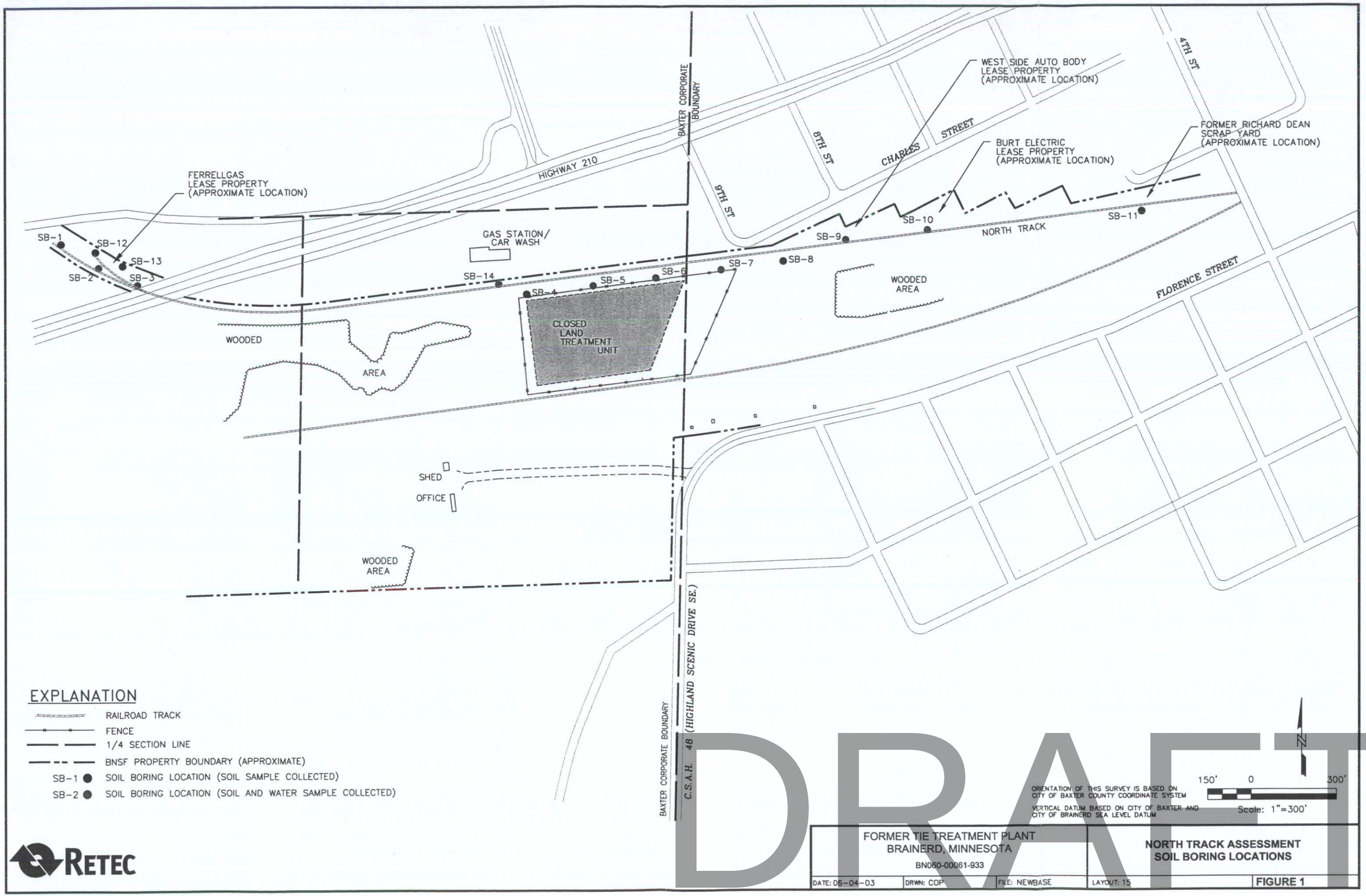
HIGHWAY 210
BAXTER CORPORATE BOUNDARY
9TH ST
8TH ST
CHARLES STREET
4TH ST
WEST SIDE AUTO BODY LEASE PROPERTY (APPROXIMATE LOCATION)
BURT ELECTRIC LEASE PROPERTY (APPROXIMATE LOCATION)
FORMER RICHARD DEAN SCRAP YARD (APPROXIMATE LOCATION)
FERRELLGAS LEASE PROPERTY (APPROXIMATE LOCATION)
GAS STATION/ CAR WASH
SB-1
SB-2
SB-3
SB-4
SB-5
SB-6
SB-7
SB-8
SB-9
SB-10
SB-11
SB-12
SB-13
SB-14
NORTH TRACK
WOODED AREA
CLOSED LAND TREATMENT UNIT
WOODED
AREA
FLORENCE STREET
SHED
OFFICE
WOODED AREA
BAXTER CORPORATE BOUNDARY
C.S.A.H. 48 (HIGHLAND SCENIC DRIVE SE.)
EXPLANATION
RAILROAD TRACK
FENCE
1/4 SECTION LINE
BNSF PROPERTY BOUNDARY (APPROXIMATE)
SB-1 SOIL BORING LOCATION (SOIL SAMPLE COLLECTED)
SB-2 SOIL BORING LOCATION (SOIL AND WATER SAMPLE COLLECTED)
ORIENTATION OF THIS SURVEY IS BASED ON CITY OF BAXTER COUNTY COORDINATE SYSTEM
VERTICAL DATUM BASED ON CITY OF BAXTER AND CITY OF BRAINERD SEA LEVEL DATUM
150' 0 300'
Scale: 1"=300'
N
DRAFT
RETEC
FORMER TIE TREATMENT PLANT
BRAINERD, MINNESOTA
BN060-00061-933
NORTH TRACK ASSESSMENT
SOIL BORING LOCATIONS
DATE: 06-04-03
DRWN: COP
FILE: NEWBASE
LAYOUT: 15
FIGURE 1

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 04 RANK: Medium

Current Site Use: **Former Imgrund Motors**

Site Summary:

The site was an undeveloped wooded lot through the 1950s. The trees were cleared site sat as a graded, vacant lot that belonged to the adjacent concrete company from the 1960s through 2003. The existing auto dealership was constructed around 2005 and appears to have also serviced vehicles on-site. The occupants have since moved and the building is currently vacant. Hazardous/petroleum products are assumed to have historically been used.

Ranking Rationale: Former auto repair.

HISTORICAL REVIEW:

Date	History	Source
1939-1954	The site was a wooded lot, bound by TH 210 to the north and the railroad corridor to the south.	Aerial photographs
1969-2003	The trees were cleared and the site appears to have been graded. It remains a vacant lot through 2003.	Aerial photographs, topographic map
2006-2015	The site was developed with commercial auto dealership.	Aerial photographs, topographic map, radius report

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☑ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

Auto repair - hazardous/petroleum product use assumed.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
033070010010009	BLACK RIDGE BANK	8337 STATE HIGHWAY 210	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS: None

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Interviews	The building was previously occupied by Ingram Motors. It is not vacant. Brainerd Ready Mix (concrete company) occupied the site prior to Ingram Motors. The concrete company later moved and is now Knife River located southwest of the project (Site PU020).	Trevor Walter; City of Baxter (2016)

End of Record for Site 04

DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

1954

1969

1973

1978

1984

1992

2003

2006

2010

2013

2015

DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 05 RANK: Medium

FR001

Current Site Use: **Paul Bunyan Trail**

Site Summary:

The railroad spur was present as early as 1915. The corridor included several side-by-side tracks. The site was investigated in 2003, prior to removal of the railroad and construction of the Paul Bunyan Trail. Low-level PAHs were identified in shallow soil on site. No impacts to groundwater were identified.

Ranking Rationale: Former rail yard.

HISTORICAL REVIEW:

Date	History	Source
1918-1992	The railroad spur was present as early as 1915. Multiple side-by-side tracks were present.	Aerial photographs, topographic maps
2003-2015	The railroad tracks were removed and a trail was constructed.	Aerial photograph

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION: No Associated Parcels

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS: None

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Voluntary Investigation & Cleanup (VIC) VP19720	MnDOT was issued a No Further Action Letter for the former railroad spur that they acquired as part of the Paul Bunyan Trail Project. The identified release was PAH contamination in soil.	Limited No Further Action Determination; MPCA (2005)
Voluntary Investigation & Cleanup (VIC) VP19720	The site was investigated in 2003 before the Paul Bunyan Trail was constructed. One boring (SB-14) was completed along the tracks on this site. Four soil samples were collected from between 1 and 20 feet bgs. Select soil and groundwater samples were analyzed for PAHs, VOCs, and DRO. Soil was also analyzed for metals. Low-level PAHs were detected in soil from 1 foot bgs. No parameters were detected in groundwater samples.	Soil and Groundwater Assessment Report; Retec (2003)

End of Record for Site 05

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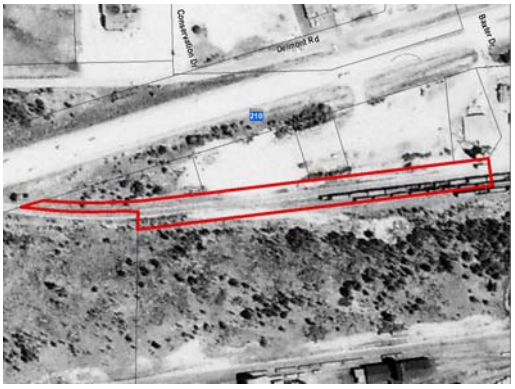
Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

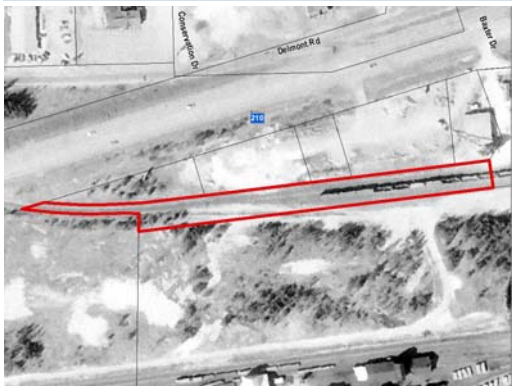
1939

1954

1969



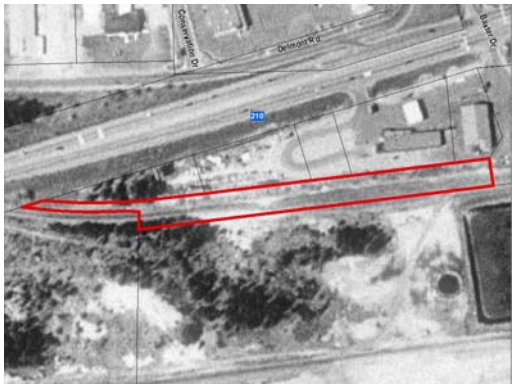
1973



1978

1984

1992



2003

2006

2010

2013

2015

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Table 1 (Continued)
Soil Analytical Results, North Track Assessment
Former BNSF Tie Treating Plant, Brainerd, Minnesota

ANALYTE	UNITS	SB-11 (4')	SB-11 (12')	SB-11 (32')	SB-12 (1')	SB-12 (4')	SB-12 (12')	SB-13 (1')	SB-13 (4')	SB-13 (12')	SB-14 (1')	SB-14 (4')	SB-14 (10')	SB-14 (20')
METALS (EPA 6010 and 7471)														
Arsenic	mg/kg	< 2.39			< 2.33	< 2.35	< 2.32		< 2.18		< 2.35	< 2.3		
Barium	mg/kg	10.2			42.1	21.7	5.48		11.4		15.6	9.47		
Cadmium	mg/kg	< 0.239			< 0.233	< 0.235	< 0.232		< 0.218		< 0.235	< 0.23		
Chromium	mg/kg	5.27			5.72	5.48	4.56		4.23		9.29	2.9		
Lead	mg/kg	1.92			6.93	1.95	< 1.39		1.44		2.94	< 1.38		
Selenium	mg/kg	< 3.58			< 3.5	< 3.52	< 3.48		< 3.26		< 3.53	< 3.46		
Silver	mg/kg	< 2.39			< 2.33	< 2.35	< 2.32		< 2.18		< 2.35	< 2.3		
Mercury	mg/kg	< 0.0182			< 0.0228	< 0.0191	< 0.0194		< 0.0199		< 0.0182	< 0.0195		
VOLATILE ORGANIC COMPOUNDS (EPA 8260)														
1,1,1,2-Tetrachloroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1,1-Trichloroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1,2,2-Tetrachloroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1,2-Trichloroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1,2-Trichlorotrifluoroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1-Dichloroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1-Dichloroethene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,1-Dichloropropene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2,3-Trichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2,3-Trichloropropane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2,4-Trichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2,4-Trimethylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2-Dibromo-3-chloropropane	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
1,2-Dibromoethane (EDB)	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2-Dichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2-Dichloroethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,2-Dichloropropane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,3,5-Trimethylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,3-Dichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,3-Dichloropropane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
1,4-Dichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
2,2-Dichloropropane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
2-Butanone (MEK)	ug/kg	< 26	< 26	< 27	< 28	< 26	< 27	< 27	< 26	< 26	< 26	< 26	< 30	< 30
2-Chlorotoluene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
4-Chlorotoluene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
4-Methyl-2-pentanone (MIBK)	ug/kg	< 26	< 26	< 27	< 28	< 26	< 27	< 27	< 26	< 26	< 26	< 26	< 30	< 30
Acetone	ug/kg	< 26	< 26	< 27	30	< 26	< 27	38	< 26	< 26	< 26	< 26	< 30	< 30
Allyl chloride	ug/kg	< 52	< 53	< 54	< 57	< 53	< 53	< 54	< 51	< 53	< 52	< 52	< 60	< 60
Benzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Bromobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Bromochloromethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Bromodichloromethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Bromoform	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Bromomethane	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
Carbon tetrachloride	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Chlorobenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Chloroethane	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
Chloroform	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Chloromethane	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
cis-1,2-Dichloroethene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
cis-1,3-Dichloropropene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Dibromochloromethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Dibromomethane	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Dichlorodifluoromethane	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
Diethyl ether (Ethyl ether)	ug/kg	< 52	< 53	< 54	< 57	< 53	< 53	< 54	< 51	< 53	< 52	< 52	< 60	< 60
Ethylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Hexachloro-1,3-butadiene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Isopropylbenzene (Cumene)	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
m&p-Xylene	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
Methylene chloride	ug/kg	< 5.2	< 5.3	6.3	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Methyl-tert-butyl ether	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Naphthalene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
n-Butylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
n-Propylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
o-Xylene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
p-Isopropyltoluene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
sec-Butylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Styrene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
tert-Butylbenzene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Tetrachloroethene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Tetrahydrofuran	ug/kg	< 52	< 53	< 54	< 57	< 53	< 53	< 54	< 51	< 53	< 52	< 52	< 60	< 60
Toluene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
trans-1,2-Dichloroethene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
trans-1,3-Dichloropropene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Trichloroethene	ug/kg	< 5.2	< 5.3	< 5.4	< 5.7	< 5.3	< 5.3	< 5.4	< 5.1	< 5.3	< 5.2	< 5.2	< 6	< 6
Trichlorofluoromethane	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
Vinyl chloride	ug/kg	< 10	< 11	< 11	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12
Xylene (Total)	ug/kg	< 15	< 16	< 16	< 17	< 16	< 16	< 16	< 15	< 16	< 16	< 16	< 18	< 18
POLYNUCLEAR AROMATIC HYDROCARBONS (EPA 8270)														
2-Methylnaphthalene	ug/kg	< 10	< 10	< 11							130	< 10	< 12	< 12
Acenaphthene	ug/kg	< 10	< 10	< 11							< 10	< 10	< 12	< 12
Acenaphthylene	ug/kg	< 10	< 10	< 11							24	< 10	< 12	< 12
Anthracene	ug/kg	< 10	< 10	< 11							24	< 10	< 12	< 12
Benzo(a)anthracene	ug/kg	< 10	< 10	< 11							41	< 10	< 12	< 12
Benzo(a)pyrene	ug/kg	< 10	< 10	< 11							46	< 10	< 12	< 12
Benzo(b)fluoranthene	ug/kg	< 10	< 10	< 11							52	< 10	< 12	< 12
Benzo(g,h,i)perylene	ug/kg	< 10	< 10	< 11							49	< 10	< 12	< 12
Benzo(k)fluoranthene	ug/kg	< 10	< 10	< 11							29	< 10	< 12	< 12
Chrysene	ug/kg	< 10	< 10	< 11							65	< 10	< 12	< 12
Dibenz(a,h)anthracene	ug/kg	< 10	< 10	< 11							13	< 10	< 12	< 12
Fluoranthene	ug/kg	< 10	< 10	< 11							87	< 10	< 12	< 12
Fluorene	ug/kg	< 10	< 10	< 11							< 10	< 10	< 12	< 12
Indeno(1,2,3-cd)pyrene	ug/kg	< 10	< 10	< 11							49	< 10	< 12	< 12
Naphthalene	ug/kg	< 10	< 10	< 11							120	< 10	< 12	< 12
Phenanthrene	ug/kg	< 10	< 10	< 11							120	< 10	< 12	< 12
Pyrene	ug/kg	< 10	< 10	< 11							83	< 10	< 12	< 12
DIESEL RANGE ORGANICS (EPA WI Modified 8015)														
DRO	mg/kg	< 10	< 10	< 11	< 11	< 10	< 11	< 11	< 10	< 11	< 10	< 10	< 12	< 12

Notes:
Dup-1 was collected at SB-4 (4')
Dup-2 was collected at SB-1 (1')
Dup-3 was collected at SB-8 (24')

DRAFT

Table 2
Groundwater Anaytical Results, North Track Assessment
Former BNSF Tie Treating Plant, Brainerd, Minnesota

RETEC

ANALYTE	UNITS	GW-2	GW-3	GW-5	GW-6	DUP-1	GW-7	GW-9	GW-10	GW-14	TRIP BLANK
VOLATILE ORGANIC COMPOUNDS (EPA 8260)											
1,1,1,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichlorotrifluoroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloropropene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-chloropropane	ug/l	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
1,2-Dibromoethane (EDB)	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3,5-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2,2-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2-Butanone (MEK)	ug/l	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Methyl-2-pentanone (MIBK)	ug/l	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Acetone	ug/l	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Allyl chloride	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromomethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Carbon tetrachloride	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroform	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,3-Dichloropropene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dibromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dibromomethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorodifluoromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorofluoromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Diethyl ether (Ethyl ether)	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Ethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Hexachloro-1,3-butadiene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Isopropylbenzene (Cumene)	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
m&p-Xylene	ug/l	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Methylene chloride	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Methyl-tert-butyl ether	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Naphthalene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
n-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
n-Propylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
o-Xylene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
p-Isopropyltoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
sec-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Styrene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
tert-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrahydrofuran	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,3-Dichloropropene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichlorofluoromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Vinyl chloride	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
POLYNUCLEAR AROMATIC HYDROCARBONS (EPA 8270 SIM)											
2-Methylnaphthalene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Acenaphthene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Acenaphthylene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Anthracene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(a)anthracene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(a)pyrene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(b)fluoranthene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(g,h,i)perylene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(k)fluoranthene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Chrysene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Dibenz(a,h)anthracene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Fluoranthene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Fluorene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Indeno(1,2,3-cd)pyrene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Naphthalene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Phenanthrene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Pyrene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
DIESEL RANGE ORGANICS (EPA WI Modified 8015)											
DRO	mg/l	< 0.1	< 0.1	< 0.33	0.11	< 0.1	< 0.13	< 0.1	0.11	< 0.1	

Notes:
Dup-1 was collected from SB-6 (GW-6)

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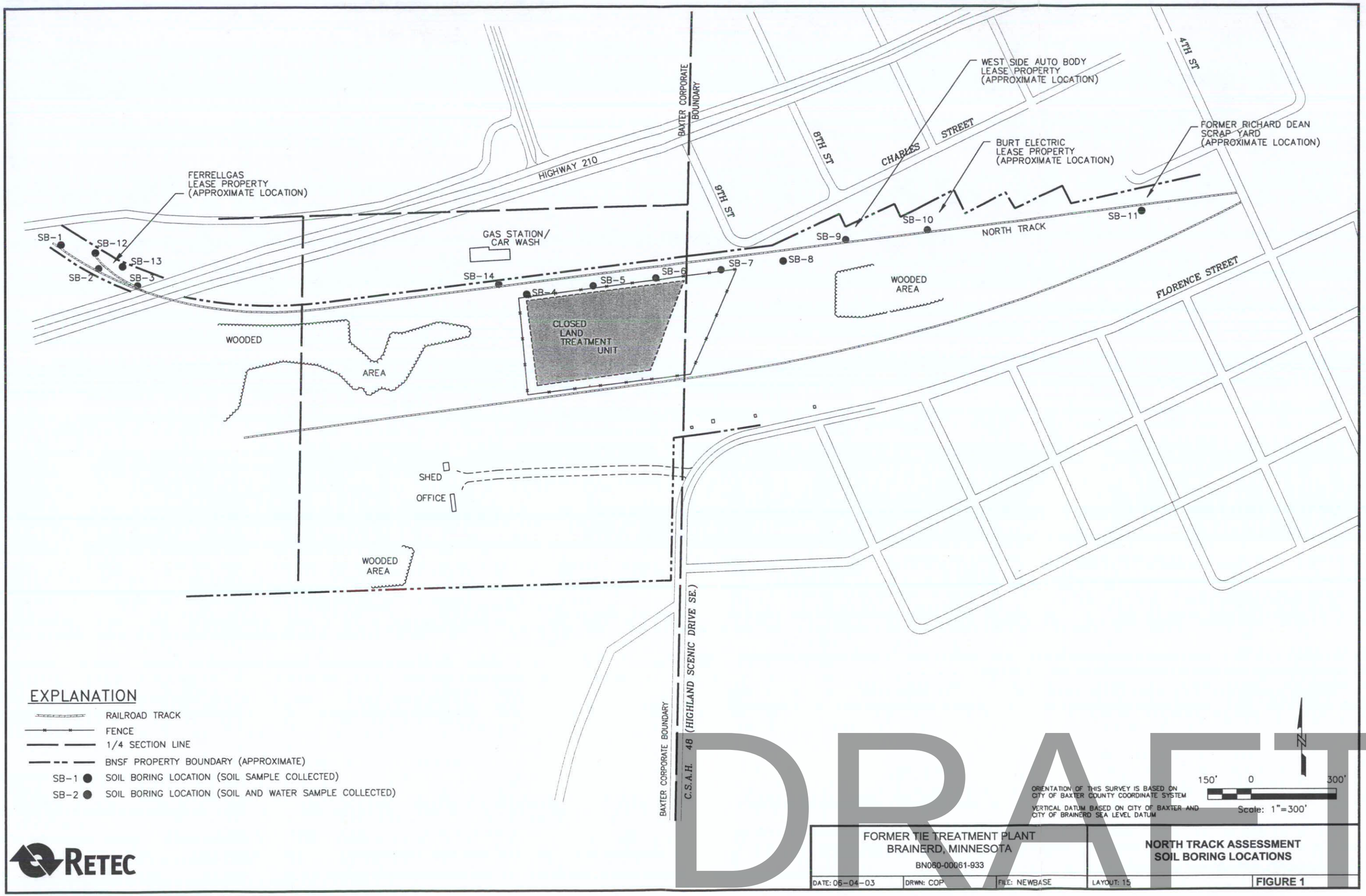
HIGHWAY 210
BAXTER CORPORATE BOUNDARY
9TH ST
8TH ST
CHARLES STREET
4TH ST
WEST SIDE AUTO BODY LEASE PROPERTY (APPROXIMATE LOCATION)
BURT ELECTRIC LEASE PROPERTY (APPROXIMATE LOCATION)
FORMER RICHARD DEAN SCRAP YARD (APPROXIMATE LOCATION)
FERRELLGAS LEASE PROPERTY (APPROXIMATE LOCATION)
GAS STATION/ CAR WASH
SB-1
SB-2
SB-3
SB-4
SB-5
SB-6
SB-7
SB-8
SB-9
SB-10
SB-11
SB-12
SB-13
SB-14
NORTH TRACK
WOODED AREA
CLOSED LAND TREATMENT UNIT
WOODED
AREA
FLORENCE STREET
SHED
OFFICE
WOODED AREA
BAXTER CORPORATE BOUNDARY
C.S.A.H. 48 (HIGHLAND SCENIC DRIVE SE.)
EXPLANATION
RAILROAD TRACK
FENCE
1/4 SECTION LINE
BNSF PROPERTY BOUNDARY (APPROXIMATE)
SB-1 SOIL BORING LOCATION (SOIL SAMPLE COLLECTED)
SB-2 SOIL BORING LOCATION (SOIL AND WATER SAMPLE COLLECTED)
ORIENTATION OF THIS SURVEY IS BASED ON CITY OF BAXTER COUNTY COORDINATE SYSTEM
VERTICAL DATUM BASED ON CITY OF BAXTER AND CITY OF BRAINERD SEA LEVEL DATUM
150' 0 300'
Scale: 1"=300'
N
DRAFT
RETEC
FORMER TIE TREATMENT PLANT
BRAINERD, MINNESOTA
BN060-00061-933
NORTH TRACK ASSESSMENT
SOIL BORING LOCATIONS
DATE: 06-04-03
DRWN: COP
FILE: NEWBASE
LAYOUT: 15
FIGURE 1

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 06 RANK: High

WM014

Current Site Use: **Railroad corridor and greenspace (former BNSF Tie Plant)**

Site Summary:

This site was the central location of the BNSF Tie Plant Superfund site that was operational from about 1907 to 1986. The Superfund site includes numerous parcels in this area. The plant and rail yard was removed by the early 1990s. Small, shed-sized structures and monitoring wells associated with remediation of the BNSF Tie Plant Superfund site were constructed in the 1990s. A former marsh in the northeast corner of the site was filled and used as a land treatment area for contamination remediation. A detailed history and summary of environmental concerns for the BNSF Tie Plant Superfund site is provided in the introduction to this appendix. Additional investigation of this site took place for preparation of the Paul Bunyan Trail construction project. Three borings were completed adjacent to the north side of the former land treatment area, targeting the proposed trail alignment. Very low acetone, naphthalene, and PAHs were identified in soil samples.

Ranking Rationale: BNSF Tie Plant Superfund site, primary plant operations/land treatment area.

HISTORICAL REVIEW:

Date	History	Source
1915-1984	The railroad and rail yard were present as early as 1915. This site was the primary location for the BNSF Tie Plant operations. The plan structures were present from at least the 1930s through the 1980s. A low-lying marsh was present in the northeast corner of the site.	Aerial photographs, topographic maps
1992-2006	The rail yard, tie plant, and associated structures were removed and the marsh was filled. A single track through the central portion of the site was all that remained in place. Several small shed-like structures were constructed in the central potion of the site.	Aerial photographs, topographic maps

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☑ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No access. Small out buildings potentially associated with the railroad. Numerous monitoring wells.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010081100AA0009	N P RAILWAY CO		BAXTER	56425	Assessed Elsewhere

MPCA WIMN DATABASE LISTINGS:

Site ID	Name	Activity
MND000686196	BNSF - Tie Plant	CERCLIS Site
MND000686196	BNSF Railway Co - Tie Plant	Hazardous Waste, Small to Minimal QG
MND000686196	BN Tie Plant	RCRA Cleanup
SR16	BURLINGTON NORTHERN (Tie plant, Brainerd)	Superfund Project
VP19720	MNDoT BNSF North Track	Voluntary Investigation & Cleanup (VIC)

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
110006738398	BNSF RAILWAY CO - TIE PLANT	Facility Registry System
RCRA42	BN TIE PLANT	Hazardous Waste Cleanup Sites
MND000686196	BRAINERD-TIE PLANT SITE - BURLINGTON NOR	RCRA

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
MND000686196	BURLINGTON NORTHERN (BRAINERD/BAXTER P	Record of Decision System
VP19720	MNDOT BNSF NORTH TRACK	Site Response Section Database
MND000686196	BNSF RAILWAY CO - TIE PLANT	Hazardous Waste Generator Sites
VP21200	BNSF - WEST LAUREL STREET	Site Response Section Database
VP19720	MNDOT BNSF NORTH TRACK	Voluntary Investigation & Cleanup (VIC)
74189654	STATEWIDE ARSENIC ABOVEGROUND STORAG	State Assessment Sites
SR16	BURLINGTON NORTHERN (TIE PLANT, BRAINER	Site Response Section Database
MN0055387INPDES	BURLINGTON NORTHERN-BAXTER	Integrated Compliance Information System National Pollutant Discharge Elimin
110009292871	BURLINGTON NORTHERN RAILROAD COMPANY	Integrated Compliance Information System (formerly DOCKETS)
RCRA42	BN TIE PLANT	Sites with Institutional Controls
110009292871	BURLINGTON NORTHERN RAILROAD COMPANY	Facility Registry System
110041987874	BNSF RAILWAY CO - TIE PLANT	Facility Registry System
VP21200	BNSF - WEST LAUREL STREET	Voluntary Investigation & Cleanup (VIC)
RCRA42	BN TIE PLANT	Site Response Section Database

MPCA SPILL LISTINGS:

MPCA ID	Name	Quantity	Spilled Product	Spill Date	Closed Date
66277	BNSF Brainerd Tie Plant	185 Gallons	Other (Described In Remarks)	02/09/2006	2/28/2006

The contaminates are GRO , DRO benzene, phenanphrene, acenaphthene, acenaphthylene. This was release below soil surface due to a pipe break in a ground water control system.

COUNTY WELL INDEX REGISTERED WELLS:

Unique Well No	Well Name	Depth (ft)	Aquifer	Listed Use	Date Drilled
746258	MW-29A	60	Not Listed	Monitor well	2007
746259	MW-29B	48	Not Listed	Monitor well	2007
746260	MW-29C	36	Not Listed	Monitor well	2007
756600	BNSF RAILWAY CO.	40	Not Listed	Monitor well	2008
761330	BNSF RAILWAY CO	43	Not Listed	Monitor well	2008
761331	BNSF RAILWAY CO.	31	Not Listed	Monitor well	2008
804287	MW	48	Not Listed	Monitor well	2014

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Superfund Project SR16	This site was the central location of the BNSF Tie Plant Superfund site. The main plant used for chemically treating wood railroad ties was located on this site. The Superfund site includes numerous parcels in this area that were used for drying and outdoor storage of the treated ties. A detailed history and summary of environmental conditions is provided at the beginning of this Appendix.	Notes

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Voluntary Investigation & Cleanup (VIC) VP19720	Investigation of this site took place for preparation of the Paul Bunyan Trail construction project. Three borings (SB-4, SB-5, and SB-6 were completed adjacent to the north side of the former land treatment area, targeting the proposed trail alignment. Soil samples were collected from various intervals between 1 and 20 feet bgs. Samples were analyzed for PAHs, VOCs, DRO, GRO, and RCRA metals. Acetone, naphthalene, and PAHs were identified in soil samples at concentrations at least one magnitude below action levels.	Soil and Groundwater Assessment Report; Retec (2003)

End of Record for Site 06

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

1954

1969

1973

1978

1984

1992

2003

2006

2010

2013

2015

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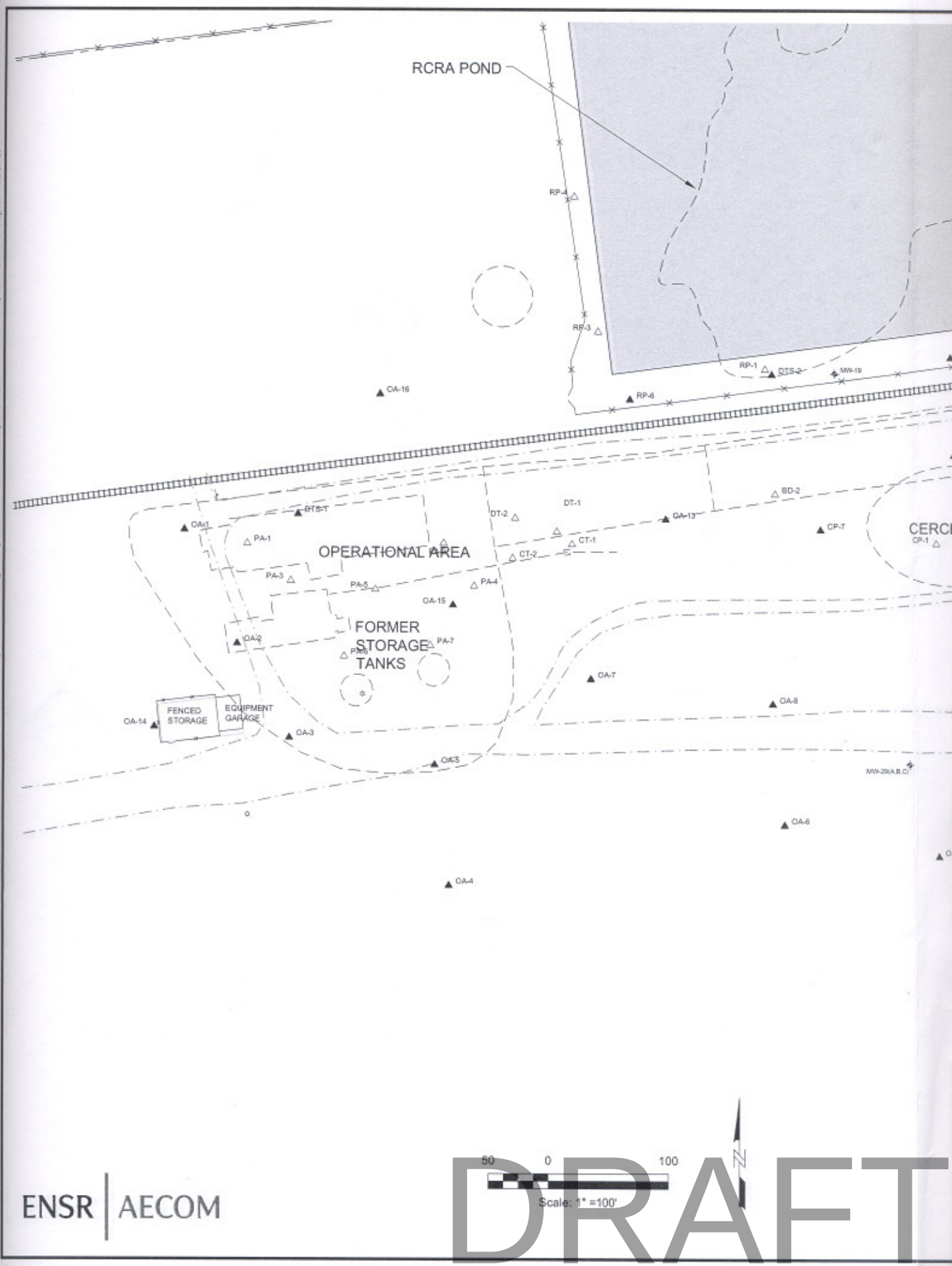

File: J:\0 Burlington Northern\19347 - Brainerd\5 yr Review Supplemental Soil Inv Rpt\Fig 3 soil boring locations.dwg Layout: 3 User: tcampbell Plotted: Jun 03, 2008 - 5:56pm Xref's:

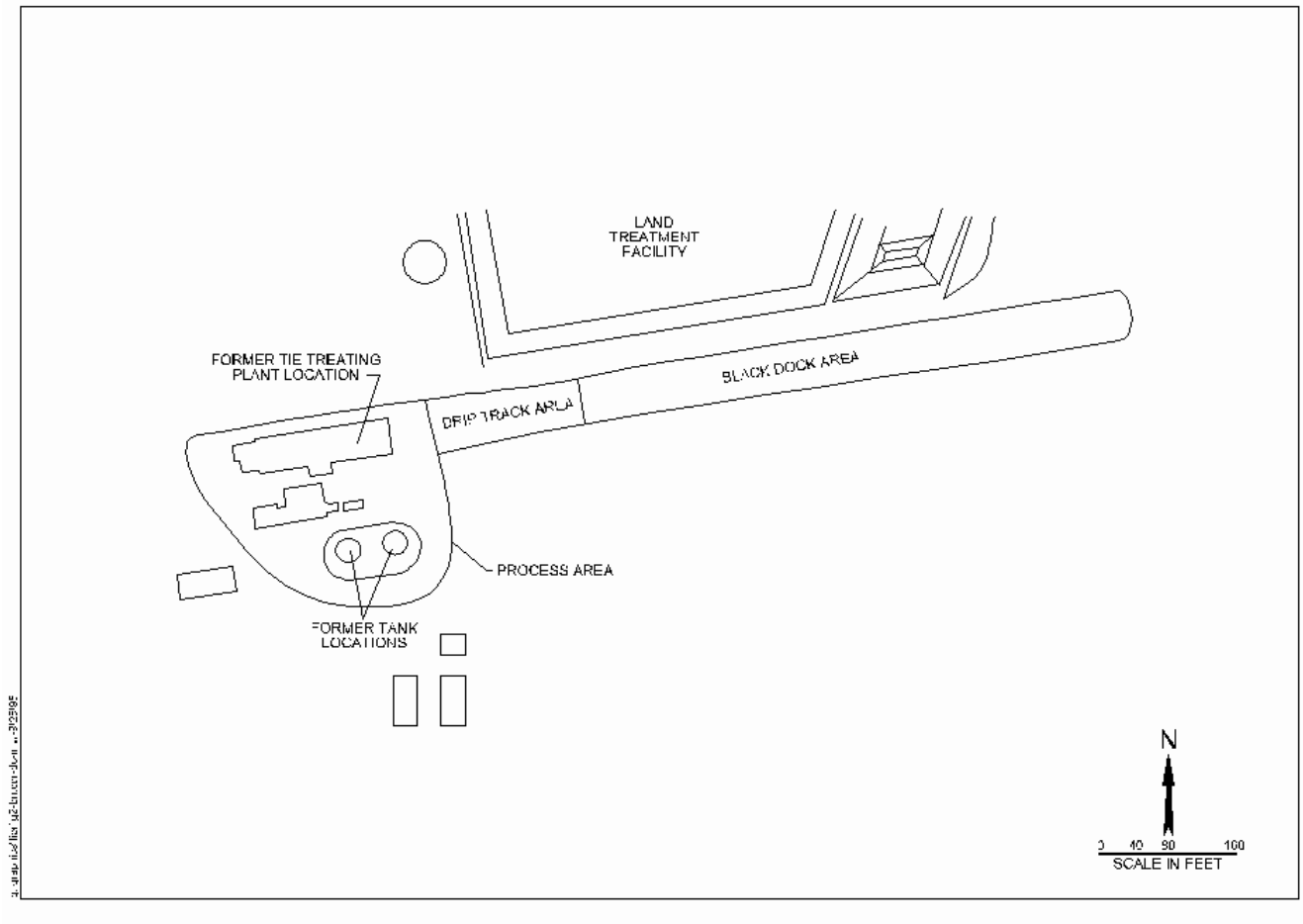

Figure 2. Additional Areas of Contaminated Soil at Burlington Northern [1]

Site Logistics/Contacts

Site Management: PRP lead

Oversight: EPA/State

Remedial Project Manager: Tony Rutter
U.S. EPA Region V
77 W. Jackson Boulevard
Mail Code HSR-6J
Chicago, Illinois 60604
(312) 886-8961

State Contact: Fred M. Jenness
Minnesota Pollution Control Agency
Hazardous Waste Division
Regulatory Compliance Section
Permit and Review Unit
530 Lafayette Road North
St. Paul, Minnesota 55155-4194
(612) 297-8470

Treatment System Vendor: Mindy L. Salisbury
Remediation Technologies, Inc. (ReTeC)
413 Waconta St., Suite 400
St. Paul, MN 55110
(612) 222-0841

Back to Executive Summary | Table of Contents | Forward to Matrix Description

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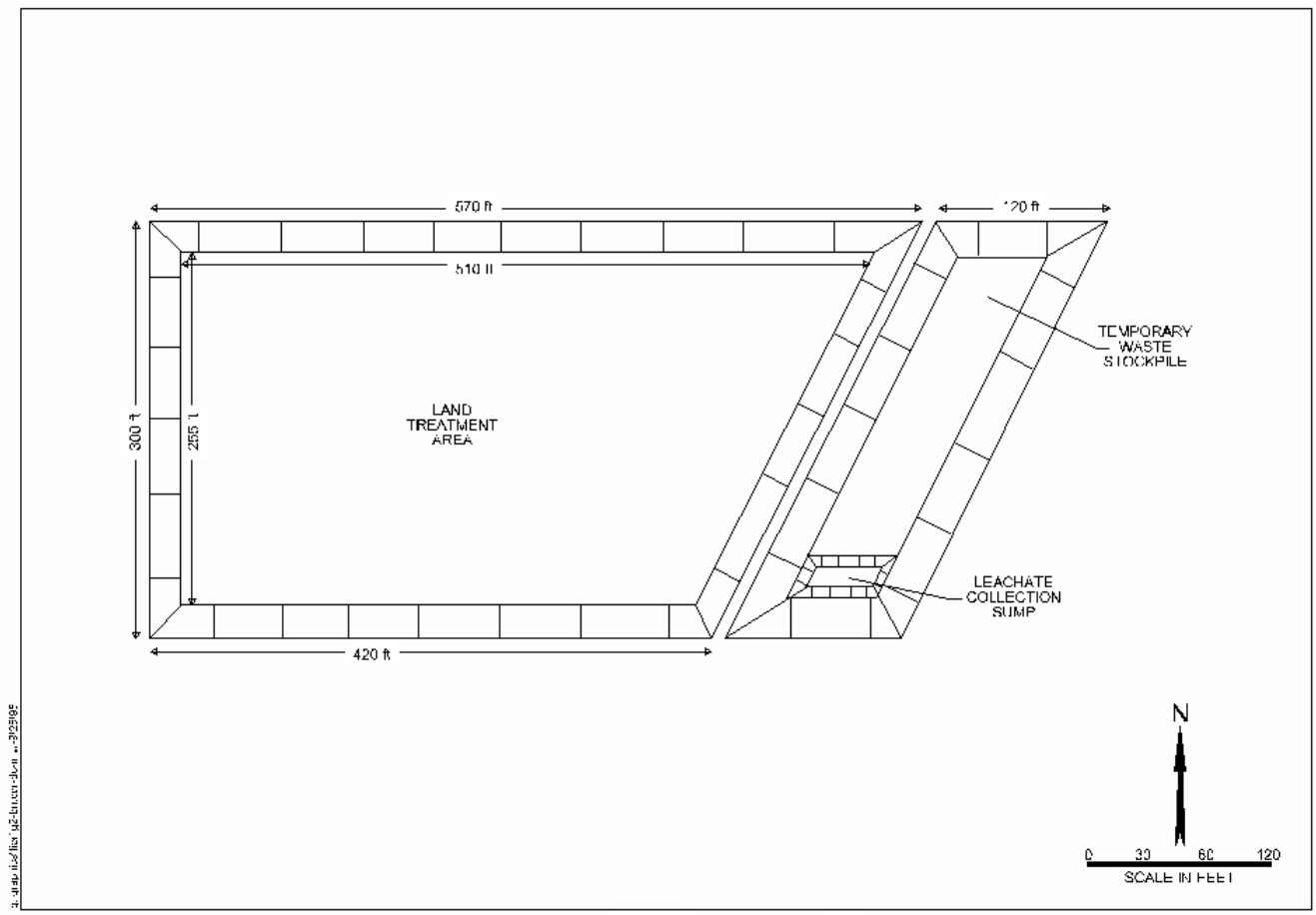

Figure 3. Land Treatment Unit Constructed at Burlington Northern [1]

LTU Construction
The LTU was constructed with the following layers, as shown in Figure 4:

- A 100-millimeter thick high density polyethylene (HDPE) membrane;
- An 18-inch layer of silty sand ballast;
- A 6-inch layer of gravel; and
- A 24-inch layer of clean, silty sand.

Depth (Inches Below Surface) 0	LTU Surface
8	Material Treated in 1994
14	Material Treated in 1993
20	Material Treated in 1992
26	Material Treated in 1991
32	Material Treated in 1990

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Table 1
Soil Analytical Results, North Track Assessment
Former BNSF Tie Treating Plant, Brainerd, Minnesota

ANALYTE	UNITS	SB-1 (1')	DUP-2	SB-1 (4')	SB-1 (12')	SB-2 (1')	SB-2 (4')	SB-2 (12')	SB-3 (1')	SB-3 (4')	SB-3 (12')	SB-4 (1')	SB-4 (4')	DUP-1	SB-4 (12')
METALS (EPA 6010 and 7471)															
Arsenic	mg/kg	< 2.32	< 2.2	< 2.34		< 2.43	< 2.48		< 2.46	< 2.08		2.66	< 2.17	< 2.05	
Barium	mg/kg	20.5	20.3	8.25		27.5	15.4		37.4	13.8		23	12.5	13.7	
Cadmium	mg/kg	< 0.232	< 0.22	< 0.234		< 0.243	< 0.248		< 0.246	< 0.208		< 0.222	< 0.217	< 0.205	
Chromium	mg/kg	6.33	6.33	3.38		6.27	5.7		6.86	4.38		7.41	6.61	6.05	
Lead	mg/kg	2.3	2.27	< 1.41		2.34	1.85		14.6	1.39		22.9	2.97	1.85	
Selenium	mg/kg	< 3.48	< 3.31	< 3.51		< 3.64	< 3.72		< 3.69	< 3.12		< 3.34	< 3.25	< 3.08	
Silver	mg/kg	< 2.32	< 2.2	< 2.34		< 2.43	< 2.48		< 2.46	< 2.08		< 2.22	< 2.17	< 2.05	
Mercury	mg/kg	< 0.0223	< 0.0212	< 0.0225		< 0.0212	< 0.0211		< 0.0199	< 0.0178		< 0.0175	< 0.0175	< 0.0188	
VOLATILE ORGANIC COMPOUNDS (EPA 8260)															
1,1,1,2-Tetrachloroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1,1-Trichloroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1,2,2-Tetrachloroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1,2-Trichloroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1,2-Trichlorotrifluoroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1-Dichloroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1-Dichloroethene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,1-Dichloropropene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2,3-Trichlorobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2,3-Trichloropropane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2,4-Trichlorobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2,4-Trimethylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2-Dibromo-3-chloropropane	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
1,2-Dibromoethane (EDB)	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2-Dichlorobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2-Dichloroethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,2-Dichloropropane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,3,5-Trimethylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,3-Dichlorobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,3-Dichloropropane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
1,4-Dichlorobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
2,2-Dichloropropane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
2-Butanone (MEK)	ug/kg	< 28	< 27	< 28	< 30	< 26	< 27	< 28	< 27	< 26	< 27	< 26	< 26	< 26	< 35
2-Chlorotoluene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
4-Chlorotoluene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
4-Methyl-2-pentanone (MIBK)	ug/kg	< 28	< 27	< 28	< 30	< 26	< 27	< 28	< 27	< 26	< 27	< 26	< 26	< 26	< 35
Acetone	ug/kg	54	34	< 28	30	33	< 27	< 28	85	< 26	< 27	< 26	< 26	< 26	< 35
Allyl chloride	ug/kg	< 56	< 55	< 56	< 60	< 53	< 55	< 55	< 55	< 52	< 53	< 51	< 51	< 52	< 69
Benzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Bromobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Bromochloromethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Bromodichloromethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Bromoform	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Bromomethane	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
Carbon tetrachloride	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Chlorobenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Chloroethane	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
Chloroform	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Chloromethane	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
cis-1,2-Dichloroethene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
cis-1,3-Dichloropropene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Dibromochloromethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Dibromomethane	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Dichlorodifluoromethane	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
Diethyl ether (Ethyl ether)	ug/kg	< 56	< 55	< 56	< 60	< 53	< 55	< 55	< 55	< 52	< 53	< 51	< 51	< 52	< 69
Ethylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Hexachloro-1,3-butadiene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Isopropylbenzene (Cumene)	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
m&p-Xylene	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
Methylene chloride	ug/kg	< 5.6	5.6	5.8	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Methyl-tert-butyl ether	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Naphthalene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
n-Butylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
n-Propylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
o-Xylene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
p-Isopropyltoluene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
sec-Butylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Styrene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
tert-Butylbenzene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Tetrachloroethene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Tetrahydrofuran	ug/kg	< 56	< 55	< 56	< 60	< 53	< 55	< 55	< 55	< 52	< 53	< 51	< 51	< 52	< 69
Toluene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
trans-1,2-Dichloroethene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
trans-1,3-Dichloropropene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Trichloroethene	ug/kg	< 5.6	< 5.5	< 5.6	< 6	< 5.3	< 5.5	< 5.5	< 5.5	< 5.2	< 5.3	< 5.1	< 5.1	< 5.2	< 6.9
Trichlorofluoromethane	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
Vinyl chloride	ug/kg	< 11	< 11	< 11	< 12	< 11	< 11	< 11	< 11	< 10	< 11	< 10	< 10	< 10	< 14
Xylene (Total)	ug/kg	< 17	< 16	< 17	< 18	< 16	< 16	< 17	< 16	< 16	< 16	< 15	< 15	< 16	< 21
POLYNUCLEAR AROMATIC HYDROCARBONS (EPA 8270)															
2-Methylnaphthalene	ug/kg	32	57									< 10	< 10	< 10	< 14
Acenaphthene	ug/kg	< 11	< 11									< 10	< 10	< 10	< 14
Acenaphthylene	ug/kg	26	< 11									< 10	< 10	< 10	< 14
Anthracene	ug/kg	40	51									< 10	< 10	< 10	< 14
Benzo(a)anthracene	ug/kg	280	180									< 10	< 10	< 10	< 14
Benzo(a)pyrene	ug/kg	480	320									< 10	< 10	< 10	< 14
Benzo(b)fluoranthene	ug/kg	350	260									< 10	< 10	< 10	< 14
Benzo(g,h,i)perylene	ug/kg	590	400									< 10	< 10	< 10	< 14
Benzo(k)fluoranthene	ug/kg	170	150									< 10	< 10	< 10	< 14
Chrysene	ug/kg	410	260									< 10	< 10	< 10	< 14
Dibenz(a,h)anthracene	ug/kg	130	96									< 10	< 10	< 10	< 14
Fluoranthene	ug/kg	120	160									< 10	< 10	< 10	< 14
Fluorene	ug/kg	< 11	< 11									< 10	< 10	< 10	< 14
Indeno(1,2,3-cd)pyrene	ug/kg	510	340									< 10	< 10	< 10	< 14
Naphthalene	ug/kg	23	36									< 10	< 10	< 10	< 14
Phenanthrene	ug/kg	39	100									< 10	< 10	< 10	< 14
Pyrene	ug/kg	220	190									< 10	< 10	< 10	< 14
DIESEL RANGE ORGANICS (EPA WI Modified 8015)															
DRO	mg/kg	< 11	< 11	< 11	< 12	< 10	< 11	< 11	29	< 10	< 11	< 8.4	< 8.4	< 8.6	< 5.7

Notes:
Dup-1 was collected at SB-4 (4')
Dup-2 was collected at SB-1 (1')
Dup-3 was collected at SB-8 (24')

DRAFT

Table 1 (Continued)
Soil Analytical Results, North Track Assessment
Former BNSF Tie Treating Plant, Brainerd, Minnesota

RETEC

ANALYTE	UNITS	SB-4 (20')	SB-5 (1')	SB-5 (4')	SB-5 (12')	SB-5 (18')	SB-6 (1')	SB-6 (4')	SB-6 (12')	SB-6 (24')	SB-7 (1')	SB-7 (4')	SB-7 (12')	SB-7 (22')	SB-8 (1')
METALS (EPA 6010 and 7471)															
Arsenic	mg/kg		< 2.13	< 2.07			2.72	< 2.03			< 2.49	< 2.25			< 2.2
Barium	mg/kg		15	16.3			26.9	21.4			29.5	30.7			12.5
Cadmium	mg/kg		< 0.213	< 0.207			< 0.224	< 0.203			< 0.249	< 0.225			< 0.22
Chromium	mg/kg		5.27	5.37			9.73	4.86			6.59	6.18			4.64
Lead	mg/kg		2.32	2.21			17.7	2.21			2.73	2.24			1.98
Selenium	mg/kg		< 3.19	< 3.1			< 3.37	< 3.04			< 3.74	< 3.38			< 3.3
Silver	mg/kg		< 2.13	< 2.07			< 2.24	< 2.03			< 2.49	< 2.25			< 2.2
Mercury	mg/kg		< 0.0182	< 0.0192			< 0.0191	< 0.0179			< 0.0185	< 0.0195			< 0.0178
VOLATILE ORGANIC COMPOUNDS (EPA 8260)															
1,1,1,2-Tetrachloroethane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,1,1-Trichloroethane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,1,2,2-Tetrachloroethane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,1,2-Trichloroethane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,1,2-Trichlorotrifluoroethane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,1-Dichloroethane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,1-Dichloroethene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,1-Dichloropropene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,2,3-Trichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,2,3-Trichloropropane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,2,4-Trichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,2,4-Trimethylbenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,2-Dibromo-3-chloropropane	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	< 10
1,2-Dibromoethane (EDB)	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,2-Dichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,2-Dichloroethane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,2-Dichloropropane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,3,5-Trimethylbenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,3-Dichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,3-Dichloropropane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
1,4-Dichlorobenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
2,2-Dichloropropane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
2-Butanone (MEK)	ug/kg	< 26	< 27	< 26	< 28	< 31	< 28	< 26	< 31	< 30	< 27	< 27	< 29	< 30	< 26
2-Chlorotoluene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
4-Chlorotoluene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
4-Methyl-2-pentanone (MIBK)	ug/kg	< 26	< 27	< 26	< 28	< 31	< 28	< 26	< 31	< 30	< 27	< 27	< 29	< 30	< 26
Acetone	ug/kg	< 26	29	< 26	< 28	< 31	62	34	< 31	< 30	55	32	< 29	< 30	31
Allyl chloride	ug/kg	< 52	< 53	< 51	< 56	< 62	< 56	< 52	< 61	< 59	< 54	< 54	< 57	< 61	< 52
Benzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Bromobenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Bromochloromethane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Bromodichloromethane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Bromoform	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Bromomethane	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	< 10
Carbon tetrachloride	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Chlorobenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Chloroethane	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	< 10
Chloroform	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Chloromethane	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	< 10
cis-1,2-Dichloroethene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
cis-1,3-Dichloropropene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Dibromochloromethane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Dibromomethane	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Dichlorodifluoromethane	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	< 10
Diethyl ether (Ethyl ether)	ug/kg	< 52	< 53	< 51	< 56	< 62	< 56	< 52	< 61	< 59	< 54	< 54	< 57	< 61	< 52
Ethylbenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Hexachloro-1,3-butadiene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Isopropylbenzene (Cumene)	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
m&p-Xylene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	< 10
Methylene chloride	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Methyl-tert-butyl ether	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Naphthalene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	38	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
n-Butylbenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
n-Propylbenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
o-Xylene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
p-Isopropyltoluene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
sec-Butylbenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Styrene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
tert-Butylbenzene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Tetrachloroethene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Tetrahydrofuran	ug/kg	< 52	< 53	< 51	< 56	< 62	< 56	< 52	< 61	< 59	< 54	< 54	< 57	< 61	< 52
Toluene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
trans-1,2-Dichloroethene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
trans-1,3-Dichloropropene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Trichloroethene	ug/kg	< 5.2	< 5.3	< 5.1	< 5.6	< 6.2	< 5.6	< 5.2	< 6.1	< 5.9	< 5.4	< 5.4	< 5.7	< 6.1	< 5.2
Trichlorofluoromethane	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	< 10
Vinyl chloride	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	< 10
Xylene (Total)	ug/kg	< 15	< 16	< 15	< 17	< 19	< 17	< 16	< 18	< 18	< 16	< 16	< 17	< 18	< 16
POLYNUCLEAR AROMATIC HYDROCARBONS (EPA 8270)															
2-Methylnaphthalene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	52
Acenaphthene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	< 10
Acenaphthylene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	18
Anthracene	ug/kg	< 10	< 11	< 10	< 11	66	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	20
Benzo(a)anthracene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	19
Benzo(a)pyrene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	26
Benzo(b)fluoranthene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	37
Benzo(g,h,i)perylene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	32
Benzo(k)fluoranthene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	21
Chrysene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	44
Dibenz(a,h)anthracene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	< 10
Fluoranthene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	40
Fluorene	ug/kg	< 10	< 11	< 10	< 11	13	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	< 10
Indeno(1,2,3-cd)pyrene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	31
Naphthalene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	52
Phenanthrene	ug/kg	< 10	< 11	< 10	< 11	55	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	52
Pyrene	ug/kg	< 10	< 11	< 10	< 11	< 12	< 11	< 10	< 12	< 12	< 11	< 11	< 11	< 12	37
DIESEL RANGE ORGANICS (EPA WI Modified 8015)															
DRO	mg/kg	18	< 8.8	< 8.6	< 9.2	< 10	< 9.2	< 8.7	< 10	< 9.8	< 8.9	< 8.8	< 9.4	< 10	< 10

Notes:
Dup-1 was collected at SB-4 (4')
Dup-2 was collected at SB-1 (1')
Dup-3 was collected at SB-8 (24')

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Table 2
Groundwater Anaytical Results, North Track Assessment
Former BNSF Tie Treating Plant, Brainerd, Minnesota

RETEC

ANALYTE	UNITS	GW-2	GW-3	GW-5	GW-6	DUP-1	GW-7	GW-9	GW-10	GW-14	TRIP BLANK
VOLATILE ORGANIC COMPOUNDS (EPA 8260)											
1,1,1,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichlorotrifluoroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloropropene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-chloropropane	ug/l	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
1,2-Dibromoethane (EDB)	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3,5-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2,2-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2-Butanone (MEK)	ug/l	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Methyl-2-pentanone (MIBK)	ug/l	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Acetone	ug/l	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Allyl chloride	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromomethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Carbon tetrachloride	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroform	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,3-Dichloropropene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dibromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dibromomethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorodifluoromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorofluoromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Diethyl ether (Ethyl ether)	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Ethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Hexachloro-1,3-butadiene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Isopropylbenzene (Cumene)	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
m&p-Xylene	ug/l	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Methylene chloride	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Methyl-tert-butyl ether	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Naphthalene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
n-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
n-Propylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
o-Xylene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
p-Isopropyltoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
sec-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Styrene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
tert-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrahydrofuran	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,3-Dichloropropene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichlorofluoromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Vinyl chloride	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
POLYNUCLEAR AROMATIC HYDROCARBONS (EPA 8270 SIM)											
2-Methylnaphthalene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Acenaphthene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Acenaphthylene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Anthracene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(a)anthracene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(a)pyrene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(b)fluoranthene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(g,h,i)perylene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Benzo(k)fluoranthene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Chrysene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Dibenz(a,h)anthracene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Fluoranthene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Fluorene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Indeno(1,2,3-cd)pyrene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Naphthalene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Phenanthrene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
Pyrene	ug/l			< 10	< 10	< 10	< 11	< 11	< 10	< 10	
DIESEL RANGE ORGANICS (EPA WI Modified 8015)											
DRO	mg/l	< 0.1	< 0.1	< 0.33	0.11	< 0.1	< 0.13	< 0.1	0.11	< 0.1	

Notes:
Dup-1 was collected from SB-6 (GW-6)

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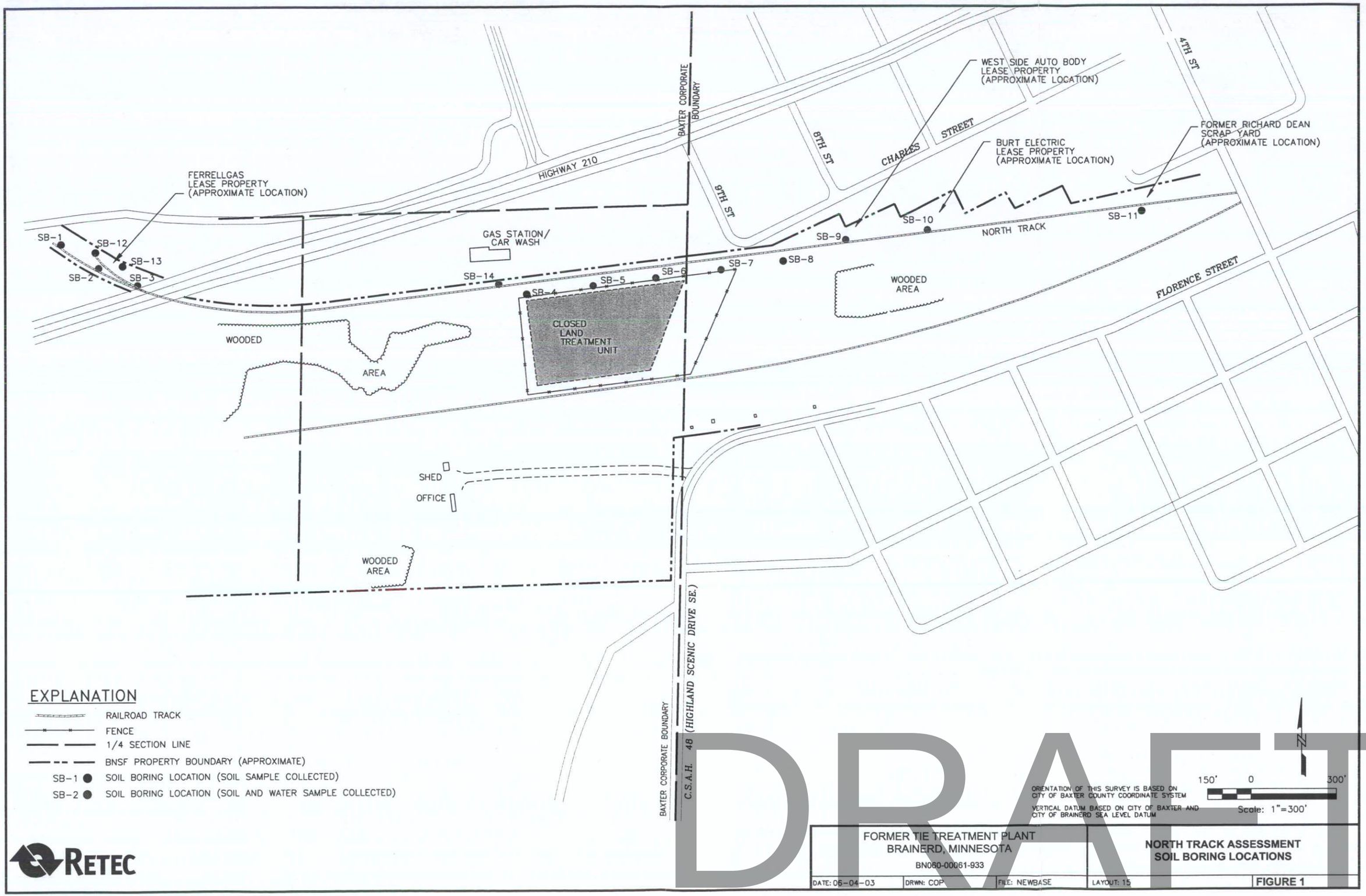
HIGHWAY 210
BAXTER CORPORATE BOUNDARY
9TH ST
8TH ST
CHARLES STREET
4TH ST
WEST SIDE AUTO BODY LEASE PROPERTY (APPROXIMATE LOCATION)
BURT ELECTRIC LEASE PROPERTY (APPROXIMATE LOCATION)
FORMER RICHARD DEAN SCRAP YARD (APPROXIMATE LOCATION)
FERRELLGAS LEASE PROPERTY (APPROXIMATE LOCATION)
GAS STATION/ CAR WASH
SB-1
SB-2
SB-3
SB-4
SB-5
SB-6
SB-7
SB-8
SB-9
SB-10
SB-11
SB-12
SB-13
SB-14
NORTH TRACK
WOODED AREA
CLOSED LAND TREATMENT UNIT
WOODED
AREA
FLORENCE STREET
SHED
OFFICE
WOODED AREA
BAXTER CORPORATE BOUNDARY
C.S.A.H. 48 (HIGHLAND SCENIC DRIVE SE.)
EXPLANATION
RAILROAD TRACK
FENCE
1/4 SECTION LINE
BNSF PROPERTY BOUNDARY (APPROXIMATE)
SB-1 SOIL BORING LOCATION (SOIL SAMPLE COLLECTED)
SB-2 SOIL BORING LOCATION (SOIL AND WATER SAMPLE COLLECTED)
ORIENTATION OF THIS SURVEY IS BASED ON CITY OF BAXTER COUNTY COORDINATE SYSTEM
VERTICAL DATUM BASED ON CITY OF BAXTER AND CITY OF BRAINERD SEA LEVEL DATUM
150' 0 300'
Scale: 1"=300'
N
DRAFT
RETEC
FORMER TIE TREATMENT PLANT
BRAINERD, MINNESOTA
BN060-00061-933
NORTH TRACK ASSESSMENT
SOIL BORING LOCATIONS
DATE: 06-04-03
DRWN: COP
FILE: NEWBASE
LAYOUT: 15
FIGURE 1

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 07 RANK: High

Current Site Use: **Railroad corridor and greenspace**

Site Summary:

This site is within the footprint of the BNSF Tie Plant Superfund site. The Superfund site includes numerous parcels in this area and is summarized in greater detail in the introduction to this appendix. This site was used by the plant for drying and outdoor storage of treated wood railroad ties. Creosote diluted with diesel was used as the wood preserve. The northeast corner of the site was investigated 2003, targeting a proposed pond to be constructed associated the Paul Bunyan Trail project. Soil samples indicated there were no impacts to soil in the proposed pond location.

Ranking Rationale: Former BNSF Tie Plant Superfund, drying/outdoor storage area.

HISTORICAL REVIEW:

Date	History	Source
1918-2015	The railroad was present as early as 1913. The site was part of the BNSF Tie Plant Superfund site. This portion of the plant was used for outdoor drying and storage of treated railroad ties through the 1980s. The tie plant was razed before 1992, and the site was cleared. Only a single track rail remained through 2016. The BNSF Tie Plant Superfund Site is discussed in greater detail in the introduction to this appendix.	Aerial photographs, topographic map, file review

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010081200B00009	M & I RY CO		BAXTER	56425	Assessed Elsewhere

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
MND000686196	BNSF RAILWAY CO - TIE PLANT	
4248	BURLINGTON NORTHERN & SANTA FE RAILWAY	Wastewater Discharger
SR16	BURLINGTON NORTHERN (TIE PLANT, BRAINER	Superfund Site Information Listing
MND000686196	BURLINGTON NORTHERN (BRAINERD/BAXTER P	National Priorities List
MN0055387	BURLINGTON NORTHERN/SANTA FE	
MND000686196	BRAINERD-TIE PLANT SITE - BURLINGTON NOR	RCRA - Generator Facilities
MND000686196	BRAINERD-TIE PLANT SITE - BURLINGTON NOR	RCRA Sites with Controls
MND000686196	BRAINERD-TIE PLANT SITE - BURLINGTON NOR	
57026	BNSF RAILWAY CO - TIE PLANT	CERCLIS Sites
MND000686196	BURLINGTON NORTHERN (BRAINERD/BAXTER P	

MPCA LISTED SPILLS: None

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Voluntary Investigation & Cleanup (VIC) VP19720	MnDOT was issued a No Further Action Letter for the former railroad spur that they acquired as part of the Paul Bunyan Trail Project. The identified release was PAH contamination in soil.	Limited No Further Action Determination; MPCA (2005)
Voluntary Investigation & Cleanup (VIC) VP19720	The northeast corner of this site was investigated in 2003 before the Paul Bunyan Trail was constructed. Four borings were completed targeting a proposed sedimentation pond. Soil samples were analyzed for DRO, GRO, VOCs, SVOCs, and RCRA metals. No soil impacts were identified. Fill was encountered to depths of 3 to 14 feet bgs. Fill and native soil consisted of primarily poorly graded fine grained sand.	Soil and Groundwater Assessment Report; Retec (2003)

End of Record for Site 07

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

1954

1969

1973

1978

1984

1992

2003

2006

2010

2013

2015

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- A Braun Intertec environmental technician was present during the probes to screen soils for organic vapors using a photoionization detector (PID) and headspace procedures. The soils were also observed for other indications of possible contamination such as odor or staining.

- Soil samples were collected in each probe for laboratory analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), RCRA metals, diesel-range organics (DRO) and gasoline-range organics (GRO). The depths at which the samples were collected are indicated in the table below. The samples were placed on ice and transported to the Braun Intertec laboratory for analysis.

Probe	Location	Total Depth	Depth to Base of Fill	Sample Depth
GP-1	Behind Valvoline	12'	0	3'
GP-2	Proposed Pond	20'	3'	5' (2' below original surface)
GP-3	Proposed Pond	20'	11'	15' (4' below original surface)
GP-4	Proposed Pond	28'	14'	20' (7' below original surface)
GP-5	Proposed Pond	20'	13'	16' (3' below original surface)

Results and Conclusions

As indicated in the attached boring logs, both the fill and the original soils encountered in the probes were primarily poorly-graded fine-grained sands. At the location of the pond, the fill was present to depths of 3 to 14 feet. No organic vapors were detected and no other indications of contamination such as staining or odors were observed.

The only analyte detected in the soils was barium and the concentrations were consistent with naturally occurring levels. Therefore, based on our field and laboratory results, soils within the area of this investigation do not appear to have been impacted by the adjacent Superfund site.

Should you have any questions regarding these results, please call Pat at 952-431-4493 or Rick at (651) 487-7050.

Sincerely,

BRAUN INTERTEC CORPORATION

Patricia M. Terhaar, PG
Senior Scientist

Richard M. Johnston, PG
Associate Principal

Attachments: Figure
Field Notes
Boring Logs
Laboratory Report

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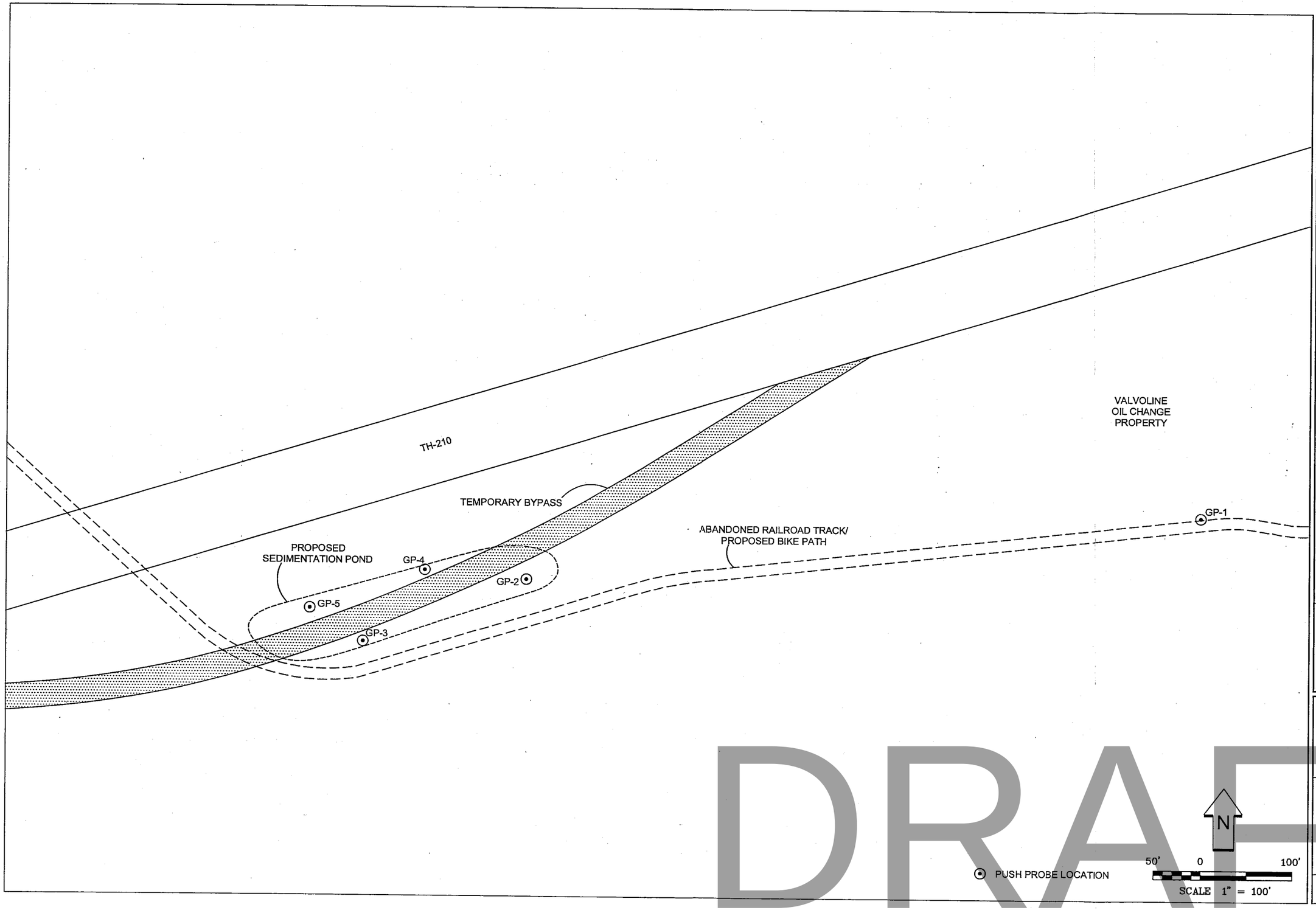

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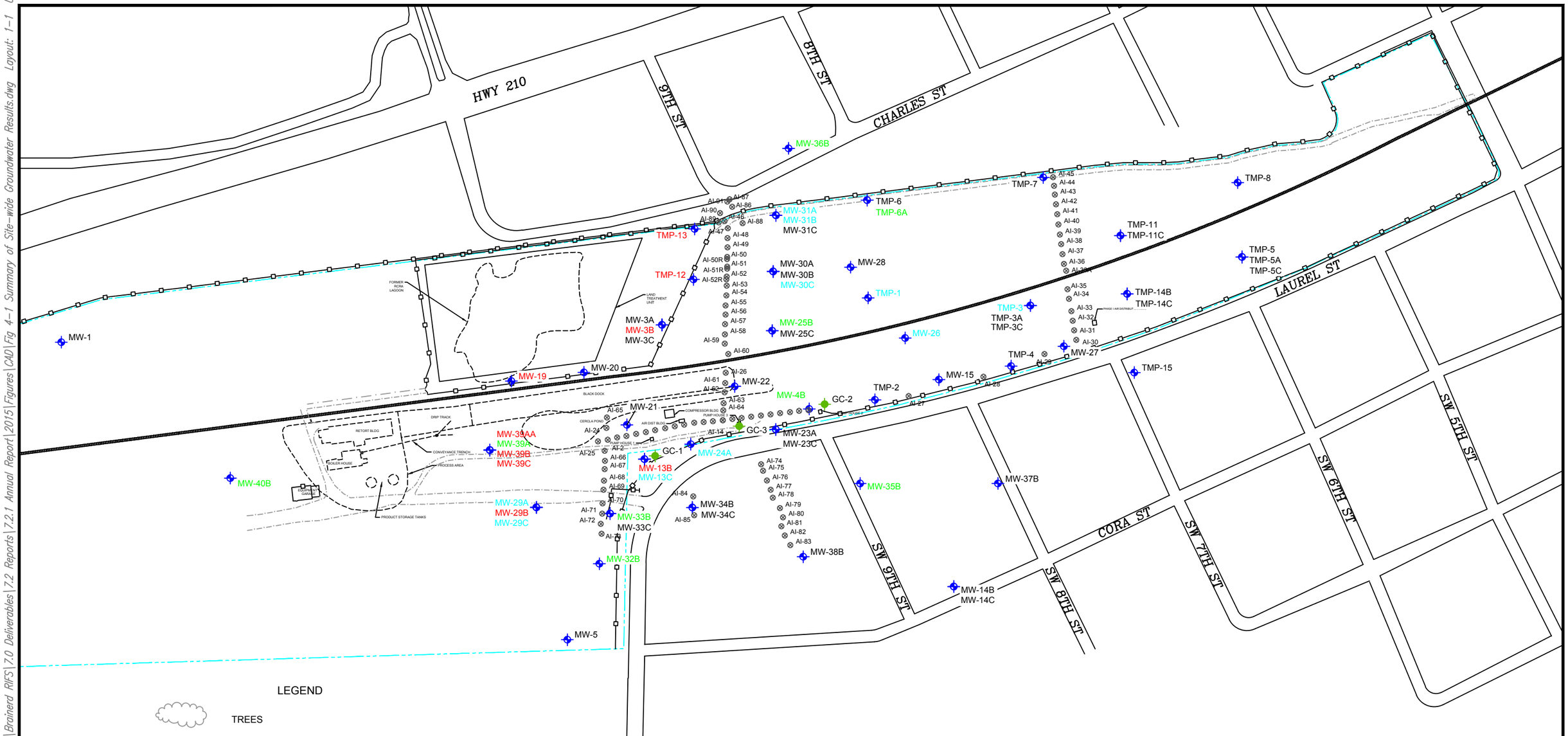
BRAUN INTERTEC

PUSH PROBE LOCATIONS
MN/DOT TH-210 PROJECT
BAXTER, MINNESOTA

INT	DATE
DRAWN BY: BJB	7-31-03
APP'D BY: PMT	7-31-03
JOB NO. CMXX-03-0203.BAX	
DWG. NO. XXOOOOOX	SHEET 1 OF 1
SCALE NONE	

FIGURE NO. 1



LEGEND

- TREES
- RAILROAD TRACK
- FENCE
- BNSF PROPERTY BOUNDARY (APPROXIMATE)
- FORMER TIE TREATING PLANT FACILITY
- DIRT/GRAVEL ACCESS ROAD
- GRADIENT CONTROL RECOVERY WELL
- PHASE I AIR INJECTION POINT (AI-24 THROUGH AI-45)
- PHASE II AIR INJECTION POINT (AI-46 THROUGH AI-91)
- GRADIENT CONTROL SYSTEM AIR INJECTION POINT (UNLABELED)
- MONITORING WELL
- MW-1 GROUNDWATER RESULTS EXCEED MCL/HRL/HBV AND CONSENT ORDER CRITERIA
- MW-1 GROUNDWATER RESULTS ONLY EXCEED CONSENT ORDER CRITERIA
- MW-1 GROUNDWATER RESULTS BELOW MCL/HRL/HBV/CONSENT ORDER CRITERIA
- MW-1 MONITORING WELL NOT SAMPLED

AECOM

DRAFT

Burlington Northern Railroad
Tie Treatment Facility Superfund Site
Brainerd and Baxter, MN

Summary of Site-wide Groundwater Results
October/November 2015

DATE: 3/1/2016 | DRWN: BJK/MN

Figure 4-1

File: \\usmps3fp001\Data\BNSFSecure\1 - Active Projects\Brainerd RIFS\7.0 Deliverables\7.2 Reports\7.2.1 Annual Report\2015\Figures\CAD\Fig 4-1 Summary of Site-wide Groundwater Results.dwg Layout: 1-1 User:

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 08 RANK: High

CW003

Current Site Use: **Vacant grass lot, parking lot**

Site Summary:

The site was a vacant through the 1950s. Fill material appears to have been placed on the northern portion of the site as part of the TH 210 project. The site was occupied by a propane plant from the 1960s through the 1990s. The plant was accessed by a railroad spur and was a hazardous waste generator. By 2003, the site was cleared and remains a vacant lot presently. The western end of the site was paved for parking around 2006. It is expected that loading/unloading of potentially hazardous/petroleum products has historically occurred at this site. In general, bulk loading/unloading of hazardous materials at railroad property is associated with a high frequency of spills and releases to the ground surface.

Ranking Rationale: Former propane plant, RCRA GEN.

HISTORICAL REVIEW:

Date	History	Source
1939-1954	The site was a vacant vegetated lot from the 1930s to the 1950s. It appears fill was placed on the northern portion of the site as part of the Highway 210 project.	Aerial photograph
1969-1992	The site was developed with several structures that were accessed by a railroad spur. National Propane and Pyrofax Gas Corp occupied the site during this time period. A large propane tank was located on-site.	Aerial photographs, topographic map, radius report, BNSF right-of-way map
2003-2015	The site was cleared. The western parcel was paved for parking and the eastern parcel remained a vacant grass lot through 2015.	Aerial photographs, topographic map

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010081200KA0009	CITY OF BAXTER				Municipal - All Other
010081200K00009	DONDELINGER, ROGER H				Commercial Preferred

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
110046034705	NATIONAL PROPANE CORP	Facility Registry System
HWLIC1002464	NATIONAL PROPANE CORP	Hazardous Waste Generator Sites

MPCA LISTED SPILLS: None

COUNTY WELL INDEX REGISTERED WELLS:

Unique Well No	Well Name	Depth (ft)	Aquifer	Listed Use	Date Drilled
555742	NATIONAL PROPANE COMPANY	126	Quat. Buried Artes. Aquifer	Abandoned	1995

MPCA REGISTERED TANKS: None

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DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Hazardous Waste, Small to Minimal QG HWLIC1002464	No significant details were provided.	Radius Report; GeoSearch (2016)

End of Record for Site 08

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

1954

1969

1973

1978

1984

1992

2003

2006

2010

2013

2015

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 09 RANK: Low

WM007

Current Site Use: **Excelsior Dental Care**

Site Summary:

The site was a vacant grass lot until it was developed with the existing dental clinic by 2006. The clinic is a small quantity hazardous waste generator.

Ranking Rationale: RCRA SQG.

HISTORICAL REVIEW:

Date	History	Source
1939-2003	The site was an undeveloped grass lot.	Aerial photographs, topographic maps
2006-2015	The site was developed with a dental clinic by 2006. It remained similar through this time period.	Aerial photographs, topographic maps, city directories

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
032890010010009	ZARD, CLARK D & KATHRYN	7814 EXCELSIOR RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS:

Site ID	Name	Activity
MNS000176800	Excelsior Dental	Hazardous Waste, Small to Minimal QG
123039	Brainerd Oil Drop Site	Tank Site

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
MNS000176800	EXCELSIOR DENTAL	Hazardous Waste Generator Sites
110046042625	EXCELSIOR DENTAL	Facility Registry System

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS:

MPCA ID	Tank #	Above/Underground?	Capacity (gal)	Stored Product	Status	Date Regist.
123039	001	Under Ground	4000	Used Or Waste Oil	Active	6/27/2003

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DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Hazardous Waste, Small to Minimal QG MNS000176800	The dental clinic is a small quantity hazardous waste generator with no listed violations.	Radius Report; GeoSearch (2016)

End of Record for Site 09

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

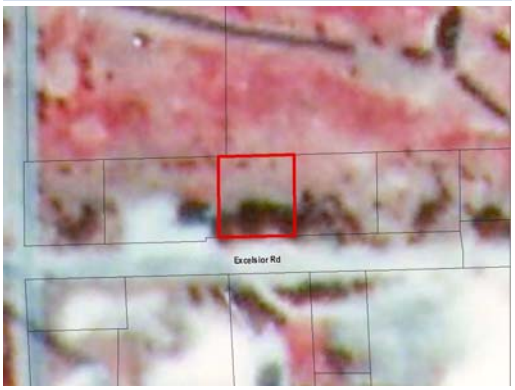
1954

1969

1973

1978

1984



1992

2003

2006

2010

2013

2015

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 10 RANK: Low

WM006

Current Site Use: **Salon El Rio**

Site Summary:

The site was a vacant grass lot until it was developed with the existing commercial structure by 1978. The site was consistently occupied by a dental clinic and various retailers. The clinic was a small quantity hazardous waste generator.

Ranking Rationale: RCRA SQG.

HISTORICAL REVIEW:

Date	History	Source
1939-1973	The site was a vacant grass lot and partially wooded.	Aerial photographs, topographic maps
1978-2015	The site was developed with a dental clinic by 1978. The clinic was expanded to the east by 2003. It has consistently been occupied by Budding dentistry. Other retailers (beauty salon, insurance agents, etc.) have also occupied the site.	Aerial photographs, topographic maps, city directories

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010053400D00009	AJO PROPERTIES LLC	7760 EXCELSIOR RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS:

Site ID	Name	Activity
702778630	Joseph P Dudding DDS	Hazardous Waste, Small to Minimal QG

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
702778630	JOSEPH P DUDDING DDS	Hazardous Waste Generator Sites
110008731300	JOSEPH P DUDDING DDS	Facility Registry System

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW: None

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End of Record for Site 10

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

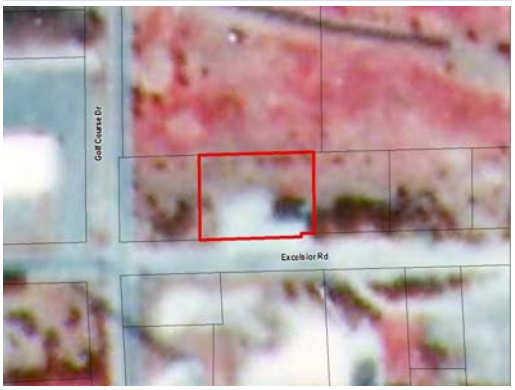
1954

1969

1973

1978

1984



1992

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2006

2010

2013

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 11 RANK: Medium

Current Site Use: **Papa Murphy's**

Site Summary:

The site was wooded until developed with an auto parts and repair store in the mid-1970s. The auto center had one used or waste oil UST that has been removed, and was a small quantity hazardous waste generator of ignitable waste. The site use remained consistent through the 1990s. After 2003, the site was used as a book store and then a restaurant.

Ranking Rationale: Removed AST, former auto center, RCRA SQG.

HISTORICAL REVIEW:

Date	History	Source
1939-1969	The site was wooded and undeveloped.	Aerial photographs
1973	The site was graded prior to development.	Aerial photograph, topographic map
1978-1998	The site was developed with the existing commercial structure. It was occupied consecutively by Crown Auto stores, Champion Auto and Tire, and Baxter Champion Auto.	Aerial photographs, topographic maps, city directories
2000-2015	The site was occupied by a book store and then Papa Murphy's restaurant.	Aerial photographs, topographic map, city directories, file review

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010082100FA0009	MEYER, JOEL & JANE A		BAXTER	56425	Commercial Preferred
010082100E00009	MEYER, JOEL & JANE A	7822 FAIRVIEW RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
110003768539	BAXTER CHAMPION AUTO	Facility Registry System
MND058332685	BAXTER CHAMPION AUTO	No Longer Regulated RCRA Generator Facilities
5893	CROWN AUTO INC	Tank Site
MND058332685	BAXTER CHAMPION AUTO	Resource Conservation & Recovery Act - Non-Generator

MPCA LISTED SPILLS: None

COUNTY WELL INDEX REGISTERED WELLS:

Unique Well No	Well Name	Depth (ft)	Aquifer	Listed Use	Date Drilled

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Unique Well No	Well Name	Depth (ft)	Aquifer	Listed Use	Date Drilled
569912	SOLLID, DALE	60	Not Listed	Domestic	1995

MPCA REGISTERED TANKS:

MPCA ID	Tank #	Above/Underground?	Capacity (gal)	Stored Product	Status	Date Regist.
5893	022	Under Ground	560	Used Or Waste Oil	Removed	5/29/1986

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Hazardous Waste, Small to Minimal QG MND058332685	The former auto center was listed as a small quantity generator of ignitable waste with no listed violations.	Radius Report; GeoSearch (2016)

End of Record for Site 11

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

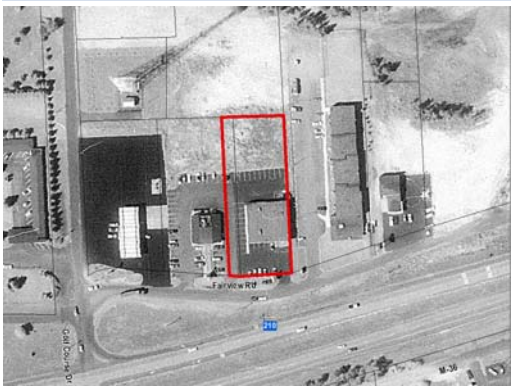
1939

1954

1969

1973

1978



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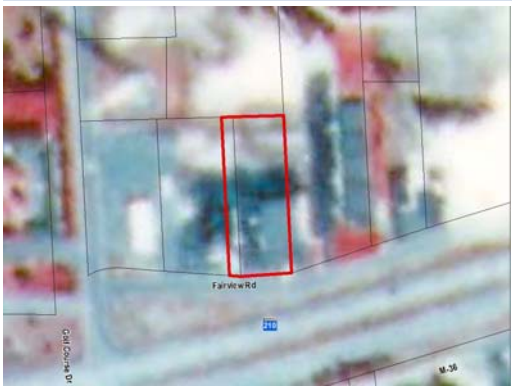

1992

2003

2006

2010

2013

2015

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 12 RANK: Medium WM004

Current Site Use: **MnDOT storage building, cell tower**

Site Summary:

The site was a wooded lot until developed with a radio tower and small shed in the 1950s. The tower was razed by 2010 and a new one was constructed in 2015. The site is a small quantity hazardous waste generator. The monitoring well is not listed in the BNSF Tie Plant Superfund site network of monitoring wells.

Ranking Rationale: Monitoring well, RCRA SQG.

HISTORICAL REVIEW:

Date	History	Source
1939	The site is an undeveloped wooded lot.	Aerial photograph
1954-2006	The site was developed with a communications tower and an adjacent shed by 1954. The shed was either replaced or relocated to the west side of the tower by 2003.	Aerial photographs, topographic maps
2010-2015	The tower was razed by 2010 and a new one was constructed in 2015.	Aerial photograph

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010082100D00009	STATE OF MINNESOTA ADMIN BLDG				State Public Property

MPCA WIMN DATABASE LISTINGS:

Site ID	Name	Activity
MNS000172825	Baxter Tower Site	Hazardous Waste, Small to Minimal QG

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
MNS000172825	BAXTER TOWER SITE	Hazardous Waste Generator Sites
110046070835	BAXTER TOWER SITE	Facility Registry System

MPCA LISTED SPILLS: None

COUNTY WELL INDEX REGISTERED WELLS:

Unique Well No	Well Name	Depth (ft)	Aquifer	Listed Use	Date Drilled
790020	MW-33	17	Not Listed	Monitor well	2012

MPCA REGISTERED TANKS: None

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DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Hazardous Waste, Small to Minimal QG MNS000172825	The site is a small quantity hazardous waste generator with no listed violations.	Radius Report; GeoSearch (2016)

End of Record for Site 12

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

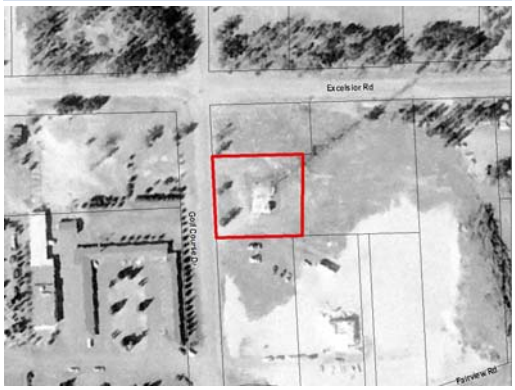
Historical Aerial Photographs

1939

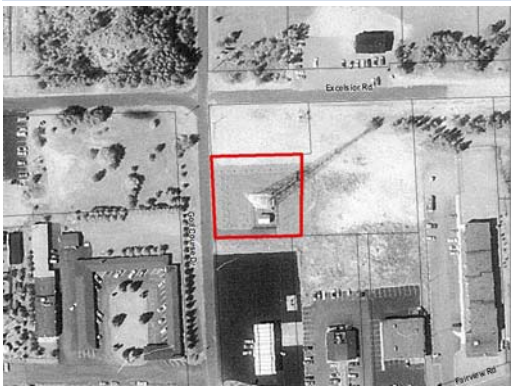
1954

1969

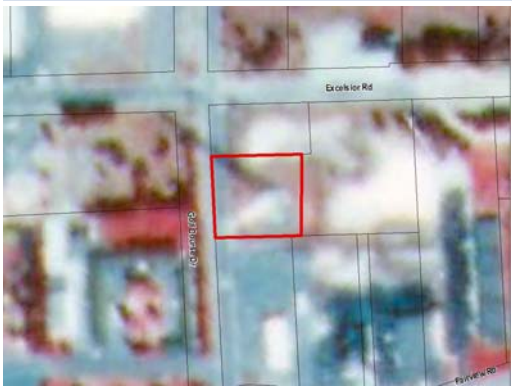
1973



1978



1984



1992

2003

2006

2010

2013

2015

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 13 RANK: Medium

Current Site Use: **Fleet Farm car wash**

Site Summary:

The site was a wooded lot until developed with a fuel station around the mid-1970s. Leaking petroleum USTs at the site were removed with the fuel station around 2004. The site was redeveloped with a carwash over the former tank basins. Soil was investigated and groundwater monitoring was completed. The Leak file indicates significant petroleum impacts were still present in soil and shallow groundwater after the redevelopment. The plume was determined to be stable, so the file was closed.

Ranking Rationale: Former fuel station, closed Leak, removed USTs.

HISTORICAL REVIEW:

Date	History	Source
1939-1969	The site was an undeveloped wooded lot.	Aerial photographs, topographic maps
1973-2003	The site was graded in the early 1970s and developed with a fuel station. The fuel station was located on the southern half of the site.	Aerial photographs, topographic maps, city directories
2006-2015	The fuel station was razed and the site was redeveloped with a car wash.	Aerial photographs, topographic maps, file review

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010082100G00009	MILLS PROPERTIES, INC	7778 FAIRVIEW RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS:

Site ID	Name	Activity
15211	Baxter Ico	Leak Site
5904	Baxter Food Mart	Tank Site

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS: None

MPCA LISTED SPILLS: None

COUNTY WELL INDEX REGISTERED WELLS:

Unique Well No	Well Name	Depth (ft)	Aquifer	Listed Use	Date Drilled
711779	MW-1	17	Not Listed	Abandoned	2004
711780	MW-2	17	Not Listed	Abandoned	2004
711781	MW-3	17	Not Listed	Abandoned	2004

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

MPCA REGISTERED TANKS:

MPCA ID	Tank #	Above/Underground?	Capacity (gal)	Stored Product	Status	Date Regist.
5904	167	Under Ground	6000	Gasoline	Removed	5/1/1986
5904	168	Under Ground	10000	Diesel	Removed	5/1/1986
5904	169	Under Ground	10000	Gasoline	Removed	5/1/1986
5904	170	Under Ground	10000	Gasoline	Removed	5/1/1986
5904	171	Under Ground	10000	Gasoline	Removed	5/1/1986

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Voluntary Investigation & Cleanup (VIC) VP19720	A 2002 Phase I ESA completed in the vicinity of this site identified it as Inter City Oil, a former gas station.	Limited Phase I Environmental Site Assessment, Trunk Highway 210; Service Engineering Group (2002)
Leak Site 15211	Four gasoline and one diesel UST were removed in 2003. The site had been a gasoline retailer for over 30 years. Groundwater was very shallow and a resource aquifer in the area. The site was redeveloped with a car wash and investigated for petroleum contamination in 2004. The car wash was constructed over the former tank basin which had petroleum impacted soil that remained in place. Groundwater monitoring was completed. Groundwater was determined to flow southeast across the site. The groundwater plume was determined to be stable and the file was closed in 2006.	Interest Remarks; MPCA (2006)
Leak Site 15211	On-site soil analytical indicated that petroleum compounds (GRO up to 5,900 mg/kg) were detected in the vicinity of the former tank basin.	Updated Remedial Investigation Report for the Baxter ICO site; Millsop Associates, Inc. (2004)
Leak Site 15211	Groundwater was encountered between 8 and 10 feet bgs. Petroleum compounds in groundwater (GRO up to 36,000 ug/L) were present during the last sampling event.	Annual Monitoring Report for the Former Baxter ICO; Millsop Associates, Inc. (2006)

End of Record for Site 13

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

1954

1969

1973

1978

1984

1992

2003

2006

2010

2013

2015

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Table 2
Results of Soil Headspace Screening

Depth (ft)	Soil Boring										
	P-1	P-2	P-3	P-4	P-5	P-6	P-7	P-8	MW-1	MW-2	MW-3
0-1		2.2									
2-3	0.4		0.6	1.6		24.2	1.9	3.5			
3-4		1.8			3.1						
4-5			1.2								
4-6									0.5	0.8	0.3
5-6	-							3.2			
6-7				1.7							
7-8	0.7	1.4			661	1.4	1.5				
9-10			1.1								
9-11									974	2.8	5.3
10-11	1.0	1.1						1.6			
11-12				5.8			1.9				
12-13			1.2		345						
13-14	0.7										
14-15						1.7		1.2			
14-16									707	0.7	0.1
17-18	0.4				4.9						
22-23	0.4				2.3						
27-28	0.8										

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Table 3
Analytical Results of Soil Samples

Boring, Depth(ft)	Date Sampled	Benzene	Toluene	Ethylbenzene	Xylenes	GRO	DRO	Lab Type
P-1 (9-10)	10-02-03	<0.029	<0.029	<0.029	<0.029	<2.9	<4.2	Fixed
P-1 (29-30)	10-02-03	<0.030	<0.030	<0.030	<0.030	<3.0	<3.4	Fixed
P-2 (8-9)	10-02-03	<0.030	<0.030	<0.030	<0.030	NA	6.3	Fixed
P-2 (13-14)	10-02-03	<0.030	<0.030	<0.030	<0.030	NA	<3.5	Fixed
P-3 (7-8)	10-02-03	<0.026	<0.026	<0.026	<0.026	NA	<3.6	Fixed
P-3 (12-13)	10-02-03	<0.031	<0.031	<0.031	<0.031	NA	<3.8	Fixed
P-4 (7-8)	10-02-03	<0.026	<0.026	<0.026	<0.026	NA	NA	Fixed
P-4 (12-13)	10-02-03	0.033	0.054	0.078	0.067	NA	<3.5	Fixed
P-5 (8-9)	10-02-03	<0.054	<0.054	0.20	1.72	230	NA	Fixed
P-5 (21-22)	10-02-03	<0.032	<0.032	<0.032	<0.032	<3.2	NA	Fixed
P-6 (6-7)	10-02-03	<0.028	<0.028	<0.028	<0.028	<2.8	NA	Fixed
P-6 (13-14)	10-02-03	<0.029	<0.029	<0.029	<0.029	<2.9	NA	Fixed
P-7 (6-7)	10-02-03	<0.027	<0.027	<0.027	<0.027	<2.7	NA	Fixed
P-7 (12-13)	10-02-03	<0.030	<0.030	<0.030	<0.030	<3.0	NA	Fixed
P-8 (6-7)	10-02-03	<0.027	<0.027	<0.027	<0.027	<2.7	NA	Fixed
P-8 (12-13)	10-02-03	<0.030	<0.030	<0.030	<0.030	<3.0	NA	Fixed
MW-1 (10-11)	08-18-04	<2.4	140	56	970	5900	1400	Fixed
MW-1 (15-16)	08-18-04	<0.031	0.210	0.100	0.710	7.1	<3.7	Fixed
MW-2 (10-11)	08-18-04	<0.030	<0.030	<0.030	<0.030	<3.0	<3.7	Fixed
MW-2 (15-16)	08-18-04	<0.030	<0.030	<0.030	<0.030	<3.0	<4.1	Fixed
MW-3 (10-11)	08-18-04	<0.030	<0.030	<0.030	<0.030	<3.0	<4.0	Fixed
MW-3 (15-16)	08-18-04	<0.030	<0.030	<0.030	<0.030	<3.0	<4.1	Fixed

Report results in mg/kg. Use less than symbols to show detection limit. Indicate mobile or fixed based in the lab type column.
Notes: There were no detections in the methanol field blanks.

Table 4
Other Contaminants Detected in Soils (Petroleum or Non-petroleum Derived)

Boring, Depth (ft)	Date Sampled						Lab Type

Report results in mg/kg. Indicate other contaminants (either petroleum or non-petroleum derived) detected in soil collected from borings.
Notes:

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Table 5
Water Level Measurements and Depths of Water Samples Collected from Borings

	Soil Boring									
	P-1	**P-2**	**P-3**	**P-4**	**P-5**	**P-6**	**P-7**	**P-8**		
Static Water level depth (ft)	10	10	10	9	9	7	8	7		
Sampled Depth (ft)	10	10	10	9	9	7	8	7		

Describe in Appendix C, the methods and procedures used to measure water levels in borings.
Notes:

Table 6
Analytical Results of Water Samples Collected from Borings

Boring Number	Date Sampled	Sampled Depth	Benzene	Toluene	Ethyl benzene	Xylenes	MTBE	GRO	DRO	Lab Type
P-1	10-02-03	10	<1.0	1.4	<1.0	<2.0	<1.0	<50	<100	Fixed
P-2	10-02-03	10	<1.0	2.4	<1.0	<2.0	<1.0	<50	130	Fixed
P-3	10-02-03	10	<1.0	1.4	<1.0	<2.0	<1.0	NA	<100	Fixed
P-4	10-02-03	9	15	5.5	<1.0	14.5	<1.0	860	4600	Fixed
P-5	10-02-03	9	<25	260	340	7700	<25	18000	6700	Fixed
P-6	10-02-03	7	<1.0	2.4	<1.0	<2.0	<1.0	<50	NA	Fixed
P-7	10-02-03	8	<1.0	1.4	<1.0	<2.0	<1.0	<50	NA	Fixed
P-8	10-02-03	7	<1.0	2.4	<1.0	<2.0	<1.0	<50	NA	Fixed
Trip Blank	10-02-03		<1.0	<1.0	<1.0	<2.0	<1.0	NA	NA	Fixed
Field Blank										
Lab Blank										
HRL			10	1000	700	10000				

Report results in ug/L. Use less than symbols to show detection limit. Indicate mobile or fixed based in the lab type column.
Notes

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Table 7
Other Contaminants Detected in Water Samples Collected from Borings (Petroleum or Non-petroleum Derived)

Boring Number	Date Sampled	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	2-Butanone	Acetone	Isopropylbenzene	Naphthalene	n-Butylbenzene	n-Propylbenzene	Dichloroethene
P-3	10-02-03	-	-	-	-	-	-	-	-	
P-4	10-02-03	2.9	-	10	56	6.5	53	7.7	-	-
P-5	10-02-03	1900	710	-	250	42	86	84	190	-
P-6	10-02-03	-	-	-	-	-	2.0	-	-	-
Trip Blank	10-02-03	-	-	-	-	-	-	-	-	-
Field Blank										
Lab Blank										
HRL (ug/L)										

Report results in ug/L. Indicate other contaminants (either petroleum or non-petroleum derived) detected in water samples collected from the borings, temporary wells or push probes.
Notes:

Table 8
Monitoring Well Completion Information

Well Number	Unique Well Number	Date Installed	Surface Elevation	Top of Riser Elevation	Bottom of Well (Elevation)	Screen Interval (Elev. - Elev.)
MW-1		08-18-04	99.74	99.46	82.74	92.74 – 82.74
MW-2		08-18-04	99.98	101.99	82.98	92.98 – 82.98
MW-3		08-18-04	98.41	100.50	81.41	91.41 – 81.41

Notes: Benchmark of 100.00 feet – S.W. corner of car wash, on concrete at door jam

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Table 9
Water Level Measurements in Wells

Well Number	Date Sampled	Depth of Water from Top of Riser	Product Thickness	Depth of Water Below Grade	Relative Groundwater Elevation	Water Level Above Screen (Y/N)
MW-1	08-19-04	9.86	0	10.14	89.60	N
	11-04-04	9.09	0	9.37	90.37	N
MW-2	08-19-04	12.57	0	10.56	89.42	N
	11-04-04	11.84	0	9.83	90.15	N
MW-3	08-19-04	11.16	0	9.07	89.34	N
	11-04-04	10.39	0	8.30	90.11	N

Describe in Appendix C, the methods and procedures used to measure water levels.
Notes:

Table 10
Analytical Results of Water Samples Collected from Wells

Well #	Date Sampled	Benzene	Toluene	Ethyl benzene	Xylenes	MTBE	GRO	DRO	Lab Type
MW-1	08-19-04	<20	2600	410	2710	<20	12000	2800	Fixed
	11-04-04	<50	5900	980	7100	<50	36000	2700	Fixed
MW-2	08-19-04	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<100	Fixed
	11-04-04	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<94	Fixed
MW-3	08-19-04	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<100	Fixed
	11-04-04	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<94	Fixed
Duplicate (MW-1)	08-19-04	<25	3700	580	3800	<25	20000	3700	Fixed
	11-04-04	<50	6500	1100	7900	<50	17000	12000	Fixed
Trip Blank	08-19-04	<1.0	<1.0	<1.0	<2.0	<1.0	NA	NA	Fixed
	11-04-04	<1.0	<1.0	<1.0	<2.0	<1.0	NA	NA	Fixed
Lab Blank HRL (ug/L)		10	1000	700	10000				

Report results in ug/L. Use less than symbols to show detection limit. Indicate mobile or fixed based in the lab type column.
Notes

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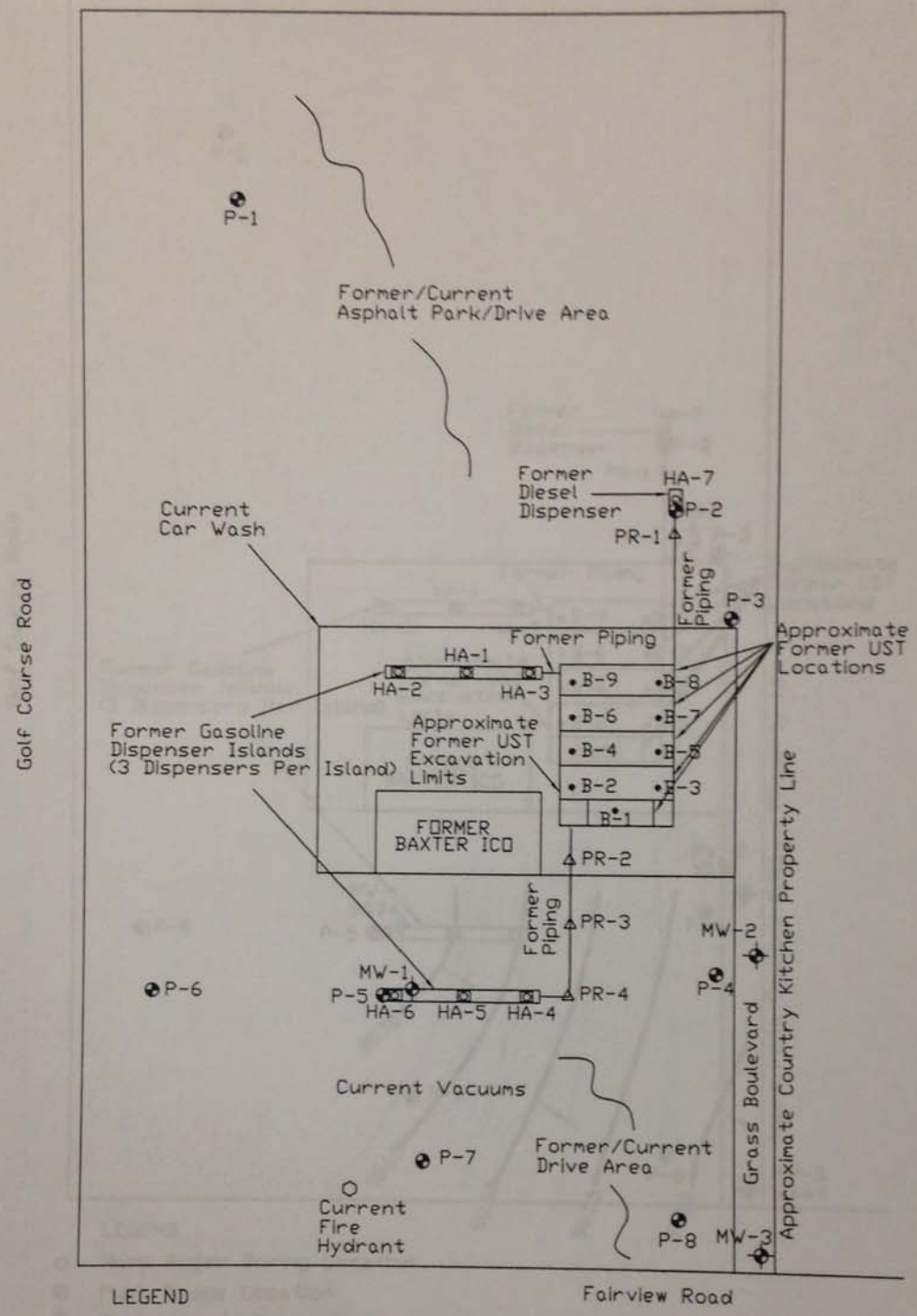
Table 11
Other Contaminants Detected in Water Samples
Collected from Wells (Petroleum or Non-petroleum Derived)

Well Number	Date Sampled	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Naphthalene	Tetrahydrofuran	Isopropylbenzene	n-Propylbenzene		
MW-1	08-19-04	830	240	160			98		
	11-04-04	2200	690	330		58	260		
MW-2	08-19-04				7.3				
Duplicate (MW-1)	08-19-04	1100	320	210		31	130		
	11-04-04	2500	790	370		65	300		
Field Blank									
Trip Blank									
Lab Blank									
HRL (ug/L)									

Report results in ug/L. Indicate other contaminants (either petroleum or non-petroleum derived) detected in water samples collected from the borings, temporary wells or push probes.
Notes:



LEGEND

- ○ Hand Auger Boring Location
- Push Probe Location
- Monitoring Well Location
- • Approximate UST Excavation Base Soil Sample Location
- △ Piping Run Soil Sample Location

Note: Diagram partially based on a site map for the car wash supplied by Widseth Smith Nolting.

N

APPROXIMATE SCALE

0 FEET 40

MILLSOP ASSOCIATES, INC.

P.O. BOX 236
35797 DOLNEY LAKE ROAD
CROSBY, MINNESOTA 56441
218-763-2907

FIGURE 2: APPROXIMATE SITE DIAGRAM
FORMER BAXTER ICO
BAXTER, MINNESOTA

MARCH 2006 | MAI PROJECT NO. M-06-05C

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 14 RANK: Low

WM002

Current Site Use: **Fleet Farm Indoor Shooting Range, Kohls store**

Site Summary:

The site was developed with a single commercial structure as early as 1938 and additional structures added through the 1960s. The site was historically occupied by a hotel, bowling alley, amusement park, restaurant, and retailers. The bowling alley (original 1930s structure) was improved, but remains on-site. All other structures were cleared for construction of a department store and parking lots. The indoor shooting range and department store are RCRA small quantity hazardous waste generators.

Ranking Rationale: RCRA SQG.

HISTORICAL REVIEW:

Date	History	Source
1915-1918	No structures are depicted on the site.	Topographic maps
1939-2003	The northwest corner of the site was developed with a single commercial structure as early as 1939. By 1954, the original building was expanded and numerous other structures were added to create the Paul Bunyan Amusement Center. Historic occupants included a bowling alley, restaurant, amusement park, hotel, and retailers.	Aerial photographs, topographic maps, city directories, MnDOT ROW maps
2006-2015	All but one structure (the bowling alley) were razed from the site. The bowling alley appears to have been improved and a Kohl's department store was constructed in the southeast portion of the site. The remainder of the site was paved for parking.	Aerial photographs, topographic map, city directories

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
032820010030009	KOHL'S ILLINOIS INC	7565 EXCELSIOR RD	BAXTER, MN	56425	Commercial Preferred
032820010020009	MILLS PROPERTIES, INC				Commercial Preferred
032820010010009	MILLS PROPERTIES, INC	7609 EXCELSIOR RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS:

Site ID	Name	Activity
MNS000188839	Indoor Shooting & Archery Range	Hazardous Waste, Small to Minimal QG
MNS000171363	Kohl's Department Store - Store 743	Hazardous Waste, Small to Minimal QG

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
MNS000171363	KOHL'S DEPARTMENT STORE - STORE 743	Hazardous Waste Generator Sites
MNS000188839	INDOOR SHOOTING & ARCHERY RANGE	Hazardous Waste Generator Sites
110046050429	KOHL'S STORE 743	Facility Registry System

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MPCA LISTED SPILLS: None

COUNTY WELL INDEX REGISTERED WELLS:

Unique Well No	Well Name	Depth (ft)	Aquifer	Listed Use	Date Drilled
105916	NEFF, D.B.	70	Quat. Buried Artes. Aquifer	Domestic	1975

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Hazardous Waste, Small to Minimal QG Multiple	The shooting range and department store are small quantity hazardous waste generators with no listed violations.	Radius Report; GeoSearch (2016)

End of Record for Site 14

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

1954

1969

1973

1978

1984

1992

2003

2006

2010

2013

2015

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 15 RANK: Medium

WM009

Current Site Use: **Harley Davidson sales and repair**

Site Summary:

The site was a vacant grass lot bound by TH 210 and the railroad through the early 1950s. Around the mid-1950s, the site was developed with the existing commercial structure (later expanded). The structure was used through 2003 as a car dealership and is now used for motorcycle sales and repair. Two closed Leak sites document petroleum impacts to soil and groundwater, and chlorinated solvents were detected in groundwater. Petroleum impacted soil and the petroleum USTs on-site were removed. Groundwater was still impacted (DRO up to 830 ug/L) when the files were closed.

Ranking Rationale: Closed Leaks, auto repair, removed USTs, RCRA SQG.

HISTORICAL REVIEW:

Date	History	Source
1939	The site was an undeveloped grass lot bound by TH 210 and the railroad.	Aerial photograph
1954-2015	The site was graded in 1954, before developed with a car dealership and adjacent parking lots. The northern leg of the building was expanded to the east by 1984, and the eastern leg of the building was expanded by 2006. The parking areas were also later expanded. Vehicles were consistently present in the lot.	Aerial photographs, topographic map, radius report, city directories

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☑ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

Motorcycle sales and service. Assumed petroleum/hazardous substance use.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010082100I00009	BLUE OX PROPERTIES LLC	7915 STATE HIGHWAY 210	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS:

Site ID	Name	Activity
MND045959483	Dondelinger Chevrolet-Cadillac Inc	Hazardous Waste, Small to Minimal QG
14163	Dondelinger Chevrolet	Leak Site
11882	Dondelinger Chevrolet	Leak Site
5858	Dondelinger Chevrolet-Cadillac Inc	Tank Site

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
11882	DONDELINGER CHEVROLET	Leak Site
110063575983	VIKING LAND HARLEY-DAVIDSON-CARTRIDGE FI	Facility Registry System
5858	DONDELINGER CHEVROLET-CADILLAC INC	Tank Site
MND045959483	DONDELINGER CHEVROLET-CADILLAC INC	RCRA - Generator Facilities
14163	DONDELINGER CHEVROLET	Leak Site

DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
68211	DONDELINGER CADILLAC CSW	Wastewater Discharger
MND045959483	DONDELINGER CHEVROLET-CADILLAC INC	Hazardous Waste Generator Sites
110064277786	DONDELINGER CHEVROLET-CADILLAC INC	Facility Registry System

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS:

MPCA ID	Tank #	Above/Underground?	Capacity (gal)	Stored Product	Status	Date Regist.
5858	001	Under Ground	10000	Fuel Oil	Removed	4/30/1986
5858	002	Under Ground	1000	Gasoline	Removed	4/30/1986
5858	003	Under Ground	500	Used Or Waste Oil	Removed	3/28/1998

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Leak Site 11882	In 1998, the site was investigated during removal of a used oil UST and an unleaded gasoline UST. Elevated DRO concentrations were found in soils in the tank basin, so 8 cubic yards of soil was removed. Native soil type was identified as sand and groundwater was encountered from 14 to 17 feet bgs during the investigation. Monitoring wells were installed. DRO was detected in groundwater up to 830 ug/L. The risk level was evaluated as low.	Remedial Investigation Report, Dondelinger Chevrolet; GME (2003)
Leak Site 11882	A public supply well was installed in the unconsolidated aquifer (20 feet bgs) in 1998 to supply water to the facility. Analytical results identified 0.2 ug/L toluene, 0.5 ug/L xylenes, and 1,1,1-trichloroethane (apparently detected in 1993) in groundwater on the site. The site was determined to be reliably and consistently below the maximum contaminant levels (MCLs) for 1,1,1-trichlorethane and xylenes.	Petroleum Tank Release Site File Closure Letter; MPCA (2003)
Leak Site 14163	need to order	Public Water Supply Well Assessment; Terracon (2002)
Safe Drinking Water Information System MN5180059F3	The site has a Transient Non-Community Inner Wellhead Management Zone. The source water protection area for this facility consists of an inner wellhead management zone that is defined by a 200 foot radius around each well that supplies drinking water.	PRP Maps Online; MPCA (2016)
Hazardous Waste, Small to Minimal QG MND045959483	The site is a small quantity generator of ignitable waste, metals, petroleum compounds, and solvents. A letter of warning was issued in 2000 for a manifest violation.	Radius Report; GeoSearch (2016)

End of Record for Site 15

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

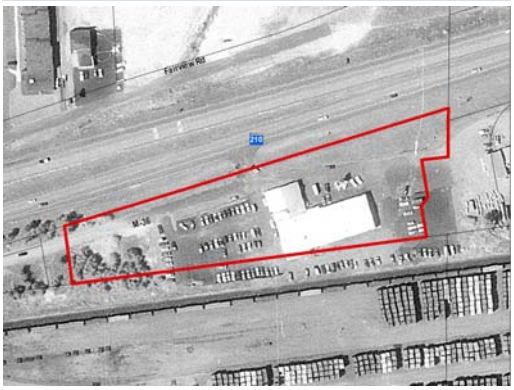
1939

1954

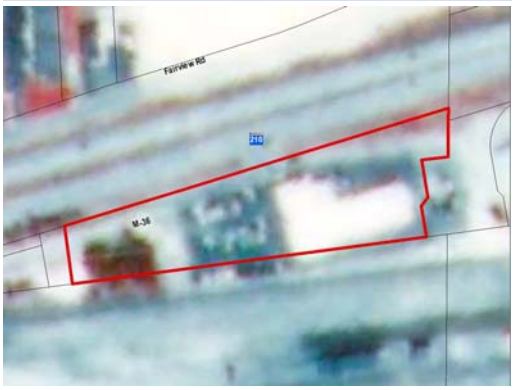
1969

1973

1978



1984



1992

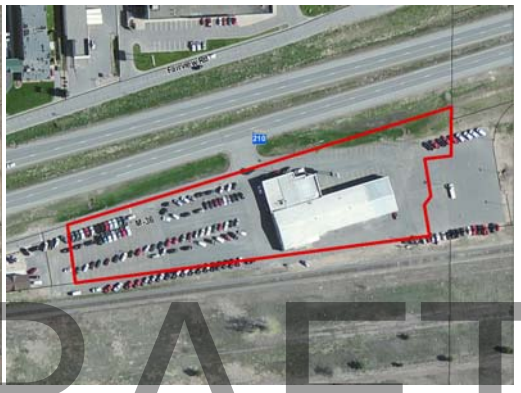
2003

2006

2010

2013

2015



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Section 14: Tables

Table 1
Tank Information

Tank #	UST or AST	Capacity (Gallons)	Contents	Year Installed	Status*	Condition
1	UST	560	Used Oil	~1969	Removed 10-02-98	The tank appeared to be in poor condition with several small holes observed through the tank shell.
2	UST	1000	Unleaded Gasoline	~1969	Removed 10-02-98	The tank appeared to be in good condition with some surficial corrosion observed on the tank shell.

Table 2
Results of Soil Headspace Screening

Boring Number	Sample Depth (Feet)	Headspace Measurement (ppm)	ASTM Soil Classification
B-1	4 - 6	0.2	SP
	9 - 11	0.1	ML
	14 - 16	0.1*	SP
	19 - 21	0.0*	SP
B-2	4 - 6	0.2	SP-SM
	9 - 11	0.1	SP
	14 - 16	0.1*	SP
	19 - 21	0.3*	SP
	24 - 26	0.3*	SP
	34 - 36	0.1*	SP

ppm = parts per million SP = Sand ML = Sandy Silt SM = Silty Sand
*Sample collected below the observed water table
PID used - HNU Model PI-101 (HNU) with 10.2 eV lamp
MPCA headspace technique used - polyethylene bag

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Table 2 (Continued)
Results of Soil Headspace Screening

Boring Number	Sample Depth (Feet)	Headspace Measurement (ppm)	ASTM Soil Classification
B-3	4 - 6	0.4	SP
	9 - 11	0.1	SP
	14 - 16	0.2*	SP
	19 - 21	0.2*	SP
B-4	4 - 6	0.2	ML
	9 - 11	0.6	SP
	14 - 16	0.3*	SP
	19 - 21	0.2*	SP
B-5	4 - 6	0.5	SP
	9 - 11	0.3	SP
	14 - 16	0.3*	SP
	19 - 21	0.0*	SP

ppm = parts per million SP = Sand ML = Sandy Silt SM = Silty Sand NR = No Recovery
*Sample collected below the observed water table
PID used - HNU Model PI-101 (HNU) with 10.2 eV lamp
MPCA headspace technique used - polyethylene bag

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Table 3
Analytical Results of Soil Samples

Well/Boring, Depth (Ft)	Date Sampled	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	DRO (ppm)	Lab Type
B-1/MW-1	04-30-01	<29	<29	<29	<58	<3.9	Fixed
B-2	04-30-01	<30	<30	<30	<59	<3.8	Fixed
B-3/MW-2	04-30-01	<29	<29	<29	<58	<3.7	Fixed
B-4	04-30-01	<31	<31	<31	<62	<3.7	Fixed
B-5/MW-3	04-30-01	<31	<31	<31	<62	<4.5	Fixed

ppm = parts per million
DRO = diesel range organics

Table 4
Other Contaminants Detected in Soils (Petroleum or Non-petroleum Derived)

Boring # Depth (Ft)	Date Sampled							

Report results in mg/kg. Indicate other contaminants (either petroleum or non-petroleum derived) detected in soil collected from borings.

Table 5
Water Level Measurements and Depths of Water Samples Collected from Borings

	Soil Boring #							
	1	2	3	4	5	6	7	8
Static Water Level Depth (Ft)	15	15	17	16	14	16		
Sampled Depth (Ft)	15-16	15-16	17-18	16-17	14-15	16-17		

Describe in Appendix C, the methods and procedures used to measure water levels in borings.

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Table 6
Analytical Results of Water Samples Collected From Borings

Boring #	Date Sampled	Sampled Depth	Benzene (ppb)	Toluene (ppb)	Ethyl Benzene (ppb)	Xylenes (ppb)	MTBE (ppb)	DRO (ppb)	Lab Type
B-2	05-01-01	15	<1.0	<1.0	<1.0	<2.0	<1.0	830	Fixed
B-4	04-30-01	16	<1.0	1.8	<1.0	<2.0	<1.0	120	Fixed
B-6	05-01-01	16-17	<1.0	<1.0	<1.0	<2.0	<1.0	<120	Fixed
Trip Blank	05-01-01		<1.0	<1.0	<1.0	<2.0	<1.0	NA	Fixed
Lab Blank									
ERL			10	1000	700	10000			

Report results in ug/L. Use less than symbols to show detection limit. Indicate mobile or fixed based in the lab type column.
ppb = parts per billion
NA = not analyzed

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Table 10
Analytical Results of Water Samples Collected From Wells

Well #	Date Sampled	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	DRO (ppb)	Lab Type
MW-1	05-01-01	<1.0	<1.0	<1.0	<2.0	460	Fixed
	07-23-01	<1.0	<1.0	<1.0	<2.0	<100	Fixed
MW-2	05-01-01	<1.0	<1.0	<1.0	<2.0	670	Fixed
	07-23-01	<1.0	<1.0	<1.0	<2.0	<100	Fixed
MW-3	05-01-01	<1.0	<1.0	<1.0	<2.0	130	Fixed
	07-23-01	<1.0	<1.0	<1.0	<2.0	<100	Fixed
Trip Blank	07-23-01	<1.0	<1.0	<1.0	<2.0	NA	Fixed

Table 11
Other Contaminants Detected in Water Samples Collected From Wells (Petroleum or Non-petroleum Derived)

Parameter		

Table 12
Natural Attenuation Parameters

Monitoring Well	Sampling Date	Conductivity	Temperature °C	pH (Units)	DO (mg/L)	Nitrate (mg/L)	Fe II (mg/L)

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Table 15
Results of Vapor Monitoring

Location #	Date	PID Reading (ppm)	Percent of the LEL
VM1	04-30-01	0.0	
VM2	04-30-01	0.0	
VM3	04-30-01	0.0	
VM4	04-30-01	0.0	

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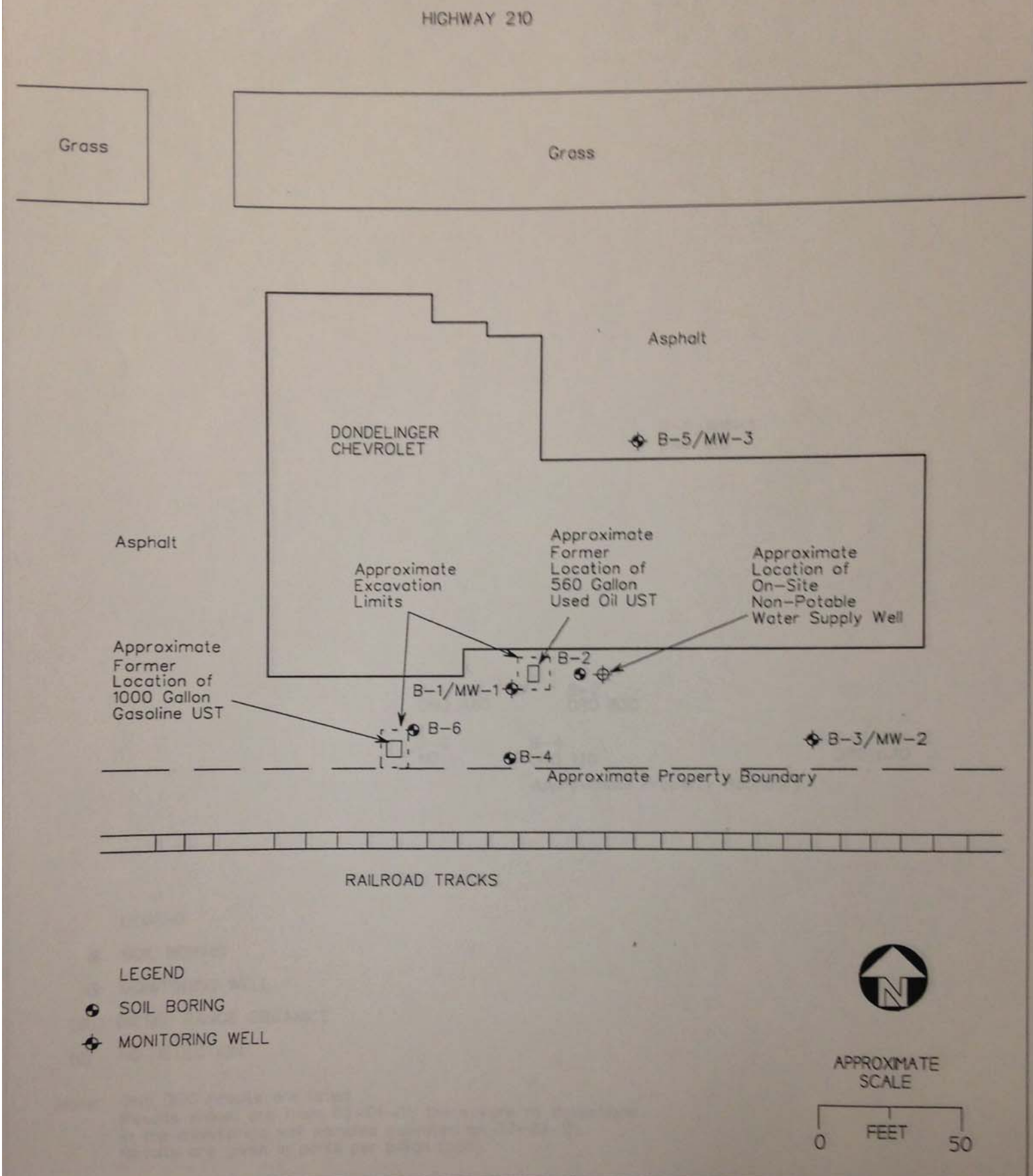


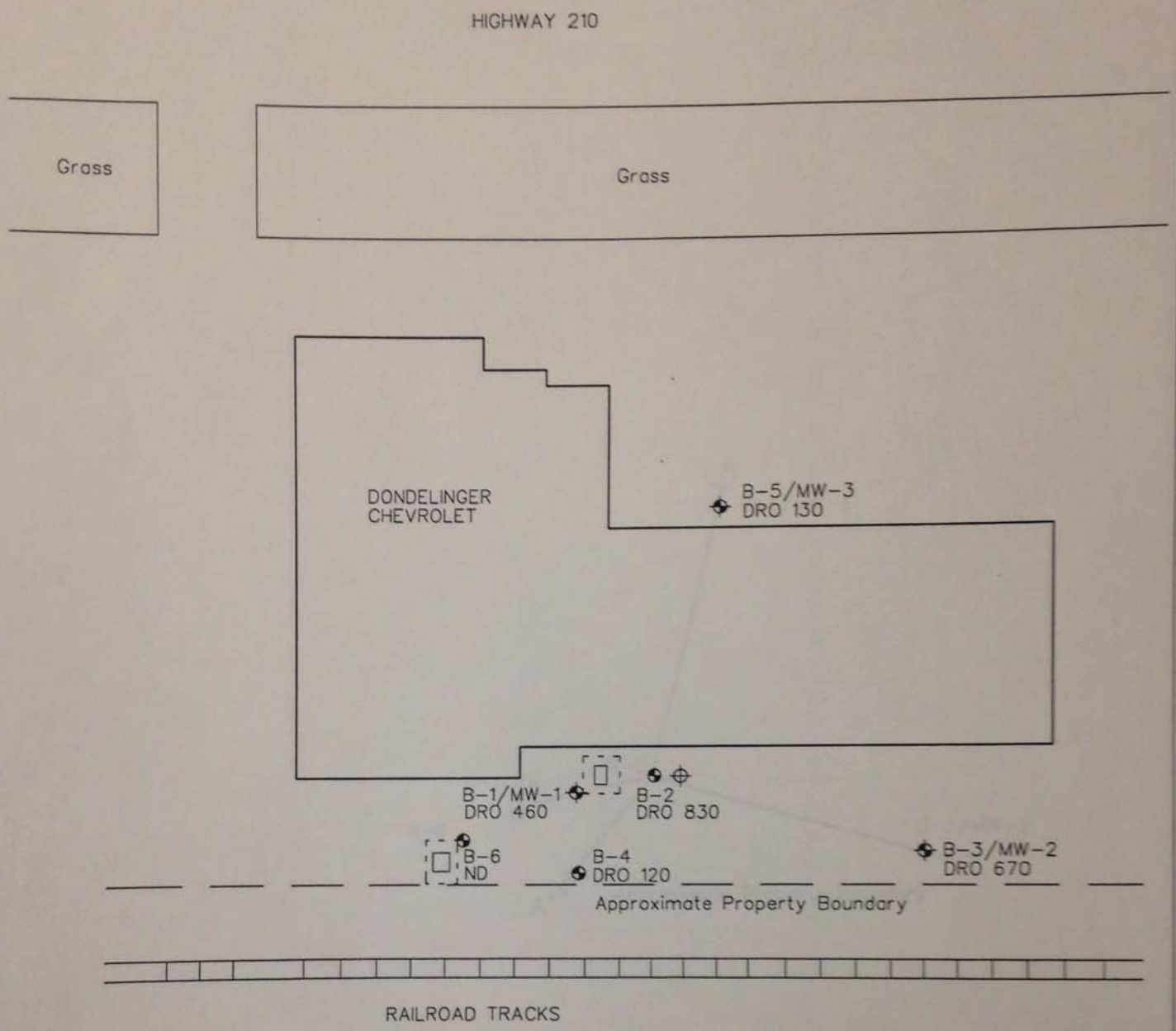
GME CONSULTANTS, INC.
Geotechnical • Materials • Environmental
P.O. Box 250, Lakeshore Drive
Crosby, Minnesota 56441
(218) 546-6371

FIGURE 2: APPROXIMATE LOCATION DIAGRAM

DONDELINGER CHEVROLET
BRAINERD, MINNESOTA

JLM	RJE	01-03	GME Project No. C-8003-B

DRAFT



LEGEND

- SOIL BORING
- MONITORING WELL

DRO DIESEL RANGE ORGANICS

ND NO DETECTION

Note: Only DRO results are listed.
Results shown are from 05-01-01; there were no detections in the monitoring well samples collected on 07-23-01.
Results are given in parts per billion (ppb).

APPROXIMATE SCALE

0 FEET 50

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Crosby, Minnesota 56441
(218) 546-6371

FIGURE 3: GROUNDWATER CHEMISTRY RESULTS

DONDELINGER CHEVROLET
BRAINERD, MINNESOTA

JLM	RJE	01-03	GME Project No. C-8003-B

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 16 RANK: High

CW004

Current Site Use: **Railroad corridor and greenspace**

Site Summary:

The railroad was present as early as 1913. This site is within the footprint of the BNSF Tie Plant Superfund site. The Superfund site includes numerous parcels in this area and is summarized in greater detail in the introduction to this appendix. The eastern portion of this site was used by the plant for drying and outdoor storage of treated wood railroad ties. Creosote diluted with diesel was used as the wood preserve. The site was cleared by the early 1990s and a single track railroad corridor remains. Non-native fill is present in areas where the track has been built up above grade.

Ranking Rationale: Former BNSF Tie Plant Superfund, drying/outdoor storage area.

HISTORICAL REVIEW:

Date	History	Source
1918-2015	The railroad was present as early as 1913. The site was part of the BNSF Tie Plant Superfund site. This portion of the plant was used for outdoor drying and storage of treated railroad ties through the 1980s. The tie plant was razed before 1992, and the site was cleared. Only a single track rail remained through 2016. The BNSF Tie Plant Superfund Site is discussed in greater detail in the introduction to this appendix.	Aerial photographs, topographic map, file review

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☑ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

Non-native fill where railroad bed has been built up.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
01R00000001A009	BURLINGTON NORTHERN SANTA FE RR CO		BAXTER	56425	Railroad Preferred (Commercial)

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS: None

MPCA LISTED SPILLS: None

COUNTY WELL INDEX REGISTERED WELLS:

Unique Well No	Well Name	Depth (ft)	Aquifer	Listed Use	Date Drilled
460438	POTTER, DAVID A	60	Not Listed	Domestic	1990
620830	DONDELINGER INC	94	Quat. Buried Artes. Aquifer	Public Supply/non-comm.-no	1998
636649	MW-1	20	Not Listed	Monitor well	2001
646313	MW-2	22	Not Listed	Monitor well	2001
646314	MW-3	20	Not Listed	Monitor well	2001
778195	MW-39	22	Not Listed	Monitor well	2010

MPCA REGISTERED TANKS: None

DETAILED REVIEW

DRAFT

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Superfund Project SR16	This site is within the footprint of the BNSF Tie Plant Superfund site. The eastern portion of this site was used by the plant for drying and outdoor storage of treated wood railroad ties. Creosote diluted with diesel was used as the wood preserve. A detailed history and summary of environmental conditions is provided at the beginning of this Appendix.	Notes

End of Record for Site 16

DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

1954

1969

1973

1978

1984

1992

2003

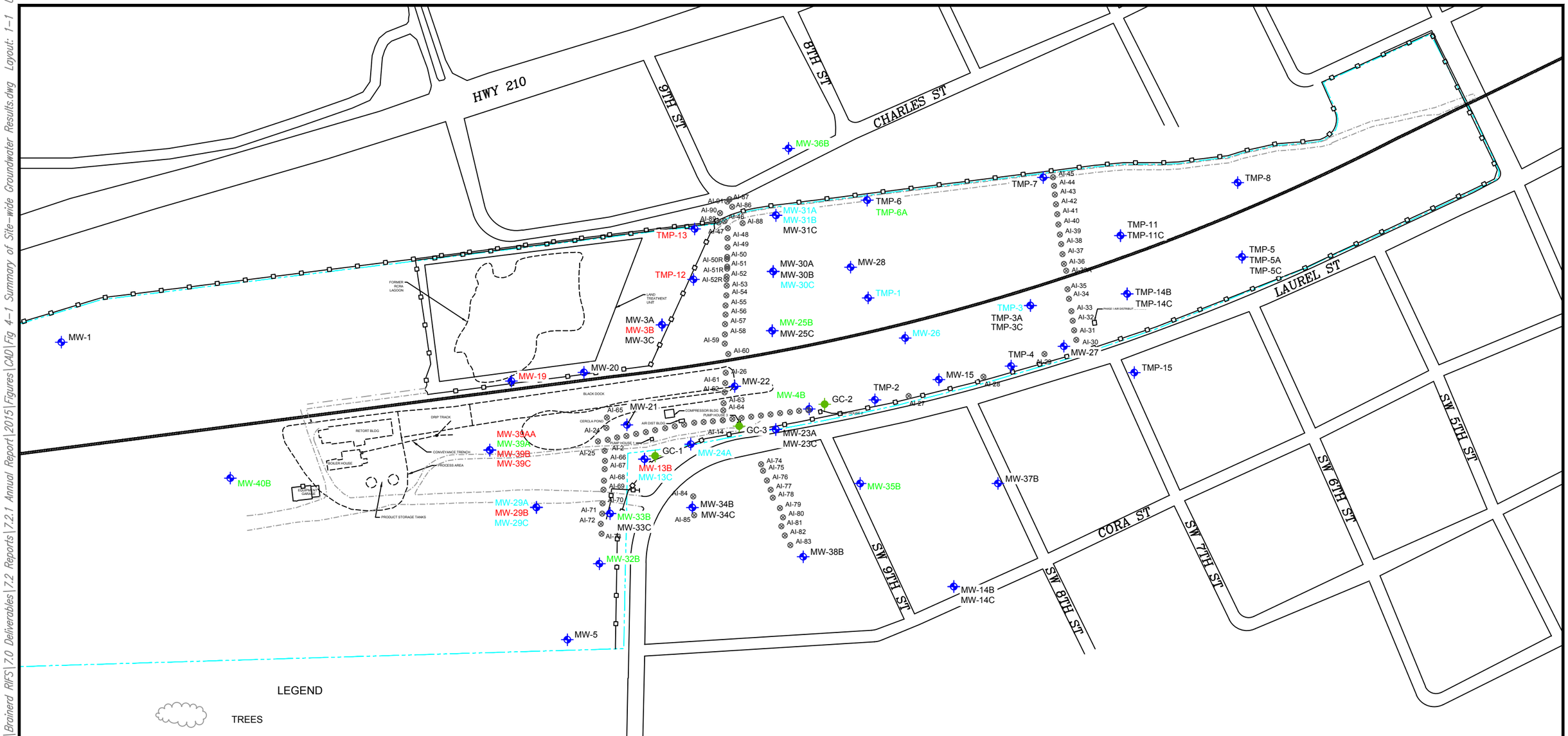
2006

2010

2013

2015

DRAFT



LEGEND

- TREES
- RAILROAD TRACK
- FENCE
- BNSF PROPERTY BOUNDARY (APPROXIMATE)
- FORMER TIE TREATING PLANT FACILITY
- DIRT/GRAVEL ACCESS ROAD
- GRADIENT CONTROL RECOVERY WELL
- PHASE I AIR INJECTION POINT (AI-24 THROUGH AI-45)
- PHASE II AIR INJECTION POINT (AI-46 THROUGH AI-91)
- GRADIENT CONTROL SYSTEM AIR INJECTION POINT (UNLABELED)
- MONITORING WELL
- MW-1 GROUNDWATER RESULTS EXCEED MCL/HRL/HBV AND CONSENT ORDER CRITERIA
- MW-1 GROUNDWATER RESULTS ONLY EXCEED CONSENT ORDER CRITERIA
- MW-1 GROUNDWATER RESULTS BELOW MCL/HRL/HBV/CONSENT ORDER CRITERIA
- MW-1 MONITORING WELL NOT SAMPLED

AECOM

DRAFT

Burlington Northern Railroad
Tie Treatment Facility Superfund Site
Brainerd and Baxter, MN

Summary of Site-wide Groundwater Results
October/November 2015

DATE: 3/1/2016 | DRWN: BJK/MN

Figure 4-1

File: \\usmps3fp001\Data\BNSFSecure\1 - Active Projects\Brainerd RIFS\7.0 Deliverables\7.2 Reports\7.2.1 Annual Report\2015\Figures\CAD\Fig 4-1 Summary of Site-wide Groundwater Results.dwg Layout: 1-1 User:

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 17 RANK: Medium

WM001

Current Site Use: **Intersection of TH 210 and TH 371**

Site Summary:

At least one road has intersected the site since 1915. TH 210 was constructed around the 1930s and TH 371 was rerouted to intersect TH 210 at this location around 2005. One closed Spill file documents approximately 120 gallons of petroleum released at the intersection in 1989.

Ranking Rationale: Closed Spill.

HISTORICAL REVIEW:

Date	History	Source
1918-2003	The intersection included one north-south secondary road in the early 1900s. Around the 1930s, TH 210 was constructed similar to its current alignment and TH 371 was originally constructed to the east of this site.	Aerial photographs, topographic maps
2006-2015	TH 371 was reconstructed through this site and the intersection remains similar through this time frame.	Aerial photographs, topographic map

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION: No Associated Parcels

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS: None

MPCA SPILL LISTINGS:

MPCA ID	Name	Quantity	Spilled Product	Spill Date	Closed Date
5482	JENKINS TRUCKING	120 Gallons	Petroleum, Unspecified	07/04/1989	1/1/1996

APPROX 100-120GA

COUNTY WELL INDEX REGISTERED WELLS:

Unique Well No	Well Name	Depth (ft)	Aquifer	Listed Use	Date Drilled
109020	PAUL BUNYAN CENTER	57	Quat. Buried Artes. Aquifer	Domestic	1975

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW: None

End of Record for Site 17

DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

1954

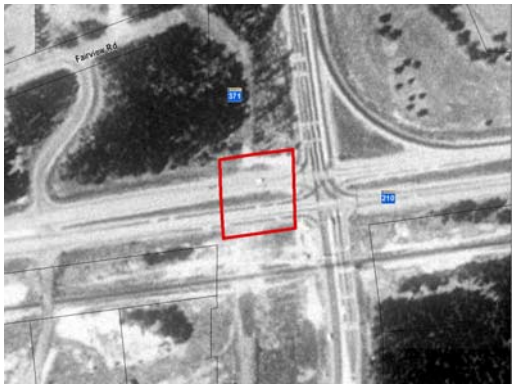
1969

1973

1978

1984

1992



2003

2006

2010

2013

2015

DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 18 RANK: Medium

PU029

Current Site Use: **Jim's Electric**

Site Summary:

The site was developed around 1990 with the existing commercial structure (expanded by 2006). The site is occupied by an electrical contractor that is a small quantity hazardous waste generator. A 100 gallon AST, outdoor equipment/scrap storage, and a monitoring well were observed during the site reconnaissance. The well is not listed as part of the BNSF Tie Plant Superfund site monitoring well network.

Ranking Rationale: Monitoring well, AST, RCRA SQG.

HISTORICAL REVIEW:

Date	History	Source
1939-1984	The site was undeveloped and partially wooded through 1984. A trail intersected the southern end of the site until Industrial Park Road was constructed by 1984.	Aerial photographs, topographic maps
1992-2015	The site was graded and a commercial structure was constructed on the south end of the site by 1992. The west side of the site was paved for parking and the structure was expanded by 2003. The northern portion of the site remained unpaved and was used for parking.	Aerial photographs, topographic map

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- [x] Tank(s)
- [x] Well(s)
- [ ] Evidence of Spill or Release
- [x] Petroleum/Hazardous Product Use
- [ ] Evidence of Dumping or Non-native Fill
- [ ] Evidence of Removed Structures

Comments:

Monitoring well, 100 gallon AST, outdoor storage of equipment and scrap materials. Hazardous/petroleum product use assumed.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010081300CAB009	POINTE ENTERPRISES LLC	8296 INDUSTRIAL PARK RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS:

Site ID	Name	Activity
MNS000130542	Jim's Electric Co Inc	Hazardous Waste, Small to Minimal QG

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
110037419852	JIM'S ELECTRIC CO INC	Facility Registry System
MNS000130542	JIM'S ELECTRIC CO INC	Resource Conservation & Recovery Act - Non-Generator
MNS000130542	JIM'S ELECTRIC CO INC	Hazardous Waste Generator Sites

MPCA LISTED SPILLS: None

COUNTY WELL INDEX REGISTERED WELLS:

Unique Well No	Well Name	Depth (ft)	Aquifer	Listed Use	Date Drilled
786964	MW-37	18	Not Listed	Monitor well	2011

MPCA REGISTERED TANKS: None

DRAFT

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Hazardous Waste, Small to Minimal QG MNS000130542	Jim's Electric is categorized as an electrical contractor and other wiring installation contractors. It is a small quantity hazardous waste generator with no listed violations.	Radius Report; GeoSearch (2016)

End of Record for Site 18

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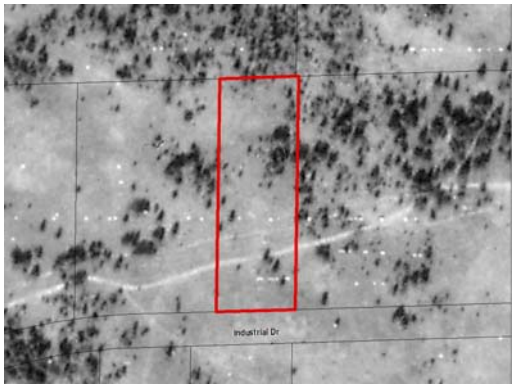
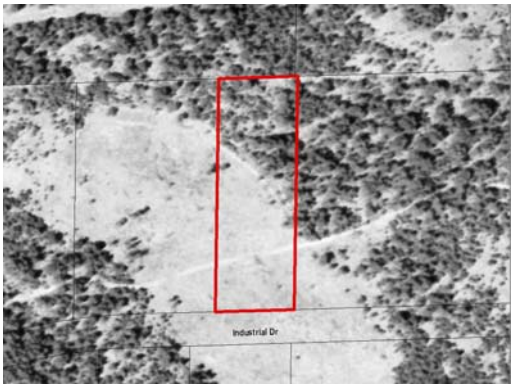
Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

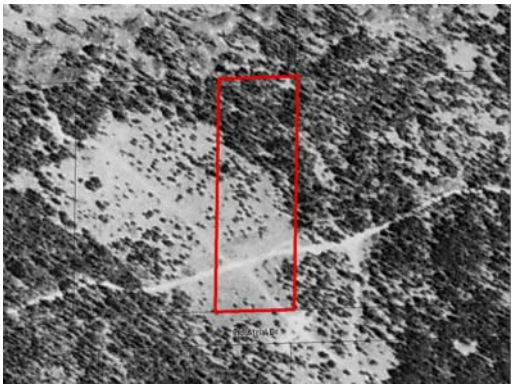
1939



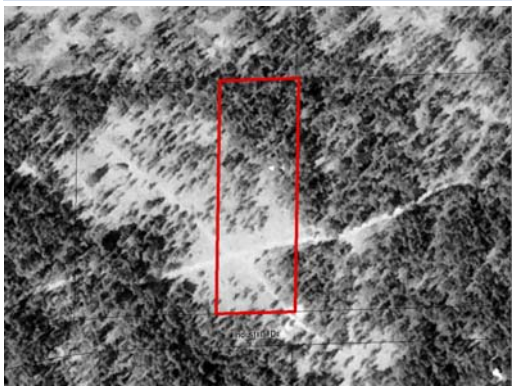
1954



1969

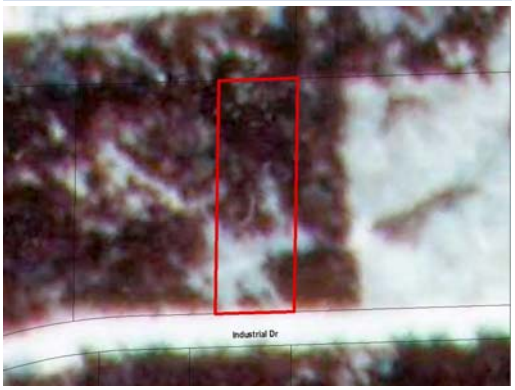


1973

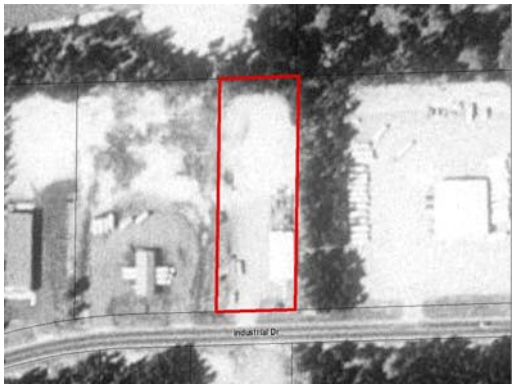


1978

1984



1992



2003

2006

2010

2013

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 19 RANK: Low

Current Site Use: **Unmarked Commercial building**

Site Summary:

The site was developed with a commercial structure (later expanded) around 1990. A shipping company occupied the site and was a small quantity hazardous waste generator of ignitable and corrosive waste.

Ranking Rationale: RCRA SQG.

HISTORICAL REVIEW:

Date	History	Source
1939-1984	The site was undeveloped and partially wooded through 1984. A trail intersected the southern end of the site until Industrial Park Road was constructed by 1984.	Aerial photographs, topographic maps
1992-2015	The site was graded and a commercial structure was constructed on the south end of the site by 1992. The parking areas adjacent to the structure appear to have been gravel. An addition was constructed on the north side of the structure by 2006. The northern portion of the site remained a vacant grassy area.	Aerial photographs, topographic map

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010081300EA0009	LARONGE ENTERPRISES LLC	8256 INDUSTRIAL PARK RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
MNR000102806	CONWAY CENTRAL EXPRESS - BAXTER	Resource Conservation & Recovery Act - Non-Generator

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference
Hazardous Waste, Small to Minimal QG MNR000102806	The shipping company was a small quantity hazardous waste generator of ignitable and corrosive waste with no listed violations.	Radius Report; GeoSearch (2016)

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End of Record for Site 19

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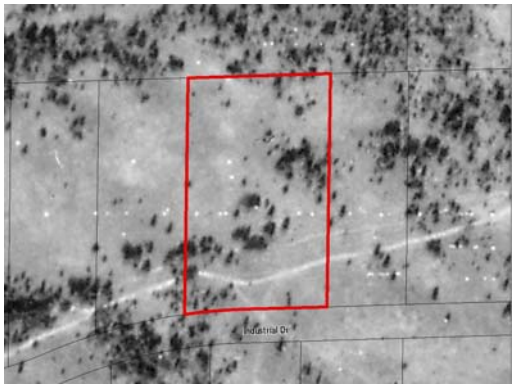
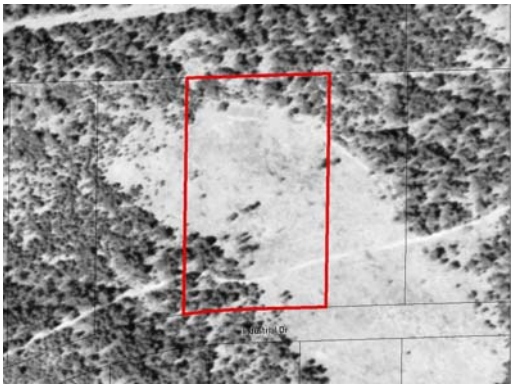
Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

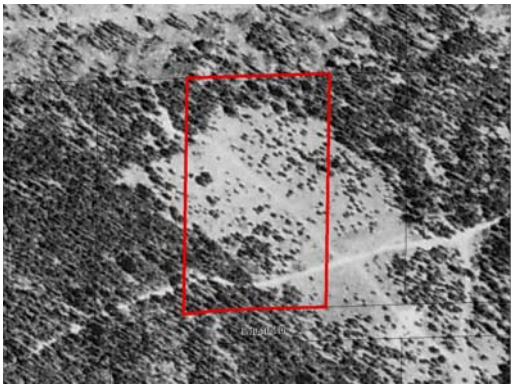
1939



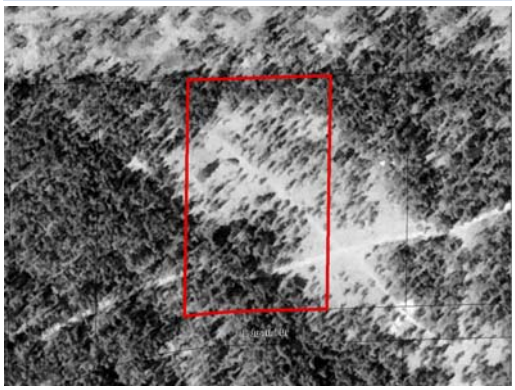
1954



1969

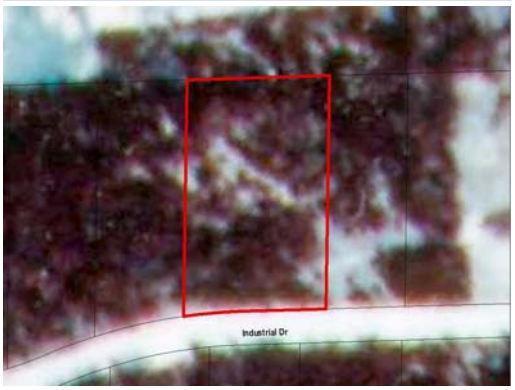


1973

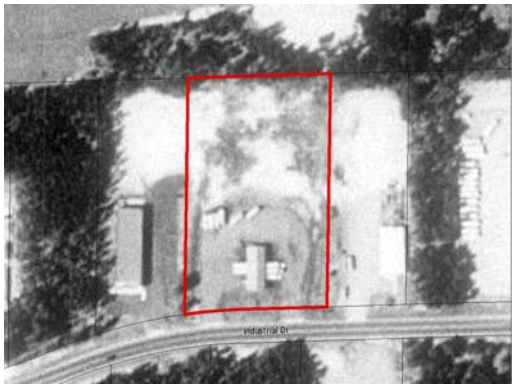


1978

1984



1992



2003

2006

2010

2013

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 20 RANK: Low

Current Site Use: **Culligan**

Site Summary:

The site was wooded until developed with the existing commercial structure by 1992. The site has been occupied by Culligan. In 1997, a water and sodium hydrosulfite caused a chemical reaction and released a gas inside the building. The Spill file was later closed.

Ranking Rationale: Spill to air.

HISTORICAL REVIEW:

Date	History	Source
1939-1992	The site was undeveloped and wooded. A trail was present across the southern edge of the site until Industrial Park Road was constructed in the early 1980s.	Aerial photographs, topographic maps
2003-2015	The site was graded and developed with the existing commercial structure by 1992.	Aerial photograph

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010081300AD0009	PACKARD PROPERTIES , LLC	8240 INDUSTRIAL PARK RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
MN0003077	CULLIGAN WTR CONDITIONING CO	Permit Compliance System

MPCA SPILL LISTINGS:

MPCA ID	Name	Quantity	Spilled Product	Spill Date	Closed Date
26847	CULLIGAN SOFT WATER	10 Gallons	Acid/Base Chemicals	10/30/1997	10/30/1997

WATER SPILLED TO 1/4 BARREL OF SODIUM HYDROSULFITE. CHEMICAL RXN\n\nBUILDING EXCAVATED. CALL CONTRACTOR TO GET RID OF CHEMICALS.

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW: None

End of Record for Site 20

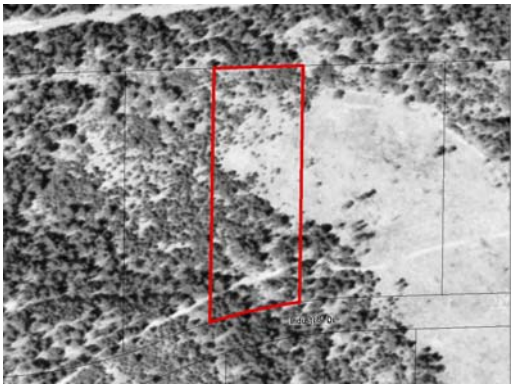
DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

1954



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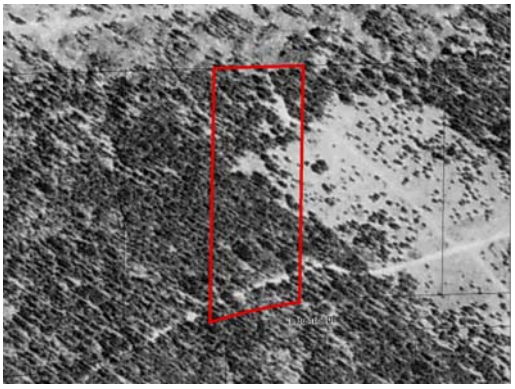
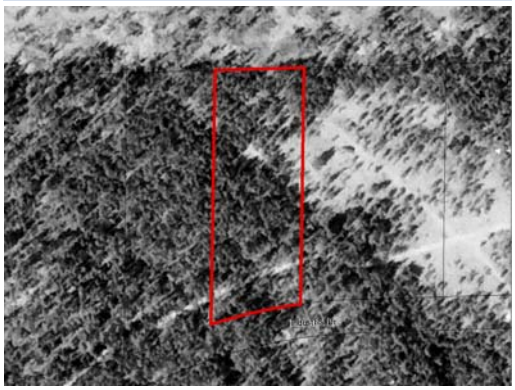
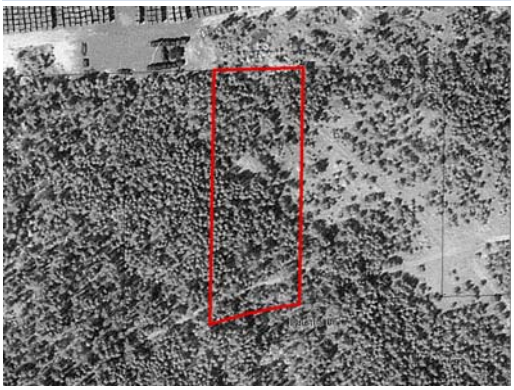


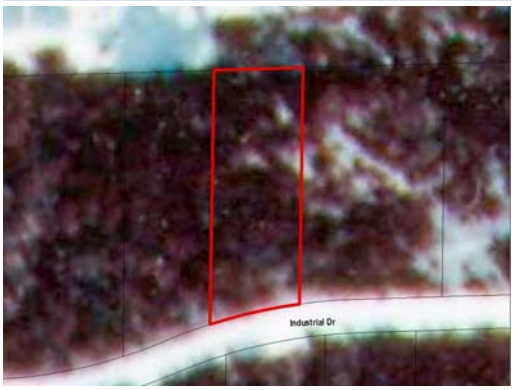
1973



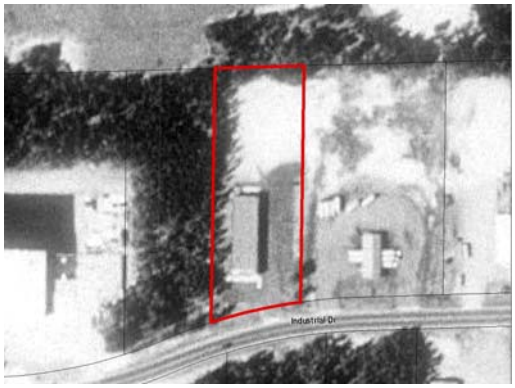
1978



1984



1992



2003

2006

2010

2013

2015

DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 21 RANK: Medium

Current Site Use: **Randy's Plumbing and Heating**

Site Summary:

The site was wooded until developed with the existing commercial structure by 2003. The site has been used by a plumbing and heating business. Several ASTs were observed behind the building and a small stockpile was on-site during the site reconnaissance. The structure had the appearance of an auto repair shop. Petroleum/hazardous substance use is assumed. No database listings were identified for the site.

Ranking Rationale: ASTs, suspect auto repair.

HISTORICAL REVIEW:

Date	History	Source
1939-1992	The site was undeveloped and wooded. A trail was present across the southern edge of the site until Industrial Park Road was constructed in the early 1980s.	Aerial photographs, topographic maps
2003-2015	The site was developed with the existing commercial structure by 2003. Outdoor storage is visible throughout this time period.	Aerial photograph

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- [x] Tank(s)
- [ ] Well(s)
- [ ] Evidence of Spill or Release
- [x] Petroleum/Hazardous Product Use
- [x] Evidence of Dumping or Non-native Fill
- [ ] Evidence of Removed Structures

Comments:

Several ASTs behind building. Bay doors have appearance like auto repair shop. Less than 10 cubic yard stockpile observed.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010081300AF0009	SMELTER, RANDY G	8216 INDUSTRIAL PARK RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS: None

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW: None

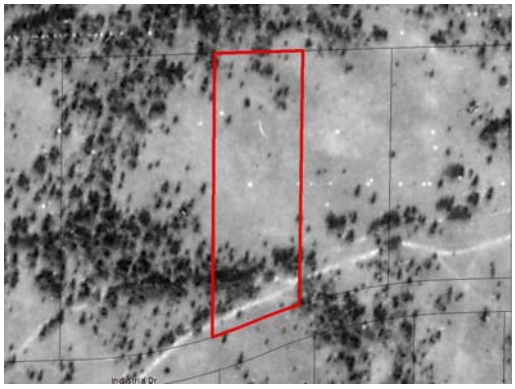
End of Record for Site 21

DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939



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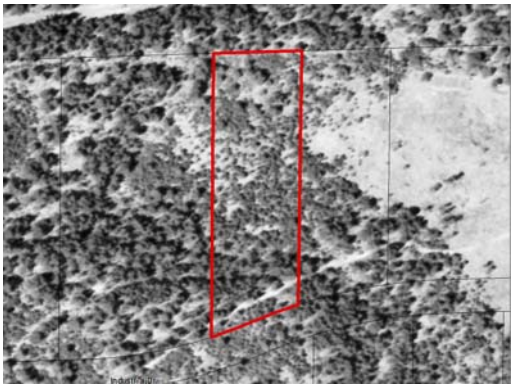

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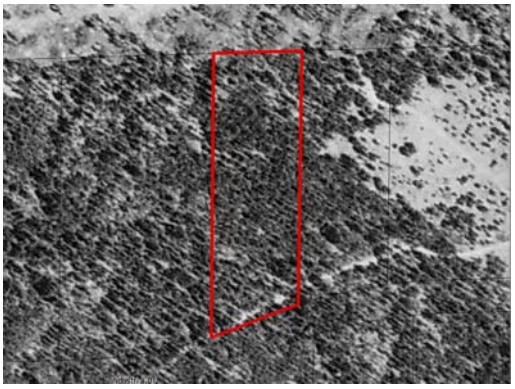
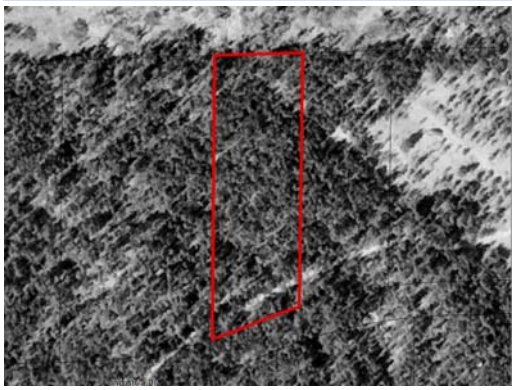
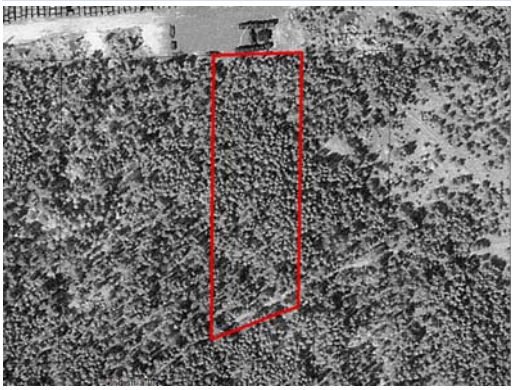


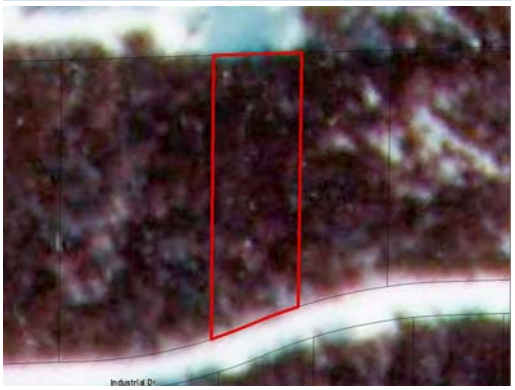
1973



1978



1984



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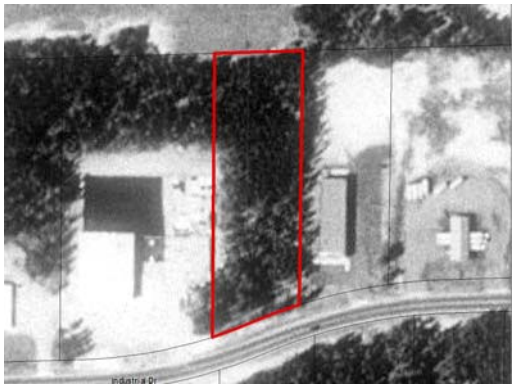


2003

2006

2010

2013

2015

DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 22 RANK: Low

Current Site Use: **LCL Electronics Inc. offices**

Site Summary:

The site was wooded until developed with the existing commercial structure around 1990. LCL Electronics is a small quantity hazardous waste generator.

Ranking Rationale: RCRA SQG.

HISTORICAL REVIEW:

Date	History	Source
1939-1984	The site was undeveloped and wooded. Industrial Park Road and Cyprus Drive were constructed by 1984.	Aerial photographs, topographic maps
1992-2015	The southern end of the site was graded and developed with a commercial structure by 1992. By 2003, the an expansion was constructed on the north side of the building. The rest of the site remained wooded.	Aerial photograph

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010081300B00009	LONEY, LE ANN C	8148 INDUSTRIAL PARK RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
MNS000173708	LCL ELECTRONICS INC	Hazardous Waste Generator Sites
61197470	LCL ELECTRONICS INC	Wastewater Discharger
110044308629	LCL ELECTRONICS INC	Facility Registry System

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference

DRAFT

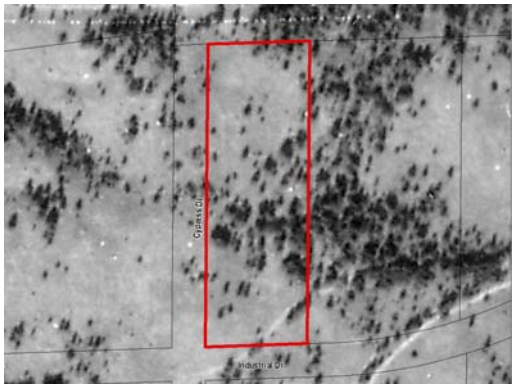
Hazardous Waste, Small to Minimal QG MNS000173708	The site is a small quantity hazardous waste generator with no listed violations.	Radius Report; GeoSearch (2016)

End of Record for Site 22

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939



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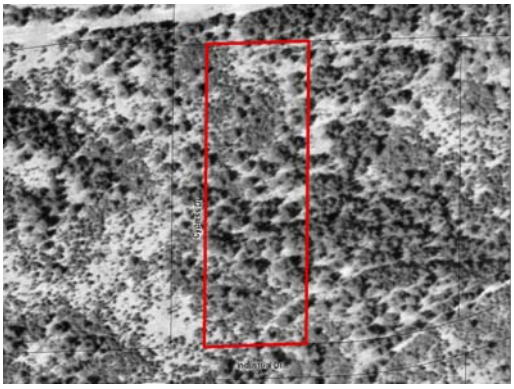
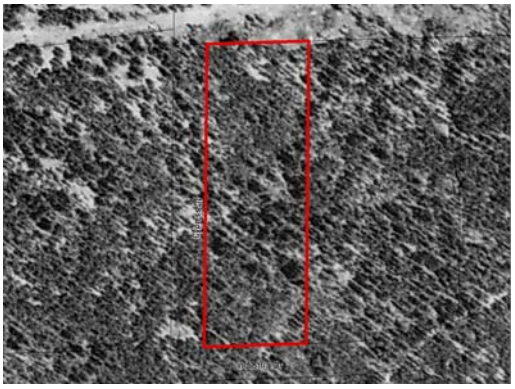
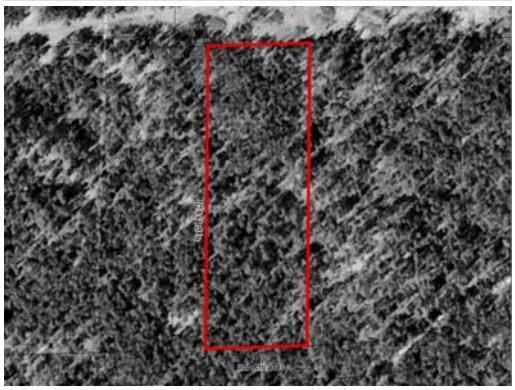


1969



1973



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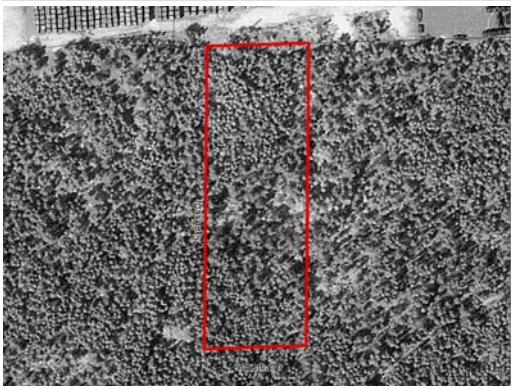
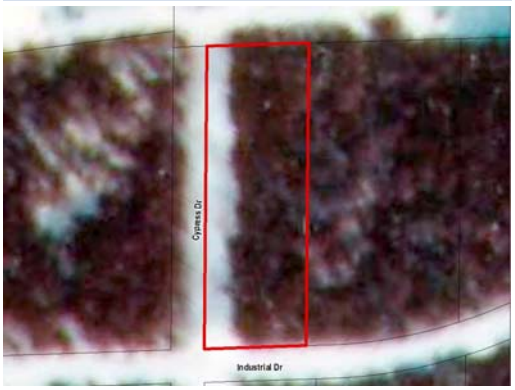
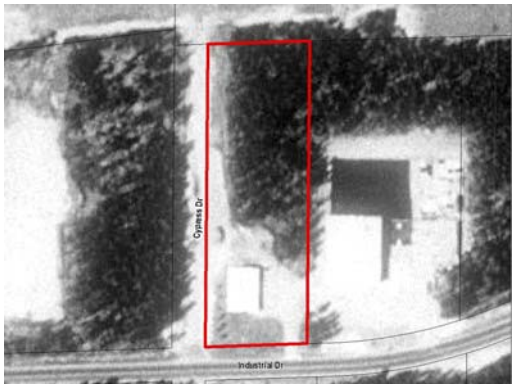


1984



1992



2003

2006

2010

2013

2015

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 23 RANK: Medium

Current Site Use: **Schwanns**

Site Summary:

The site was wooded until developed with the existing commercial structure around 1990. A closed Spill file documents a release of 40 gallons of light fuel oil and diesel during a vehicle overfill. No fuel tanks were observed during the site reconnaissance or identified in database listings, but based on the description of the Spill, it is assumed a fuel tank was located on-site at some point.

Ranking Rationale: Closed Spill, unregistered tank.

HISTORICAL REVIEW:

Date	History	Source
1939-1984	The site was undeveloped and wooded.	Aerial photographs, topographic maps
1992-2015	The southern portion of the site was developed with a commercial structure and parking areas by 1992. The northern portion of the site remained wooded.	Aerial photographs, topographic maps

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- [x] Tank(s)
- [ ] Well(s)
- [ ] Evidence of Spill or Release
- [ ] Petroleum/Hazardous Product Use
- [ ] Evidence of Dumping or Non-native Fill
- [ ] Evidence of Removed Structures

Comments:

No access. Propane tanks behind building.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010082400BBA009	SCHWAN'S SALES, ENTERPRISES INC	7998 INDUSTRIAL PARK RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
110016665198	SCHWANS SALES ENTERPRISES	Facility Registry System
1949	SCHWAN'S HOME SERVICE, INC - 100980	Tier Two Facility Listing
55746646	SCHWANNS	mnpcaspills

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW: None

End of Record for Site 23

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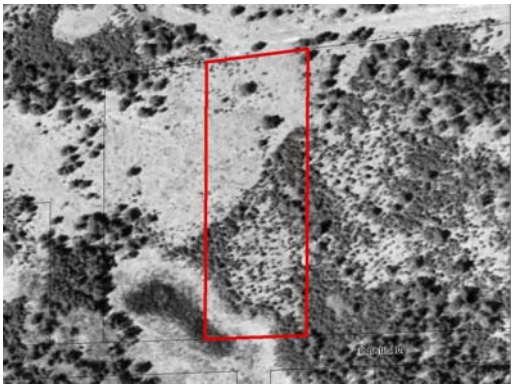
Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

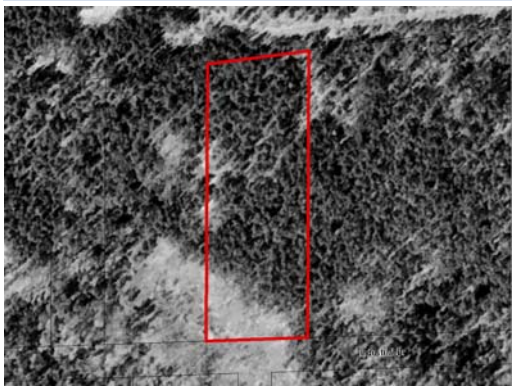
1939

1954

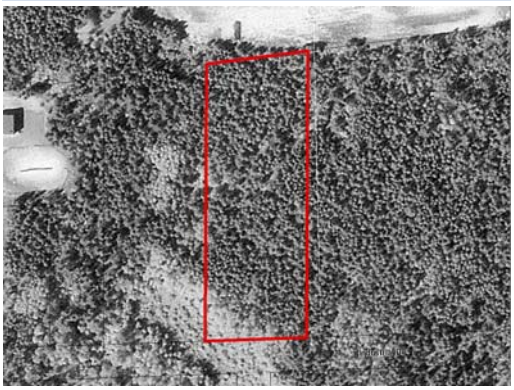


1969

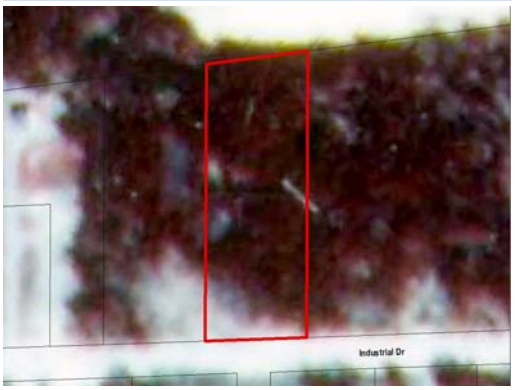
1973



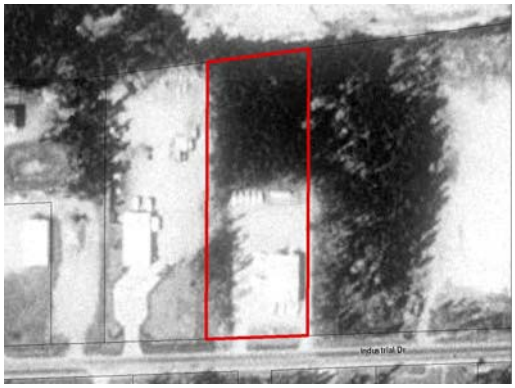
1978



1984



1992



2003

2006

2010

2013

2015

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 24 RANK: Medium CW008

Current Site Use: **Waste Management**

Site Summary:

The site was developed with a waste transfer facility in the early 1990s. The site is a Permit-By-Rule facility and hazardous waste generator of toxic and ignitable waste, benzene, and PCE. Outdoor storage of primarily dumpsters has been consistent throughout the developed history. Four petroleum ASTs are active on-site.

Ranking Rationale: Permit-by-rule solid waste facility, active ASTs, RCRA SQG.

HISTORICAL REVIEW:

Date	History	Source
1939-1984	The site was wooded and undeveloped. The southern portion of the site appears to have been low-lying marsh.	Aerial photographs, topographic map
1992-2015	The site was filled and graded prior to its development by 1992. Waste Management, Baxter Hauling, and Northern Waste Systems have been occupants of the site. Dumpsters and outdoor storage are present throughout the developed history.	Aerial photographs, topographic map, radius report

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- [x] Tank(s)
- [ ] Well(s)
- [ ] Evidence of Spill or Release
- [x] Petroleum/Hazardous Product Use
- [ ] Evidence of Dumping or Non-native Fill
- [ ] Evidence of Removed Structures

Comments:

Fuel AST on-site.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010082400BD0009	NORTHERN WASTE, SYSTEMS INC	7968 INDUSTRIAL PARK RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
MND985748680	WASTE MANAGEMENT - BRAINERD	Hazardous Waste Generator Sites
54933	NORTHERN WASTE SYSTEMS	Tank Site
125031	WASTE MANAGEMENT INC - BRAINERD	Tank Site
8436	WASTE MANAGEMENT INC - BRAINERD	Wastewater Discharger
58040263	BAXTER HAULING	Wastewater Discharger
14625	WASTE MANAGEMENT OF BAXTER	Tier Two Facility Listing
8436	WASTE MANAGEMENT INC - BRAINERD	Permitted By Rule Landfills
MND985748680	WASTE MANAGEMENT - BRAINERD	RCRA - Generator Facilities
110003871971	WASTE MANAGEMENT INC - BRAINERD	Facility Registry System

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MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS:

MPCA ID	Tank #	Above/Underground?	Capacity (gal)	Stored Product	Status	Date Regist.
125031	`1	Above Ground	4000	Diesel	Active	3/9/2009
54933	1001	Above Ground	250	Motor Oil	Active	3/14/1995
54933	1002	Above Ground	250	Hydraulic Fluid	Active	3/14/1995
54933	1003	Above Ground	265	Used Or Waste Oil	Active	3/14/1995

DETAILED REVIEW

REGULATORY FILE REVIEW:

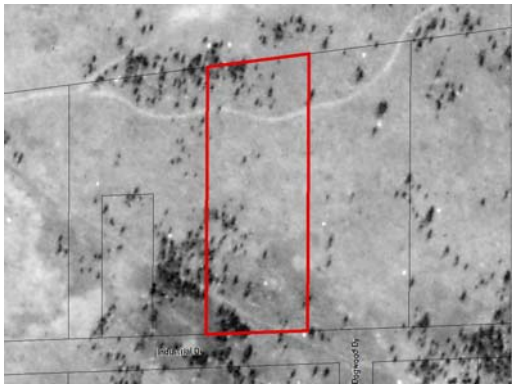
Listing	Summary	Reference
Hazardous Waste, Small to Minimal QG MND985748680	Waste Management is a small quantity generator of toxic and ignitable waste, benzene and PCE. No violations are recorded. The waste profile form was submitted in 1992.	Radius Report; GeoSearch (2016)

End of Record for Site 24

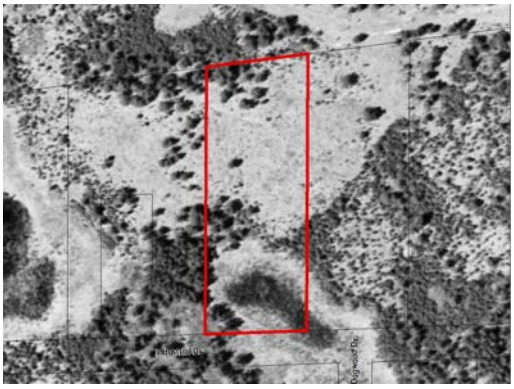
Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939

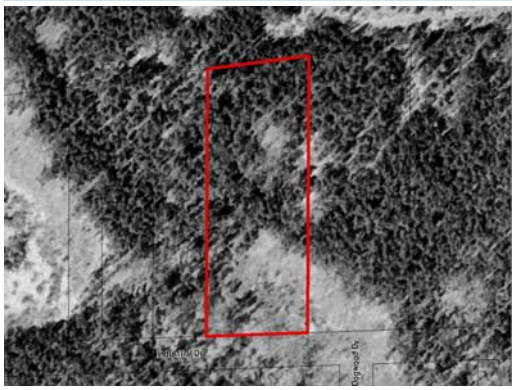


1954



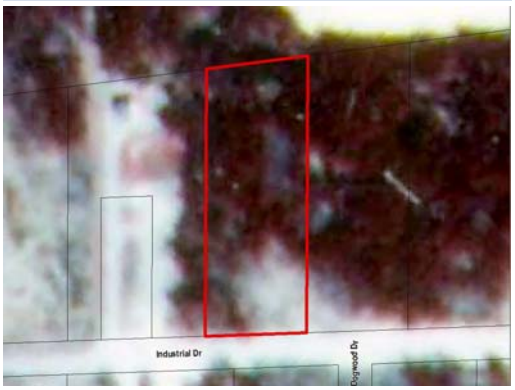
1969

1973

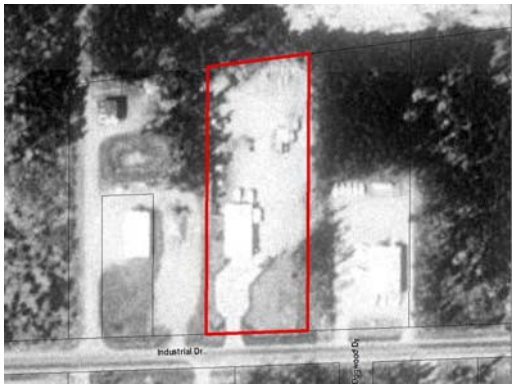


1978

1984



1992



2003

2006

2010

2013

2015

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 25 RANK: Medium

Current Site Use: **Baxter Snowmobile Club and public hazardous materials disposal point**

Site Summary:

The site was wooded and partially marshy until it was developed with a well house and infiltration pond for backwashing the water treatment filters at the water treatment plant in the 1970s. The structure was razed and the well abandoned by 2010. The City temporarily stockpiled dirt from the Brainerd Wastewater Treatment Plant Construction on the site around the 1980s. The material was later sold or used city-wide on other projects. A public used oil, antifreeze, etc. disposal point (with used oil UST) and snowmobile storage building were added to the site by 2003. Drums, containers, and staining on the concrete were observed at the disposal point.

Ranking Rationale: Public hazardous materials disposal point, active UST.

HISTORICAL REVIEW:

Date	History	Source
1939-1973	The site was wooded and undeveloped. The southwest end of the site was marshy.	Aerial photographs, topographic map
1978-1992	Portions of the site appears to have been filled or graded and developed with a well house by 1978. A large stockpile was present south of the structure.	Aerial photographs, topographic map, well log
2003-2015	By 2003, the hazardous materials disposal point was added to the southwest end of the site, and a storage building was added to northeast portion of the site. The well house was removed by 2010. Small objects were present in the northeast corner of the site in 2003 and 2006.	Aerial photographs, topographic map

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- [x] Tank(s)
- [ ] Well(s)
- [x] Evidence of Spill or Release
- [x] Petroleum/Hazardous Product Use
- [ ] Evidence of Dumping or Non-native Fill
- [ ] Evidence of Removed Structures

Comments:

Public used oil, antifreeze, etc. disposal point. Drums, containers, staining on concrete.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010082400BEC009	CITY OF BAXTER	7952 INDUSTRIAL PARK RD	BAXTER, MN	56425	Municipal Public Service Enterprises

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS: None

MPCA LISTED SPILLS: None

COUNTY WELL INDEX REGISTERED WELLS:

Unique Well No	Well Name	Depth (ft)	Aquifer	Listed Use	Date Drilled
133647	BAXTER 1	135	Quat. Water Table Aquifer	Abandoned	1977

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference

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Interviews	The Crow Wing County/City of Baxter used oil, antifreeze, and oil filter drop off site has a 4,000 gallon underground storage tank for used oil.	Trevor Walter; City of Baxter (2016)
Interviews	The oval area depicted on aerial photographs was a rapid infiltration pond for back washing the water treatment filters at Water Treatment Plant #1. The pond was cleaned and filled in when the plant was decommission and demolished. There was a well on-site for Water Treatment Plant #1 and the well was properly sealed and abandoned. Material cleaned out of the rapid infiltration pond was sampled and hauled to the Crow Wing County landfill. The stockpile of dirt was temporary from the Brainerd Wastewater Treatment Plant Construction. All material was either sold or used on City projects city-wide.	Trevor Walter; City of Baxter (2016)
Interviews	The pond cleanout material was sampled for TCLP metals, PCBs, and VOCs. No contamination was identified. The pole building is a heated garage used by Baxter Snowmobile Club.	Sample results for Crow Wing Landfill; NTS (2008)

End of Record for Site 25

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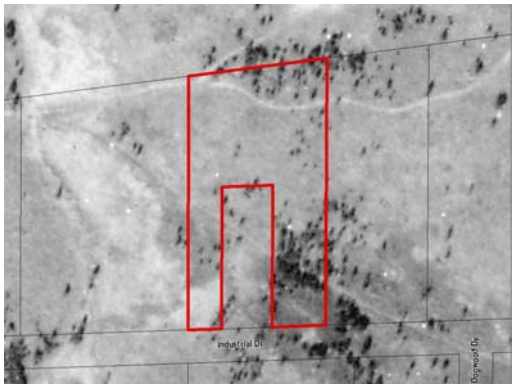
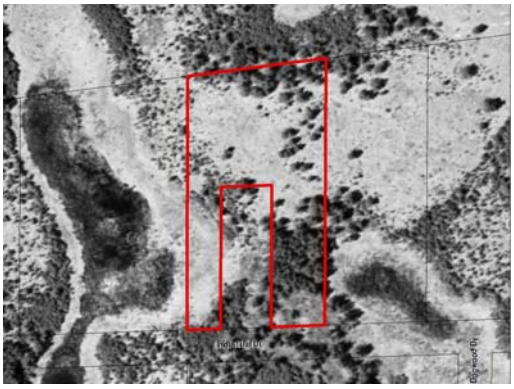
Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

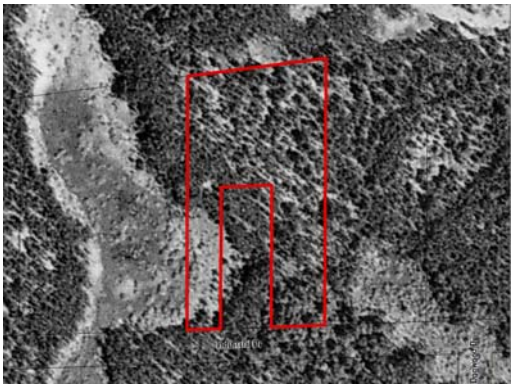
1939



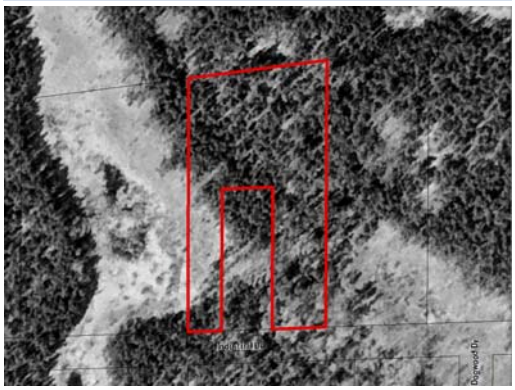
1954



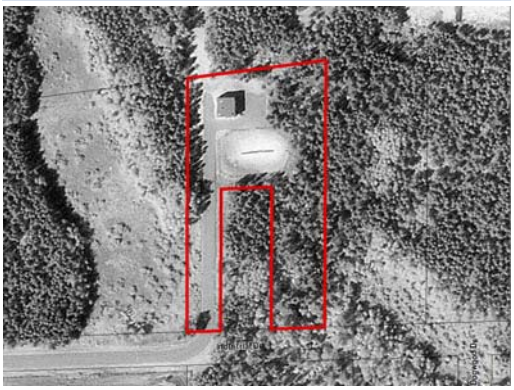
1969



1973



1978



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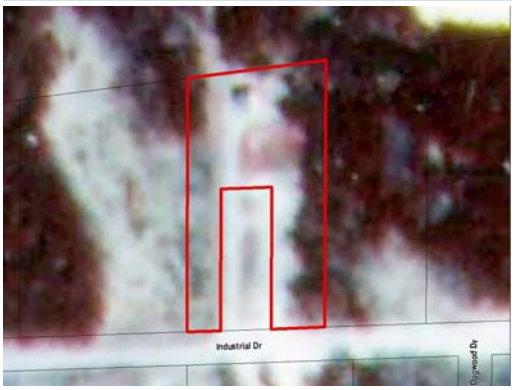

1992

2003

2006

2010

2013

2015

DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 26 RANK: High

CW006

Current Site Use: **Cell tower**

Site Summary:

The site was an undeveloped wooded lot, owned by the City of Baxter since at least the 1970s. The site soil and groundwater was investigated in 1997, prior to the cell tower being constructed. Low-level GRO and a common laboratory contaminant were detected in soil. The MPCA required no further action and the VIC file was closed. A monitoring well was observed on the site during the site reconnaissance. The well is not included in the network of monitoring wells for the BNSF Tie Plant Superfund site. The site is also reported for a drug lab in a vehicle at this location. The City hazardous material disposal point is partially located on the southeast corner of this site. More information regarding the disposal point is available on the data sheet for Site CW007.

Ranking Rationale: VIC, monitoring well, public hazardous materials disposal point.

HISTORICAL REVIEW:

Date	History	Source
1939-1992	The site was an undeveloped wooded lot. The central portion of the site was marshy. The City of Baxter owned the site as early as the 1970s.	Aerial photographs, topographic map, file review
2003-2015	A cell tower was constructed on the northeast corner of the site and a public hazardous waste disposal point was constructed off the southeast end of the site by 2003.	Aerial photographs, topographic map

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☑ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☑ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

Potentially a fuel source for backup generator on-site. Unique MW No. 785661. De minimis concrete debris.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010082300AAA009	CITY OF BAXTER				Assessed Elsewhere

MPCA WIMN DATABASE LISTINGS:

Site ID	Name	Activity
702183427	Baxter City Of	Hazardous Waste, Small to Minimal QG
VP9250	City of Baxter	Voluntary Investigation & Cleanup (VIC)

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
VP9250	CITY OF BAXTER	Voluntary Investigation & Cleanup (VIC)
VP9250	CITY OF BAXTER	Site Response Section Database
1061		Clandestine Drug Laboratory Locations

MPCA LISTED SPILLS: None

COUNTY WELL INDEX REGISTERED WELLS:

Unique Well No	Well Name	Depth (ft)	Aquifer	Listed Use	Date Drilled
606802	DW	32	Not Listed	Abandoned	1997

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606803	DW	32	Not Listed	Abandoned	1997
785661	MW-36	14	Not Listed	Monitor well	2011

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

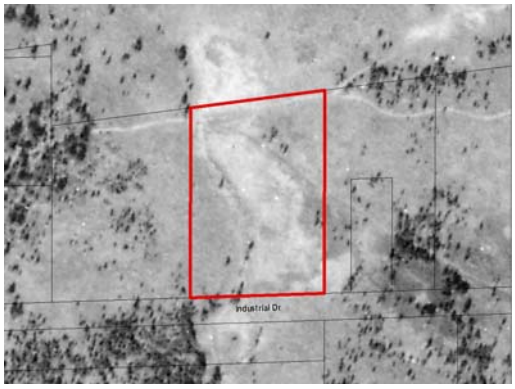
Listing	Summary	Reference
Voluntary Investigation & Cleanup (VIC) VP9250	The site was an undeveloped wooded lot, owned by the City of Baxter since at least the 1970s. A Phase I ESA and Phase II Investigation were completed on the site in 1997. Soil and groundwater samples were analyzed for petroleum compounds, solvents, and metals. Low level GRO and a common laboratory contaminant were detected in soil. Metals concentrations in soil and groundwater were determined to be background. The MPCA issued a No Further Action Determination for the site.	No Further Action Letter; MPCA (1998)
Voluntary Investigation & Cleanup (VIC) VP9250	The GRO concentration was 68 mg/kg in soil.	Phase II Subsurface Investigation Report for APT Site A1O087; Land Recyclers, Inc. (1997)

End of Record for Site 26

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

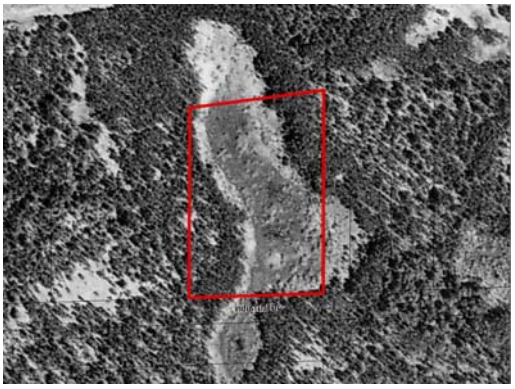
Historical Aerial Photographs

1939

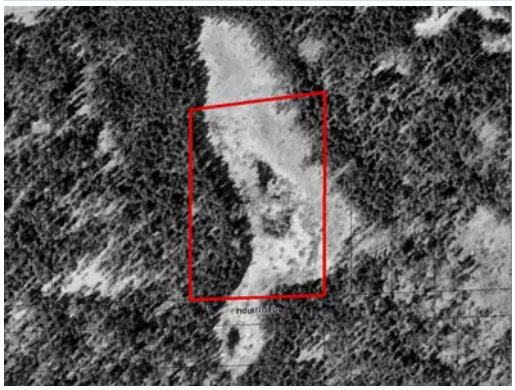


1954

1969

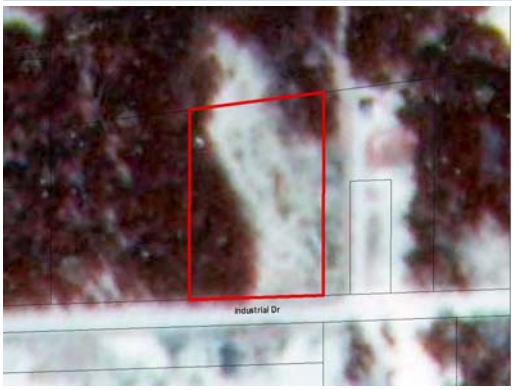


1973



1978

1984



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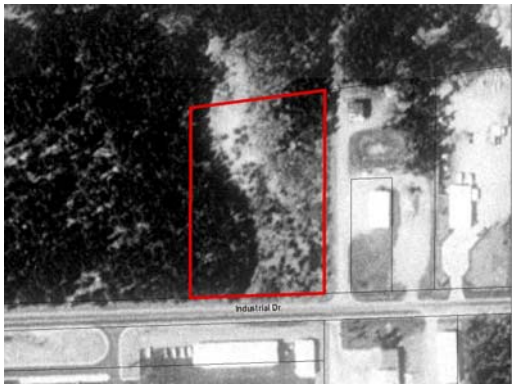

2003

2006

2010

2013

2015

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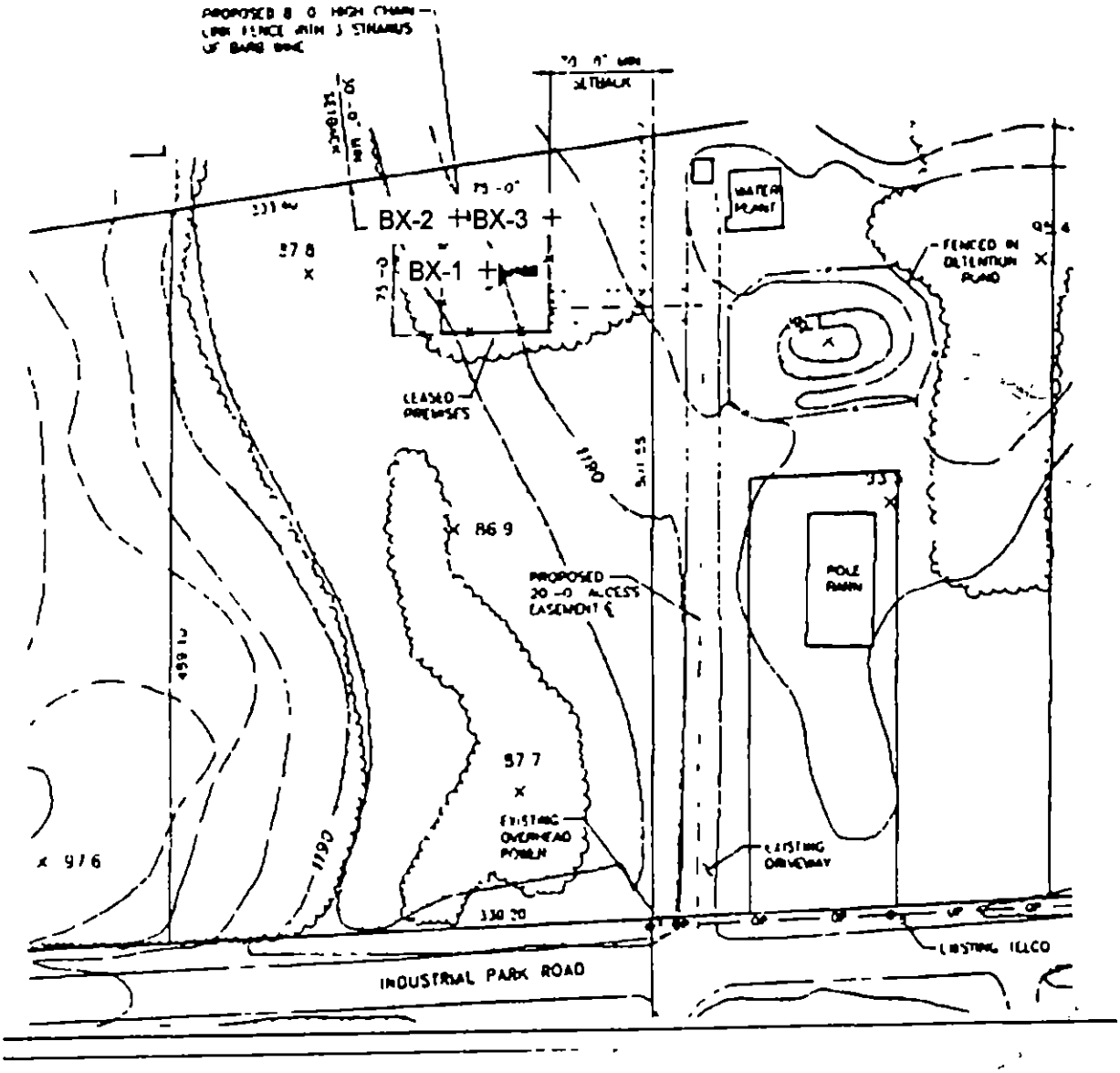
Poor Quality



N

SCALE

1 in = 70 Ft

Figure 3

PLANNED BOREHOLE LOCATIONS
Ulysses Ct. NE
Isanti, MN

LAND RECYCLERS

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12591 Driftwood Court
Apple Valley, MN 55124
(612) 322-1220

Table 1 Rationale for Selecting Soil Boring Locations		
Location	Total Depth	Rationale
BX-1	51 5	Investigated soil and groundwater in vicinity of the proposed tower
BX-2	9 0	Investigated soil along northern property line
BX-3	9 0	Investigated soil along northern property line

Table 2 Rationale for Selecting Soil Samples and Laboratory Analysis			
Soil Sample	Depth Interval	Lab Analysis	Rationale
BX-1-1	0-2	RCRA Metals, VOCs, GRO, DRO, SVOCs	Investigated surface soil in vicinity of the proposed tower
BX-1-2	7-9	GRO, DRO	Investigated subsurface soils in vicinity of the proposed tower over the depth interval of the water table
BX-1-3	17-19	VOCs, GRO, DRO, SVOCs	Investigated intermediate-depth subsurface soils in vicinity of the proposed tower
BX-1-4	43-45	VOCs, GRO, DRO, SVOCs	Investigated deeper subsurface soils in vicinity of the proposed tower
BX-2-1	0-2	RCRA Metals, VOCs, GRO, DRO, SVOCs	Investigated surface soil at hydraulically upgradient location along northern property line

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 27 RANK: Low

Current Site Use: **Ultra Paws**

Site Summary:

The site was wooded until developed with the existing commercial structure around 1990. A commercial printing company occupied the site through the early 2000s, and it is now occupied by a dog gear and clothing manufacturers. The printing company was a small quantity hazardous waste generator of toxic and ignitable waste with minor violations cited in 2005.

Ranking Rationale: RCRA SQG, commercial printing.

HISTORICAL REVIEW:

Date	History	Source
1939-1984	The site was wooded and undeveloped.	Aerial photographs, topographic maps
1992-2015	The site was partially cleared of trees and developed with a commercial structure adjacent to Industrial Park Road. The remaining trees were cleared from the site by 2003 when the adjacent sites were being developed. What appears to be a stockpile was present on the southern end of the site in 2006 when grading activities were taking place at adjacent sites.	Aerial photographs, topographic map

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

No significant observations.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010081300D00009	FSO LLC	8301 INDUSTRIAL PARK RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS:

Site ID	Name	Activity
MND985694108	Crow Wing Press	Hazardous Waste, Small to Minimal QG

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
110008731284	CROW WING PRESS	Facility Registry System
MND985694108	CROW WING PRESS	Resource Conservation & Recovery Act - Non-Generator
MND985694108	CROW WING PRESS	No Longer Regulated RCRA Generator Facilities

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

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REGULATORY FILE REVIEW:

Listing	Summary	Reference
Hazardous Waste, Small to Minimal QG MND985694108	Crow Wing Press was registered as a small quantity generator of toxic and ignitable waste from 1990 through at least 2007. Three violations (general, pre-transport, and records/reporting) were documented in 2005, but no enforcements were imposed.	Radius Report; GeoSearch (2016)
Notes	Ultra Paws manufactures gear and clothing for dogs.	http://www.ultrapaws.com/

End of Record for Site 27

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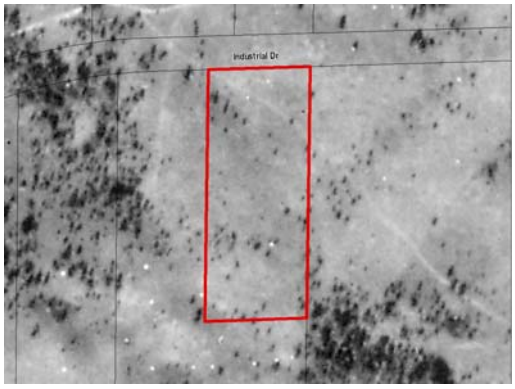
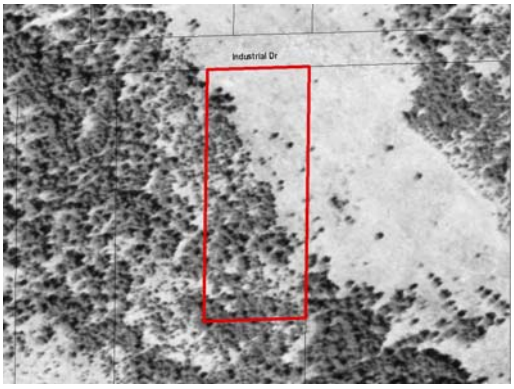
Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

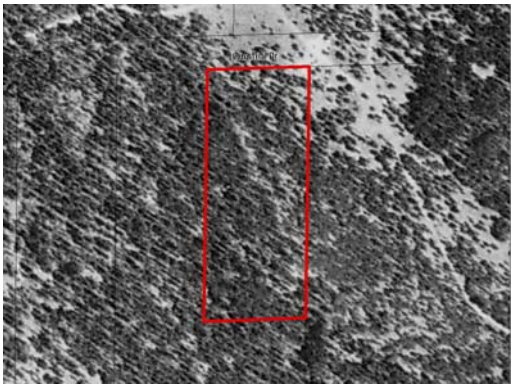
1939



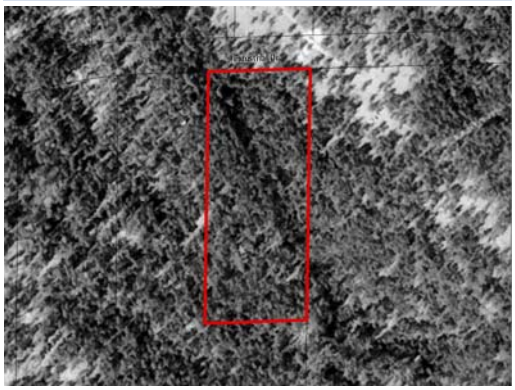
1954



1969



1973



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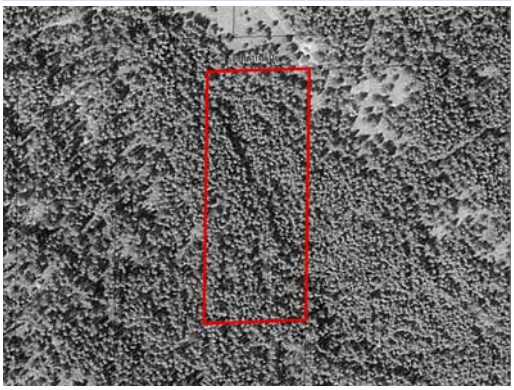
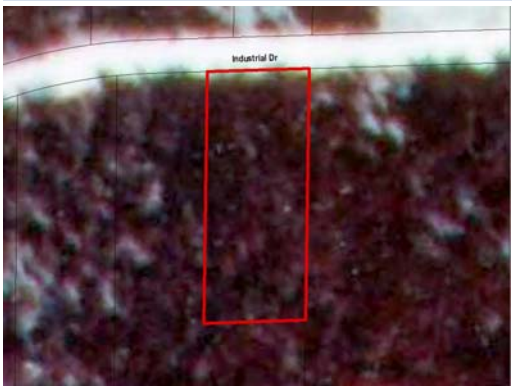


1984



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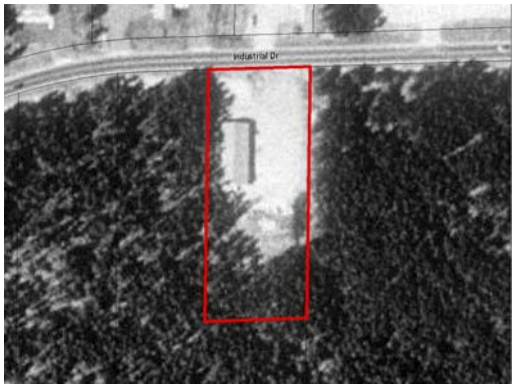

2003

2006

2010

2013

2015

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 28 RANK: Low

Current Site Use: **Silent Power Inc. Energy Conservation Equipment**

Site Summary:

The site was developed around 2002 and has been occupied by Silent Power since it was developed. They specialize in power conversion and energy storage equipment. A small stockpile (less than 2 cubic yards) was observed on the site during the site reconnaissance.

Ranking Rationale: Small stockpile.

HISTORICAL REVIEW:

Date	History	Source
1939-1992	The site was wooded and undeveloped.	Aerial photographs, topographic maps
2003-2015	The site was partially cleared of trees and developed with a commercial structure adjacent to Industrial Park Road. Areas adjacent to the structure were used for parking and the southern portion of the site remained wooded.	Aerial photographs, topographic map

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☑ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

Small stockpile observed.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010081300H00009	T & E PROPERTIES LLC	8175 INDUSTRIAL PARK RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
54715480	SILENT POWER INC	Wastewater Discharger
110058055296	SILENT POWER INC	Facility Registry System

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

Listing	Summary	Reference

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Notes	"Silent Power was founded in 2002 with an initial focus on innovative and reliable power conversion and energy storage equipment for the off grid market. The company created patented technology to allow a high frequency, micro-transformer to handle large surge currents that are typical when starting electric motor loads." Provided by Silent Power	http://listings.findthecompany.com/l/14483908/Silent-Power-Inc-in-Baxter-MN

End of Record for Site 28

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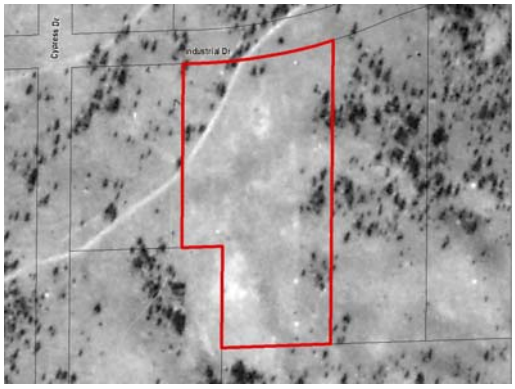
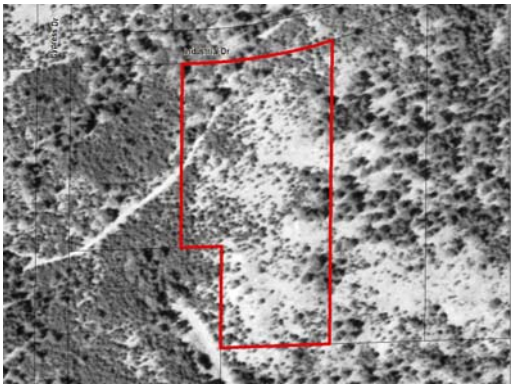
Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

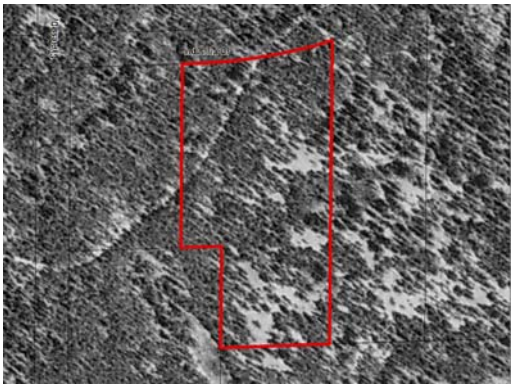
1939



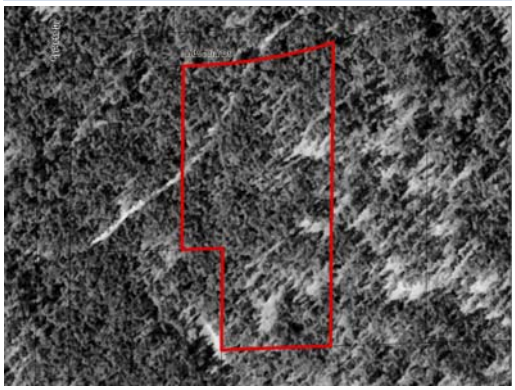
1954



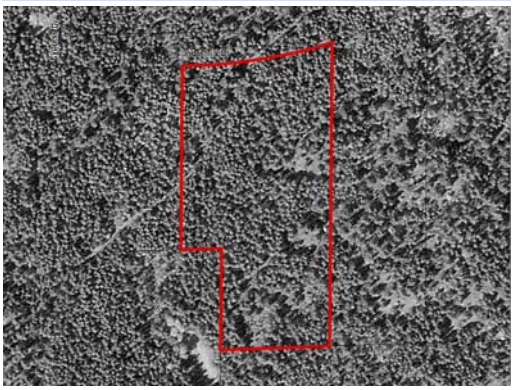
1969



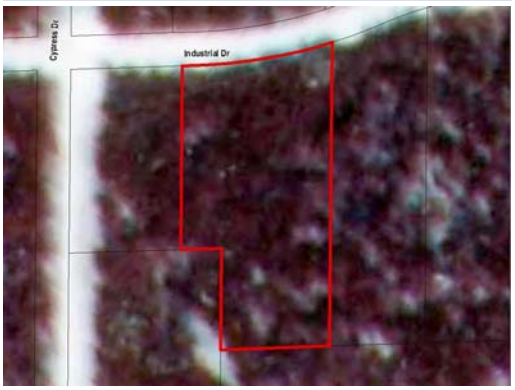
1973



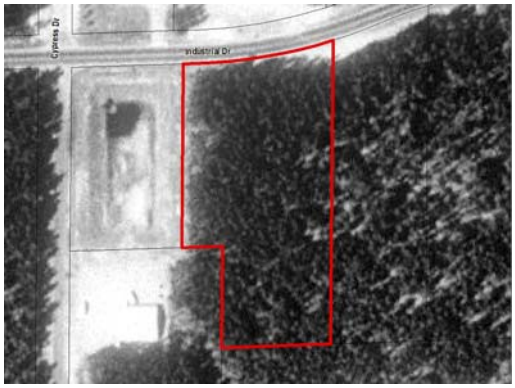
1978



1984



1992



2003

2006

2010

2013

2015

DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 29 RANK: Medium

Current Site Use: **Spray Foam Insulators**

Site Summary:

The site was wooded until it was developed with the existing commercial structure around 1990. Spray Foam Insulators occupies the site. Two less than 500 gallon ASTs and wood pallets were observed adjacent to the building. Hazardous/petroleum product use is assumed based on the type of business and ASTs on-site. No database listings were identified for the site.

Ranking Rationale: ASTs, spray foam insulators.

HISTORICAL REVIEW:

Date	History	Source
1939-1984	The site was wooded and undeveloped.	Aerial photographs, topographic maps
1992-2015	The site was partially cleared of trees and developed with a commercial structure adjacent to Cypress Drive. Areas adjacent to the structure were used for parking and the southern portion of the site remained wooded.	Aerial photographs, topographic map

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- [x] Tank(s)
- [ ] Well(s)
- [ ] Evidence of Spill or Release
- [x] Petroleum/Hazardous Product Use
- [ ] Evidence of Dumping or Non-native Fill
- [ ] Evidence of Removed Structures

Comments:

Two <500 gallon ASTs and wood pallets behind building. Petroleum/hazardous substance use assumed.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010081300F00009	ENGELMEYER REAL ESTATE LLC	13534 CYPRESS DR	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS: None

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW: None

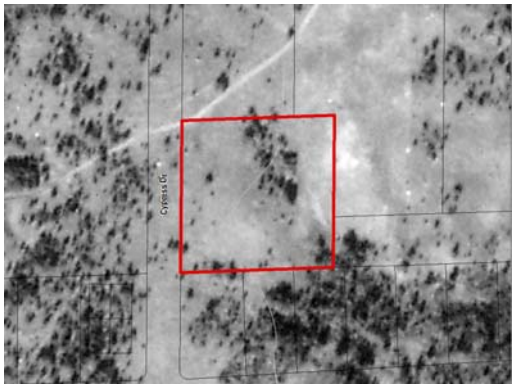
End of Record for Site 29

DRAFT

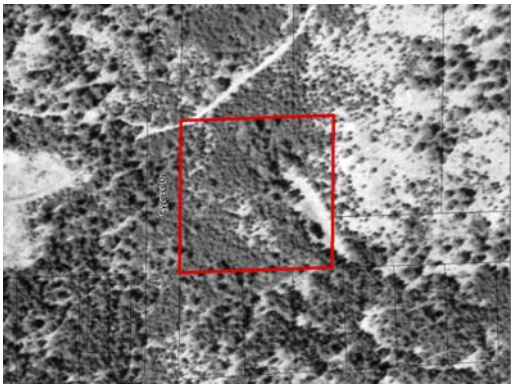
Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939



1954



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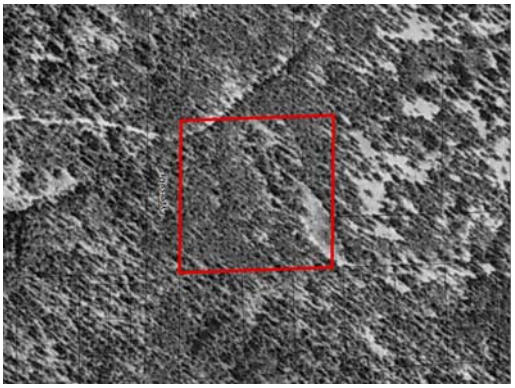
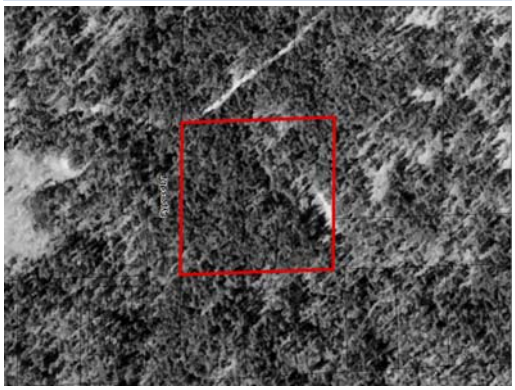
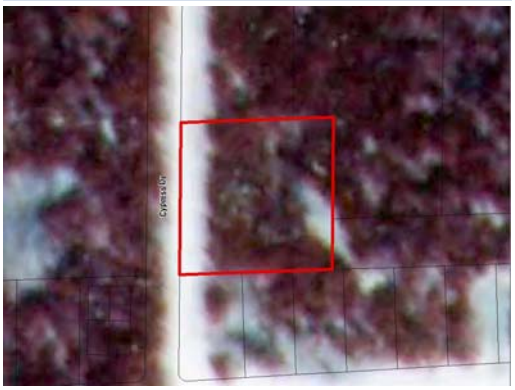


1973



1978

1984



1992

2003

2006

2010

2013

2015

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 30 RANK: Medium

Current Site Use: **Vitale Development**

Site Summary:

The site was wooded until developed with the existing commercial structure by 2003. The occupant is listed for motorcycles and motor scooters. It is suspected that small engine repairs were completed on-site, but no significant information was identified.

Ranking Rationale: Suspect small engine repair.

HISTORICAL REVIEW:

Date	History	Source
1939-1992	The site was wooded and undeveloped.	Aerial photographs, topographic maps
2003-2015	The site was partially cleared of trees and developed with a commercial structure adjacent to Cyprus Drive. Areas adjacent to the structure were used for parking and the southern end of the site remained wooded. City directories indicate the site was occupied by Vitale Development motor cycles and motor scooters.	Aerial photographs, topographic map, city directories

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☑ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

Sign reading "Motorcycle Parts and Service," small stockpile, wood pallets observed.
Petroleum/hazardous substance use assumed.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010082400D00009	VITALE, ADA A TRTEE VITALE SURV TRS				Commercial Preferred

MPCA WIMN DATABASE LISTINGS: None

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS: None

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW: None

End of Record for Site 30

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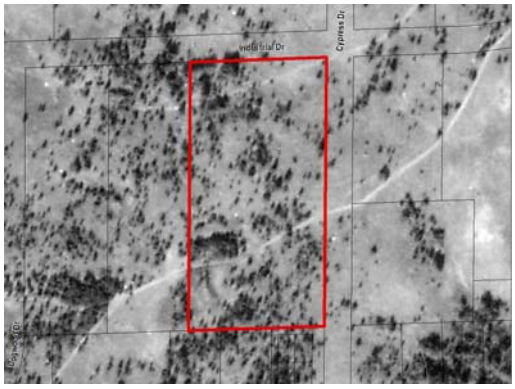
Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939



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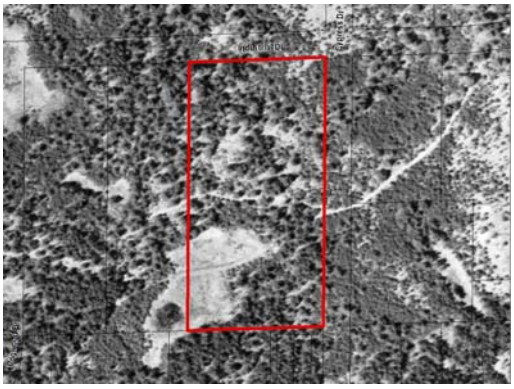

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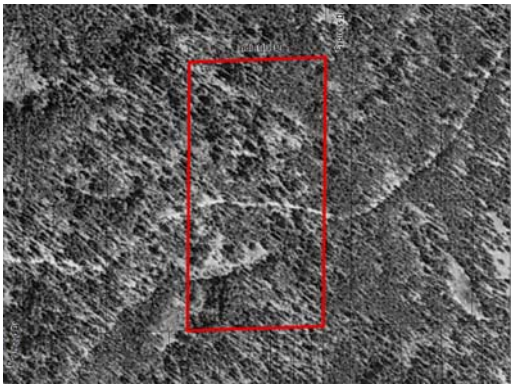

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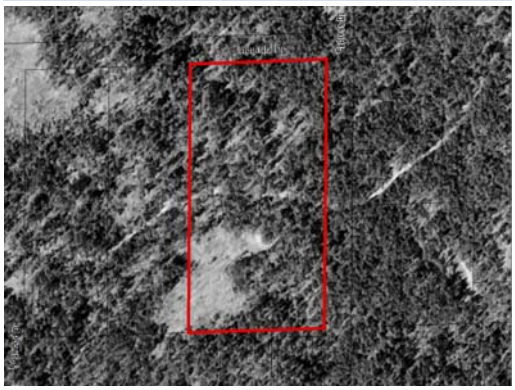

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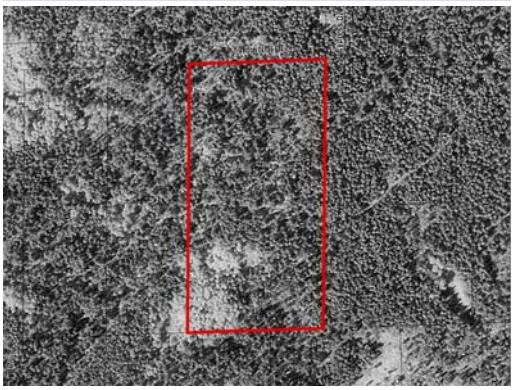
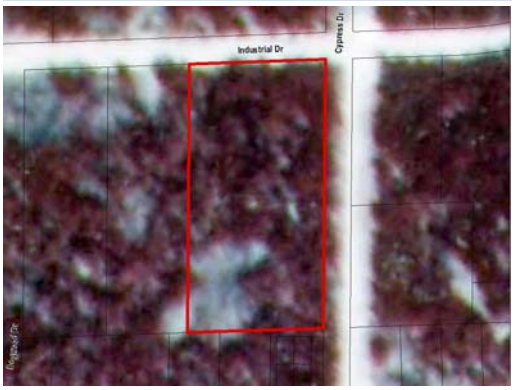


1984



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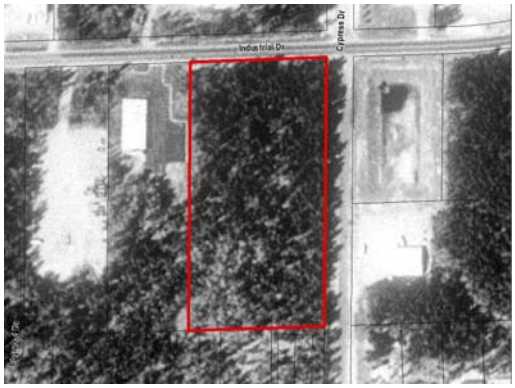

2003

2006

2010

2013

2015

DRAFT

Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 31 RANK: Medium

Current Site Use: **Knife River Corporation**

Site Summary:

The site was wooded until it was developed with a construction materials and services facility around 1980. Aggregate stockpiles and construction equipment have consistently been stored on-site. Three diesel ASTs have been removed from the site and one, 10,000 gallon diesel AST remains active at the site. The occupant is a small quantity hazardous waste generator of toxic and ignitable waste, and lead. One warning letter was issued for a general violation reported during a 2006 inspection.

Ranking Rationale: Removed/active ASTs, RCRA SQG, stockpiles.

HISTORICAL REVIEW:

Date	History	Source
1939-1978	The site was wooded and undeveloped. A trail extended through the southern end of the site.	Aerial photographs, topographic maps
1984-2015	The western portion of the site was cleared and graded by 1984. Several structures were constructed in the northwest portion of the site. The eastern end of the site remained wooded until the majority of the remaining trees were cleared and additional grading occurred. Numerous stockpiles have been located on-site since it was developed. Equipment staging is located primarily in the northeast portion of the site.	Aerial photographs, topographic map, city directories

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☑ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

Large aggregate, concrete, asphalt stockpiles.

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
010082400C00009	KNIFE RIVER CORPORATION-NORTH CENTR	7925 INDUSTRIAL PARK RD	BAXTER, MN	56425	Commercial Preferred
010082400BFA009	KNIFE RIVER CORPORATION-NORTH CENTR		BAXTER	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS:

Site ID	Name	Activity
312214679	Lakeland - Redi Mix	Hazardous Waste, Small to Minimal QG
MNR000016584	Knife River Corp N Central Baxter	Hazardous Waste, Small to Minimal QG
MNR053476	Knife River Corp N Central Baxter - SW	Industrial Stormwater Permit

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
MNR000016584	KNIFE RIVER CORP N CENTRAL BAXTER	Hazardous Waste Generator Sites
121948	KNIFE RIVER NORTH CENTRAL BAXTER	Tank Site
1952	KNIFE RIVER/ BAXTER	Tier Two Facility Listing
8194	KNIFE RIVER CORP N CENTRAL BAXTER	Wastewater Discharger

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
110057292317	KNIFE RIVER	Facility Registry System
MNR000016584	KNIFE RIVER CORP N CENTRAL BAXTER	RCRA - Generator Facilities
110003898523	LAKELAND REDI MIX	Facility Registry System
110057757994	KNIFE RIVER CORPORATION - NORTH CENTRAL	Facility Registry System

MPCA LISTED SPILLS: None

CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS:

MPCA ID	Tank #	Above/Underground?	Capacity (gal)	Stored Product	Status	Date Regist.
121948	1001	Above Ground	4000	Diesel	Removed	12/14/2000
121948	1002	Above Ground	1000	Diesel	Removed	4/18/2005
121948	1003	Above Ground	1000	Diesel	Removed	4/18/2005
121948	1004	Above Ground	10000	Diesel	Active	6/14/2006

DETAILED REVIEW

REGULATORY FILE REVIEW:

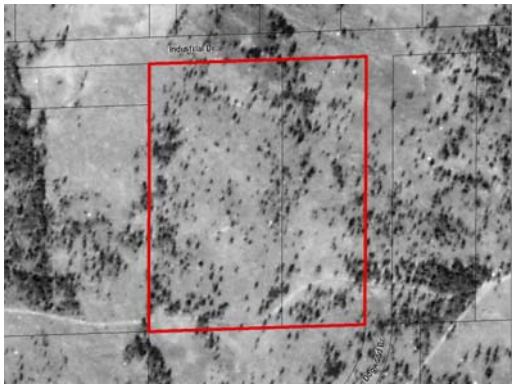
Listing	Summary	Reference
Notes	Knife River is a construction materials and services company.	http://www.kniferiver.com/
Hazardous Waste, Small to Minimal QG MNR000016584	Knife River is a small quantity hazardous waste generator of toxic and ignitable waste, and lead. One warning letter was issued in 2006 for a general violation documented during a compliance inspection.	Radius Report; GeoSearch (2016)

End of Record for Site 31

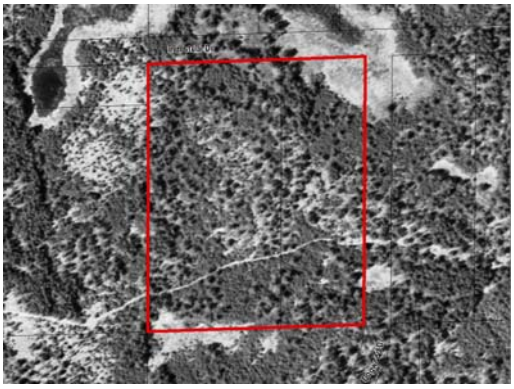
Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

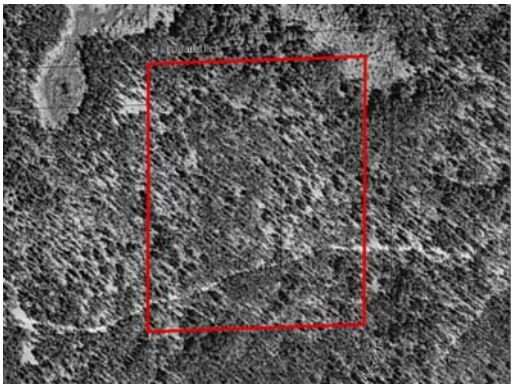
1939



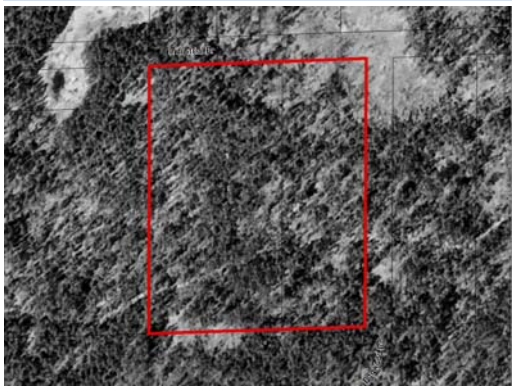
1954



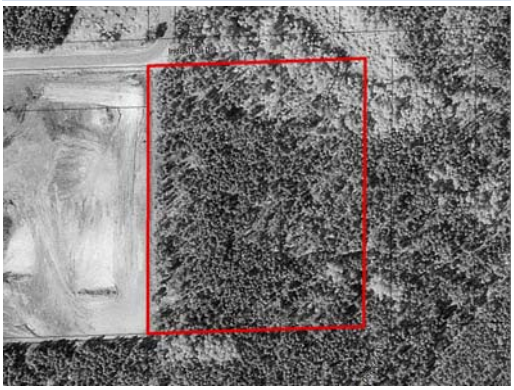
1969



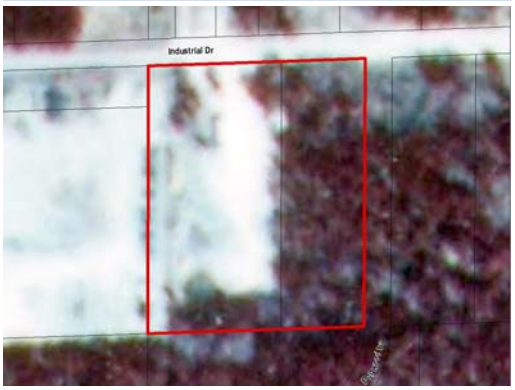
1973



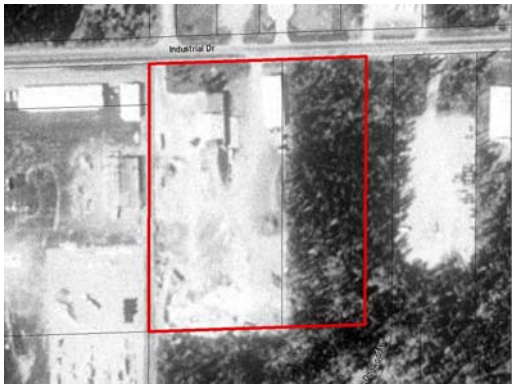
1978



1984



1992



2003

2006

2010

2013

2015

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Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

SITE ID: 32 RANK: Low

WM015

Current Site Use: **Navillus Court/Center offices**

Site Summary:

The site was developed with the existing commercial structures by 2003. The southwest portion of the site has outdoor storage and parking that appears to be associated with the Nor-son Contractors to the south. Layne Christensen, a water management construction and drilling company, is small quantity hazardous waste generator at the site.

Ranking Rationale: RCRA SQG.

HISTORICAL REVIEW:

Date	History	Source
1939-1992	The site was undeveloped and wooded through the 1990s.	Aerial photographs, topographic maps
2003-2015	The site was developed with three commercial structures and parking areas. The southwest portion of the site has outdoor storage and parking that appears to be associated with the Nor-son Contractors to the south.	Aerial photographs

SITE RECONAISSANCE/SITE PHOTOS:

Observed On Site?

- ☐ Tank(s)
- ☐ Well(s)
- ☐ Evidence of Spill or Release
- ☐ Petroleum/Hazardous Product Use
- ☐ Evidence of Dumping or Non-native Fill
- ☐ Evidence of Removed Structures

Comments:

Air Tech, Dish, towing service. Not an impound lot. Outdoor storage (scrap materials, skid steers, trailers, wood pallets, timbers).

PARCEL INFORMATION:

PID	Owner Name	Address	City	Zip	Property Type
03245002005A009	NAVILLUS LAND COMPANY		BAXTER	56425	Commercial Preferred
032050050030009	NAVILLUS LAND COMPANY	7957 COLLEGE RD	BAXTER, MN	56425	Commercial Preferred
032050050020009	NAVILLUS LAND COMPANY		BAXTER	56425	Commercial Preferred
032050050010009	NAVILLUS LAND COMPANY	7953 COLLEGE RD	BAXTER, MN	56425	Commercial Preferred
032050040040009	NAVILLUS LAND COMPANY	7877 COLLEGE RD	BAXTER, MN	56425	Commercial Preferred

MPCA WIMN DATABASE LISTINGS:

Site ID	Name	Activity
MNS000147686	Layne Christensen DTC	Hazardous Waste, Small to Minimal QG

ADDITIONAL ENVIRONMENTAL DATABASE REPORT AND DEPARTMENT OF AGRICULTURE LISTINGS:

Site ID	Name	Activity
MNS000147686	LAYNE CHRISTENSEN DTC	Hazardous Waste Generator Sites
74479776	LAKES DETAILING	Wastewater Discharger
MNS000147686	LAYNE CHRISTENSEN DTC	RCRA - Generator Facilities

MPCA LISTED SPILLS: None

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CWI REGISTERED WELLS: None

MPCA REGISTERED TANKS: None

DETAILED REVIEW

REGULATORY FILE REVIEW:

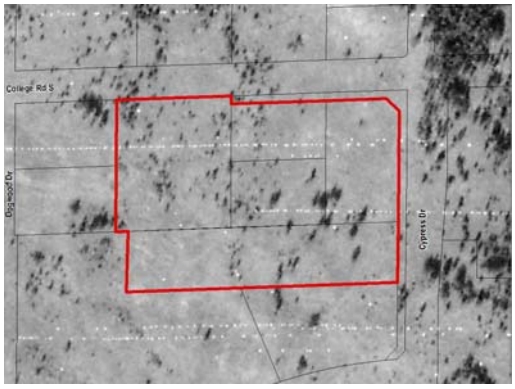
Listing	Summary	Reference
Hazardous Waste, Small to Minimal QG MNS000147686	Layne Christensen, a water management construction and drilling company, is small quantity hazardous waste generator with no listed violations.	Radius Report; GeoSearch (2016) and http://www.layne.com/en/

End of Record for Site 32

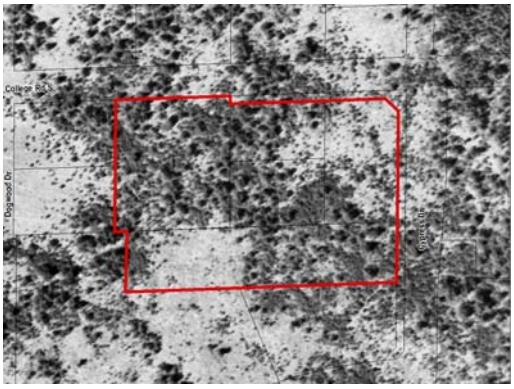
Modified Phase I Environmental Site Assessment Site Data Sheets
2018 Cypress Drive Improvements (SAP 230-113-04)

Historical Aerial Photographs

1939



1954



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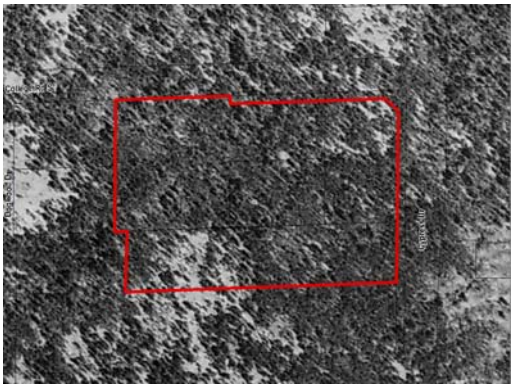
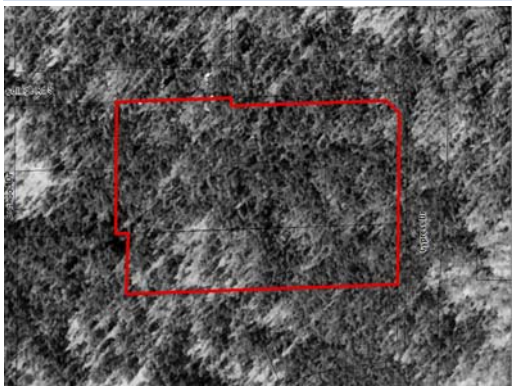
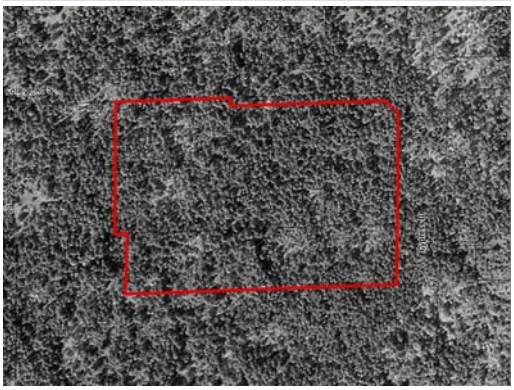


1973



1978



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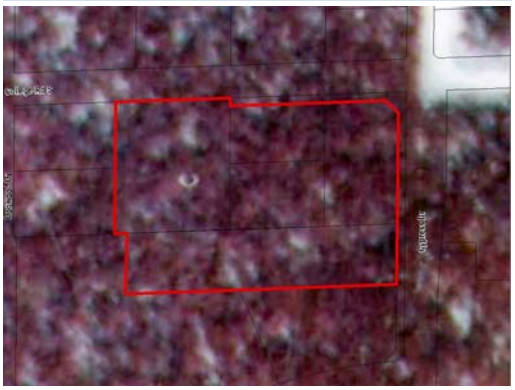
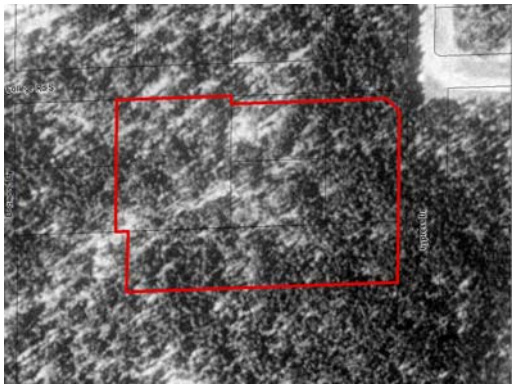


1992



2003

2006

2010

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Appendix B

Definitions, Standards, and Other Considerations

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11.0 Scope of Services

The standard Phase I ESA consists of the following four general tasks. Modifications to this standard are listed in **Section 8.0** of this report.

- Records Review – The purpose of the records review is to obtain and review reasonably ascertainable records from standard sources (including government records, physical setting sources, and historical use records) to assist in identifying RECs, HRECs and/or CRECs (all referred to as RECs in this section) in connection with the project corridor. Publicly-available federal, tribal, state, county and/or city records are reviewed as appropriate to determine if the property has had a history of spills, leaks, hazardous waste storage, regulatory compliance and improper waste disposal practices. Reasonably obtainable standard historical sources are reviewed as necessary to identify prior uses of the property from the time the property was first developed or 1940, whichever is earlier. Significant data gaps of greater than 5 years in property historical information are identified and discussed.
- Reconnaissance – The objective of the reconnaissance is to observe the project corridor to obtain information indicating the likelihood of RECs in connection with the project corridor. As part of the reconnaissance, SEH observes the property and any structures located on the property for indications of RECs to the extent not obstructed by thick vegetation, bodies of water, stored materials or product, equipment, or other obstacles. Potential environmental concerns on the project corridor and observable environmental concerns on adjoining properties that relate to improper waste storage and disposal and hazardous materials are noted.
- Interviews – The purpose of conducting interviews is to obtain information indicating RECs in connection with the project corridor. Interviews of past and present owner/manager/occupant for individual properties are not required for this modified Phase I ESA.
- Technical Report – SEH prepares the technical report summarizing the compiled information, and offers findings, opinions and conclusions based on the available data. Significant data gaps are identified and discussed in the report. RECs, if any, identified during performance of the Phase I ESA are described in the report.

For the tasks listed above, records reviewed were limited to information that was publicly available, obtainable from its source within reasonable time and cost constraints, was practically reviewable, and determined by the environmental professional to be useful in evaluating the condition of the property.

The Phase I ESA was conducted in accordance with the Agreement between SEH and the City of Baxter. The Phase I ESA does not include testing or sampling of materials (for example, soil, water, air or building materials) or any of the other following non-scope considerations specified in Section 13.1.5 of ASTM E 1527-13:

1. Asbestos-containing materials;
2. Radon;
3. Lead-based paint;
4. Lead in drinking water;
5. Wetlands;
6. Regulatory compliance;
7. Cultural and historical resources;
8. Industrial hygiene;
9. Health and safety;

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10. Ecological resources;
11. Endangered species;
12. Indoor air quality; or
13. High voltage power lines.

11.1 Definitions

11.1.1 American Society of Testing & Materials E1527-13

Recognized Environmental Condition (REC) - By ASTM definition, REC means "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. ***De minimis*** conditions are not recognized environmental conditions."

Historical REC (HREC) - The term HREC is defined by ASTM to mean "a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls)."

Controlled REC (CREC) – The term CREC is defined by ASTM to mean "a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls."

11.1.2 Minnesota Department of Transportation

The following definitions of "high", "medium", "low", or "de minimis" environmental risk are standard categories utilized by Minnesota Department of Transportation (MnDOT) Office of Environmental Stewardship (OES) to rank sites within a project corridor.

High Environmental Risk –All active and inactive VIC and MERLA sites, all active and inactive dump sites, all active Leak sites, dry cleaners (with on-site or unknown chemical processing), bulk oil facilities, all active agricultural release sites, and all historical industrial sites with likely chemical use on the premises.

Medium Environmental Risk – All closed Leak sites, all sites with USTs or ASTs, machine shops, all sites with historical vehicle repair activities, and all closed agricultural release sites.

Low Environmental Risk – All sites that are hazardous waste generators and possibly some farmsteads and residences with poor housekeeping practices.

De Minimis Environmental Risk – Properties that do not qualify by definition as low, medium, or high ranked sites and are considered unlikely for contamination (ranked "de minimis").

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11.2 MPCA Data Sources and Definitions

The following MPCA "What's in my neighborhood" activities and programs are referenced throughout the report.

- **Air Quality**: Many businesses create air pollutants as they generate power, manufacture products, or perform other industrial activities. These emissions might include fine particles, ozone, mercury or other toxic substances that can harm human health or the environment. Air quality permits help to reduce the amounts of pollutants that these facilities put into the air by requiring the facilities to use air pollution control equipment and establishing limits to what a facility can put into the air. Permits may also require air monitoring.
- **CERCLIS**: These are sites that are listed in the federal Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS). This means that they are or were suspected of being contaminated. The CERCLIS database contains information on preliminary assessments, site inspections, and cleanup activities for these sites. After CERCLIS sites are investigated, they may be elevated to state or federal Superfund lists, or it may be determined that no action is necessary.
- **Construction Stormwater Permit**: When stormwater drains off of a construction site, it can carry sediment and other pollutants that can harm lakes, streams and wetlands. A construction stormwater permit is designed to limit this pollution during and after construction by controlling the erosion associated with construction activities. Permits are issued to construction site owners and their operators.
- **Construction Stormwater Permit**: When stormwater drains off of a construction site, it can carry sediment and other pollutants that can harm lakes, streams and wetlands. A construction stormwater permit is designed to limit this pollution during and after construction by controlling the erosion associated with construction activities. Permits are issued to construction site owners and their operators.
- **Construction Stormwater Site Subdivision**: A construction stormwater site subdivision is a site where a construction project with an existing stormwater permit has been sub-divided into smaller parcels. The subdivisions are subject to the requirements of the original permit.
- **Contaminated Soil Treatment Facilities**: Contaminated soil treatment facilities are places that the MPCA has approved or permitted to take petroleum-contaminated soils from leak sites and provide treatment through a number of different processes. The processes include thermal treatment (usually by roasting soils at high temperatures), composting, or thin-spreading soils and allowing natural microorganisms to biodegrade the petroleum.
- **Feedlots**: Feedlots may be small farms or large-scale commercial livestock operations. They are places where animals are confined for feeding, breeding or holding. The MPCA and its county partners place requirements on how manure is managed at feedlots, so that it does not contaminate nearby surface water and groundwater. Most feedlots in Minnesota are only required to register with the MPCA, but larger feedlots may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit. This means that they must submit plans for how they will reduce their impact on the environment, including their plans to manage manure and control air pollution from the feedlot.
- **Hazardous Waste, LQG**: A large quantity generator (LQG) is a facility that generates at least 1,000 kilograms (2,200 pounds) of hazardous waste or 1 kilogram (2.2 pounds) of acutely hazardous waste per calendar month. An MPCA permit is not required for a large quantity generator, but the facility must have a current hazardous waste license. This

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means that they must tell the MPCA what kinds of waste they generate, how much waste they generate, and how they dispose of the waste.

- **Hazardous Waste, Small to Minimal Quantity Generator**: A small to minimal quantity generator is a facility that generates less than 1,000 kilograms (2,200 pounds) of hazardous waste or 1 kilogram (2.2 pounds) of acutely hazardous waste per calendar month. These facilities have less stringent rules than large quantity generators. This group includes Small Quantity Generators (SQGs), which produce 100 - 1000 kg of hazardous waste per month; Very Small Quantity Generators (VSQGs), which produce less than 100 kg of hazardous waste per month; and Conditionally Exempt Generators, which produce less than 100 kg or 10 gallons of hazardous waste per year. Like large quantity generators, SQGs and VSQGs must have current hazardous waste licenses.
- **Hazardous Waste, TSD**: A hazardous waste Treatment Storage and /or Disposal facility (TSD) is any business designed to treat, store and / or dispose of hazardous waste. These facilities typically collect hazardous wastes for other businesses and treat it or dispose of it properly. TSD facilities must have valid operating permits issued by the MPCA.
- **Industrial Stormwater Permit**: At industrial sites such as factories, salvage yards and airports, stormwater may come into contact with harmful pollutants, including toxic metals, oil, grease, de-icing salts and other chemicals. Industrial stormwater permits are designed to limit the amount of these contaminants that reaches surface water and groundwater, by requiring good practices for storing and handling materials.
- **Landfill, Closed**: Closed landfills are landfills that are no longer accepting waste. This includes landfills that are privately owned and managed, as well as those that are owned or managed by the MPCA and are part of the formal Closed Landfill Program. The Closed Landfill Program manages qualified closed landfills throughout Minnesota, and conducts cleanup work and maintenance at those sites. At some of these landfills, landfill gasses may be captured and used to create energy.
- **Landfill, Open**: Open landfills are landfills that are still accepting waste. This includes facilities that accept household garbage, industrial waste, and debris from construction or demolition. The MPCA requires that landfills are designed to bury this garbage in a controlled manner and reduce potential impacts on the environment. Many landfills have wells installed so that groundwater can be monitored for any contaminants that might leak into the ground.
- **Landfill, Permitted By Rule**: A landfill that is permitted by rule is not required to obtain an individual solid waste permit if it meets certain eligibility criteria. However, it must comply with waste management rules and regulations. Landfills may be permitted by rule if they have a small capacity and/or operate for a short period of time. Some yard waste composting facilities, recycling facilities and energy recovery facilities are also permitted by rule.
- **Leak Site**: Leak sites are locations where a release of petroleum products has occurred from a tank system. Leak sites can occur from aboveground or underground tank systems as well as from spills at tank facilities. A leak can result from an accident or from activities that occur over a long time.
- **MS4 Project**: A Municipal Separate Storm Sewer System (MS4) is a system of conveyances - such as gutters, ditches, city streets and storm drains - which is used as a path for stormwater. Regulated MS4s cover large areas, and are owned or operated by a public entity such as a city, county, township, watershed district or university. Runoff from sidewalks, driveways and city streets can contain pollutants, such as fertilizers, oil, road

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salt, litter and other debris. Permits for MS4s are designed to reduce the amount of stormwater pollution that reaches surface water and groundwater.

- **Multi**: Multi sites are locations where there are multiple MPCA activities occurring. This could be a facility with a wastewater permit and an air quality permit, a cleanup site with multiple Superfund operating units, a site with a registered feedlot and a tank, etc.
- **Petroleum Brownfield**: Petroleum Brownfield sites are places that may have been contaminated with petroleum due to a past or current leak. Petroleum Brownfield Program assesses risk associated with petroleum contamination at these sites and then provides technical assistance to help get the site cleaned up, redeveloped, and/or transferred to a new owner.
- **RCRA Cleanup**: Resource Conservation and Recovery Act Cleanup Sites are places where an existing business with a hazardous waste license or permit may have released hazardous waste to the environment. RCRA Cleanup staff investigate these sites and determine if cleanup is needed. Cleanups may occur at facilities that have current hazardous waste licenses or permits (hazardous waste generators or TSDs û see Hazardous Waste). They may also occur at interim status facilities, which at one time applied to be TSDs, but did not complete the permitting process.
- **Solid Waste Utilization Project**: A solid waste utilization project uses certain wastes in a new way to recycle the material instead of putting it into a landfill. An example is using tires to create furniture. The beneficial use of waste products saves landfill capacity for materials that do not have alternative uses.
- **State and Federal Superfund Projects**: Superfund projects occur where known or suspected environmental contamination threatens public health, welfare or the environment. The Superfund Program identifies, investigates and determines appropriate cleanup plans for these sites. Superfund projects often occur at abandoned or uncontrolled sites, for instance, where the business that polluted a site no longer exists. Federal Superfund sites are on the U.S. Environmental Protection Agency's National Priority List (NPL), while State Superfund sites are on Minnesota's Permanent List of Priorities (PLP). MPCA staff may work with EPA staff or other state agencies to investigate and clean up these sites. In Minnesota, sites which may have been contaminated by agricultural chemicals are managed by the Minnesota Department of Agriculture.
- **State Assessment Site**: State Assessment sites are places that MPCA Site Assessment staff have investigated because of suspected contamination. The sites investigated include abandoned industrial properties, small commercial businesses and publicly-owned land. (Note that petroleum-contaminated sites are investigated by MPCA Tanks and Leaks staff.) These sites may be referred to the Site Assessment program by the Voluntary Investigation and Cleanup (VIC) program, the Petroleum Remediation program, Minnesota Duty Officer reports or citizen complaints. Site Assessment staff do an initial assessment, and then determine if further action is needed. If a site poses a threat to human health or the environment, it is referred to CERCLIS, Superfund, RCRA Cleanup or VIC.
- **Tank Site**: A tank site is a place with an underground or aboveground storage tank of a certain size on the premises. One tank site may have multiple tanks, and these tanks may contain food products, petroleum products, or other substances. Tank sites include gas stations, bus companies and trucking companies, as well as factories that process sugar beets, ethanol, pulp and paper, or chemicals. The MPCA requires monitoring and maintenance at these sites, which helps to ensure that tanks do not cause environmental contamination.

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- **Unpermitted Dump Site**: Unpermitted dump sites are landfills that never held a valid permit from the MPCA. Generally, these dumps existed prior to the permitting program established with the creation of the MPCA in 1967. These dumps are not restricted to any type of waste, but were often old farm or municipal disposal sites that accepted household waste. State assessment staff have investigated many of these dump sites.
- **Voluntary Investigation & Cleanup (VIC) Site**: The Voluntary Investigation and Cleanup (VIC) Program provides technical assistance to buyers, sellers, developers or local governments seeking to voluntarily investigate or clean up contaminated property. Properties often enter the VIC program in preparation for sale, financing or redevelopment. Voluntary parties that complete investigation and / or cleanup activities under MPCA oversight can receive liability assurances that protect them from future Superfund liability. In some cases, the MPCA may use institutional controls as part of the overall site remedy and notify interested parties of any property use conditions or restrictions.
- **Wastewater Dischargers**: A wastewater discharger is a facility that generates or treats wastewater for discharge onto land or into water. Wastewater dischargers include sewage treatment plants, as well as ships with ballast water permits, and some manufacturers. MPCA permits may require treatment and monitoring, and limit the amount of contaminants that a facility can release into the environment. Wastewater permits may be classified as SDS or NPDES/SDS. SDS stands for State Disposal System, and indicates that the facility needs to follow Minnesota rules and regulations for wastewater. NPDES is the National Pollutant Discharge Elimination System, and indicates that the facility is also subject to the regulations of the federal Clean Water Act.

11.3 Special Terms and Conditions

SEH performed a modified Phase I ESA in general accordance with ASTM E 1527-13 and the Agreement between SEH and the City of Baxter. Performance of the Phase I ESA in general accordance with ASTM E 1527-13 is intended to reduce, but not eliminate, uncertainty regarding the existence of RECs or HRECs in connection with the project corridor.

When reasonably ascertainable, data was obtained and reviewed; however, the accuracy of the collected data is not the responsibility of SEH. Information provided to SEH by client representatives and site contacts has been accepted in good faith and is assumed to be accurate unless written documentation, available within the scope of this Phase I ESA, or visual observations contradicted it.

The Phase I ESA is not a comprehensive site characterization and should not be construed as such. The findings and conclusions of the Phase I ESA are based on information collected and observed at the time of the Phase I ESA and are not scientific certainties, but probabilities based on professional judgment regarding the significance and accuracy of the collected data. Because professional judgments incorporated into the report are based on limited evidence, there is inherent uncertainty in the conclusions drawn and reported. The client has determined that the level of effort and corresponding degree of uncertainty are acceptable for the client's purpose. The Phase I ESA may not include all environmental conditions that can materially impact the property and a finding of no RECs or HRECs is not a warranty or guarantee that a property remains free from contamination.

Laws and regulations, if referenced in this report, are provided for information purpose and should not be construed as legal opinion or recommendation.

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11.4 User Reliance

The Phase I ESA and all reports, verbal and written, are solely for the use of the City of Baxter and MnDOT. Any third party may have different interests, purposes, and motives than the City of Baxter and MnDOT with regard to this assessment and report. Any reliance on the Phase I ESA by any other party shall be at such party's sole risk, unless that party has written authorization from SEH, the City of Baxter and MnDOT, and is a party to the Agreement between SEH and the City of Baxter.

12.0 Limitations and Standard of Care

This modified ESA was completed in general accordance with ASTM E 1527-13, *Standard Practice for Environmental Assessments* and SEH's agreement with the City of Baxter. The findings and conclusions of this report are not scientific certainties, but probabilities based on professional judgment regarding the significance and accuracy of the collected data. When reasonably ascertainable, environmental data was obtained and reviewed. However, the accuracy of the sources and collected data is not the responsibility of SEH.

When a Phase I ESA is completed without subsurface exploration or chemical analyses of the soil and/or groundwater at the site, no statement of scientific certainty can be made regarding the environmental or subsurface conditions resulting from either onsite or offsite pollutant sources. The possibility always exists for contaminants to migrate from one property to another via surface water, groundwater or soil. The ability to accurately assess the environmental risk associated with the transport of pollutants through these media to the site is beyond the scope of this Phase I ESA.

This Phase I ESA report was prepared for the exclusive use of the City of Baxter and MnDOT. The negotiated scope of work imposed limitations on the collection and interpretation of evidence, consistent with the ASTM Standard, resulting in a commensurate uncertainty as to the conclusions drawn. The degree of uncertainty was deemed acceptable by the City of Baxter. Any third party interested in using or relying upon this report must first secure written authorization from the City of Baxter and SEH, and agree to accept SEH's terms and conditions respecting indemnification and agreed upon limitations of liability.

SEH services were conducted in a manner consistent with the level of care and skill standard to the industry. The conclusions and recommendations contained in this report were arrived at in accordance with generally accepted professional practice at this time and location. Other than this, no warranty is implied or intended.

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Building a Better World
for All of Us®

MEMORANDUM

TO: Honorable Mayor and City Council and Utilities Commission
c/o Trevor Walter, PE
City of Baxter, Minnesota

FROM: Scott Hedlund, PE

DATE: December 1, 2016

RE: 2018 Cypress Drive Improvements
Sewer Televising Quotes
SEH No. BAXTE 138944 16.00

SEH solicited quotes to televise portions of the existing storm sewer and sanitary sewer systems. Quote Documents that were sent out to prospective contractors are attached.

The televising limits include:

- Storm sewer north of TH 210 along Fairview Road between Golf Course Drive and Cypress Drive, Cypress Drive between Fairview Road and Excelsior Road, and along Excelsior Road for approximately 500 feet west of Excelsior Road.
- Gravity sanitary sewer along the Cypress Drive corridor between TH 210 and College Road, along Industrial Road approximately 500 feet east and west of Cypress Drive, and along College Road between Cypress Drive and Berrywood Drive.
- Optional - gravity sanitary sewer along Berrrywood Drive between College Road and the south side of CSAH 48.

The City's public works department has advised the storm sewer has had a history of maintenance issues and the trunk sanitary sewer has never been televised. It is recommended that the condition of these existing facilities be evaluated in conjunction with the Cypress Drive project.

Also attached is a tabulation of the three quotes received. SEH recommends award to Hydro-Klean, LLC in the amount of $16,988.70.

Attachments
c: Kelly Steele – City of Baxter
sh
p:\ae\b\baxte\138944\1-genl\16-meet\2016.12.07 utilities commission\m seh to city 2018 cypress drive sewer televising quotes 120116.docx

Building a Better World
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MEMORANDUM

TO: Bidders

FROM: Scott Hedlund, PE

DATE: November 17, 20166

RE: 2018 Cypress Drive Improvements
Baxter, Minnesota
Quote for Televising
SEH No. BAXTE 138944

Enclosed find the Bid Form, Specification, and Drawings for this project. Quotes are due:

Date:	**November 29, 2016**
Day:	**Tuesday**
Time:	**11:00 a.m.**
Email:	**shedlund@sehinc.com**

Emailed quotes are required.

No Bid Bond is required.

Performance and Payment Bonds are not required.

Certificates of Insurance will be required.

Project Completion: Site is available upon authorization, and the televising report must be submitted to SEH within 6 weeks of Council authorization to proceed (currently expected on December 20, 2016).

The City of Baxter will assist in locating sanitary sewer and storm sewer manholes prior to Contractor performing the televising services. Contractor must coordinate with the City as to when the work will be performed.

Contractor will be responsible for jetting and televising of sanitary sewer mains and storm sewer.

Contractor will provide red-line changes to city map in the event the televising shows discrepancies.

If you have any questions, please call me directly at 218.855.1705 or via email at shedlund@sehinc.com.

sh
Enclosures
c: Trevor Walter, City of Baxter
p:\ae\b\baxte\138944\5-final-dsgn\52-specs-proj-man\november 2016 televising quotes\m bidders televising quote - 111716.docx

The Bid is to be submitted on photocopies of this Bid Form and the attachments provided.

DOCUMENT 00 41 00

BID FORM

Total Amount of Bid $_____

Contractor's Name _____

Telephone _____

PROJECT IDENTIFICATION: **2018 Cypress Drive Sanitary and Storm Sewer Televising Quote**
Baxter, MN
SEH No. BAXTE 138944

THIS BID IS SUBMITTED TO: Honorable Mayor and City Council
c/o Scott Hedlund, PE - SEH
shedlund@sehinc.com

ARTICLE 1 – BIDDER'S REPRESENTATIONS

In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum Date
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress and performance of the Work.

D. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, and (3) Bidder's safety precautions and programs.

E. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.

F. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

G. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

H. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

ARTICLE 2 – BASIS OF BID

BASE BID **UNIT PRICE BID**					
ITEM NO.	**DESCRIPTION**	**UNIT**	**ESTIMATED QUANTITY**	**BID UNIT PRICE**	**TOTAL BID PRICE**
1	MOBILIZATION	LUMP SUM	1.00		
2	CLEAN SANITARY SEWER MAINS (UP TO 3 PASSES)	LIN FT	4,330.00		
3	TELEVISE SANITARY SEWER MAINS	LIN FT	4,330.00		
4	CLEAN STORM SEWER MAINS (UP TO 3 PASSES)	LIN FT	3,450.00		
5	TELEVISE STORM SEWER MAINS	LIN FT	3,450.00		
			TOTAL BASE BID		

ALTERNATE BID **UNIT PRICE BID**					
ITEM NO.	**DESCRIPTION**	**UNIT**	**ESTIMATED QUANTITY**	**BID UNIT PRICE**	**TOTAL BID PRICE**
6	CLEAN SANITARY SEWER MAINS (UP TO 3 PASSES)	LIN FT	2,400.00		
7	TELEVISE SANITARY SEWER MAINS	LIN FT	2,400.00		
			TOTAL ALTERNATE BID		

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 3 – BID SUBMITTAL

3.01 This Bid submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____ (SEAL)
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____ (SEAL)

By: _____
(Signature of general partner - attach evidence of authority to sign)

Name (typed or printed): _____

A Joint Venture

Name of Joint Venturer: _____

First Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of first joint venture partner - attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venturer Name: _____ (SEAL)

By: _____
(Signature - attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability): _____

By: _____
(Signature - attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____
(CORPORATE SEAL)

Attest: _____
(Signature of Corporate Secretary)

Date of Qualification to do business in _____ is ____/____/____.
(State Where Project is Located)

3.02 Contact Information

Bidder's Business Address: _____

_____

Phone: _____ Facsimile: _____ E-mail: _____

Submitted on _____, 20_____.

State Contractor License No. _____. (If applicable)

SECTION 33 01 30

TELEVISION INSPECTION OF SEWERS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes inspection of existing sewer lines by means of closed-circuit television.

B. Method of Measurement: Measure by length in linear feet of sewer televised regardless of size or type.

C. Basis of Payment:
   1. Payment for acceptable quantities of televised sewer inspection shall be at the Contract Unit Price as listed on the Bid Form. All associated Work items shall be considered incidental.
   2. All information generated and the media on which it is provided shall become property of the Owner.

1.02 DEFINITIONS

A. Pipe Segment: The length of pipe connecting 2 manholes.

1.03 SUBMITTALS

A. Video Tape:
   1. Provide 2 copies of visual and audio record of inspection.
   2. Features:
      a. Color, Digital format.
      b. Video display of footage counter continuously showing distance from reference point.
      c. Slow and stop motion.
      d. Speed: Maximum televising velocity of 35 feet of pipe per minute.
   3. Audio record should include:
      a. Date and time of inspection.
      b. Operator name.
      c. Street or surface location of reference manhole.
      d. Size and type of pipe being inspected.
      e. Direction of camera.
      f. Description of all significant items including:
         1) Broken or damaged pipe.
         2) Points of infiltration.
         3) Root intrusions.
         4) Scale and corrosion.
         5) Service connections.
         6) Pipe deflections.
         7) Other discernable features.
      g. Distance of each item from the reference manhole.
      h. Location of each item with respect to pipe axis.
   4. Audio record shall correspond with written log.
   5. Identify location and date of inspection on tape container.
   6. Identify tape speed on tape container.
   7. Furnish 2 copies.

B. Written Logs:
   1. Supply typewritten record of inspection on a standard format.
   2. Written record should correspond with audio record.
   3. Written record should include all information required for audio record.
   4. Furnish 2 copies.

1.04 QUALIFICATIONS

A. All Work shall be performed by personnel who have been specifically trained for equipment used and who have experience in televised inspections.

B. Contractor must utilize NASSCO PACP inspection standards.

PART 2 PRODUCTS

2.01 EQUIPMENT

A. Television Camera:
   1. Specifically designed and constructed for operations associated with sewer inspection.
   2. Adequate quality to accurately reproduce all colors and provide a clear, focused picture of the entire pipe interior for all conditions encountered.
   3. Operative in 100 percent humidity conditions.
   4. Adjustable mounting in order to center lens in a variety of pipe diameters.
   5. Built-in light source positioned to minimize reflective glare.
   6. Adjustable focal distance from 6 inches to infinity.
   7. Articulating feature to provide for viewing of up to 90 degrees in all directions.
   8. Variable speed operation propelled by:
      a. Power winch.
      b. Hand winch.
      c. Self-propelled.
   9. Footage counter to measure distance traveled.

B. Television Monitor:
   1. Vehicle mounted for viewing in a weather-protected environment.
   2. Minimum Screen Size: 9-inch.
   3. Minimum 350 line resolution color picture.
   4. Display footage counter superimposed on screen.

2.02 ACCESSORIES

A. Provide:
   1. Vehicles, as required.
   2. 2-way radio/telephone communication equipment.
   3. Video and audio signal cable.
   4. Color video tape equipment and tapes.
   5. Equipment to generate photographs from individual video frames.
   6. Power source.
   7. Winches and cables.

PART 3 EXECUTION

3.01 PREPARATION

A. Preliminary Work Performed by Quoter:
   1. Locate and expose all manholes required for access to sewer system.
   2. Clean and flush pipe segments to be inspected (3 jetting passes included in base bid).
   3. Provide access to manholes with adequate area for operation of inspection equipment and personnel.

3.02 PERFORMANCE

A. Description of Work:
   1. Propel closed-circuit television camera through designated pipe segments to document condition of pipe, joints, and service connections.
   2. Use in-place manholes for access to pipe segments.
   3. Operate camera from remote video monitor display.
   4. Record camera from remote video monitor display.
   5. Record camera output on videotape for future viewing.
   6. Pipe segments to be inspected are shown on enclosed figure.

B. Sewage Flow Control:
   1. When sewage flows in pipe segment to be inspected exceed minimum levels for a complete inspection of the pipe interior, perform one of the following control methods.
      a. Plugging and blocking:
         1) Provide plugs which will allow a controlled release of sewage flow.
         2) Insert plugs in the upstream manhole of the pipe segment to be inspected.
         3) As the inspection is performed, shut off or reduce flows to minimum acceptable level for adequate inspection.
      b. Bypass pumping:
         1) Eliminate flow in pipe segment to be inspected by inserting solid plugs in upstream manhole.
         2) Provide pumping equipment and conduits to transfer sewage flows from upstream side of the plug to a downstream manhole, around the pipe segment during the inspection.
   2. When excessive flow is entering pipe segment being inspected from outside source, Contractor shall proceed with one of the following methods:
      a. Coordinate with source owner to stop or reduce flow to acceptable levels.
      b. Reschedule inspection of pipe segment to when flows are at acceptable levels.

3.03 INSPECTION PROCEDURE

A. Move camera through entire pipe segment in a downstream direction.

B. Winches:
   1. Winch assembly shall not obstruct camera view.
   2. If non-remote control winch is used, provide 2-way communication between television monitor and winch operator.

C. Center lens in pipe area.

D. Maximum Camera Speed: 30 feet per minute.

E. Relay video signal from camera to monitor and video tape recorder.

F. Produce audio record concurrently with video record.

G. Stop camera when necessary to properly document significant items and take photographs as requested by Owner.

H. Use articulating feature to obtain the best possible view of service connections and other items.

I. Zero footage counter at inside wall of manhole in each pipe segment.

J. In case of obstruction in pipe segment, reset camera in downstream manhole and propel upstream to opposite side of obstruction.

3.04 FIELD QUALITY CONTROL

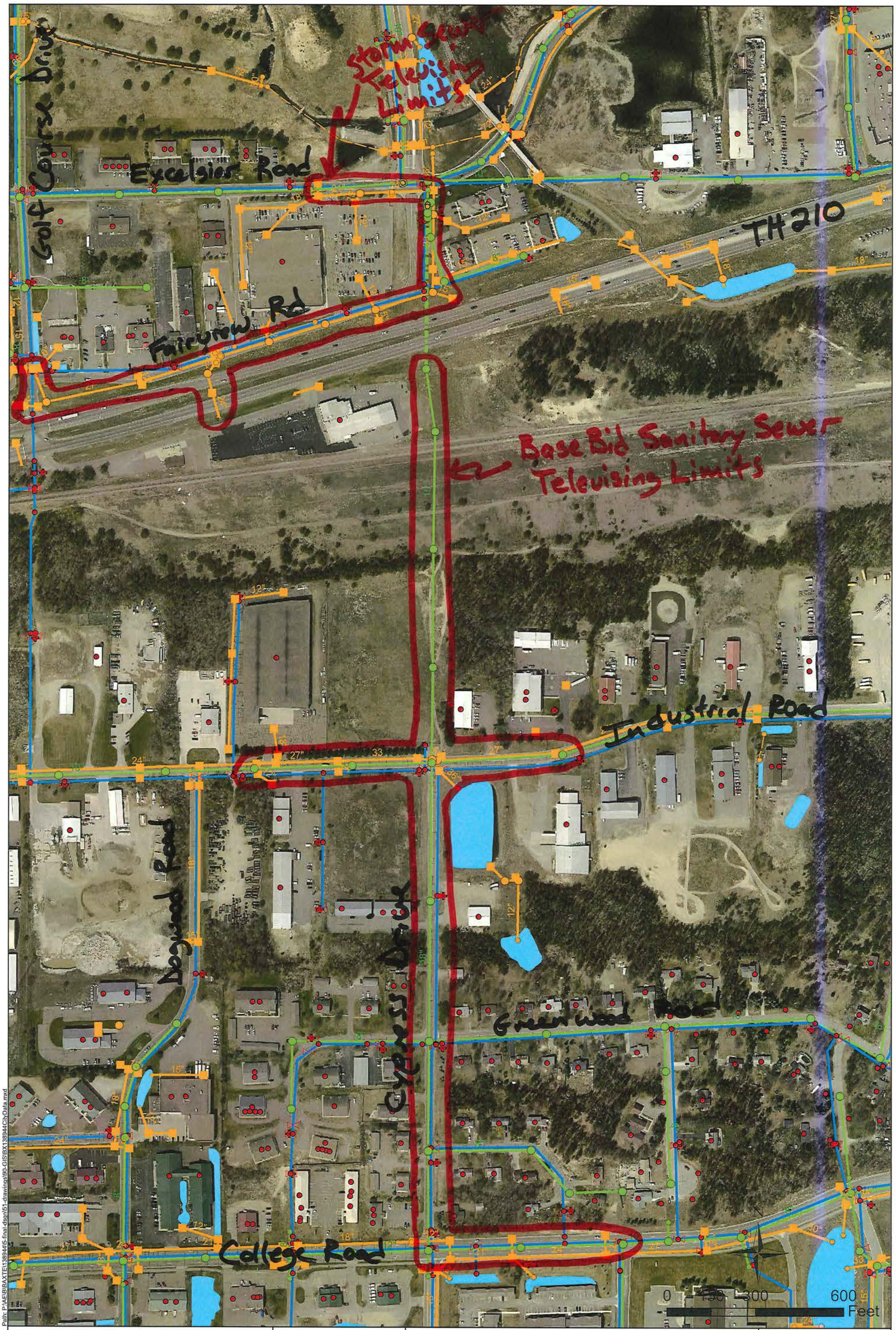
A. Verify accuracy of footage counter by measuring surface distance between manholes with a measuring wheel.

B. Footage counter shall be accurate to within 1 percent of the length of pipe segment.

3.05 REPORT

A. Televising and report shall contain all information in industry standard terminology.

END OF SECTION



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SEH
416 South 6th Street, Suite 200
Brainerd, MN 56401-3540
218.855.1700
866.852.8880 toll free
888.908.8166 fax
www.sehinc.com

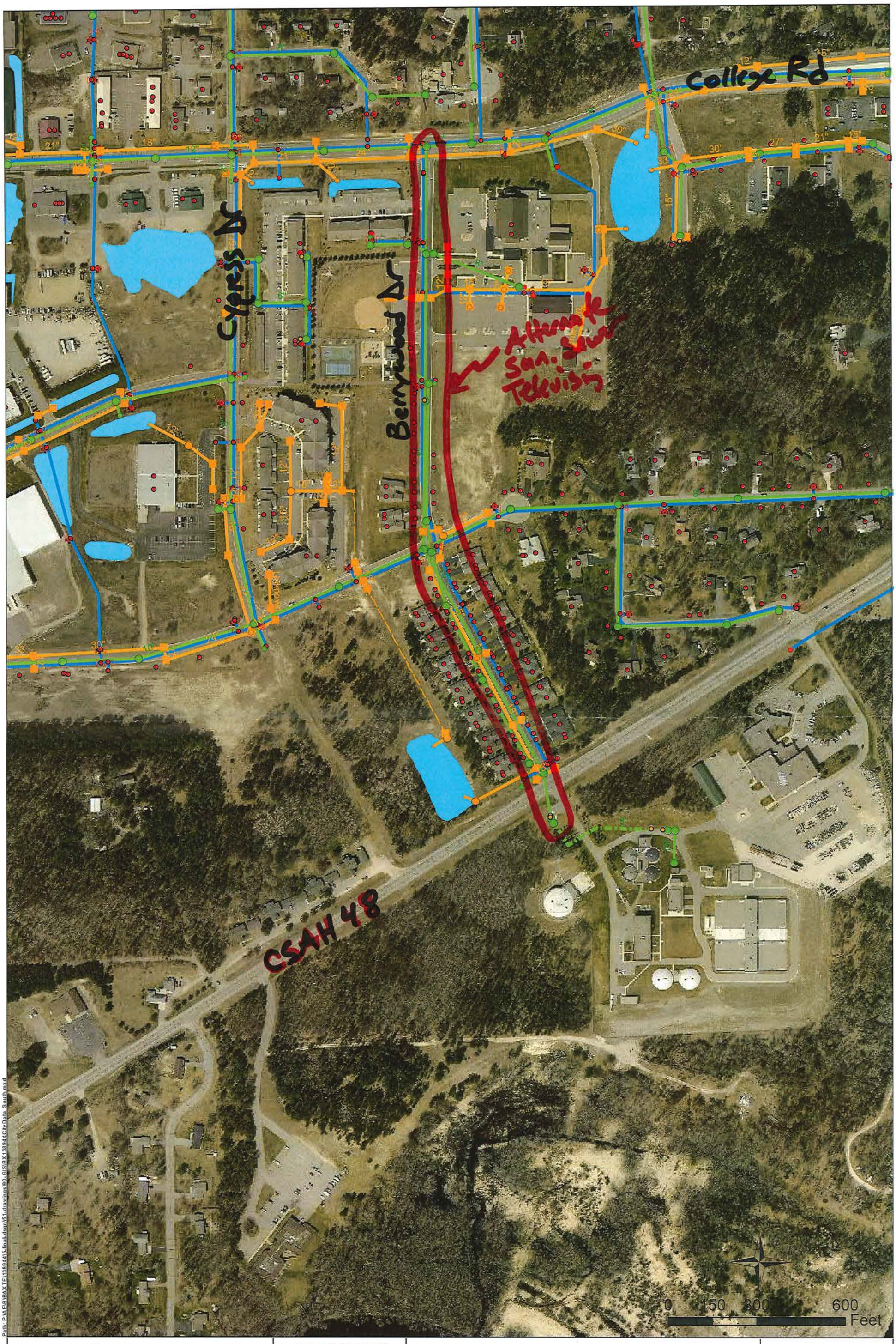
Project: XXXXX 000000
Print Date: 11/10/2016

Map by: jschmitz
Projection:
Source:
11-17-16

CYPRESS DRIVE
UTILITY LAYOUT
Baxter, Minnesota

Figure 1

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.



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SEH

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Project: XXXXX 000000
Print Date: 11/17/2016

Map by: jasp
Projection:
Source:
11-17-16

CYPRESS DRIVE
UTILITY LAYOUT
Baxter, Minnesota

Figure
2

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

TABULATION OF BIDS

SEH NO.: **BAXTE 138944**
NAME: **2018 CYPRESS DRIVE IMPROVEMENTS - TELEVISING QUOTE**
OWNER: **CITY OF BAXTER, MN**
BID DATE: **TUESDAY, NOVEMBER 29, 2016 @ 11:00 A.M.**

				1 HYDRO-KLEAN, LLC		2 JOHNSON JET LINE		3 RITTER & RITTER	
ITEM	**QUANTITY**	**UNIT**	**DESCRIPTION**	**UNIT COST**	**TOTAL**	**UNIT COST**	**TOTAL**	**UNIT COST**	**TOTAL**
BASE BID									
1	1.00	LUMP SUM	MOBILIZATION	$2,160.00	$2,160.00	$600.00	$600.00	$2,000.00	$2,000.00
2	4,330.00	LIN FT	CLEAN SANITARY SEWER MAINS (UP TO 3 PASSES)	$0.75	$3,247.50	$0.89	$3,853.70	$1.25	$5,412.50
3	4,330.00	LIN FT	TELEVISE SANITARY SEWER MAINS	$0.54	$2,338.20	$0.73	$3,160.90	$1.00	$4,330.00
4	3,450.00	LIN FT	CLEAN STORM SEWER MAINS (UP TO 3 PASSES)	$0.98	$3,381.00	$0.89	$3,070.50	$5.00	$17,250.00
5	3,450.00	LIN FT	TELEVISE STORM SEWER MAINS	$0.60	$2,070.00	$0.73	$2,518.50	$1.00	$3,450.00
			TOTAL BASE BID		**$13,196.70**		**$13,203.60**		**$32,442.50**
ALTERNATE									
6	2,400.00	LIN FT	CLEAN SANITARY SEWER MAINS (UP TO 3 PASSES)	$0.98	$2,352.00	$0.89	$2,136.00	$1.00	$2,400.00
7	2,400.00	LIN FT	TELEVISE SANITARY SEWER MAINS	$0.60	$1,440.00	$0.73	$1,752.00	$1.00	$2,400.00
			TOTAL ALTERNATE		**$3,792.00**		**$3,888.00**		**$4,800.00**
SUMMARY									
			TOTAL BASE BID		**$13,196.70**		**$13,203.60**		**$32,442.50**
			TOTAL ALTERNATE		**$3,792.00**		**$3,888.00**		**$4,800.00**
			GRAND TOTAL BID		**$16,988.70**		**$17,091.60**		**$37,242.50**

P:\AE\B\BAXTE\138944\6-bid-const\Televising Quote\[Bid Tabulation.xlsx]BIDTAB

Building a Better World
for All of Us™

December 1, 2016

RE: City of Baxter, Minnesota
2018 Cypress Drive Project
FHWA Environmental Review and Documentation
SEH No. BAXTE 138944

Mr. Trevor Walter, PE
Public Works Director / City Engineer
City of Baxter
13190 Memorywood Drive
PO Box 2626
Baxter, MN 56425-2626

Dear Mr. Walter:

Short Elliott Hendrickson Inc. (SEH®) is pleased to submit this proposal to assist the City in conducting the required environmental reviews for the 2018 Cypress Drive Project.

Project Overview

A preliminary layout for the proposed project includes extending Cypress Drive as a four-lane divided roadway from College Road to Excelsior Road. The project includes a new crossing of the BNSF railroad corridor, a new signalized intersection at Highway 210, two new roundabouts, stormwater treatment facilities (ponds), utilities, and pedestrian/bicycle improvements.

Since the project has received federal funding, SEH has been in discussions with MnDOT on the level and type of environmental review and documentation needed to satisfy the requirements of the National Environmental Policy Act. It is not clear at this time whether the project impacts will require the preparation of a Categorical Exclusion document (also known as Project Memorandum) or more detailed Environmental Assessment (EA) document. The level of potential impacts of the project will play a role in MnDOT, and potentially the Federal Highway Administration (FHWA), making a final determination on the type of environmental documentation required.

Therefore, we propose that the environmental review and documentation process be split into a two phase approach. Phase I will include the completion of several required social, economic, and environmental impact assessments (e.g. calculating right of way acquisitions/relocations, calculating acreages of wetland impacts, identifying noise violations, air quality impacts, and several others). The work completed in Phase I will ultimately be carried forward into Phase II, which will include the preparation of the Project Purpose and Need Statement, documenting the alternatives development and screening process, identification of the preferred alternative, documentation of impacts and mitigation commitments, and processing the federal environmental documentation. A separate Phase II contract will be brought forth to the City for consideration once the environmental analysis is complete and the type of federal documentation is known.

Phase I Work Plan

Task 1 Early Agency Correspondence and Collection of Existing Social, Economic, and Environmental (SEE) Data

SEH will prepare and distribute the early agency correspondences required by MnDOT and FHWA. We will also gather all readily available SEE data for the project area. This task will include, but is not limited to: field reconnaissance, collection and analysis of GIS data-sets, review historical land records, and review previous transportation and environmental studies.

Task 2 Conduct SEE Impact Assessments for the Cypress Drive Corridor

SEH will conduct several technical analyses required as part of the MnDOT Highway Project Development Process (HPDP) and the National Environmental Policy Act (NEPA). Detailed impact assessments will be completed for:

- Right of Way Needs
  - Number of Relocations
  - Acreage of Permanent and Temporary Easements
- Social & Economic Effects
- Air Quality/Mobile Source Air Toxics Analysis (in accordance with the Clean Air Act)
- Visual Quality Assessment
- Detailed Noise Analysis (in accordance with the new MnDOT Noise Policy)
- Natural Resource Assessment
  - Wetlands
  - Vegetation
  - Threatened & Endangered Species
  - Surface Water Quality
  - Groundwater / Contamination
- Environmental Justice Populations (in accordance with Federal Executive Order 12898)
- Pedestrian/Bicycle Movements

Task 3 Technical Memorandum and Project Impacts Matrix

SEH will prepare a technical memorandum and impacts matrix that will be used to inform MnDOT's decision regarding the required NEPA documentation path (either a Categorical Exclusion or EA).

Schedule

We will begin work upon notification to proceed. Phase I tasks will be completed by March 15, 2017. If Phase II follows the Categorical Exclusion path, it is anticipated that Phase II would be completed by June 1, 2017. Further review of the environmental documentation schedule will be needed if it is determined that an EA is required. Forces beyond SEH's control could affect the project schedule such as agency review turnaround times.

Fee Estimate

Our proposed fee is hourly not to exceed $22,420 for Phase I of the environmental review including expenses.

Should additional services or modifications to the work plan be requested by the City, they can be furnished with compensation based on our standard hourly rates or for a negotiated fee.

If this proposal is acceptable, an Agreement for Professional Services will be forwarded for approval.

If you have any questions, please contact me at **218.855.1705** or shedlund@sehinc.com.

Sincerely,

Scott Hedlund, PE
SEH Project Manager / Client Service Manager

Agreement for Professional Services

This Agreement is effective as of December 1, 2016, between City of Baxter, Minnesota (Client) and Short Elliott Hendrickson Inc. (Consultant).

This Agreement authorizes and describes the scope, schedule, and payment conditions for Consultant's work on the Project described as: Cypress Drive – FHWA Environmental Review and Documentation.

Client's Authorized Representative: Trevor Walter
Address: 13190 Memorywood Drive
Baxter, MN 56425-2626
Telephone: 218.454.5110 email: twalter@baxtermn.gov

Project Manager: Scott Hedlund
Address: 416 South 6th St, Suite 200
Brainerd, MN 56401
Telephone: 218.855.1705 email: shedlund@sehinc.com

Scope: The Basic Services to be provided by Consultant as set forth herein is provided subject to the attached General Conditions of the Agreement for Professional Services (General Conditions Rev. 07.14.16), which is incorporated by reference herein and subject to Exhibits attached to this Agreement.

The scope of services is per SEH letter to the City dated 12/1/16 and **Exhibit A**.

Schedule: We will begin work immediately upon notice to proceed.

Payment: The estimated fee increase is subject to a not-to-exceed amount of $22,420.00 including expenses and equipment.

The previously approved fee is hourly estimated to be $250,277.00. Including the above $22,420.00 fee increase, the total fee is hourly estimated to be $272,697.00, including expenses and equipment. The estimated total fee is subject to a not-to-exceed amount of **$272,697.00** including expenses and equipment.

The payment method, basis, frequency and other special conditions are set forth in attached Exhibit A-1.

This Agreement for Professional Services, attached General Conditions, Exhibits and any Attachments (collectively referred to as the "Agreement") supersedes all prior contemporaneous oral or written agreements and represents the entire understanding between Client and Consultant with respect to the services to be provided by Consultant hereunder. In the event of a conflict between the documents, this document and the attached General Conditions shall take precedence over all other Exhibits unless noted below under "Other Terms and Conditions". The Agreement for Professional Services and the General Conditions (including scope, schedule, fee and signatures) shall take precedence over attached Exhibits. This Agreement may not be amended except by written agreement signed by the authorized representatives of each party.

Other Terms and Conditions: Other or additional terms contrary to the General Conditions that apply solely to this project as specifically agreed to by signature of the Parties and set forth herein: None.

Short Elliott Hendrickson Inc.

By: Scott D. Hedlund

Scott Hedlund

Title: Senior Project Manager

City of Baxter, Minnesota

By: _____

Title: _____

City of Baxter, Minnesota

By: _____

Title: _____

2018 CYPRESS DRIVE IMPROVEMENTS

EXHIBIT A

Professional Services - FHWA Environmental Review and Documentation

Work Plan Summary and Fee Estimate

City of Baxter, Minnesota

December 1, 2016

WORK TASKS	Sr. Prof. Eng/ Sr. Project Manager	Principal/ Sr. Specialist	Professional Engineer/ Specialist/ RLS	Staff Engineer/ Scientist	Sr. Water Resources Eng./ Scientist	Lead Technician/ Specialist	Sr. Technician / Surveyor Crew Chief	Technician / Survey Assistant	Admin. Tech	SEH TOTAL HOURS
5.0 FHWA Environmental Review and Documentation	68	2	0	106	4	8	8	0	4	**200**
Total Project Hours	**68**	**2**	**0**	**106**	**4**	**8**	**8**	**0**	**4**	**200**
Average Rates	$150.00	$180.00	$124.00	$85.00	$130.00	$109.00	$95.00	$83.00	$63.00	

Total Labor Cost	$21,974.00
Reimbursables	$446.00
Total SEH Fee	**$22,420.00**

Total Project Cost	**$22,420.00**

2018 CYPRESS DRIVE IMPROVEMENTS
Professional Services - FHWA Environmental Review and Documentation
Work Plan

Client: CITY OF BAXTER, MINNESOTA **December 1, 2016**

Work Tasks	Work Task Descriptions	Sr Prof Eng/ Sr Project Manager	Principal/ Sr. Specialist	Prof. Engineer / Specialist/ RLS	Staff Engineer/ Scientist/ Planner	Water Res. Engineer or Scientist	Lead Technician/ Specialist	Sr Tech. or Survey Crew Chief	Tech / Survey Assist.	Admin. Tech.	TOTAL
5.0	**Federal Highway Administration (FHWA) Environmental Review and Documentation**										
5.1	Data Collection, Database Reviews, and Agency Coordination - Request MNDNR NHIS Database review and coordinate with MnDNR as necessary for State T&E species. Request MnDOT Cultural Resource staff review and MnDOT OES review for federal T&E species. (Sub-task hours assume no detailed cultural resource investigations or botanical survey needed).	5			10					2	17
5.2	Conduct Social, Economic, and Environmental (SEE) Impact Assessments.	60	1		80	4	8	8			161
5.3	Technical Memorandum and Project Impact Matrix	3	1		16					2	22
	Task 5.0 Subtotal Hours (Phase I):	***68***	***2***	***0***	***106***	***4***	***8***	***8***	***0***	***4***	***200***
	Deliverables: Data Collection/Agency Coordination, Wetland Review, Detailed Noise Analysis & Report, Other SEE Reviews/Assessments, Technical Memorandum and Impacts Matrix										
	TOTAL PROJECT HOURS	***68***	***2***	***0***	***106***	***4***	***8***	***8***	***0***	***4***	***200***
6.0	**Additional/Optional/Future Services**										
	Completion of Phase II Envinronmental Review and Documentation Process. Subtasks to include preparation of Project Purpose & Need Statement, documenting alternatives development and screening process, identification of the preferred alternative, documentation of impacts and mitigation committments, and processing the federal environmental documentation.	To be determined									

2018 CYPRESS DRIVE IMPROVEMENTS
FHWA ENVIRONMENTAL REVIEW AND DOCUMENTATION SERVICES
ESTIMATED REIMBURSABLE DIRECT COSTS
City of Baxter, Minnesota

SEH, INC.

	NUMBER OF TRIPS	MILES/ TRIP	TOTAL MILES	
TRAVEL EXPENSES				
Local Trips				
SEH Brainerd Based Staff	0	10	0	
SEH St Cloud Based Staff	0	130	0	
SEH Twin Cities Based Staff	1	270	270	
Project Site Visits/Field Trips	0	25	0	
Subtotals:			270	
ESTIMATED MILEAGE COSTS:	$0.540	per mile	$146	
	Number	Cost	Total Cost	
Hotel	0	$0.000	$0	
Meals	0	$10.000	$0	
Total			$0	
ESTIMATED TRAVEL COSTS:				**$146**
EXHIBITS:				**$0**
Miscellaneous Printing:				**$100**
Mailing/Postage Costs				**$0**
State Database Reviews				**$200**
ROW PLAT				
Mylar Prints (Estimate 6 pages @ $500 per page)				**$0**
EQUIPMENT EXPENSES	Number of Hou	Cost/Hr	Total Cost	
Computer Expenses (in OH mulitplier)	0		$0	**$0**
Survey Equipment	0	$25	$0	**$0**
Survey Truck	0	$4.5	$0	**$0**
TOTAL ESTIMATED REIMBURSABLE EXPENSES:				**$446**

Exhibit A-1
to Agreement for Professional Services
Between City of Baxter, Minnesota (Client)
and
Short Elliott Hendrickson Inc. (Consultant)
Dated December 1, 2016

Payments to Consultant for Services and Expenses
Using the Hourly Basis Option

The Agreement for Professional Services is amended and supplemented to include the following agreement of the parties:

A. Hourly Basis Option

The Client and Consultant select the hourly basis for payment for services provided by Consultant. Consultant shall be compensated monthly. Monthly charges for services shall be based on Consultant's current billing rates for applicable employees plus charges for expenses and equipment.

Consultant will provide an estimate of the costs for services in this Agreement. It is agreed that after 90% of the estimated compensation has been earned and if it appears that completion of the services cannot be accomplished within the remaining 10% of the estimated compensation, Consultant will notify the Client and confer with representatives of the Client to determine the basis for completing the work.

Compensation to Consultant based on the rates is conditioned on completion of the work within the effective period of the rates. Should the time required to complete the work be extended beyond this period, the rates shall be appropriately adjusted.

B. Expenses

The following items involve expenditures made by Consultant employees or professional consultants on behalf of the Client. Their costs are not included in the hourly charges made for services and shall be paid for as described in this Agreement but instead are reimbursable expenses required in addition to hourly charges for services:

1. Transportation and travel expenses.
2. Long distance services, dedicated data and communication services, teleconferences, Project Web sites, and extranets.
3. Lodging and meal expense connected with the Project.
4. Fees paid, in the name of the Client, for securing approval of authorities having jurisdiction over the Project.
5. Plots, Reports, plan and specification reproduction expenses.
6. Postage, handling and delivery.
7. Expense of overtime work requiring higher than regular rates, if authorized in advance by the Client.
8. Renderings, models, mock-ups, professional photography, and presentation materials requested by the Client.
9. All taxes levied on professional services and on reimbursable expenses.
10. Other special expenses required in connection with the Project.
11. The cost of special consultants or technical services as required. The cost of subconsultant services shall include actual expenditure plus 10% markup for the cost of administration and insurance.

The Client shall pay Consultant monthly for expenses.

C. Equipment Utilization

The utilization of specialized equipment, including automation equipment, is recognized as benefiting the Client. The Client, therefore, agrees to pay the cost for the use of such specialized equipment on the project. Consultant invoices to the Client will contain detailed information regarding the use of specialized equipment on the project and charges will be based on the standard rates for the equipment published by Consultant.

The Client shall pay Consultant monthly for equipment utilization.

p:\ae\b\baxte\138944\1-genl\10-setup-cont\03-proposal\fhwa enviro review dec 2016\exhibit a1.docx

General Conditions of the Agreement for Professional Services

SECTION I – SERVICES OF CONSULTANT

A. General

1. Consultant agrees to perform professional services as set forth in the Agreement for Professional Services or Supplemental Letter Agreement ("Basic Services"). Nothing contained in this Agreement shall create a contractual relationship with or a cause of action in favor of a third party against either the Client or the Consultant. The Consultant's services under this Agreement are being performed solely for the Client's benefit, and no other party or entity shall have any claim against the Consultant because of this Agreement or the performance or nonperformance of services hereunder.

B. Schedule

1. Unless specific periods of time or dates for providing services are specified, Consultant's obligation to render services hereunder will be for a period which may reasonably be required for the completion of said services.
2. If Client has requested changes in the scope, extent, or character of the Project or the services to be provided by Consultant, the time of performance and compensation for Consultant's services shall be adjusted equitably. The Client agrees that Consultant is not responsible for damages arising directly or indirectly from delays beyond Consultant's control. If the delays resulting from such causes increase the cost or the time required by Consultant to perform its services in accordance with professional skill and care, then Consultant shall be entitled to a equitable adjustment in schedule and compensation.

C. Additional Services

1. If Consultant determines that any services it has been directed or requested to perform are beyond the scope as set forth in the Agreement or that, due to changed conditions or changes in the method or manner of administration of the Project, Consultant's effort required to perform its services under this Agreement exceeds the stated fee for Basic Services, then Consultant shall promptly notify the Client regarding the need for additional services. Upon notification and in the absence of a written objection, Consultant shall be entitled to additional compensation for the additional services, and to an extension of time for completion of additional services absent written objection by Client.
2. Additional services shall be billed in accord with agreed upon rates, or if not addressed, then at Consultant's standard rates.

D. Suspension and Termination

1. If Consultant's services are delayed or suspended in whole or in part by Client, or if Consultant's services are delayed by actions or inactions of others for more than 60 days through no fault of Consultant, then Consultant shall be entitled to either terminate its agreement upon 7 days written notice or, at its option, accept an equitable adjustment of rates and amounts of compensation provided for elsewhere in this Agreement to reflect reasonable costs incurred by Consultant.
2. This Agreement may be terminated by either party upon seven days written notice should the other party fail substantially to perform in accordance with its terms through no fault of the party initiating the termination.
3. This Agreement may be terminated by either party upon thirty days' written notice without cause. All provisions of this Agreement allocating responsibility or liability between the Client and Consultant shall survive the completion of the services hereunder and/or the termination of this Agreement.
4. In the event of termination, Consultant shall be compensated for services performed prior to termination date, including charges for expenses and equipment costs then due and all termination expenses.

SECTION II – CLIENT RESPONSIBILITIES

A. General

1. The Client shall, in proper time and sequence and where appropriate to the Project, at no expense to Consultant, provide full information as to Client's requirements for the services provided by Consultant and access to all public and private lands required for Consultant to perform its services.
2. The Consultant is not a municipal advisor and therefore Client shall provide its own legal, accounting, financial and insurance counseling and other special services as may be required for the Project. Client shall provide to Consultant all data (and professional interpretations thereof) prepared by or services performed by others pertinent to Consultant's services, including but not limited to, previous reports; sub-surface explorations; laboratory tests and inspection of samples; environmental assessment and impact statements, surveys, property descriptions; zoning, deed and other land use restrictions; as-built drawings, electronic data base and maps. The costs associated with correcting, creating or recreating any data that is provided by the Client that contains inaccurate or unusable information shall be the responsibility of the Client.
3. Client shall provide prompt written notice to Consultant whenever the Client observes or otherwise becomes aware of any changes in the Project or any defect in Consultant's services. Client shall promptly examine all studies, reports, sketches, opinions of construction costs, specifications, drawings, proposals, change orders, supplemental agreements and other documents presented by Consultant and render the necessary decisions and instructions so that Consultant may provide services in a timely manner.
4. Client shall require all utilities with facilities within the Client's Project site to locate and mark said utilities upon request, relocate and/or protect said utilities as determined necessary to accommodate work of the Project, submit a schedule of the necessary relocation/protection activities to the Client for review and comply with agreed upon schedule. Consultant shall not be liable for damages which arise out of Consultant's reasonable reliance on the information or services furnished by utilities to Client or others hired by Client.
5. Consultant shall be entitled to rely on the accuracy and completeness of information or services furnished by the Client or others employed by the Client and shall not be liable for damages arising from reasonable reliance on such materials. Consultant shall promptly notify the Client if Consultant discovers that any information or services furnished by the Client is in error or is inadequate for its purpose.

SECTION III – PAYMENTS

A. Invoices

1. Undisputed portions of invoices are due and payable within 30 days. Client must notify Consultant in writing of any disputed items within 15 days from receipt of invoice. Amounts due Consultant will be increased at the rate of 1.0% per month (or the maximum rate of interest permitted by law, if less) for invoices 30 days past due. Consultant reserves the right to retain Instruments of Service until all invoices are paid in full. Consultant will not be liable for any claims of loss, delay, or damage by Client for reason of withholding services or Instruments of Service until all invoices are paid in full. Consultant shall be entitled to recover all reasonable costs and disbursements, including reasonable attorney's fees, incurred in connection with collecting amounts owed by Client.
2. Should taxes, fees or costs be imposed, they shall be in addition to Consultant's agreed upon compensation.
3. Notwithstanding anything to the contrary herein, Consultant may pursue collection of past due invoices without the necessity of any mediation proceedings.

SECTION IV – GENERAL CONSIDERATIONS

A. Standards of Performance

1. The standard of care for all professional engineering and related services performed or furnished by Consultant under this Agreement will be the care and skill ordinarily exercised by members of Consultant's profession practicing under similar circumstances at the same time and in the same locality. Consultant makes no warranties, express or implied, under this Agreement or otherwise, in connection with its services.
2. Consultant neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor's failure to furnish and perform the work in accordance with its construction contract or the construction documents prepared by Consultant. Client acknowledges Consultant will not direct, supervise or control the work of construction contractors or their subcontractors at the site or otherwise. Consultant shall have no authority over or responsibility for the contractor's acts or omissions, nor for its means, methods or procedures of construction. Consultant's services do not include review or evaluation of the Client's, contractor's or subcontractor's safety measures, or job site safety or furnishing or performing any of the Contractor's work.
3. If requested in the scope of a Supplemental Letter Agreement, then Consultant may provide an Opinion of Probable Construction Cost. Consultant's Opinions of Probable Construction Cost provided for herein are to be made on the basis of Consultant's experience and qualifications and represent Consultant's best judgment as a professional generally familiar with the industry. However, since Consultant has no control over the cost of labor, materials, equipment or service furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Consultant cannot and does not guarantee that proposals, bids or actual construction cost will not vary from Opinions of Construction Cost prepared by Consultant. If Client wishes greater assurance as to probable Construction Cost, Client shall employ an independent cost estimator or negotiate additional services and fees with Consultant.

B. Indemnity for Environmental Issues

1. Consultant is not a user, generator, handler, operator, arranger, storer, transporter or disposer of hazardous or toxic substances, therefore the Client agrees to hold harmless, indemnify and defend Consultant and Consultant's officers, directors, subconsultant(s), employees and agents from and against any and all claims, losses, damages, liability and costs, including but not limited to costs of defense, arising out of or in any way connected with, the presence, discharge, release, or escape of hazardous or toxic substances, pollutants or contaminants of any kind at the site.

C. Limitations on Consultant's Liability

1. The Client hereby agrees that to the fullest extent permitted by law, Consultant's total liability to the Client for any and all injuries, claims, losses, expenses, or damages whatsoever arising out of or in any way related to the Project or this Agreement from any cause or causes including, but not limited to, Consultant's negligence, errors, omissions, strict liability, breach of contract or breach of warranty shall not exceed five hundred thousand dollars ($500,000). In the event Client desires limits of liability in excess of those provided in this paragraph, Client shall advise Consultant in writing and agree that Consultant's fee shall increase by 1% for each additional five hundred thousand dollars of liability limits, up to a maximum limit of liability of five million dollars ($5,000,000).
2. Neither Party shall be liable to the other for consequential damages, including, without limitation, lost rentals, increased rental expenses, loss of use, loss of income, lost profit, financing, business and reputation and for loss of management or employee productivity, incurred by one another or their subsidiaries or successors, regardless of whether such damages are foreseeable and are caused by breach of contract, willful misconduct, negligent act or omission, or other wrongful act of either of them.
3. It is intended by the parties to this Agreement that Consultant's services shall not subject Consultant's employees, officers or directors to any personal legal exposure for the risks associated with this Agreement. The Client agrees that as the Client's sole and exclusive remedy, any claim, demand or suit shall be directed and/or asserted only against Consultant, and not against any of Consultant's individual employees, officers or directors, and Client knowingly waives all such claims against Consultant individual employees, officers or directors.

D. Assignment

1. Neither party to this Agreement shall transfer, sublet or assign any rights under, or interests in, this Agreement or claims based on this Agreement without the prior written consent of the other party. Any assignment in violation of this subsection shall be null and void.

SECTION V – DISPUTE RESOLUTION

A. Mediation

1. Any dispute between Client and Consultant arising out of or relating to this Agreement or services provided under this Agreement, (except for unpaid invoices which are governed by Section III), shall be submitted to nonbinding mediation as a precondition to litigation unless the parties mutually agree otherwise. Mediation shall occur within 60 days of a written demand for mediation unless Consultant and Client mutually agree otherwise.

B. Litigation – Choice of Venue and Jurisdiction

1. Any dispute not settled through mediation shall be settled through litigation in the state where the Project at issue is located.

SECTION VI – INTELLECTUAL PROPERTY

A. Proprietary Information

1. All documents, including reports, drawings, calculations, specifications, CADD materials, computers software or hardware or other work product prepared by Consultant pursuant to this Agreement are Consultant's Instruments of Service ("Instruments of Service") and Consultant retains all ownership interests in Instruments of Service, including all available copyrights.
2. Consultant shall retain all of its rights in its proprietary information including, without limitation, its methodologies and methods of analysis, ideas, concepts, expressions, inventions, know how, methods, techniques, skills, knowledge and experience possessed by Consultant prior to, or acquired by Consultant during, the performance of this Agreement and the same shall not be deemed to be Work Product or Work for Hire and Consultant shall not be restricted in any way with respect thereto.

B. Client Use of Instruments of Service

1. Provided that Consultant has been paid in full for its services, Client shall have the right in the form of a license to use Instruments of Service resulting from Consultant's efforts on the Project. Consultant shall retain full rights to electronic data and the drawings, specifications, including those in electronic form, prepared by Consultant and its subconsultants and the right to reuse component information contained in them in the normal course of Consultant's professional activities. Consultant shall be deemed to be the author of such Instruments of Service, electronic data or documents, and shall be given appropriate credit in any public display of such Instruments of Service.
2. Records requests or requests for additional copies of Instruments of Services outside of the scope of services are available to Client subject to Consultant's current rate schedule.

C. Reuse of Documents

1. All Instruments of Service prepared by Consultant pursuant to this Agreement are not intended or represented to be suitable for reuse by the Client or others on extensions of the Project or on any other Project. Any reuse of the Instruments of Service without written consent or adaptation by Consultant for the specific purpose intended will be at the Client's sole risk and without liability or legal exposure to Consultant; and the Client shall release Consultant from all claims arising from such use. Client shall also defend, indemnify and hold harmless Consultant from all claims, damages, losses and expenses including attorneys' fees arising out of or resulting from reuse of Consultant documents without written consent.

WIDSETH SMITH NOLTING

Brainerd/Baxter
7804 Industrial Park Road
PO Box 2720
Baxter, MN 56425-2720

218.829.5117
218.829.2517
Brainerd@wsn.us.com

WidsethSmithNolting.com

HIGHLAND SCENIC ROAD (CSAH 48) RAILWAY CROSSING IMPROVEMENTS

FEASIBILITY REPORT

August, 2016

Council Approval Date: _____

DRAFT

Prepared for
City of Baxter

WSN No. 0102B0381.000

HIGHLAND SCENIC ROAD (CSAH 48) RAILWAY CROSSING IMPROVEMENTS

FEASIBILITY REPORT

Prepared for

City of Baxter

WSN No. 0102B0381.000

I hereby certify that this 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.

	41983	
Aric Welch Professional Engineer	License Number	Date

HIGHLAND SCENIC ROAD (CSAH 48) RAILWAY CROSSING IMPROVEMENTS

FEASIBILITY REPORT

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CONCLUSIONS AND RECOMMENDATIONS 12

LIST OF EXHIBITS

Exhibit A Project Location Map
Exhibit B Existing Conditions
Exhibit C Proposed Improvements
Exhibit D Railway Crossing Detail

APPENDICES

Engineer's Estimate
Crow Wing County Highway Department Cost Share Policy
BNSF Cost Estimate
Silent Crossing Information

STATEMENT OF PURPOSE

The purpose of this report is to review the feasibility of upgrading the existing Highland Scenic Road (CSAH 48) BNSF railway crossing to a silent crossing configuration. The project was initiated by the Crow Wing County which was proposing a mill and overlay project on CSAH 48 from TH 210 to Minnesota Drive (Minnesota Department of Natural Resources entrance).

During project scoping, the County solicited preliminary comments from the City of Baxter. Baxter responded with requests for improvements that were not included in the original project scope. Requested improvements included a silent railroad crossing configuration and separated trail.

The County reviewed the City's response and requested a meeting. As a result of the meeting, it was determined the County would stop the mill and overlay project at Foley Road and allow the City to develop the project, with the additional City requested improvements, from Foley Road to TH 210.

This report will review existing conditions, propose feasible improvements, estimate project costs, discuss project implementation and present conclusions and recommendations for the project area which includes Highland Scenic Road (CSAH 48) from Foley Road to TH 210.

The project area is shown as Exhibit "A".

J:\0102B-City of Baxter\0102B0381-CSAH 48 Railway Crossing Improvements\0102B0381.000-CSAH 48 Railway Crossing Improvements\CADD\Civil\C-PA-0102B0382.000.dwg Plotted by: Aric Welch 11/30/2016 10:33:40 AM © 2016 WIDSETH SMITH NOLTING

WIDSETH SMITH NOLTING
Engineering | Architecture | Surveying | Environmental

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 DISCIPLINE UNDER THE LAWS OF THE STATE OF STATE

DATE: LIC. NO.

DATE	REV#	REVISIONS DESCRIPTION	BY

DATE:	AUG 2016
SCALE:	AS SHOWN
DRAWN BY:	A.L.W.
CHECKED BY:	A.L.W.
JOB NUMBER:	0102B0381.000

CSAH 48 RAILWAY CROSSING IMPROVEMENTS
CITY OF BAXTER
BAXTER, MINNESOTA

EXHIBIT A - PROJECT AREA

SHEET NO. **A**

SHEET OF

EXISTING CONDITIONS

The project area includes Highland Scenic Road (CSAH 48) from Foley Road to TH 210.

Zoning, Development and Right-of-Way

The north half of the project area is adjacent to TH 210 and the BNSF Railway right-of-ways. The south half of the project area is adjacent Foley Road right-of-way on the east and developed residential project zoned Low Density Residential (R-1) on the west. The existing road right-of-way from Foley Road to the BNSF railway is approximately 93' wide. Through the BNSF property, the County has an easement that is approximately ??" wide.

Existing Roadways

Highland Scenic Road is a County State Aid Highway (CSAH 48) under the jurisdiction of Crow Wing County. Plans obtained from the County indicate the roadway was widened and improved in 1971 and resurfaced in 1996. In 1971, the roadway was constructed with 3" class 3 aggregate base, 4" class 5 aggregate base, 1.5" bituminous base course and 1.5" bituminous wear course. In 1996, 2" – 2.5" of the roadway was milled off and the roadway was resurfaced with 2" bituminous base course and 1.5" bituminous wear course. Based on this information, the total aggregate base depth is 7" and bituminous depth is 4.5".

The roadway varies from 42' wide at Foley Road to 46-48' wide through at the BNSF Railway crossing. The roadway contains one 12' lane in the south bound direction. The north bound lane transitions from a single 12' wide lane at Foley Road to two 11.5' lanes through the BNSF Railway crossing. The right lane is a dedicated right turn lane and the left lane is restricted to left turns onto westbound TH 210. Concrete curb and gutter exists along the west side of the roadway from just south of the BNSF tracks to Ashdale Lane. There is one catch basin located in the curb & gutter with a 12' RC pipe that outlets to east into the ditch located between CSAH 48 and Foley Road. The remaining roadway edges are gravel shouldered with ditches for drainage.

Existing Pedestrian Facilities

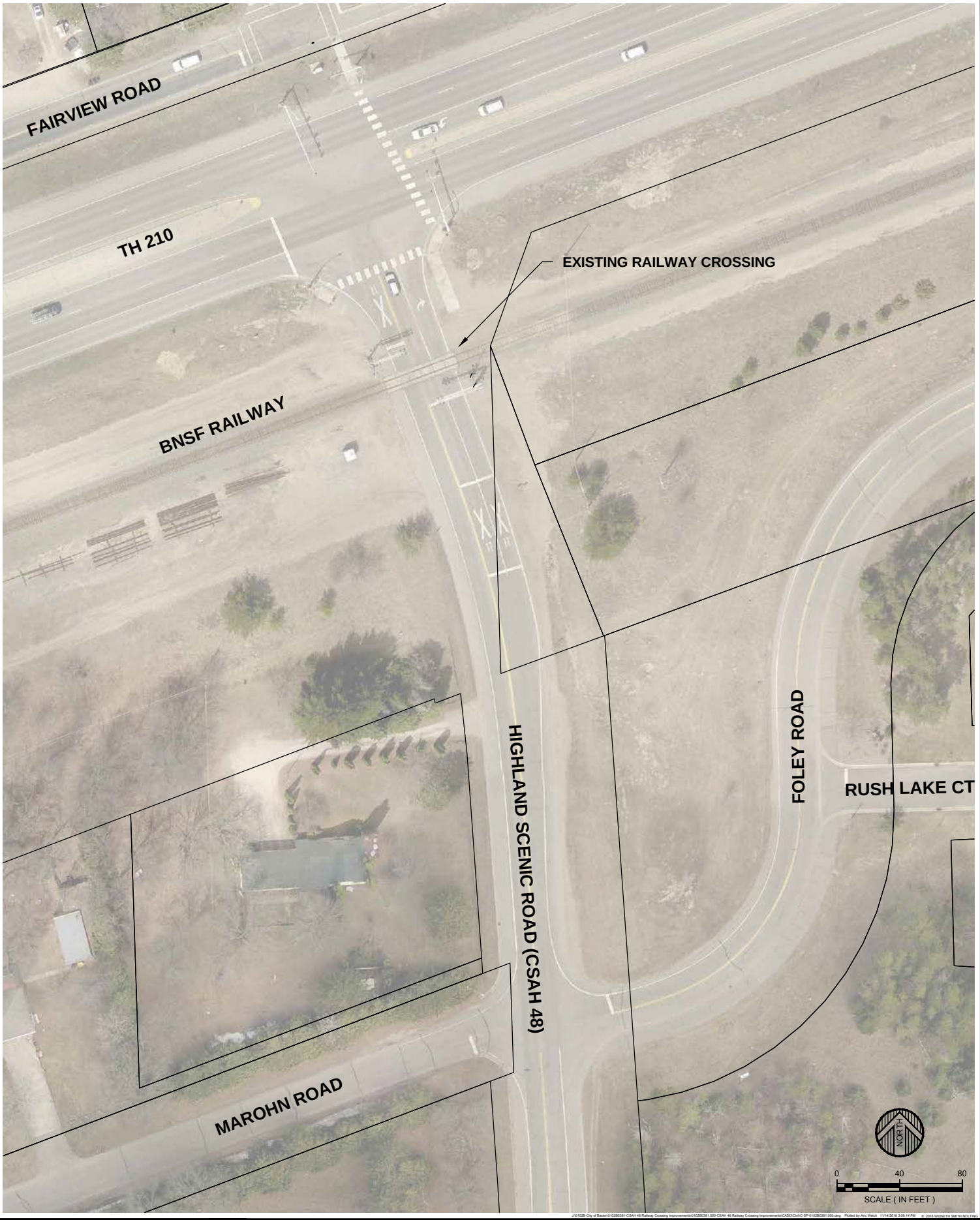
The TH 210 and CSAH 48 intersection has provisions for pedestrian crossings across CSAH 48 and across TH 210 along the west side of CSAH 48. The crossings consist of push button actuators and signals, concrete pedestrian curb ramps with truncated domes and pavement

markings. There is also an 8’ wide concrete sidewalk that extends approximately 40’ south of TH 210 along the west side of CSAH 48. No trail, sidewalk, or pedestrian facilities existing between this point and the Foley Road/Ashdale Lane intersection. At Foley Road, there is an existing 10’ bituminous trail that extends east along the south side of Foley Road. The trail terminates at CSAH 48 with a small curb cut that does not meet current ADA pedestrian curb ramp standards.

Railway Crossing

The existing railway crossing consists of one southbound lane and two northbound lanes. The crossing is 36’ wide from edge of traveled lane to edge of traveled lane. The crossing consists of a 48’ concrete panel with signals and crossing arms. The existing concrete panels and crossing signal equipment was determined to be up to date and in good operating condition according to BNSF. BNSF has no current plans to upgrade/replace the existing equipment at the crossing.

Exhibit “B” shows the existing conditions in the project area.



J:\0102B-City of Baxter\0102B0381-CSAH 48 Railway Crossing Improvements\0102B0381.000-CSAH 48 Railway Crossing Improvements\CADD\Civil\C-SP-0102B0381.000.dwg Plotted by Aric Welch 11/14/2016 3:06:14 PM © 2016 WIDSETH SMITH NOLTING

WIDSETH SMITH NOLTING
Engineering | Architecture | Surveying | Environmental

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

ARIC WELCH DATE: LIC. NO. 41983

DATE	REV#	REVISIONS DESCRIPTION	BY

DATE:	AUG 2016
SCALE:	AS SHOWN
DRAWN BY:	A.L.W.
CHECKED BY:	A.L.W.
JOB NUMBER:	0102B0381.000

CSAH 48 RAILWAY CROSSING IMPROVEMENTS
CITY OF BAXTER
BAXTER, MINNESOTA

EXHIBIT B - EXISTING CONDITIONS

SHEET NO. **B**

SHEET OF

PROPOSED IMPROVEMENTS

Proposed improvements include configuring the roadway and railway crossing to meet current silent railway crossing standards. A separated bituminous trail is also proposed to be constructed along the east side of CSAH 48. Detailed proposed improvements are as follows:

Silent Railway Crossing Improvements

In order for the crossing to meet current quiet zone requirements, it will be necessary to modify the geometric and cross-sectional layout of the existing roadway. The roadway will need concrete curb & gutter along the roadway edge and a concrete median separating the southbound and northbound lanes.

Based on information obtained through a topographic survey and supplemental field measurements, it was determined there is enough width between the existing signal and crossing arm supports to construct the required improvements. The crossing will consist of one 16’ wide south bound lane and two 11.5’ north bound lanes. The southbound and northbound lanes will be separated by a 4’ wide x 6” high concrete median. B618 concrete curb and gutter will be constructed along the west side of the roadway to match the existing B618 curb & gutter located south of the tracks. B624 curb & gutter is proposed along the east edge of the north bound lane.

A pedestrian maze consisting of chain link fencing or other suitable material is proposed at the multi-use bituminous trail crossing. The maze is designed to slow trail users as they approach the track and make them look in both directions before crossing.

BNSF improvements include crossing arm and signal modifications and track improvements. Minor signal and crossing arm improvements will be necessary to align the equipment with the revised geometric layout. The concrete crossing panel will also need to be extended an additional 24’ east to accommodate the trail crossing.

The improvements discussed above will not automatically initiate the silent crossing. The City will need to follow the application process as outlined in the U.S. Department of Transportation Federal quiet zone guidance document attached in the Appendix. The City should note the regulations do not require the entire City to be designated as a quiet zone at one time. Quiet

zones can be implemented one crossing at a time as long as the zone is at least ½ mile in length.

Exhibit “D” shows the detailed improvements and dimensions at the crossing.

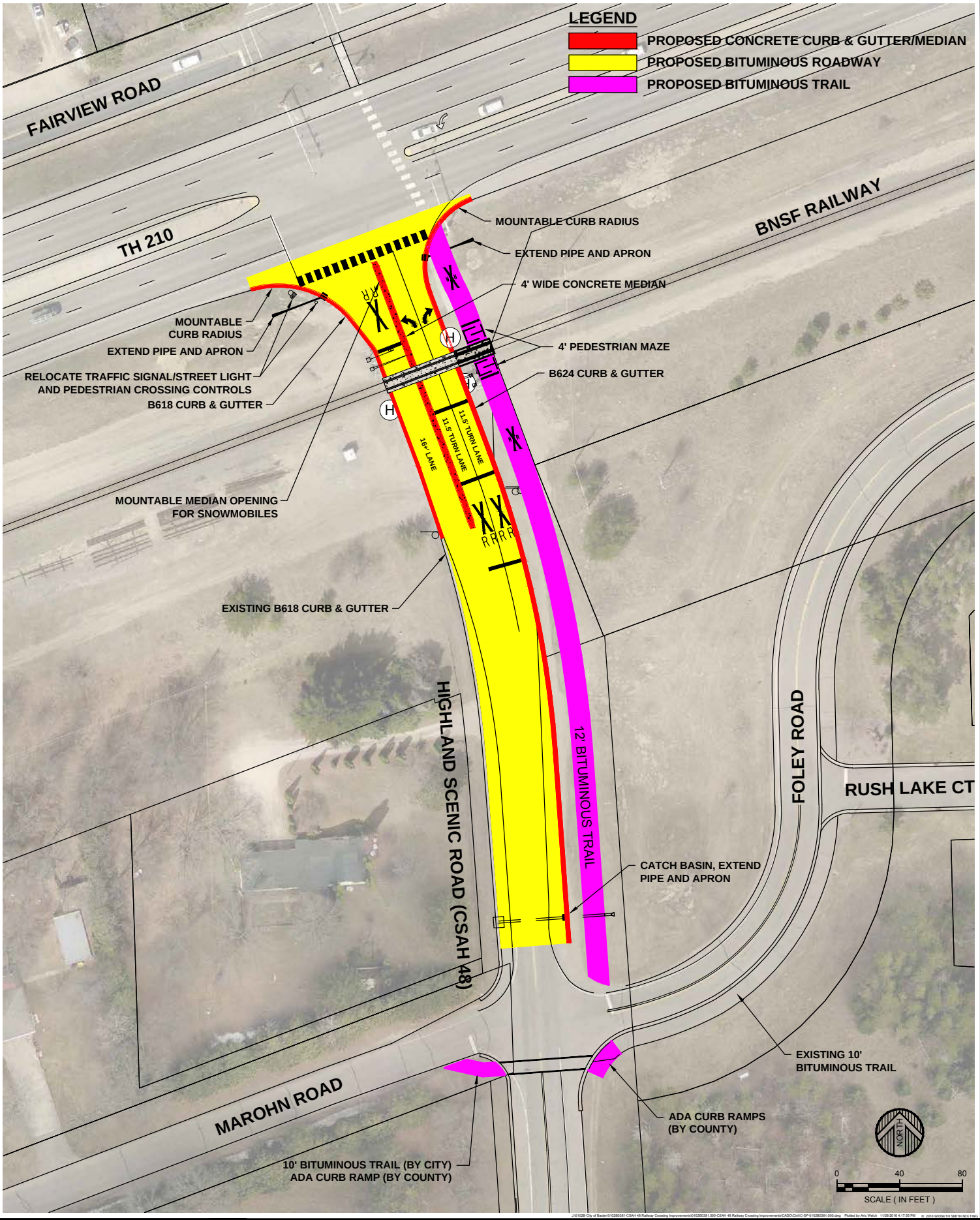
Roadway Improvements

The geometric and cross-sectional modifications for the railway crossing trigger additional modifications to the roadway corridor. The addition of the 4’ wide concrete median will require a widening of the roadway and larger radius to accommodate turning movements from eastbound TH 210 to southbound CSAH 48. The larger 60’ radius will require the relocation of the existing pedestrian push button signal actuator and the street light/signal pole and mast. Curb & gutter is also proposed to be extended along the entire east side of the roadway Highland Scenic Road from Foley Road north.

The accommodate the required geometric and cross-sectional modifications, it will be necessary to reclaim the existing roadway surface vs. the mill and overlay proposed by the County. The addition of the concrete median and widening of the roadway surface will require a change in the roadway cross slope that can only be obtained by constructing a new roadway cross section. The existing 4.5” bituminous surface and 6” of aggregate base will be reclaimed to form a homogenous aggregate base layer base on which to grade and pave a new bituminous surface. To accommodate the new urban roadway section, it will be necessary to remove and stockpile a portion of the material to make room for the new bituminous pavement. Two lifts of bituminous totaling 4.5” inches are then proposed to be placed on the reclaimed base material. The resultant section will meet 10-ton design strength as required by State Aid standards.

Separated Trail Improvements

A separated multi-use bituminous trail is proposed to be constructed along the east side of CSAH 48 from Foley Road to TH 210. The trail will be 12’ wide and constructed of 4” Class 5 aggregate base and 2” of bituminous pavement. Concrete pedestrian curb ramps meeting current ADA standards will be constructed at all roadway crossings. Construction of the trail will require additional grading and fill material along the east side of CSAH 48. The trail will also require the extension of the existing 12” RC pipe outlet. As stated earlier, a pedestrian maze is proposed at the railway crossing to slow trail users and promote looking in both directions prior to crossing.



J:\0102B-City of Baxter\0102B0381-CSAH 48 Railway Crossing Improvements\0102B0381.000-CSAH 48 Railway Crossing Improvements\CADD\Civil\C-SP-0102B0381.000.dwg Plotted by Aric Welch 11/28/2016 4:17:56 PM © 2016 WIDSETH SMITH NOLTING

WIDSETH SMITH NOLTING
Engineering | Architecture | Surveying | Environmental

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

ARIC WELCH DATE: LIC. NO. 41983

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CSAH 48 RAILWAY CROSSING IMPROVEMENTS
CITY OF BAXTER
BAXTER, MINNESOTA

EXHIBIT C - PROPOSED IMPROVEMENTS

SHEET NO. **C**

SHEET OF

TH 210

MOUNTABLE CURB RADIUS

R45.0'

CATCH BASIN, EXTEND PIPE AND APRON

MOUNTABLE CURB RADIUS

MOUNTABLE CONCRETE MEDIAN OPENING FOR SNOWMOBILES

BITUMINOUS TRAIL

R60.0'

PEDESTRIAN MAZE (TYP)

CATCH BASIN, EXTEND PIPE AND APRON

B618 CURB & GUTTER

5.6'

5.5'

24.0'

1.7'

SIGNAL (TYP)

CROSSING ARM (TYP)

5.5'

4.2'

5.4'

4.0'

BNSF RAILWAY

1.5'

B624 CURB & GUTTER

HIGHLAND SCENIC ROAD (CSAH 48)

10.0'

12.0'

4.0'

11.5'

11.5'

16.4'

CONCRETE MEDIAN

NORTH

0 40 20

SCALE (IN FEET)

J:\012B-City of Baxter\012B0381-CSAH 48 Railway Crossing Improvements\012B0381.000-CSAH 48 Railway Crossing Improvements\CADD\Civil\C-SP-012B0381.000.dwg Plotted by Aric Welch 11/14/2016 3:07:49 PM © 2016 WIDSETH SMITH NOLTING

WIDSETH SMITH NOLTING

Engineering | Architecture | Surveying | Environmental

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

ARIC WELCH DATE: LIC. NO. 41983

DATE	REV#	REVISIONS DESCRIPTION	BY

DATE:	AUG 2016
SCALE:	AS SHOWN
DRAWN BY:	A.L.W.
CHECKED BY:	A.L.W.
JOB NUMBER:	012B0381.000

CSAH 48 RAILWAY CROSSING IMPROVEMENTS
CITY OF BAXTER
BAXTER, MINNESOTA

EXHIBIT D - RAILWAY CROSSING DETAIL

SHEET NO. **D**

SHEET OF

ESTIMATED PROJECT COSTS

The estimated costs for proposed improvements in the study area are as follows:

Construction Cost:	$175,560
BNSF Crossing Improvements:	$50,000
Subtotal:	$225,560
Contingencies (15%):	$33,835
Total Construction Cost:	$259,395
Engineering (25%):	$64,850
Administration (2%):	$5,190
Legal & Bonding (2%):	$5,190
Estimate Total Project Cost:	**$334,625**

Detailed breakdowns of the estimates are provided in the Appendix. The costs estimated represent current costs and are intended to convey a general and approximate picture of the costs that could expect to be incurred today in carrying out the proposed work. Costs can vary widely depending upon many factors such as weather, economic conditions, size of project, and the workload of available contractors.

Please note, costs presented in this report are fall 2016 costs and should be updated as needed. Actual costs can only be determined by bidding the project.

PROJECT IMPLEMENTATION

Costs for the proposed improvements were assumed to be generated through City and County contributions. County costs were determined using the County's current cost share policy. After calculating the County cost share, all remaining costs were assumed to be City costs.

In accordance with the County cost share policy, the County was assumed to contribute towards the following items:

- 50% of the sign removals and replacements
- 50% of the push button actuator and street light/signal costs
- 50% of the storm sewer costs
- 50% of the new curb & gutter
- 100% of the concrete median
- 100% of pavement markings
- Pro rata shares of mobilization, traffic control and erosion control supervisor
- 100% of estimated mill (1.5") and overlay (2") costs
- Engineering costs capped at 18% of County share of construction cost

Using the methodology described above, the following was determined:

	City	County
Total Estimated Construction:	$197,435	$61,960
Engineering (25%) (County Capped at 18%):	$53,695	$11,155
Administration (2%):	$5,190	$0
Legal & Bonding (2%):	$5,190	$0
Estimated Total Project Cost:	**$261,510**	**$73,115**

Detailed cost share calculations and the current County cost share policy are shown in the Appendix.

CONCLUSIONS AND RECOMMENDATIONS

This report has studied the feasibility of upgrading the Highland Scenic Road (CSAH 48) BNSF railroad crossing to a silent crossing configuration. The improvements are feasible from a construction stand point. With minor geometric modifications, the existing crossing can be reconfigured to meet current silent crossing geometric layout standards which will allow the City to pursue a silent crossing designation after the improvements are complete.

Funding for the improvements is likely to be obtained from contributions from the City of Baxter and Crow Wing County. The County's share is estimated at $73,115 or about 22% of the total project cost. County costs include cost share items as defined in the current cost share policy, estimated milling and overlay costs and engineering. City costs are estimated to be $261,510 or 78% if of the total project cost. City costs include all roadway costs not picked up by the County, 100% of the railway crossing improvements, 100% of the trail costs, engineering, administration and legal/bonding costs.

As with all construction projects, minor inconveniences such as construction noise, dust, detours and traffic disturbance can be expected. These situations would be temporary in nature and we would anticipate the project to take approximately two months to complete.

It should be noted that part of the work involves the expansion and modification of the BNSF Railway crossing. The City will need to work closely with BNSF to coordinate and schedule this work. It is recommended that BNSF be contacted immediately if the City decides to move forward with this project.

In conclusion, the improvements as proposed are feasible and no major construction obstacles were noted, other than coordinating and scheduling work with BNSF railway. We do not foresee any major problems with construction except possibly work around existing underground utilities (gas, electric, telephone, cable TV, etc.) and property/easement acquisition. Conflicts with underground utilities can become a major construction issue and we strongly recommend utility companies be informed of the project as soon as possible so any potential conflicts can be dealt with during the design phase and prior to construction.

We recommend the City proceed as follows:

1. Review report for general conformance to the City's long range plan.
2. Review the report with Crow Wing County.
3. Modify the report as necessary.
4. Conduct a financial review to determine impacts to City finances.
5. Finalize and formally except the report by Council resolution.
6. Determine if the proposed improvements are justified and warranted.
7. Coordinate design work Crow Wing County and BNSF Railway.

APPENDIX

ENGINEER'S ESTIMATE
CSAH 48 RAILWAY CROSSING IMPROVEMENTS
BAXTER, MN
Tuesday, November 29, 2016

CITY PROJECT

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	CITY OF BAXTER		CROW WING COUNTY		TOTAL	
					ESTIMATED QUANTITY	TOTAL COST	ESTIMATED QUANTITY	TOTAL COST	ESTIMATED QUANTITY	TOTAL COST
1	2021.501	MOBILIZATION	LUMP SUM	$10,000.00	0.85	$8,500.00	0.15	$1,500.00	1	$10,000.00
2	2104.501	REMOVE CURB AND GUTTER	LIN FT	$5.00	70	$350.00	70	$350.00	140	$700.00
3	2104.503	REMOVE CONCRTE SIDEWALK	SQ FT	$1.50	520	$780.00			520	$780.00
4	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	$1.80	250	$450.00			250	$450.00
5	2104.509	REMOVE CONCRETE APRON (STORM)	EACH	$100.00	1	$100.00			1	$100.00
6	2104.509	REMOVE CASTING	EACH	$125.00	1	$125.00			1	$125.00
7	2104.509	REMOVE SIGN	EACH	$25.00	4	$100.00	4	$100.00	8	$200.00
8	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	$3.00	240	$720.00			240	$720.00
9	2104.513	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	$3.50	50	$175.00			50	$175.00
10	2104.523	SALVAGE SIGN	EACH	$50.00	3	$150.00			3	$150.00
11	2104.523	SALVAGE PIPE APRON	EACH	$200.00	1	$200.00			1	$200.00
12	2104.602	RELOCATE PUSH BUTTON ACUATOR	EACH	$2,500.00	0.5	$1,250.00	0.5	$1,250.00	1	$2,500.00
13	2104.602	RELOCATE STREET LIGHT/SIGNAL	EACH	$7,500.00	0.5	$3,750.00	0.5	$3,750.00	1	$7,500.00
14	2105.501	COMMON EXCAVATION (P)	CU YD	$10.00	450	$4,500.00			450	$4,500.00
15	2105.522	COMMON BORROW (CV)	CU YD	$12.00	1000	$12,000.00			1000	$12,000.00
16	2118.501	AGGREGATE SURFACING CLASS 5	TON	$25.00	20	$500.00			20	$500.00
17	2123.501	COMMON LABORERS	HOUR	$85.00	5	$425.00	5	$425.00	10	$850.00
18	2123.503	MOTOR GRADER	HOUR	$170.00	5	$850.00	5	$850.00	10	$1,700.00
19	2123.610	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	$110.00	5	$550.00	5	$550.00	10	$1,100.00
20	2215.501	FULL DEPTH RECLAMATION	SQ YD	$3.00	519	$1,557.00	2111	$6,333.00	2630	$7,890.00
21	2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (2,C)	TON	$60.00	253	$15,180.00	277	$16,620.00	530	$31,800.00
22	2501.567	18" CAS SAFETY APRON AND GRATE DESIGN 3128	EACH	$850.00	1	$850.00	1	$850.00	2	$1,700.00
23	2501.573	INSTALL PIPE APRON	EACH	$250.00	1	$250.00			1	$250.00
24	2503.541	12" RC PIPE SEWER DES 3006 CL V	LIN FT	$28.00	8	$224.00			8	$224.00
25	2503.541	18" RC PIPE SEWER DES 3006 CL V	LIN FT	$33.00	25	$825.00	25	$825.00	50	$1,650.00
26	2506.501	CONST DRAINAGE STRUCTURE DESIGN F	LIN FT	$425.00	4	$1,700.00	4	$1,700.00	8	$3,400.00
27	2506.501	CONST DRAINAGE STRUCTURE DESIGN SD-48	LIN FT	$425.00	7	$2,975.00			7	$2,975.00
28	2506.516	CASTING ASSEMBLY	EACH	$750.00	2	$1,500.00	1	$750.00	3	$2,250.00
29	2506.602	CONNECT TO EXISTING STORM SEWER	EACH	$1,000.00	1	$1,000.00			1	$1,000.00
30	2506.522	ADJUST FRAME AND RING CASTING	EACH	$300.00	1	$300.00			1	$300.00
31	2521.501	6" CONCRETE WALK	SQ FT	$6.25	65	$406.25			65	$406.25
32	2521.511	2" BITUMINOUS WALK	SQ FT	$2.00	5805	$11,610.00			5805	$11,610.00
33	2531.501	CONCRETE CURB AND GUTTER DESIGN B618	LIN FT	$16.00	85	$1,360.00	85	$1,360.00	170	$2,720.00
34	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	$18.00	221	$3,978.00	272.5	$4,905.00	493.5	$8,883.00
35	2531.503	CONCRTE MEDIAN	SQ YD	$75.00			72	$5,400.00	72	$5,400.00
36	2531.618	TRUNCATED DOMES	SQ FT	$45.00	40	$1,800.00			40	$1,800.00
37	2563.601	TRAFFIC CONTROL	LUMP SUM	$20,000.00	0.85	$17,000.00	0.15	$3,000.00	1	$20,000.00
38	2564.602	INSTALL SIGN	EACH	$80.00	3	$240.00			3	$240.00
39	2564.531	SIGN PANELS - TYPE C	SQ FT	$40.00	25	$1,000.00	25	$1,000.00	50	$2,000.00
40	2564.552	HAZARD MARKER X4-2	EACH	$80.00			1	$80.00	1	$80.00
41	2573.502	SILT FENCE, TYPE MS	LIN FT	$2.75	700	$1,925.00			700	$1,925.00
42	2573.530	STORM DRAIN INLET PROTECTION	EACH	$200.00	5	$1,000.00	1	$200.00	6	$1,200.00
43	2573.550	EROSION CONTROL SUPERVISOR	LUMP SUM	$1,500.00	0.85	$1,275.00	0.15	$225.00	1	$1,500.00
44	2573.602	CULVERT END CONTROLS	EACH	$250.00	2	$500.00	1	$250.00	3	$750.00
45	2574.525	COMMON TOPSOIL BORROW	CU YD	$15.00	250	$3,750.00			250	$3,750.00
46	2575.604	SITE RESTORATION	SQ YD	$3.00	2250	$6,750.00			2250	$6,750.00
47	2575.604	TEMPORARY SEEDING	SQ YD	$1.00	2250	$2,250.00			2250	$2,250.00
48	2582.501	PAVEMENT MESSAGE-PAINT	EACH	$60.00			6	$360.00	6	$360.00
49	2582.502	4" SOLID LINE WHITE-PAINT	LIN FT	$0.35			630	$220.50	630	$220.50
50	2582.502	8" SOLID LINE WHITE-PAINT	LIN FT	$0.55			184	$101.20	184	$101.20
51	2582.502	12" SOLID LINE WHITE-PAINT	LIN FT	$0.75			24	$18.00	24	$18.00
52	2582.502	24" SOLID LINE PAINT	LIN FT	$4.00			200	$800.00	200	$800.00
53	2582.502	4" DOUBLE SOLID LINE PAINT	LIN FT	$0.35			300	$105.00	300	$105.00
54	-	PEDESTRIAN MAZE	LUMP SUM	$5,000.00	1	$5,000.00			1	$5,000.00
ESTIMATED CONSTRUCTION COST:				$175,557.95	69.31%	$121,680.25	30.69%	$53,877.70	100.00%	$175,557.95
BNSF CROSSING IMPROVEMENTS (ESTIMATED):				$50,000.00		$50,000.00				$50,000.00
SUBTOTAL:				$225,557.95		$171,680.25		$53,877.70		$225,557.95
CONTINGENCIES (15%):				$33,833.69		$25,752.04		$8,081.66		$33,833.69
ESTIMATED TOTAL CONSTRUCTION COST:				$259,391.64		$197,432.29		$61,959.36		$259,391.64
ENGINEERING (25%):				$64,847.91						
COUNTY SHARE OF ENGINEERING (CAPPED AT 18%):								$11,152.68		$11,152.68
CITY SHARE OF ENGINEERING:						$53,695.23				$53,695.23
ADMINISRATION (2%):				$5,187.83		$5,187.83				$5,187.83
LEGAL & BONDING (2%):				$5,187.83		$5,187.83				$5,187.83
ESTIMATED TOTAL PROJECT COST:				**$334,615.22**	**78.15%**	**$261,503.18**	**21.85%**	**$73,112.04**		**$334,615.22**

COUNTY PAVING PROJECT COSTS TO DETERMINE COST SHARE ON ITEMS 20 & 21 ABOVE

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	CITY OF BAXTER		CROW WING COUNTY		TOTAL	
					ESTIMATED QUANTITY	TOTAL COST	ESTIMATED QUANTITY	TOTAL COST	ESTIMATED QUANTITY	TOTAL COST
	2232.501	MILL BITUMINOUS SURFACE (1.5")	SQ YD	$2.75			2412	$6,633.00	2412	$6,633.00
	2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (2,C)	TON	$60.00			277	$16,620.00	277	$16,620.00
ESTIMATED CONSTRUCTION COST:								$23,253.00		$23,253.00

CROW WING COUNTY HIGHWAY DEPARTMENT COST SHARING
AGREEMENT FOR TRANSPORTATION PROJECTS
COUNTY BOARD APPROVED 11/12/2013

ITEMS	COUNTY SHARE	LOCAL AGENCY SHARE
Trail	0%	100%
Concrete Curb & Gutter	50%	50% A.
Sidewalk	0%	100% B.
Concrete Curb & Gutter for Median Construction	100%	0%
Concrete Median	100%	0% C.
Construction or Adjustment of Local Utilities	0%	100%
Grading, Base and Bituminous	100%	0% A.
Drainage Features (pipes, structures, ponds, etc.)	D.	D.
Driveway Upgrades	0% E.	100%
Traffic Signals / Intersections	the cost of its legs of the intersection F.	the cost of its legs of the intersection F.
Engineering Services	G.	G.
Right-of-Way	100%	H.
Street Lights, Dynamic Signs, Specialty Traffic Control	up to 50% I.	50% minimum I.
Streetscaping	0%	100%
Interchanges and Major Structures	J.	J.
Specialty Funding	K.	K.

A. If a local agency requests improvements to approach streets or roads as part of the county project, the improvements shall be paid for by the local agency. For roundabout intersections, the curb and gutter for the interior diameter (ID) shall be 100% county with the

B. Costs solely related to providing Americans with Disability Act (ADA) improvements shall be performed on a 50/50 basis. Crosswalk striping on county roads shall be 100% county cost. In the event a local agency requests specialty crosswalks including concrete/colored concrete, stamped concrete, etc. the local agency shall pay 100% of the installation and maintenance costs.

C. The County pays for 100% of a standard median design (plain concrete). If a local agency requests decorative median such as red brick, stamped concrete or landscaping, the local agency shall pay the additional costs above the cost of a standard median.

D. Drainage cost shares will be computed by the proportion of contributing flow outside of the county right of way to the total contributing flow. Hydraulic culverts and bridges shall be paid for by the agency of jurisdiction.

E. The County will replace all driveways in-kind. Upgrades to surfacing (i.e., gravel to bituminous, bituminous to concrete, etc.) shall be at 100% expense to the local agency.

F. In the event that a local agency requests a traffic signal that does not meet warrants, and is determined to be acceptable by the county to be installed, the local agency shall pay 100% of the cost of the signal construction. If a local agency requests an intersection design (roundabout, left turn lane, etc.) that is not justified by an Intersection Control Evaluation (ICE) report or other, the expense shall

G. Engineering cost share amounts shall be based upon the following: For county led projects that have a local agency cost share in which the county performs the design, the local agency shall pay an amount of 8% of their construction costs. For joint projects involving a county road and local agency road (overlay, pavement markings, seal coat, etc.) in which the local agency performs design and construction engineering (CE) the local agency shall pay an amount of 3% of their construction costs for contract administration (CA). If the county performs the CE, the local agency shall pay an amount of 8% of their construction costs for CE and CA. The county will refrain from providing design engineering (DE) on local agency roadways except in extreme circumstances. If this occurs, the local agency shall pay an amount of 18% of their construction costs for DE, CE and CA.

H. In the event that a local agency requests the purchase of right of way in excess of that required by county construction, the local agency shall participate in the cost of those properties. For example, a local agency may request a sidewalk or trail be constructed alongside a county roadway which would require additional right of way, the local agency shall pay for that portion of the right of way. Acquisition of right of way for new alignments shall be the responsibility of the local agency in which the alignment is located. This provision may be waived by agreement if the roadway replaces an existing alignment and the local agency takes jurisdiction of the existing alignment. For existing roadways needing minor new alignments (curve corrections, etc.) the county shall pay 100%.

I. For street lights or specialty traffic control devices approved by the County Engineer, the cost of materials and installation shall be shared 50/50. Specialty funding received by the county or the local agency may be used to reduce each agency's costs. The long term power costs shall be the repsonsibility of the local agency. For items not considered a high priority for the county, the local agency may proceed assuming 100% of the costs if the County Engineer approves of the installation.

J. Cost share for interchanges and major structures will be determined on a case by case basis.

K. Specialty funding received (federal, bonding, grants, etc.) by either the county or local agency shall be utilized to reduce the costs of all parties, on a pro-rated basis, to the extent possible. This does not apply to the county's normal state aid funding account.

CROW WING COUNTY HIGHWAY DEPARTMENT MAINTENANCE
AGREEMENT FOR TRANSPORTATION PROJECTS
COUNTY BOARD APPROVED 11/12/2013

ITEMS	RESPONSIBLE PARTY	
Trail	Local Agency	
Concrete Curb & Gutter	County	
Sidewalk	Local Agency	
Concrete Median	County	A.
Local Utilities	Local Agency	
Road Surface	By Jurisdiction	
Drainage Features (pipes, structures, ponds, etc.)	Local Agency	B.
Traffic Signals - Major Maintenance	County	C.
Traffic Signals - Minor Maintenance	Local Agency	D.
Street Lights, Dynamic Signs, Specialty Traffic Control		E.
Streetscaping	Local Agency	
Interchanges and Major Structures		F.

A. Landscaped medians and requested specialty items shall be maintained by the local agency.

B. The local agency shall be responsible for routine maintenance of storm sewer systems, including pipes, catch basins and manholes, and detention basins including their outlet structures. The county shall be responsible for the rehabilitation of catch basins and manholes and other drainage structures. Hydraulic culverts and bridges shall be maintained by the agency of jurisdiction.

C. Major maintenance includes replacement of knockdowns, electrical work to the signal cabinets, signal system and lighting, and emergency pre-emption system, as well as signal painting. The local agency shall pay for major and minor maintenance for traffic signals that they requested and were constructed prior to meeting signal warrants.

D. Minor maintenance includes paying for power and relamping the signal and lighting system and cleaning the signal cabinets.

E. Power costs shall be the responsibility of the local agency. Knockdowns and replacements not reimbursable through insurance or other means will be shared as per the cost sharing agreement.

F. Maintenance for interchanges and major structures will be determined on a case by case basis.

Section I. Pre-Rule Quiet Zones: Qualifying for Automatic Approval (Chart 1A)

1. Identify all the crossings you wish to include as part of the proposed Quiet Zone (QZ).

2. Check whether each crossing qualifies as a pre-rule crossing (horns not sounding on October 9, 1996 and December 18, 2003 because of state/local law or community agreement with the railroads). If all crossings do not qualify as pre-rule crossings, then the proposed quiet zone does not qualify as a Pre-Rule QZ, and you should refer to *Section III, New Quiet Zones*.

3. Determine whether you wish to eliminate any crossings from the proposed QZ. The length of a Pre-Rule QZ may continue unchanged from that which existed on October 9, 1996. If, however, you choose to eliminate a crossing, the QZ must be at least ½ mile in length along the railroad tracks.

4. A QZ may include highway-rail grade crossings on a segment of rail line crossing more than one political jurisdiction, or there may be roads within a particular area that are the responsibility of different entities (State or county roads within a town, for example). If the selected crossings are the responsibility of more than one entity, obtain the cooperation of all relevant jurisdictions.

5. Update the USDOT Grade Crossing Inventory Form to reflect conditions at each public and private crossing; this update should be complete, accurate, and be dated within 6 months prior to the QZ implementation. For instructions on how to complete the update, see the FRA website at http://www.fra.dot.gov/eLib/details/L02730.

6. If each public crossing in the proposed QZ is equipped with one or more Supplementary Safety Measures (SSMs) as defined in Appendix A of the Rule, the QZ qualifies for Automatic Approval. To complete the process of creating the QZ, notify the parties listed in rule section 222.43 by December 18, 2004.

   Note: Once the QZ has been created, install the required signage by December 18, 2006. (Refer to rule sections 222.25 and 222.35 for details.)

   Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 4.5-5 years. (Refer to rule section 222.47 for details.)

7. If every public crossing is not equipped with at least one SSM, then the QZ can automatically qualify by comparing its Quiet Zone Risk Index (QZRI) with the Nationwide Significant Risk Threshold (NSRT). However, these QZs are subject to annual review by the FRA.

Disclaimer: This summary of the interim final rule is for informational purposes only. Entities subject to the interim final rule should refer to the rule text as published in the Federal Register on December 18, 2003. Should any portion of this summary conflict with the interim final rule, the language of the interim final rule shall govern.

8. Using the FRA's Quiet Zone Calculator, a web-based tool that can be found at http://safetydata.fra.dot.gov/quiet/ , determine whether the QZRI of the proposed QZ is less than or equal to the NSRT. If the QZRI is less than or equal to the NSRT, the QZ qualifies for Automatic Approval. Notify the parties listed in rule section 222.43 by December 18, 2004.

   Note: Once the quiet zone has been created, install the required signage by December 18, 2006. (Refer to rule sections 222.25 and 222.35 for details.)

   Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 2.5-3 years. (Refer to rule section 222.47 for details.)

9. If the QZRI is greater than the NSRT, use the FRA's Quiet Zone Calculator to check whether it is less than twice the NSRT. If the QZRI is more than twice the NSRT, the QZ cannot qualify for Automatic Approval. For information on how to proceed, see *Section II, Pre-Rule Quiet Zones Not Qualified for Automatic Approval*.

10. If the QZRI is greater than the NSRT, but less than twice the NSRT, determine whether any of the public crossings have experienced a "relevant collision" on or after December 18, 1998. (See rule section 222.9 for the definition of a "relevant collision.") If there have not been any "relevant collisions" at any public crossing since December 18, 1998, the QZ qualifies for Automatic Approval. Notify the parties listed in rule section 222.43.

    Note: Once the quiet zone has been created, install the required signage by December 18, 2006. (Refer to rule sections 222.25 and 222.35 for details.)

    Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 2.5-3 years. (Refer to rule section 222.47 for details.)

11. If the QZRI is greater than the NSRT, but less than twice the NSRT, and there has been a "relevant collision" at a public crossing within the proposed QZ, the QZ cannot qualify for Automatic Approval. For information on how to proceed, see *Section II, Pre-Rule Quiet Zones Not Qualified for Automatic Approval*.

Disclaimer: This summary of the interim final rule is for informational purposes only. Entities subject to the interim final rule should refer to the rule text as published in the Federal Register on December 18, 2003. Should any portion of this summary conflict with the interim final rule, the language of the interim final rule shall govern.

Section II. Pre-Rule Quiet Zones Not Qualified for Automatic Approval (Chart 1B)

1. Review *Section I, Pre-Rule Quiet Zones: Qualifying for Automatic Approval*, to confirm that the proposed Pre-Rule Quiet Zone does not qualify for Automatic Approval.

2. If each crossing qualifies as a pre-rule crossing (horns not sounding on October 9, 1996 and December 18, 2003 because of state/local law or community agreement with the railroads), send notice of continuation of the quiet zone to all parties by December 18, 2004. (Refer to rule section 222.43 for details.)

   Note: If you eliminated any pre-rule crossings to create the proposed Quiet Zone, the Quiet Zone must be at least ½ mile in length along the railroad tracks.

3. Submit to FRA a detailed plan for establishing a quiet zone before December 18, 2006. This plan should include a timetable for the implementation of safety improvements. If you intend to implement ASMs, the plan should include a completed application for FRA approval of their use. If a detailed plan is not been submitted by December 18, 2006, the quiet zone will terminate. (Refer to rule section 222.41 for details.)

   Note: Since the proposed quiet zone does not qualify for Automatic Approval, any SSMs and ASMs used must be implemented in accordance with rule section 222.39.[1]

   Note: For guidance on ASM use, see *Section IV, Creating Quiet Zones using Engineering Alternative Safety Measures (modified SSMs)* and *Section V, Creating Quiet Zones using Non-engineering Alternative Safety Measures.*

   Note: Required signage must also be installed by December 18, 2006. (Refer to rule sections 222.25 and 222.35 for details.)

4. Install SSMs and/or traffic control device upgrades as necessary to reduce risk within the proposed quiet zone.

5. If every public crossing in the proposed Quiet Zone is equipped with one or more SSMs as defined in Appendix A of the Rule, you can establish the proposed Quiet Zone through public authority designation by completing the following steps:

[1] Although the requirements for implementation of SSMs and ASMs must be in accord with rule section 222.39, the Pre-Rule Quiet Zone requirements covering minimum length and traffic control devices remain in effect for these crossings.

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a. Complete the planned improvements by December 18, 2008,[2]

b. Update the USDOT Grade Crossing Inventory Form.

c. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 4.5-5 years. (Refer to rule section 222.47 for details.)

6. Using the FRA's Quiet Zone Calculator, a web-based tool that can be found at http://safetydata.fra.dot.gov/quiet/, determine whether the implementation of SSMs, ASMs, and/or traffic control devices will reduce the QZRI of the proposed Pre-Rule Quiet Zone to the level of risk that would exist if the train horns were still sounded (RIWH). If the QZRI will be less than or equal to the RIWH, you can establish the Quiet Zone through public authority designation by completing the following steps:

   a. Complete the planned improvements by December 18, 2008,[2]

   b. Update the USDOT Grade Crossing Inventory Form.

   c. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

   Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 2.5-3 years. (Refer to rule section 222.47 for details.)

7. Using the FRA's Quiet Zone Calculator, a web-based tool that can be found at http://safetydata.fra.dot.gov/quiet/, determine whether the implementation of SSMs, ASMs, and/or traffic control devices will reduce the QZRI of the proposed Pre-Rule Quiet Zone to the Nationwide Significant Risk Threshold (NSRT). If the QZRI will be less than or equal to the current NSRT, you can establish the Quiet Zone through public authority designation by completing the following steps:

   a. Complete the planned improvements by December 18, 2008.[2]

   b. Update the USDOT Grade Crossing Inventory Form.

---

[2] If the State is involved in the development of Quiet Zones, then the date for completion is extended an additional 3 years.

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c. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

Note: Quiet Zones established by comparison to the NSRT are subject to annual FRA review. (Refer to rule section 222.51 for details.)

Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 2.5-3 years. (Refer to rule section 222.47 for details.)

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Section III. Creating a New Quiet Zone Using SSMs (Chart 2)

1. Select the crossings to be included in the New Quiet Zone.

2. A Quiet Zone may include highway-rail grade crossings on a segment of rail line crossing more than one political jurisdiction, or there may be roads within a particular area that are the responsibility of different entities (State or county roads within a town, for example). If the selected crossings are the responsibility of more than one entity, obtain the cooperation of all relevant jurisdictions.

3. A New Quiet Zone must be at least ½ mile in length along the railroad tracks.

4. A New Quiet Zone must have, at a minimum, flashing lights and gates in place at each public crossing. These must be equipped with constant warning time devices where reasonably practical, and power out indicators. Any necessary upgrades must be completed before calculating risk for the quiet zone.

5. Are there any private crossings within the proposed Quiet Zone? If any private crossings allow access to the public or provide access to active industrial or commercial sites, you must conduct a diagnostic team review of those crossings. Following the diagnostic review, you must comply with the diagnostic team's recommendations concerning those crossings.

6. Update the USDOT Grade Crossing Inventory Form to reflect conditions at each public and private crossing; this update should be complete, accurate, and dated within 6 months prior to the Quiet Zone implementation[3]. For instructions on how to complete the update, see the FRA website at http://www.fra.dot.gov/Content3.asp?P=801.

7. Using the FRA's Quiet Zone Calculator, a web-based tool that can be found at http://safetydata.fra.dot.gov/quiet/ , determine whether the Quiet Zone Risk Index (QZRI) of the proposed Quiet Zone is less than or equal to the Nationwide Significant Risk Threshold (NSRT). If the QZRI is less than or equal to the NSRT, you can establish the Quiet Zone through public authority designation by completing the following steps:

    a. Install required signage at each crossing. (Refer to rule sections 222.25 and 222.35 for details.)

    b. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

[3] For New Quiet Zones, the baseline conditions for calculating risk require that the minimum required traffic control devices are in place. This first Inventory update, therefore, must be completed after the gates, lights, and signs are in place, but before the SSMs and other measures are implemented.

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Note: Quiet Zones established by comparison to the NSRT are subject to annual FRA review. (Refer to rule section 222.51 for details.)

Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 2.5-3 years. (Refer to rule section 222.47 for details.)

8. The step described above involves qualifying a quiet zone without implementing any Supplementary Safety Measures (SSMs) or Alternative Safety Measures (ASMs). If FRA's Quiet Zone Calculator indicates that the proposed quiet zone will not qualify on that basis, install any measures that are needed. To qualify for Public Authority Designation, you must implement SSMs, build grade separations, close crossings, or install wayside horns.

   Note: If you would like to implement any ASMs, their use must be approved in advance by FRA, in accordance with Appendix B of the rule. For guidance on ASM use, see *Section IV, Creating Quiet Zones using Engineering Alternative Safety Measures (modified SSMs)* or *Section V, Creating Quiet Zones using Non-engineering Alternative Safety Measures.*

9. If every public crossing in the proposed Quiet Zone is equipped with one or more SSMs, you can establish the Quiet Zone through public authority designation by completing the following steps:

   a. Install required signage at each crossing. (Refer to rule sections 222.25 and 222.35 for details.)

   b. Update the National Grade Crossing Inventory to reflect current conditions at each public and private crossing within the Quiet Zone.

   c. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

   Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 4.5-5 years. (Refer to rule section 222.47 for details.)

10. If every public crossing is not equipped with an SSM, use FRA's Quiet Zone Calculator to determine whether enough SSMs have been implemented to reduce the QZRI to the level of risk that would exist if the train horns were still sounded (RIWH). The Quiet Zone Calculator can be found at http://safetydata.fra.dot.gov/quiet/. If the QZRI is less than or equal to the RIWH, you can establish the Quiet Zone through public authority designation by completing the following steps:

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a. Install required signage at each crossing. (Refer to rule sections 222.25 and 222.35 for details.)

b. Update the National Grade Crossing Inventory to reflect current conditions at each public and private crossing within the Quiet Zone.

c. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 2.5-3 years. (Refer to rule section 222.47 for details.)

11. Use FRA's Quiet Zone Calculator to determine whether enough SSMs have been implemented to reduce the QZRI to the Nationwide Significant Risk Threshold (NSRT). The Quiet Zone Calculator can be found at http://safetydata.fra.dot.gov/quiet/. If the QZRI is less than or equal to the current NSRT, you can establish the Quiet Zone through public authority designation by completing the following steps:

a. Install required signage at each crossing. (Refer to rule sections 222.25 and 222.35 for details.)

b. Update the National Grade Crossing Inventory to reflect current conditions at each public and private crossing within the Quiet Zone.

c. Notify the parties listed in the rule. (Refer to rule section 222.43 for details.)

Note: Quiet Zones established by comparison to the NSRT are subject to annual FRA review. (Refer to rule section 222.51 for details.)

Note: Periodic updates, including updated USDOT Grade Crossing Inventory Forms, must be submitted to FRA every 2.5-3 years. (Refer to rule section 222.47 for details.)

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Chart 1A - Pre-Rule Quiet Zones: Qualifying for Automatic Approval

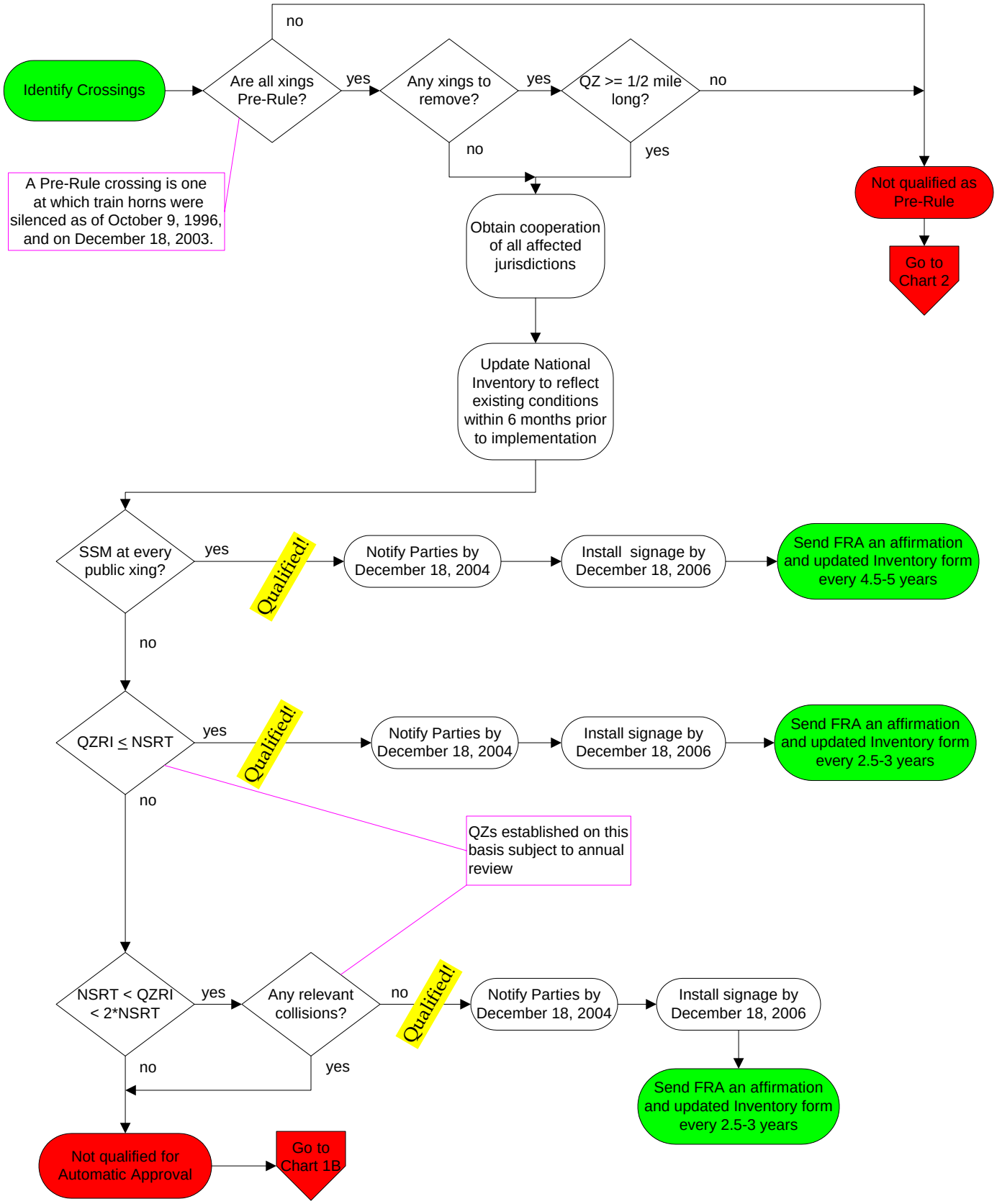

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Chart 1B - Pre-Rule Quiet Zones: Not Qualified for Automatic Approval

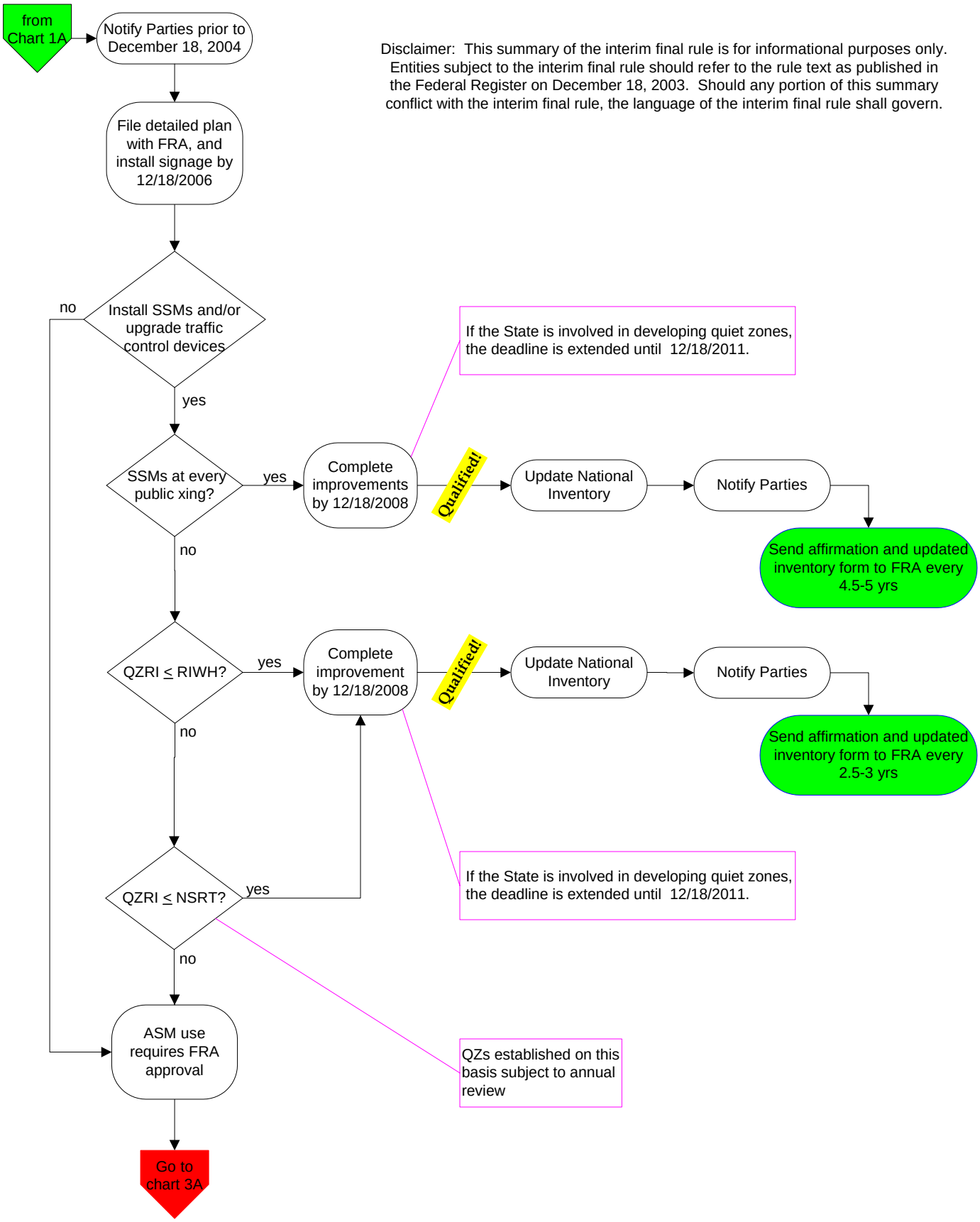

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Chart 2 - Creating a New Quiet Zone using SSMs

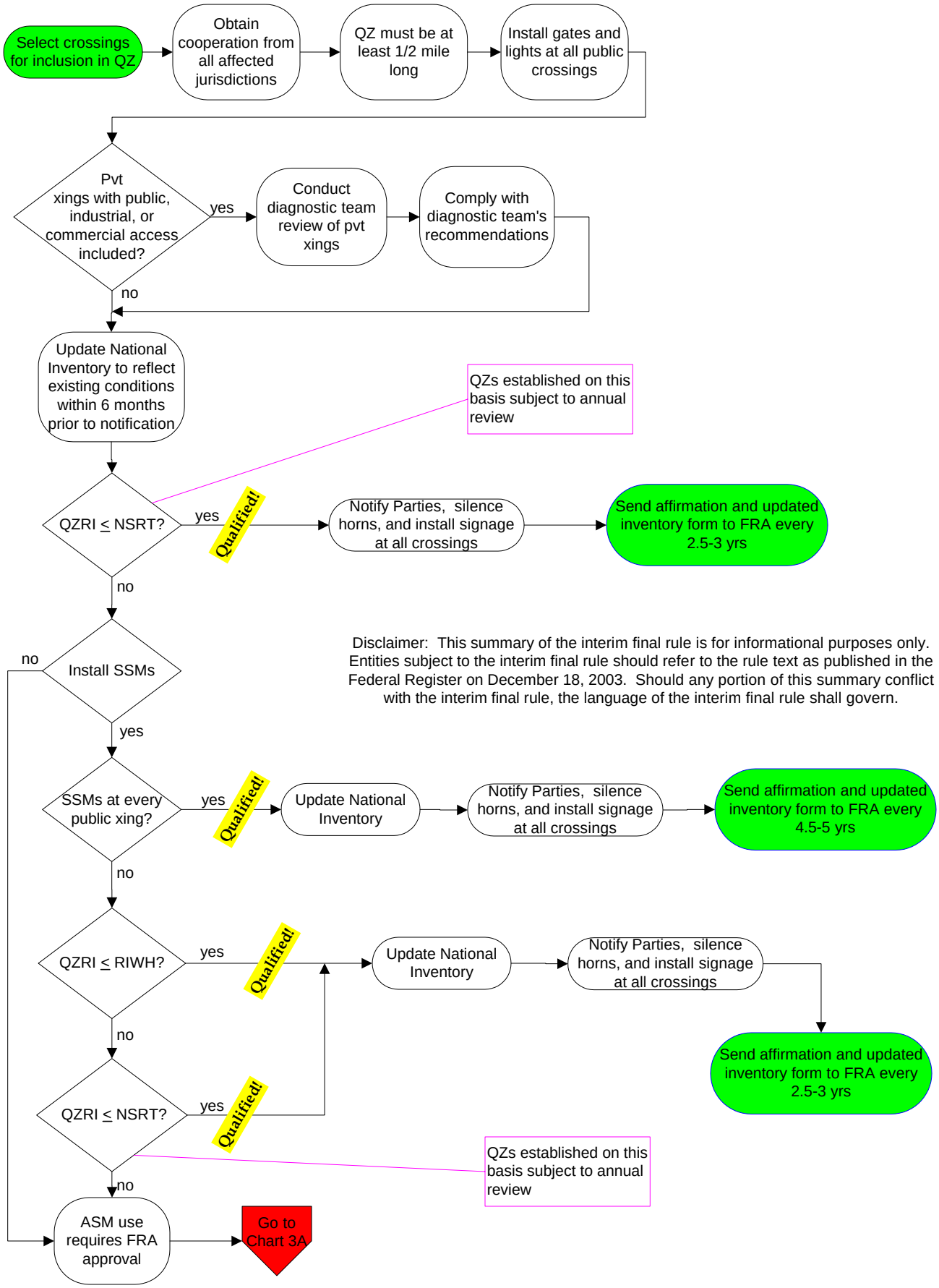

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Chart 3A - Creating a Quiet Zone using Engineering ASMs (Modified SSMs)

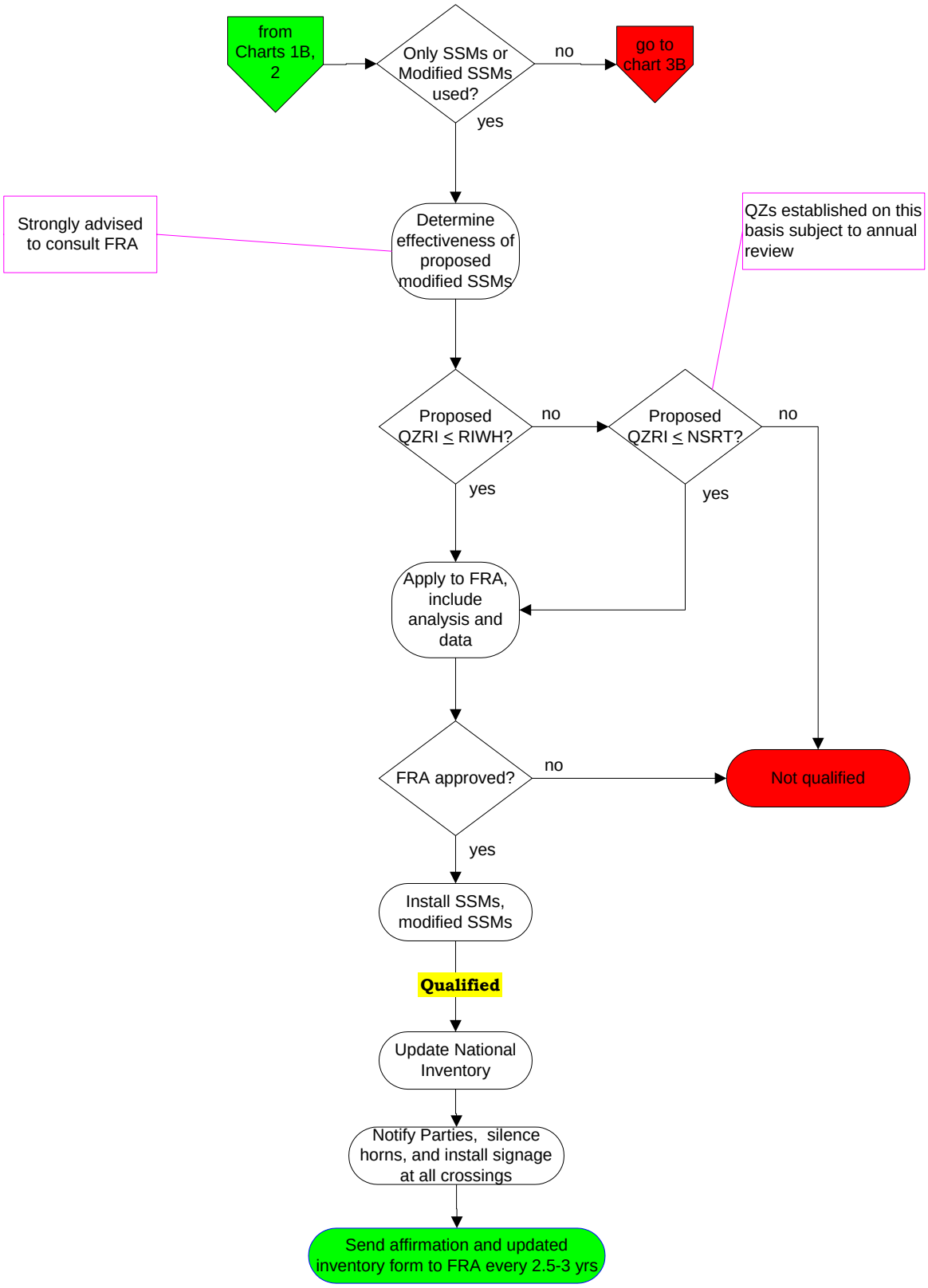

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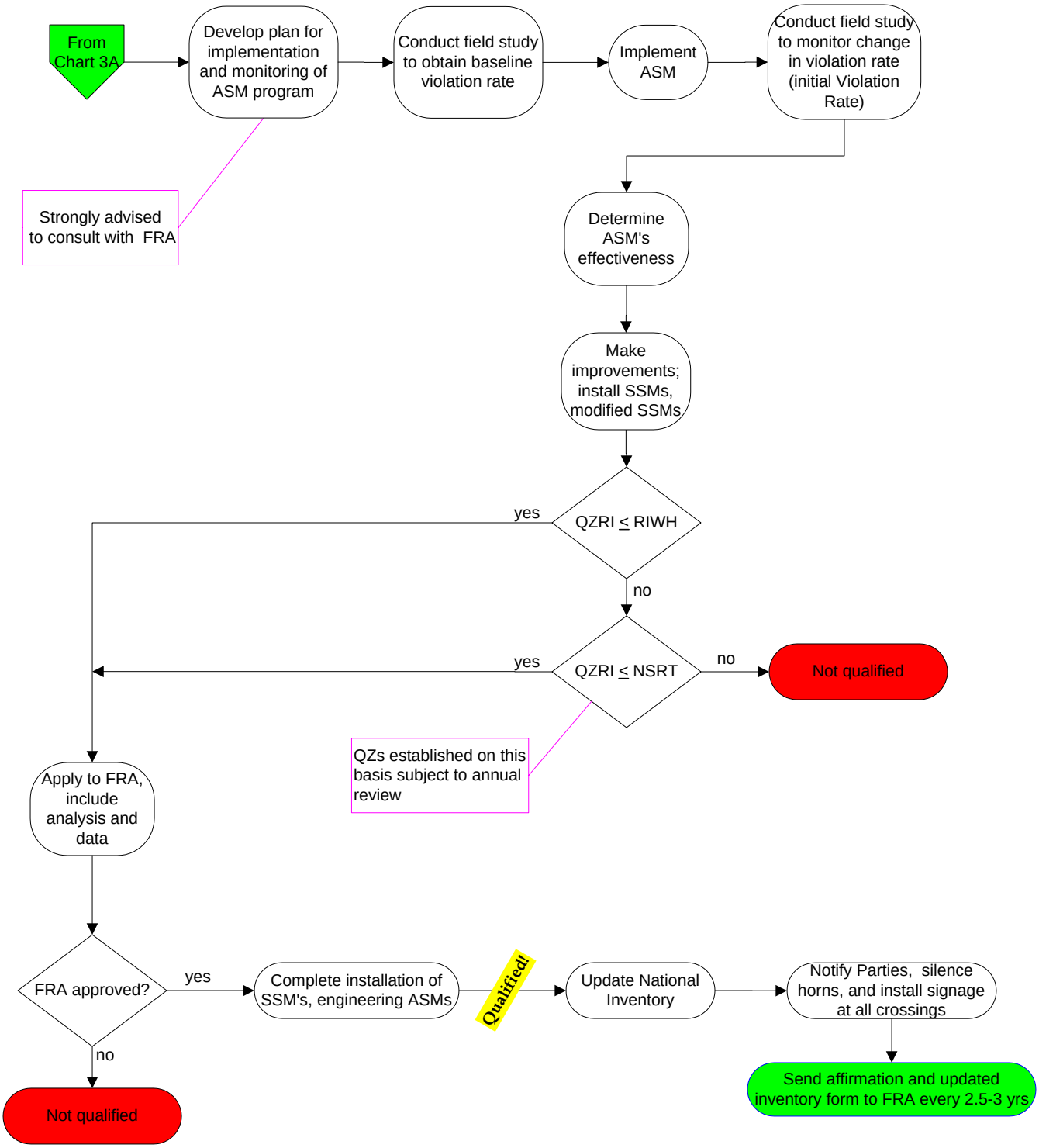
Chart 3B: Creating a Quiet Zone using Non-engineering ASMs



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List of Crossings within Quiet Zone

Submit to all Parties

Quiet Zone Name:_____

The following crossings are included in the above named Quiet Zone:

USDOT Crossing ID Number	Street or Highway Name

Sample

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Basis for Continuation of a Pre-Rule Quiet Zone:

Submit to all Parties

Quiet Zone Name:_____

This quiet zone is being continued in compliance with the following (check all that apply):

- ❑ §222.41(a) Pre-Rule Quiet Zones that qualify for automatic approval because
  - ❑ every crossing is equipped with an SSM,
  - ❑ QZRI $\leq$ NSRT, or
  - ❑ NSRT < QZRI < 2* NSRT, and there have been no relevant collisions within the 5 years preceding December 18, 2003
- ❑ §222.41(b) Pre-Rule Quiet Zones that do not qualify for automatic approval

Sample

Note: Quiet Zones established in accordance with §222.41(b) can be maintained under that provision for an interim period only. Continuation of the quiet zone beyond the interim period will require implementation of SSMs or ASMs in accordance with the section of the rule governing establishment of a New Quiet Zone (§222.49).

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FRA Quiet Zone Calculator Pages

Submit to all Parties

If the Quiet Zone is being continued under §222.41(a), Pre-Rule Quiet Zones which qualify for automatic approval, the notification to the parties must also include a copy of the FRA web page containing the quiet zone data upon which the public authority relies.

The Quiet Zone Calculator can be found at: http://safetydata.fra.dot.gov/quiet/

Sample

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Certificate of Service (submit one for each party notified)

Submit to all Parties including FRA

Quiet Zone Name:_____

Notice of the establishment or continuation of this Quiet Zone was provided to the following:

Name:	
Title:	
Organization:	
Address:	
Notification Method:	
Notification Date:	

Sample

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Grade Crossing Inventory Form (Initial)

Submit to FRA Associate Administrator, Office of Safety

Submit an accurate and complete Grade Crossing Inventory Form for each public and private crossing within the quiet zone, dated within six months prior to notification of the quiet zone. This form should reflect conditions prior to implementation of SSMs and ASMs.

Copies of the Grade Crossing Inventory Form FRA 6180.71can be downloaded from the FRA web site at http://safetydata.fra.dot.gov/officeofsafety/Forms/Default.asp.

Sample

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Grade Crossing Inventory Form Reflecting Improvements

Submit to FRA Associate Administrator, Office of Safety

Submit an additional accurate and complete Grade Crossing Inventory Form for each public and private crossing within the quiet zone, reflecting the improvements implemented within the Quiet Zone.

Copies of the Grade Crossing Inventory Form FRA 6180.71can be downloaded from the FRA web site at http://safetydata.fra.dot.gov/officeofsafety/Forms/Default.asp.

Sample

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Point of Contact Information

Submit to FRA Associate Administrator, Office of Safety

Quiet Zone Name:_____

Date:_____

The following individual is responsible for monitoring compliance with §222:

Name: _____

Title:_____

Organization:_____

Address: _____

_____

_____

Phone:_____

Fax: _____

Email:_____

Sample

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Chief Executive Officer Statement

Submit to FRA Associate Administrator, Office of Safety

Quiet Zone
Designation:_____

I hereby certify that responsible officers of the public authority of which I am the Chief Executive Officer have reviewed documentation prepared by or for the FRA, filed in Docket No. FRA-1999-6439, sufficient to make an informed decision regarding the advisability of establishing the quiet zone.

Sample

_____ _____
Signature Date

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Pre-Rule Quiet Zone Notification Checklist

Be sure to include the following information when providing notification of the continuation of a pre-rule quiet zone. Notifications must be sent by certified mail, return receipt requested.

All parties, including FRA, must receive:

- List of Crossings within Quiet Zone
- Basis for Continuation of a Pre-Rule Quiet Zone
- FRA Quiet Zone Calculator Page if quiet zone qualifies for automatic approval under §222.41(a)
- Certificate of Service (submit one for each party notified)

FRA must also receive the following:

- Grade Crossing Inventory Form (Initial)
- Grade Crossing Inventory Form Reflecting Improvements (when applicable)
- Point of Contact Information
- Chief Executive Officer Statement

Notification should be mailed to FRA at the following address:

Associate Administrator for Safety

Federal Railroad Administration

1120 Vermont Avenue, NW

Washington, DC 20590

Sample

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Pre-Rule Quiet Zone Notification Checklist

Be sure to include the following information when providing notification of the continuation of a pre-rule quiet zone. Notifications must be sent by certified mail, return receipt requested.

All parties, including FRA, must receive:

- List of Crossings within Quiet Zone
- Basis for Continuation of a Pre-Rule Quiet Zone
- FRA Quiet Zone Calculator Page if quiet zone qualifies for automatic approval under §222.41(a)
- Certificate of Service (submit one for each party notified)

FRA must also receive the following:

- Grade Crossing Inventory Form (Initial)
- Grade Crossing Inventory Form Reflecting Improvements (when applicable)
- Point of Contact Information
- Chief Executive Officer Statement

Notification should be mailed to FRA at the following address:

Associate Administrator for Safety
Federal Railroad Administration
1120 Vermont Avenue, NW
Washington, DC 20590

Sample

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New Quiet Zone Notification[1]

Parties to be notified

Once a public authority has successfully established a quiet zone either through public authority designation or through FRA approval, it must provide written notice to several parties. These parties include the following:

- All railroads operating over the public highway-rail grade crossings within the quiet zone,
- The highway or traffic control authority, or the law enforcement authority with jurisdiction over motor vehicle traffic at the quiet zone crossings,
- Landowners with control over any private crossings within the quiet zone,
- The State agency responsible for highway and road safety, and
- The FRA Associate Administrator.

All notices must be provided by certified mail, return receipt requested.

Deadlines

The notice sent to the above parties must designate a specific date on which the routine sounding of horns at crossings within the quiet zone shall cease. On no account shall this date be earlier than 21 days after the mailing of this written notification.

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[1] This collection of information will be used by FRA to increase safety at highway-rail grade crossings. Public reporting burden is estimated to average five (5) hours per response for notifications, and thirty-five (35) hours per response for the certification, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Please note that an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control number for this collection of information is 2130-0560.

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Notification contents

- ❑ The notice must unambiguously state which crossings will be contained within the quiet zone. Each public and private crossing must be identified by both the U.S. DOT National Highway-Rail Grade Crossing Inventory number and the street or highway name.

- ❑ The notification must also clearly cite the regulatory provision that provides the basis for establishing the quiet zone. For a new quiet zone, one of the following provisions should apply:

  - §222.39(a)(1), implementation of SSMs at every public crossing in the quiet zone;

  - §222.39(a)(2)(i), the QZRI is at or below the NSRT without installation of any SSMs;

  - §222.39(a)(2)(ii), SSMs were implemented at some crossings to bring the QZRI to a level at or below the NSRT;

  - §222.39(a)(3), SSMs were implemented at some crossings to bring the QZRI to a level at or below the RIWH; or

  - §222.39(b), public authority application to the FRA.

- ❑ If the quiet zone is established on the basis of §222.39(a)(1), (2), or (3), the notification must include a copy of the FRA web page containing the quiet zone data upon which the public authority is relying.

- ❑ If the quiet zone is being established on the basis of § 222.39(b) (public authority application to the FRA), the notification must include a copy of the FRA's notification of approval.

- ❑ All notifications must contain a certificate of service. This certificate of service shall show to whom the notice was provided, and by what means the notice was provided.

Additional information that must be submitted to FRA

The items listed above must be submitted to each of the parties listed in the section labeled "Parties to be notified". Public authorities are also required to submit the following information in their submission to FRA:

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- An accurate and complete Grade Crossing Inventory Form for each public and private crossing within the quiet zone, dated within six months prior to designation or FRA approval of the quiet zone;

- An accurate, complete, and current Grade Crossing Inventory Form reflecting the SSMs and ASMs implemented within the quiet zone. (SSMs and ASMs that cannot be fully described on the Inventory Form must be described separately);

- The name and title of the person responsible for monitoring compliance with the requirements of the rule and his/her contact information. In addition to the person's name, title, and organization, contact information should include his/her business address, telephone number, fax number, and email address;

- A list of all parties notified in accordance with the rule; and

- A statement signed by the Chief Executive Officer (CEO) of each public authority establishing the quiet zone. In the CEO's statement, he or she must certify that responsible officials of the public authority have reviewed the documentation prepared by or for the FRA, and filed in Docket No. FRA-1999-6439, sufficient to make an informed decision regarding the advisability of establishing the quiet zone.

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Pre-Rule Quiet Zone Notification[1]

Parties to be notified

A public authority that wants to continue silencing the locomotive horn at grade crossings within a Pre-Rule Quiet Zone must provide written notice to several parties. These parties include the following:

- All railroads operating over the public highway-rail grade crossing within the quiet zone,
- The highway or traffic control authority, or the law enforcement authority with jurisdiction over motor vehicle traffic at the quiet zone crossings,
- Landowners with control over any private crossings within the quiet zone,
- The State agency responsible for highway and road safety, and
- The FRA Associate Administrator.

All notices must be provided by certified mail, return receipt requested.

Deadlines

Notice of the continuation of a Pre-Rule Quiet Zone must be served no later than December 18, 2004.

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[1] This collection of information will be used by FRA to increase safety at highway-rail grade crossings. Public reporting burden is estimated to average five (5) hours per response for notifications, and thirty-five (35) hours per response for the certification, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Please note that an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control number for this collection of information is 2130-0560.

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Notification contents

- The notice must unambiguously state which crossings are contained within the quiet zone. All public and private crossings must be identified by both the U.S. DOT National Highway-Rail Grade Crossing Inventory Number, and by street or highway name.

- The notification must clearly cite the regulatory provision that provides the basis for continuing the Quiet Zone.

  Note: The continuation of Pre-Rule Quiet Zones that qualify for automatic approval is governed by § 222.41(a). All other Pre-Rule Quiet Zones are governed by § 222.41(b).

- The notification must also include an explanation as to how the quiet zone is in compliance with § 222.41.

- If the quiet zone is being continued on the basis of §222.41(a) (automatic approval), the notification must include a copy of the FRA web page containing the quiet zone data upon which the public authority is relying.

- All notifications must contain a certificate of service. This certificate of service shall show to whom the notice was provided, and by what means the notice was provided.

Additional information that must be submitted to FRA

The items listed above must be submitted to each of the parties listed in the section labeled "Parties to be notified". Public authorities are also required to submit the following information in their submission to FRA:

- An accurate and complete Grade Crossing Inventory Form for each public and private crossing within the quiet zone, dated within six months prior to designation of the quiet zone;

- An accurate, complete, and current Grade Crossing Inventory Form reflecting the SSMs and ASMs implemented within the quiet zone;

- The name and title of the person responsible for monitoring compliance with the requirements of the rule and his/her contact information. In addition to the person's name, title, and organization, contact

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information should include his/her business address, telephone number, fax number, and email address;

- A list of all parties notified in accordance with the rule; and

- A statement signed by the Chief Executive Officer (CEO) of each public authority continuing the quiet zone. In the CEO's statement, he or she must certify that responsible officials of the public authority have reviewed the documentation prepared by or for the FRA, and filed in Docket No. FREA-1999-6439, sufficient to make an informed decision regarding the advisability of establishing the quiet zone.

Note: Pre-Rule Quiet Zones that do not qualify for automatic approval can only be maintained for an interim period. Continuation of the quiet zone beyond the interim period will require submission of a detailed plan, as well as implementation of SSMs or ASMs in accordance with section 222.39. Please refer to sections 222.39 and 222.41 for more information.

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