



OPERATIONS COMMITTEE AGENDA

Operations Committee Meeting
Monday, August 10, 2020
Tom Davies Square - Council Chamber / Electronic Participation

COUNCILLOR DEB MCINTOSH, CHAIR

Mark Signoretti, Vice-Chair

9:00 a.m. OPERATIONS COMMITTEE MEETING
COUNCIL CHAMBER / ELECTRONIC PARTICIPATION

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ROLL CALL

DECLARATIONS OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF

REGULAR AGENDA

MANAGERS' REPORTS

- R-1. Report dated July 27, 2020 from the General Manager of Growth and Infrastructure regarding Contracting In Report - Asphalt Temporary Patching. **4 - 9**
(FOR INFORMATION ONLY)
(This report provides information regarding contracting in services to the asphalt temporary patching program.)
- R-2. Report dated July 24, 2020 from the General Manager of Growth and Infrastructure regarding Waste Collection: An Additional Support Program for the Collection of Disposable Diapers. **10 - 14**
(RESOLUTION PREPARED)
(This report provides recommendations for the weekly collection of disposable diapers in support of the waste collection changes scheduled for February 2021.)
- R-3. Report dated July 24, 2020 from the General Manager of Growth and Infrastructure regarding Waste Collection: An Additional Support Program for the Collection of Medical Circumstances Waste. **15 - 20**
(RESOLUTION PREPARED)
(This report provides recommendations for the weekly collection of medical circumstances waste in support of the waste collection changes scheduled for February 2021.)
- R-4. Report dated July 28, 2020 from the General Manager of Growth and Infrastructure regarding Enhanced Maintenance to Catch Basins. **21 - 32**
(FOR INFORMATION ONLY)
(This report provides information regarding stormwater management and enhanced maintenance to catch basins.)
- R-5. Report dated July 24, 2020 from the General Manager of Growth and Infrastructure regarding Pothole Patching Equipment Report. **33 - 42**
(RESOLUTION PREPARED)
(This report provides a recommendation to prepare a business case for the purchase of pothole patching equipment for inclusion in the 2021 budget process.)
- R-6. Report dated July 28, 2020 from the General Manager of Growth and Infrastructure regarding Active Transportation Winter Maintenance Plan. **43 - 80**
(RESOLUTION PREPARED)
(This report provides a recommendation regarding the Active Transportation Winter Maintenance Plan.)

MEMBERS' MOTIONS

ADDENDUM

CIVIC PETITIONS

QUESTION PERIOD

ADJOURNMENT

Presented To:	Operations Committee
Presented:	Monday, Aug 10, 2020
Report Date	Monday, Jul 27, 2020
Type:	Managers' Reports

For Information Only

Contracting In Report - Asphalt Temporary Patching

Resolution

For Information Only

Relationship to the Strategic Plan / Health Impact Assessment

A pillar of the Strategic Plan 2019 – 2027 is the Asset Management and Service Excellence strategic initiative. One of the tenets of this initiative is to continually look for innovative and cost-effective approaches for the services staff deliver each day. It is prudent and appropriate that the corporation's Distribution & Collection maintenance service levels and approaches for providing them are subject to periodic review.

Report Summary

This report updates Council on the status of the contracting in initiative for temporary asphalt repairs for Distribution & Collection excavations and outlines key concerns that this initiative is contemplated to address.

Temporary asphalt repairs for Distribution & Collection excavations have been undertaken by external contractors since 2017. In this time, there has been evidence that a significant decrease in customer satisfaction has occurred. City staff has determined that the best course of action is to reinstate temporary asphalt repairs as part of the City's internal preventative maintenance program by utilizing the additional 12 staff approved through last year's collective bargaining agreement for a portion of this work. This initiative is contemplated to significantly improve customer satisfaction.

Financial Implications

There are no direct financial implications as a result of this report.

Signed By

Report Prepared By

Brittany MacDonald
Operations Engineer
Digitally Signed Jul 27, 20

Division Review

Randy Halverson
Director of Linear Infrastructure
Services
Digitally Signed Jul 27, 20

Financial Implications

Steve Facey
Manager of Financial Planning &
Budgeting
Digitally Signed Jul 27, 20

Recommended by the Department

Tony Cecutti
General Manager of Growth and
Infrastructure
Digitally Signed Jul 27, 20

Recommended by the C.A.O.

Ed Archer
Chief Administrative Officer
Digitally Signed Jul 28, 20

Contracting in Report - Asphalt Temporary Patching

Background

In March 2018, the Operations Committee was presented with a report entitled "[Winter Control Operations Update for December 2017](#)". This report provided the Committee with financial results of the 2017 winter control season. During the presentation, members of the Operations Committee asked staff questions regarding the relative efficiency of services delivered with internal resources compared to services delivered by contracted (i.e. private sector) resources. Ultimately, the Committee passed resolution OP2018-07, directing staff to report back to Council with analysis and, potentially a business case, to adjust resources so that an appropriate balance of in-house and contracted resources are available to meet Council's desired service levels for both summer and winter Linear Infrastructure Services maintenance services.

As per the Operations Committee resolution staff returned to Council in September 2018 with a report titled "[Overview and Analysis of Approach to Roads and Distribution & Collection Maintenance Services](#)" which provided an overview of current maintenance services for roads and distribution and collection infrastructure. The report concludes with a description of opportunities and next steps for a detailed review of these services that will inform choices about the extent to which the service levels should be provided by in-house or contracted resources.

In October 2019, staff returned once again to the Operations Committee with a report entitled, "[Contracting In Initiatives](#)". This report detailed future contracting in initiatives which align with the objectives to analyze the potential for service changes which is contained within the Next Steps section of the "[Core Service Review Phase 1](#)" report presented to Council September 24, 2019.

This report will analyze contracting in initiative number one (1), Temporary Asphalt Repairs for Distribution & Collection Excavations.

Analysis

Description

The Distribution & Collection section of the Linear Infrastructure Services Division undertakes approximately 550 excavations per year for planned and reactive maintenance including watermain breaks, curb box repairs, water service leaks, and sanitary sewer lateral and main repairs. These repairs are undertaken 365 days a year on a 24/7 basis as required. When an excavation is completed outside of construction season, a temporary repair to the roadway is required in order to allow full driving access for the remainder of the season. These temporary repairs are required to be

maintained until a permanent repair can be carried out during the spring/summer/fall construction season.

Current Service Level

The current service level for temporary patches provides different requirements based on road classification. Upon completion of an excavation on Class 4-6 roads city operations crews backfill to surface with granular material and place the location on a list for Construction Services to access and provide to a contractor. The contractor then has seventy-two (72) hours to attend the location and temporarily repair the asphalt with cold mix. On Class 1-3 roads city operations crews backfill to surface with granular material and place cold mix asphalt at the location before placing it on a list for Construction Services to access and provide to a contractor. The contractor then has twenty-four (24) hours to attend the location and begin any maintenance that is required until paving warm mix is undertaken at the location within two (2) weeks of the excavation. These locations are then continuously monitored for settlement and/or deterioration and topped up as required by the contractor.

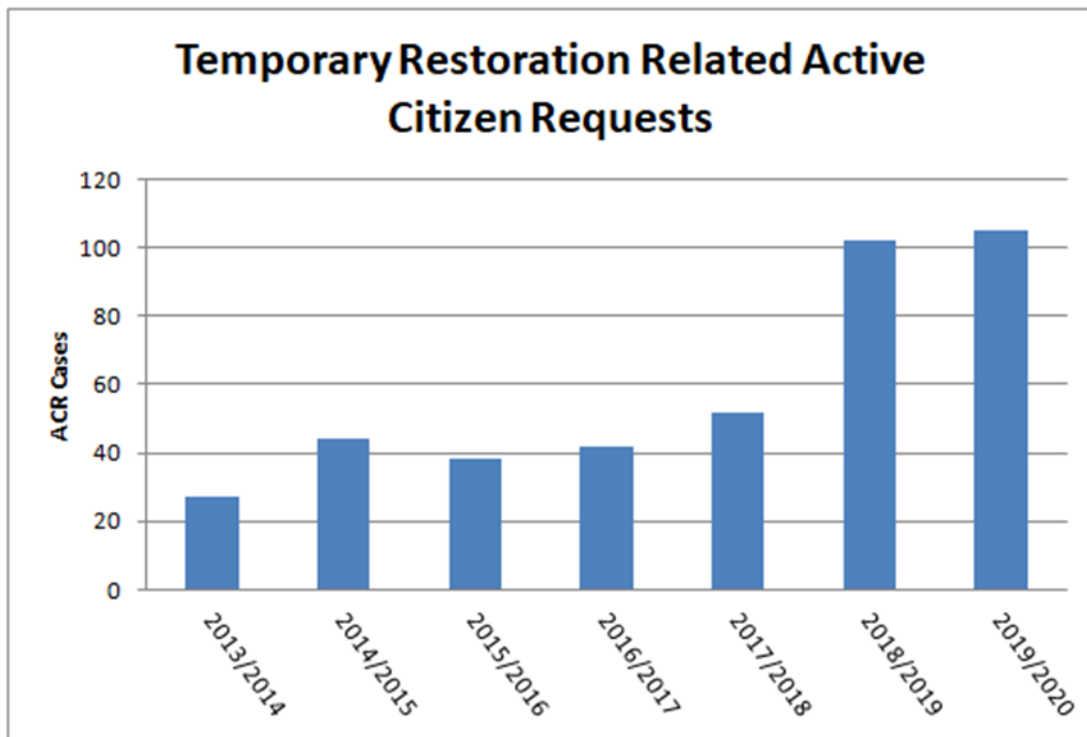
Previous Service Level

Prior to 2017, temporary asphalt repairs for Distribution & Collection excavations were undertaken by a combination of internal, Distribution & Collection forces as part of the regular maintenance program as well as external contractors under the emergency repairs contract. Cold mix would be placed on patches immediately upon completion of the excavation by the crew on site and maintained every Friday as required.

By around 2017, the competitive procurement process failed to find a contractor to perform emergency watermain repairs at a reasonable price. At this time it became necessary for staff to take on this work in house. However, performing the emergency repairs was problematic for two reasons. Firstly, using the existing staff compliment resulted in less preventative maintenance being accomplished while staff attended to emergencies. Secondly, at that time only a very limited shift schedule was available so emergency repairs required additional premium shifts and/or overtime. In order to ensure that licensed water operators were available to perform watermain repairs, it became necessary to use contractors for temporary asphalt patching while staff focused on other licensed work. This made the temporary repairs less efficient but was necessary due to the limited available staff and need to continue to have staff available for preventative maintenance activities.

Drivers for Contracting In

Contracting out temporary asphalt repairs has met with quite a few issues and challenges. The main concerns surrounding this work relate to customer satisfaction and road safety. The chart on the next page is a review of Active Citizen Requests (ACRs) between September 30th and April 30th each year, from 2013 to 2020. It shows that there has been a significant increase in calls relating to this work since contracting it out in 2017.



ACR Chart (2013-2020)

The City relies solely upon contractors to monitor and maintain these patches. It has been found that it is difficult to police whether the contractors are in fact monitoring the patches regularly. As well, when a patch is in need of significant maintenance in order to protect the integrity of the roadway, it is sometimes challenging to get the issue resolved in a timely fashion. This can lead to dissatisfied motorists and, in extreme cases, damage to vehicles.

In order to ensure service levels are being met, the contractor is required to react quickly to all patch deficiencies which could mean working on evenings and weekends. This requirement for response is sometimes difficult for the contractor to uphold and can come at a premium cost to the City. With increased shift flexibility for city staff within Linear Infrastructure Services, there will be available staff on straight time for a majority of this work and stand-by crews available outside of regular shifts if

necessary. This is contemplated to be a potential cost savings as well as an increased service level as response time would greatly improve.

Further, efficiencies will be made by having the crew who is on site undertaking the excavation, cold mix the patch prior to leaving site. This would avoid mobilizing another crew as well as reduce the potential for leaving gravel patches unattended without cold mix or warm mix for up to 72 hours.

Approach

During the most recent round of negotiations for the collective bargaining agreement, twelve (12) additional full-time staff members (FTEs) were approved in order to staff a sixteen (16) hour a day, seven (7) days a week, schedule. This schedule will support the contracting in emergency repairs initiative with more staff coverage on straight time shifts who will be able to respond to emergencies as well as help to bolster preventative maintenance activities that had fallen behind due to the additional work. With this new schedule and additional staff, it is contemplated to be a significant opportunity to begin contracting in temporary asphalt repairs for Distribution & Collection excavations.

Although it is anticipated that the additional twelve staff members in Distribution & Collection will heavily support this initiative, staff will utilize all existing Linear Infrastructure Services staff to undertake these temporary asphalt repairs as necessary. This is contemplated to include Roads and Distribution & Collection full-time, part-time, and casual staff as required.

As this initiative is only contemplated to utilize existing staff, the existing budget for contracting out these repairs is anticipated to be more than adequate to cover the costs of material and any additional equipment required.

Conclusion / Next Steps

Overall, contracting in more work is anticipated to provide the public with significantly higher quality service. Undertaking temporary asphalt repairs with city staff will allow for more city control over patch maintenance, a more organized and efficient approach to maintenance, and more timely reactions to urgent maintenance requirements. This is anticipated to improve resident satisfaction within the existing budget allocation.

At this time, a tentative projected date of September 2021 is contemplated to begin contracting in temporary asphalt repairs for Distribution & Collection excavations. This

date is dependent on when all required equipment, materials, and staff are in place and trained.

It is very difficult for staff to accurately estimate the maintenance hours required to undertake this work as it has been solely completed by contractors, whom were being paid by the square meter of patch instead of hours of work, for the past three (3) years. With that said, the additional effort required to contract in temporary patching has the potential to negatively impact the existing preventative maintenance programs and as such will be monitored closely. With this understanding, we recognize that additional maintenance hours may be required in the future. If this is realized, staff will return to Council with a follow-up report and recommendations.

Resources Cited

Winter Control Operations Update for December 2017, presented to Operations Committee on March 19, 2018.

<https://agendasonline.greatersudbury.ca/index.cfm?pg=agenda&action=navigator&lang=en&id=1253&itemid=14744>

Overview and Analysis of Approach to Roads and Distribution & Collection Maintenance Services, presented to City Council on September 25, 2018.

<https://agendasonline.greatersudbury.ca/?pg=agenda&action=navigator&lang=en&id=1247&itemid=15615>

Contracting In Initiatives, presented to Operations Committee on October 21, 2019

<https://agendasonline.greatersudbury.ca/?pg=agenda&action=navigator&lang=en&id=1346&itemid=16963>

Core Service Review Phase 1, presented to City Council on September 24, 2019.

<http://agendasonline.greatersudbury.ca/?pg=agenda&action=navigator&lang=en&id=1329&itemid=17502>

Presented To:	Operations Committee
Presented:	Monday, Aug 10, 2020
Report Date	Friday, Jul 24, 2020
Type:	Managers' Reports

Request for Decision

Waste Collection: An Additional Support Program for the Collection of Disposable Diapers

Resolution

THAT the City of Greater Sudbury approves the weekly collection of children's disposable diapers as outlined in the report entitled "Waste Collection: An Additional Support Program for the Collection of Disposable Diapers," from the General Manager of Growth and Infrastructure, presented at the Operations Committee meeting on August 10, 2020.

Relationship to the Strategic Plan / Health Impact Assessment

This report refers to operational matters.

Report Summary

On March 2, 2020, Staff presented the Operations Committee with options for additional support programs to assist residents with the transition from weekly to every other week garbage collection scheduled to commence in February 2021. The Committee requested that Staff further enhance the weekly collection of disposable diapers support program to provide the collection at no additional fee to the registered participant. This report presents a revised support program for weekly collection of children's disposable diapers for the Committee's consideration.

Financial Implications

The corporation anticipates savings of approximately \$954,000 by transitioning from weekly to every other week. By approving the recommendation in this report, these savings will be reduced by approximately \$131,000.

Signed By

Report Prepared By

Renee Brownlee
Manager of Collection & Recycling
Digitally Signed Jul 24, 20

Health Impact Review

Renee Brownlee
Manager of Collection & Recycling
Digitally Signed Jul 24, 20

Division Review

Chantal Mathieu
Director of Environmental Services
Digitally Signed Jul 24, 20

Financial Implications

Steve Facey
Manager of Financial Planning & Budgeting
Digitally Signed Jul 24, 20

Recommended by the Department

Tony Cecutti
General Manager of Growth and Infrastructure
Digitally Signed Jul 26, 20

Recommended by the C.A.O.

Ed Archer
Chief Administrative Officer
Digitally Signed Jul 27, 20

Purpose

This report is an update to the Waste Collection Services – Additional Support Programs report presented to the Operations Committee on March 2, 2020. The report provides an option for the weekly collection of children's disposable diapers at no additional fee to registered participants of the disposable diaper support program when garbage and leaf & yard trimmings collection transitions from weekly to every other week collection in February 2021.

Background

In October 2016, four support programs were created to assist residents with special circumstances to meet the garbage bag limit when it was reduced from three (3) to two (2) bags and then from two (2) to one (1) bag in October 2019. These special support programs undoubtedly contributed to the success of the 2016 and 2019 waste collection changes by providing various options and reducing complaints. One of these special support programs was a children's disposable diaper exemption.

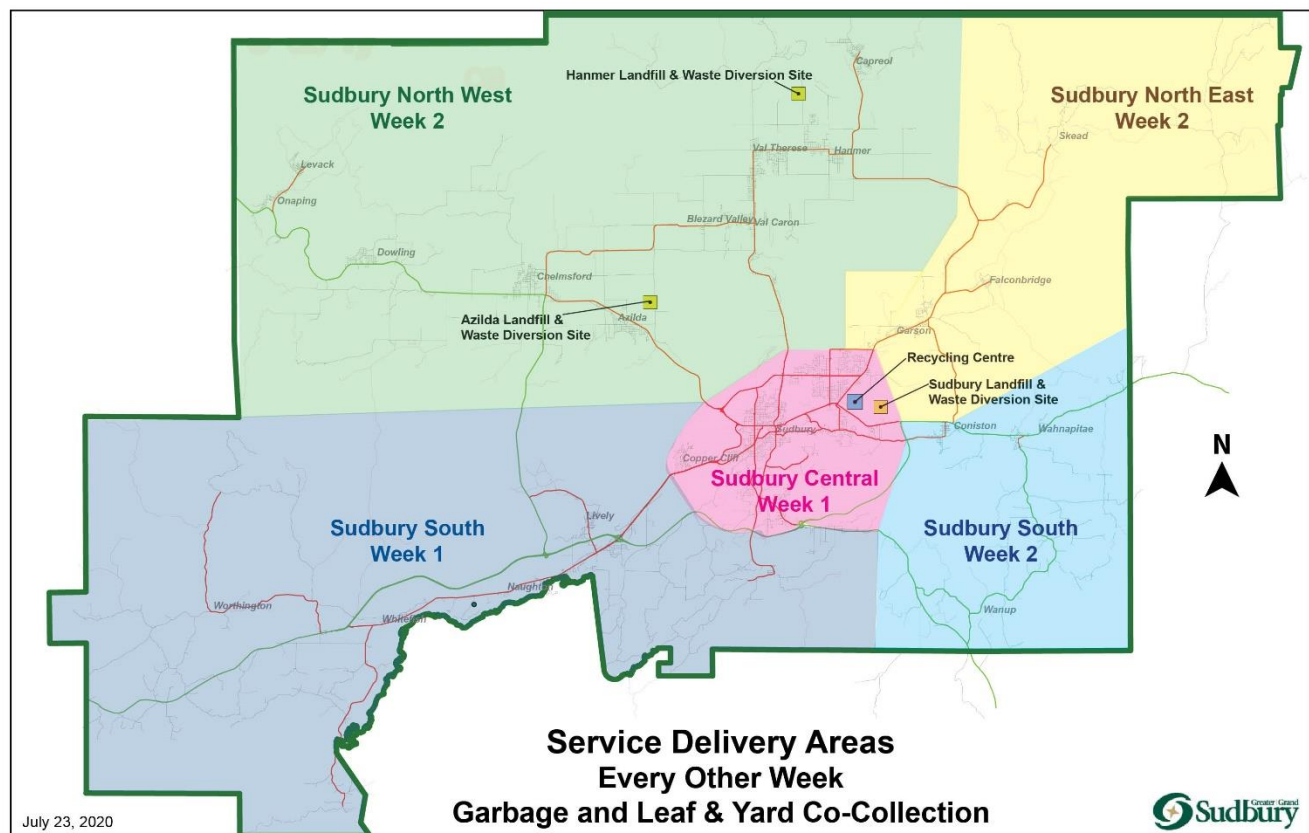
Registered participants of the disposable diaper support program are eligible to receive collection of one (1) clear bag of diapers for every child under four (4) years of age. This program is intended to assist families with children to meet the garbage bag limit. The clear bags of diapers are collected in addition to the household garbage bag limit. In order to be approved for the program, the applicant must agree to fully participate in all City waste diversion programs.

Staff are currently preparing for the last phase of the implementation plan. This will include a change from weekly to every other week garbage and leaf & yard collection with a limit of two garbage bags per household unit. Unlimited quantities of leaf & yard trimmings will be collected every other week. The unlimited co-collection of Blue Box recyclables, Green Cart organics and large furniture, appliances and electronics will continue on a weekly basis. These policies are aimed at encouraging participation and maximizing the use of existing waste diversion programs, especially the Green Cart organics program.

When garbage and leaf & yard collection transitions to every other week, in-house collection crews will co-collect waste from the Sudbury Central area for the first week (Week 1) and in-house collection crews will assume collection of waste in the Sudbury North West area in the second week (Week 2).

Contract collection crews will be responsible for the co-collection of garbage and leaf & yard in the remaining areas. In the first week (Week 1), contract collection crews will collect a portion of the Sudbury South area and in the second week (Week 2), contract collection crews will collect the remaining Sudbury South area as well as the Sudbury North East area. Refer to Map 1 - Service Delivery Areas.

Map 1. Service Delivery Areas



Contract collection crews will co-collect weekly recycling and organics as well as large furniture appliances and electronics in all service delivery areas. During the week without garbage collection, the contract collection crews will collect garbage from litter containers in all service delivery areas. The contract also includes the allowance of additional resources to provide enhanced and additional support program services if approved by Council. One such enhancement is the possibility to collect disposable children's diapers on the week without regularly scheduled garbage collection.

On March 2, 2020, Staff presented the Operations Committee with options for additional support programs that would address storage concerns after the transition from weekly to every other week garbage and leaf & yard trimmings collection scheduled to commence in February 2021. The Committee requested that Staff revise the enhancement to the children's disposable diaper support program to allow for the weekly collection of children's diapers at no additional cost to the registered participant.

Analysis

Currently, there are approximately 602 registered participants in the children's disposable diaper support program. This represents the collection of approximately 972 bags of diapers on a weekly basis.

Registration for the weekly collection of children's disposable diapers would be administered via an optional enrollment in the application process. Staff anticipate that the majority of applicants will choose to register even if it is simply precautionary. Staff also anticipate that there may be an increase in registration for the children's disposable diaper support program as we transition from weekly to every other week garbage and leaf & yard trimmings collection.

The estimated cost to collect one clear bag of diapers on the week without regularly scheduled garbage collection is estimated at \$135 for 26 weeks per year (2020 pricing).

Support programs are designed to assist residents who cannot meet the garbage bag limit due to special circumstances such as disposable diapers or medical waste. Registered participants of these programs are required and must agree to fully participate in all City waste diversion programs including Blue Box recycling, Green Cart organics and leaf & yard trimmings diversion. Support programs were not designed to encourage garbage production but rather to ensure that those with special circumstances are not penalized when the bag limit is reduced. In order to ensure that the program is not misused, Staff will periodically conduct audits to ensure that residents are fully participating in the diversion programs. Households that do not meet their commitment to fully participate in diversion programs will be contacted and provided education to allow them the opportunity to meet their diversion commitment and continue to receive support program services. Households who continue to neglect their commitment to participate in the diversion programs will have their registration revoked.

Option

Weekly Collection of Children's Disposable Diapers

The children's disposable diaper special support program application will be updated to include an optional enrollment for the collection of one (1) clear bag of diapers per child under four (4) years of age on the week without regularly scheduled roadside garbage collection. Collection will be provided to all enrolled participants on a single dedicated day of the week (e.g. every Monday).

To encourage waste diversion, participants will still be required to fully participate in all City waste diversion programs to keep their registration in good standing. Approved participants will be subject to periodic audits to ensure that the program is not being misused.

The estimated annual cost to collect clear bags of disposable diapers from all current registered participants on the weeks without regularly scheduled roadside garbage is approximately \$131,000 (based on current program enrollment and 2020 pricing). This estimated cost is directly related to registration in the program and will fluctuate (increase/decrease) based on program participation. If participation rates double, the cost would also double. For this reason, the program cost will be reviewed on an annual basis and the budget will be adjusted accordingly.

Conclusion/Next Steps

Waste diversion and sustainability is an important community value and forms part of the City of Greater Sudbury's Strategic Priorities. The transition to every other week garbage and leaf & yard trimmings collection supports these values and priorities by encouraging residents to fully participate in all available waste diversion programs and is expected to increase the low participation rates in the Green Cart organics program. It is also important not to lose sight of families with children who may require a temporary accommodation to meet the new garbage bag limits and overcome storage challenges while they contribute to the growth of our community and actively participate in diversion programs.

Staff have developed an option for the weekly collection of children's disposable diapers at no additional cost to registered participants as requested by the Operations Committee on March 2, 2020. Policies that support the City's goal of increasing waste diversion will form part of the program requirements.

Staff recommend that the Weekly Collection of Children's Disposable Diapers be approved.

Resources Cited

City of Greater Sudbury, Operations Committee, Manager's Report, Waste Collection Services – Additional Support Programs – R-2, March 2, 2020

Accessed online:

<https://agendasonline.greatersudbury.ca/index.cfm?pg=agenda&action=navigator&id=1484&itemid=18133&lang=en>

Presented To:	Operations Committee
Presented:	Monday, Aug 10, 2020
Report Date	Friday, Jul 24, 2020
Type:	Managers' Reports

Request for Decision

Waste Collection: An Additional Support Program for the Collection of Medical Circumstances Waste

Resolution

THAT the City of Greater Sudbury approves the unlimited weekly collection of medical circumstances waste as outlined in the report entitled "Waste Collection: An Additional Support Program for the Collection of Medical Circumstances Waste," from the General Manager of Growth and Infrastructure, presented at the Operations Committee meeting on August 10, 2020.

Relationship to the Strategic Plan / Health Impact Assessment

This report refers to operational matters.

Report Summary

On March 2, 2020, Staff presented the Operations Committee with options for additional support programs to assist residents with the transition from weekly to every other week garbage collection scheduled to commence in February 2021. The Committee requested that Staff develop a program to provide registered participants of the medical circumstances special support program weekly garbage collection at no additional fee. This report presents two options for the weekly collection of medical circumstances garbage for the Committee's consideration.

Financial Implications

The corporation anticipates savings of approximately \$954,000 by transitioning from weekly to every other week. By approving the recommendation in this report, these savings will be reduced by approximately \$89,000.

Signed By

Report Prepared By

Renee Brownlee
Manager of Collection & Recycling
Digitally Signed Jul 24, 20

Health Impact Review

Renee Brownlee
Manager of Collection & Recycling
Digitally Signed Jul 24, 20

Division Review

Chantal Mathieu
Director of Environmental Services
Digitally Signed Jul 24, 20

Financial Implications

Steve Facey
Manager of Financial Planning & Budgeting
Digitally Signed Jul 24, 20

Recommended by the Department

Tony Cecutti
General Manager of Growth and Infrastructure
Digitally Signed Jul 26, 20

Recommended by the C.A.O.

Ed Archer
Chief Administrative Officer
Digitally Signed Jul 27, 20

Purpose

This report is an update to the Waste Collection Services – Additional Support Programs report presented to the Operations Committee on March 2, 2020. The report provides options for the weekly collection of medical garbage at no additional fee for registered participants of the medical circumstances special support program when garbage and leaf & yard trimmings collection transitions from weekly to every other week collection in February 2021

Background

In October 2016, four support programs were created to assist residents with special circumstances to meet the garbage bag limit when it was reduced from three (3) to two (2) bags and then from two (2) to one (1) bag in October 2019. These special support programs undoubtedly contributed to the success of the 2016 and 2019 waste collection changes by providing various options and reducing complaints. One of these special support programs was a medical circumstances exemption.

Registered participants of the medical circumstances support program are eligible for 104 medical circumstances bag tags per year at no additional cost. The bag tags are intended to assist with non-recyclable and non-hazardous medical waste in excess of the garbage bag limit. The medical circumstances bag tags can be used at the discretion of the participant (e.g. use one bag tag on one collection day and three at the next or use none at all because they were able to meet the bag limit). There are no special requirements for the colour or transparency of the bag to which a medical circumstances tag can be affixed. In order to be approved for the program, the applicant must agree to fully participate in all City waste diversion programs.

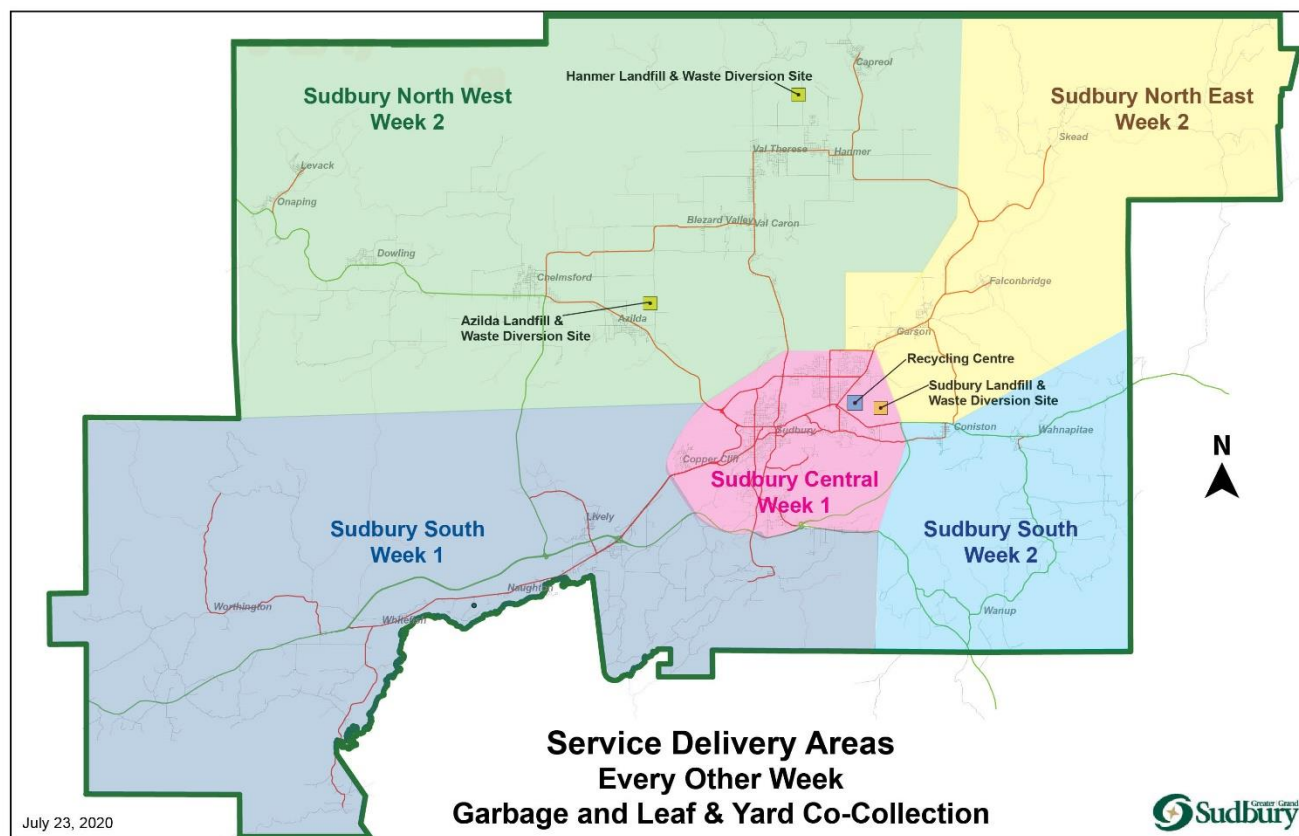
Staff are currently preparing for the last phase of the implementation plan. This will include a change from weekly to every other week garbage and leaf & yard collection with a limit of two garbage bags per household unit. Unlimited quantities of leaf & yard trimmings will be collected every other week. The unlimited co-collection of Blue Box recyclables, Green Cart organics and large furniture, appliances and electronics will continue on a weekly basis. These policies are aimed at encouraging participation and maximizing the use of existing waste diversion programs, especially the Green Cart organics program.

When garbage and leaf & yard collection transitions to every other week, in-house collection crews will co-collect waste from the Sudbury Central area for the first week (Week 1) and in-house collection crews will assume collection of waste in the Sudbury North West area in the second week (Week 2).

Contract collection crews will be responsible for the co-collection of garbage and leaf & yard in the remaining areas. In the first week (Week 1), contract collection crews will collect a portion of the Sudbury South area and in the second week (Week 2), contract

collection crews will collect the remaining Sudbury South area as well as the Sudbury North East area. Refer to Map 1 - Service Delivery Areas.

Map 1. Service Delivery Areas



Contract collection crews will co-collect weekly recycling and organics as well as large furniture appliances and electronics in all service delivery areas. During the week without garbage collection, the contract collection crews will collect garbage from litter containers in all service delivery areas. The contract also includes the allowance of additional resources to provide enhanced and additional support program services if approved by Council. One such enhancement is the possibility to collect medical circumstances garbage on the week without regularly scheduled garbage collection.

On March 2, 2020, Staff presented the Operations Committee with options for additional support programs that would address storage concerns after the transition from weekly to every other week garbage and leaf & yard trimmings collection scheduled to commence in February 2021. The Committee requested that Staff develop an enhancement to the medical circumstances support program that would allow for the weekly collection of medical circumstances garbage. The Committee further requested that the program be developed at no additional cost to the registered participant of the program.

Analysis

Currently, there are approximately 219 registered participants in the medical circumstances support program. Participants with a temporary condition are required to reapply with a medical professional's note every three (3) years whereas participants with permanent conditions are only required to reapply with a medical professional's note every seven (7) years. Regardless of condition type, registered participants may request medical circumstances bag tags on the one (1) year anniversary date of their application or last tag request whichever is later. The number of tagged medical garbage bags placed at the roadside on a weekly basis is unlimited.

Registration for weekly collection of tagged medical garbage bags would be administered via the application process. Staff anticipate that the majority of applicants will choose to register even if it is simply precautionary. Staff also anticipate that there may be an increase in registration for the medical circumstances support program as we transition from weekly to every other week garbage and leaf & yard trimmings collection.

The estimated cost to collect two (2) medical circumstances garbage bags per registered participant on the week without regularly scheduled roadside garbage collection is approximately \$270 per applicant for 26 weeks per year.

Support programs are designed to assist residents who cannot meet the garbage bag limit due to special circumstances such as disposable diapers or medical waste. Registered participants of these programs are required and must agree to fully participate in all City waste diversion programs including Blue Box recycling, Green Cart organics and leaf & yard trimmings diversion. Support programs were not designed to encourage garbage production but rather to ensure that those with special circumstances are not penalized when the bag limit is reduced. In order to ensure that the program is not misused, Staff will periodically conduct audits to ensure that residents are fully participating in the diversion programs. Households that do not meet their commitment to fully participate in diversion programs will be contacted and provided education to allow them the opportunity to meet their diversion commitment and continue to receive support program services. Households who continue to neglect their commitment to participate in the diversion programs will have their registration revoked.

Staff have developed two options for the weekly collection of medical circumstances garbage for the Committee's consideration:

1. Unlimited Weekly Collection of Medical Circumstances Waste
2. Limited Weekly Collection of Medical Circumstances Waste

Options

Option 1 – Unlimited Weekly Collection of Medical Circumstances Waste

The medical circumstances special support program application will be updated to include an optional enrollment for the collection of an unlimited number of medical

circumstances garbage bags on the week without regularly scheduled roadside garbage collection. Understandably, some participants will have more garbage while others will have less. Providing an unlimited collection mirrors the existing medical circumstances support program.

Collection for the week without regularly scheduled garbage collection will be provided to all enrolled participants on a single dedicated day of the week (e.g. every Monday). The waste collection contractor will record the number of bags collected at every address and remit the record to the City for payment. Where there are no bags out at an enrolled address, the contractor will be paid for the collection of one bag to compensate for their time.

To encourage waste diversion, participants will still be required to fully participate in all City waste diversion programs to keep their registration in good standing. Approved participants will be subject to periodic audits to ensure that the program is not being misused.

The estimated annual cost to collect unlimited bags from all registered participants on the weeks without regularly scheduled roadside garbage is approximately \$89,000 (based on 3 bags per registered participant). This estimated cost is directly related to registration in the program and the number of bags generated by each participant. Therefore, the cost will fluctuate (increase/decrease) based on program participation and the amount of garbage bags generated. If participation rates double and/or the number of garbage bags generated is higher than anticipated, the cost will increase. For this reason, the cost will be reviewed on an annual basis and the budget will be adjusted accordingly.

Option 2 – Limited Weekly Collection of Medical Circumstances Waste

The medical circumstances special support program application will be updated to include an optional enrollment for the collection of two (2) tagged medical circumstances garbage bags on the week without regularly scheduled roadside garbage collection.

Collection for the week without regularly scheduled garbage collection will be provided to all enrolled participants on a single dedicated day of the week (e.g. every Monday).

During the week with regularly scheduled garbage collection, the number of tagged medical garbage bags will remain unlimited and collection will occur on the regularly scheduled garbage and leaf & yard trimmings collection day.

To encourage waste diversion, participants will still be required to fully participate in all City waste diversion programs to keep their registration in good standing. Approved participants will be subject to periodic audits to ensure that the program is not being misused.

The estimated annual cost to collect two (2) bags from all registered participants on the weeks without regularly scheduled roadside garbage is approximately \$59,000. This estimated cost is directly related to registration in the program and will fluctuate (increase/decrease) accordingly. If participation rates double, the cost would also double. For this reason, the cost will be reviewed on an annual basis and the budget will be adjusted accordingly.

Conclusion/Next Steps

Waste diversion and sustainability is an important community value and forms part of the City of Greater Sudbury's Strategic Priorities. The transition to every other week garbage and leaf & yard trimmings collection supports these values and priorities by encouraging residents to fully participate in all available waste diversion programs and is expected to increase the low participation rates in the Green Cart organics program. It is also important not to lose sight of households with special medical circumstances who may require a temporary or permanent accommodation to meet the new garbage bag limits and overcome storage challenges while they contribute to our community and actively participate in diversion programs.

Staff have developed options for the weekly collection of garbage from registered participants of the medical circumstances support program as requested by the Operations Committee on March 2, 2020. Policies that support the City's goal of increasing waste diversion will form part of the program requirements.

Staff recommend that the Unlimited Weekly Collection of Medical Circumstances Bags be approved since it mirrors the existing program and will cause the least confusion for approved participants.

Resources Cited

City of Greater Sudbury, Operations Committee, Manager's Report, Waste Collection Services – Additional Support Programs – R-2, March 2, 2020

Accessed online:

<https://agendasonline.greatersudbury.ca/index.cfm?pg=agenda&action=navigator&id=1484&itemid=18133&lang=en>

Presented To:	Operations Committee
Presented:	Monday, Aug 10, 2020
Report Date	Tuesday, Jul 28, 2020
Type:	Managers' Reports

For Information Only

Enhanced Maintenance to Catch Basins

Resolution

For Information Only

Relationship to the Strategic Plan / Health Impact Assessment

These projects support the Strategic Plan through the Asset Management and Service Excellence objective. Through the efforts of several stormwater and subwatershed studies improving various aspects of stormwater maintenance has been identified to be critical to protecting people, property and the environment. These projects support the Strategic Plan through the Asset Management and Service Excellence objective. Through the efforts of several stormwater and subwatershed studies improving various aspects of stormwater maintenance has been identified to be critical to protecting people, property and the environment.

Report Summary

Councillor's McCausland and McIntosh presented Motion M-2 at the May 11, 2020 City Council Meeting requesting a report on enhance catch basin cleaning. The following report summarizes background on stormwater management, efforts to improve stormwater management in the community and recommendations to enhance catch basin cleaning in sensitive areas. The report summarizes; the Stormwater System, Stormwater Asset Management Plan, Subwatershed Studies, Relationship Between Winter Control and Stormwater Management, Stormwater Operations and Maintenance, Sustainable Stormwater Funding Study and Conclusions and Next Steps.

Financial Implications

There are no direct financial implications resulting from the information contained within this report.

Signed By

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Enhanced Maintenance to Catch Basins

Purpose

Provide an update on activities to improve the delivery of stormwater management in The Greater Sudbury and interim enhanced catch basin cleaning options.

Executive Summary

City stormwater services are critical to manage typical rainfall events, the risk of flooding and improve the quality of water reaching the environment for the community. These services are delivered through a significant portfolio of stormwater assets with a replacement value of \$520M of which 80% are buried linear assets, including pipes, maintenance holes and catch basins.

The City has been working on several projects to improve the delivery of stormwater services to the community. These include the Stormwater Asset Management Plan, Subwatershed Studies and Stormwater Master Plans and Sustainable Stormwater Funding Study. The Stormwater Asset Management Plan has proposed service levels that see increased operations and maintenance efforts, and capital reinvestment in assets at or beyond their lifecycle. A Managers Report will be prepared with recommended service levels and financial implications in the second quarter of 2021.

The Subwatershed Studies and Stormwater Master Plans recommend several major improvement projects that seek to improve flood resiliency, improve the quality of water reaching the environment or both. These recommended projects have a combined estimated value of \$100M but are only to be constructed as funding and opportunities exist, none are mandatory.

Winter control has significant influences on the operation and maintenance of the stormwater system, specifically the use of sand. Sand is used on 75% of City streets as a salt management initiative that protects the environment. One of the main challenges with winter sand is while less impactful to the environment it does require significant efforts to clean up with maintenance activities like, street sweeping and catch basin cleaning.

Catch basins primary purpose is to provide an outlet for precipitation events on urban streets. They are also designed to capture debris from the road to prevent it from entering pipes or the environment where it can affect natural habitat, transport contaminants or reduce capacity of natural systems to convey flow in significant events. If allowed to build up in the catch basin, storm system capacity is reduced leading to road flooding in advance of design capacities, and blockage of road subdrain systems. Subdrain blockages lead to the road bed not draining adequately and can shorten the lifespan of the road or lead to more frequent and/or intensive maintenance of the road.

Catch basin cleaning is funded at \$435K (2020 Budget) which is a 1 in 7 seven year cycle with some assets seeing maintenance more frequently in problem areas and some seeing less frequent cleaning. Given the significant use of sand as a winter control product the Stormwater Asset Management Plan recommends annual cleaning of all catch basins.

The City's current annual stormwater budget is approximately \$12.8 million per year. This is broken down into \$5 million for operations and maintenance, \$2.5 million for asset renewal, \$300,000 for Conservation Sudbury stormwater assets and \$5 million for stormwater improvements like flood resiliency and water quality improvements. The proposed levels of service from the Stormwater Asset Management Plan would see an increase in operations and maintenance, and asset renewal to a proposed annual budget of \$16.9 million. To address this funding gap a Sustainable Stormwater Funding study has been initiated to propose to Council options that provide a sustainable and reliable source of funding for stormwater.

Increasing the catch basin maintenance in the Ramsey Lake watershed to annual will require an additional \$144K per year. If all catch basins were cleaned annually a total of \$730K would be required. However, the first year of a program like this would likely require double the effort due to the amount of debris in the catch basin

Background

Councillor's McCausland and McIntosh presented Motion M-2 at the May 11, 2020 City Council Meeting requesting a report on enhance catch basin cleaning. The following report summarizes background on stormwater management, efforts to improve stormwater management in the community and recommendations to enhance catch basin cleaning in sensitive areas. The report summarizes; the Stormwater System, Stormwater Asset Management Plan, Subwatershed Studies, Relationship Between Winter Control and Stormwater Management, Stormwater Operations and Maintenance, Sustainable Stormwater Funding Study and Conclusions and Next Steps.

Analysis

Stormwater System

The City owns and operates a stormwater system that provides quality stormwater services to the community by managing typical rainfall events, improving water quality and reducing the risk of flooding while addressing the challenges of climate change, available budgets and resources. The City has a diverse and large portfolio of stormwater assets within the system to provide this service and is summarized in **Table 1**.

Table 1: City of Greater Sudbury Asset Inventory Summary

Stormwater Assets	Quantity	Unit
Stormwater Pipes	537	km
Ditches	1536	km
Municipal Drains	188	km
Maintenance Holes	8,600	EA
Catch Basins	8,744	EA
Discharges / Outlets	2,751	EA
Inlets	3,372	EA
Stormwater Management Ponds	15	EA
Oil Grit Separators (OGS)	24	EA

It is currently estimated that the replacement value of these assets is approximately \$520M with over 80% of that value being the pipe, maintenance holes and catch basins. Through community development there are many privately owned and operated stormwater management systems to protect the City stormwater system and the environment from increased flows and water quality.

When originally constructed these assets have an estimated useful lifecycle which is dependent on performing regular maintenance and working within expected service parameters. Meeting an established service level requires the system to be operated in accordance with a plan, and to ensure that sufficient resources are available for that plan. There is always a risk that service levels will not be met, or that resources required for sustaining service levels are different than what was planned.

Stormwater Asset Management Plan

Asset management planning is the process used to manage the risk that service levels and resource requirements fall outside expected levels. There is a balance that needs to be established between the community's desired level of service and its funding commitments for stormwater management, and this balance reflects the City's choice about how it wants to manage the risk that service levels or costs do not reflect expected levels. Asset Management Plans help define acceptable conditions for that asset to meet the performance targets and, when followed, reduce risk.

The City initiated a Stormwater Asset Management Plan (SAMP) with the primary objective to deliver a recommended level of service for the lowest total lifecycle cost, with risk exposure being reduced in the most cost effective manner possible. The SAMP will fulfill the requirements of *Asset Management Planning for Municipal Infrastructure Regulation, O. Reg. 588/17*.

The SAMP process involved detailed analysis and complex tasks to create a plan for the City of Greater Sudbury to provide effective stormwater management. This involved;

- Review and update of the City's stormwater asset inventory;
- Lifecycle analysis and replacement cost assessment;
- Evaluation of criticality of system assets;
- Defining existing levels of service, and comparison against industry best practice;
- Preparing a Capital Improvement Plan;
- Reviewing existing Operations and Maintenance Plans; and,
- Determining funding requirements and strategies for required funding.

Any changes to the level of service will require Council approval. Staff will assist in this process by presenting a recommended service level, accompanied with the financial implications. To assist with the deliberations, staff will provide information on best practices from across Canada. Asset management is an iterative process where desired service levels are weighed against cost. As the process progresses Council will be presented options for approval of the preferred level of service for the City.

The Target Levels of Service are divided into five goals;

- Protect the Environment;
- Ensure Adequate and Sustainable Funding;
- Adequate Capacity to Protect Life and Property;
- Provide a Safe and Productive Workplace; and,
- Have Satisfied and Informed Customers.

Each of these goals is further divided into sub-goals and performance measures. The Target Level of Service framework serves as the basis for all subsequent tasks in the SAMP by providing a defensible basis for capital planning, optimized operations and maintenance, risk management, and total funding requirements.

The lifecycle of City stormwater assets are approaching midlife as much urbanization, including the installation of stormsewers, took place in the 1960's and 1970's. Capital re-investment profiles were created based on the age of assets and risk. Current annual capital investments are close to what is required for the future, however in most capital reconstruction contracts stormwater is not the driving asset for project choices. Choosing the right reconstruction project for all buried and road assets is a complicated process that is refined annually for the capital budget process.

Critical to the lifecycle of any asset is the operation and maintenance of those assets. To meet the desired levels of service increased operations and maintenance is recommended. Table 2 demonstrates proposed changes to current operations and maintenance program.

Table 2: O & M Activities Supporting Desired Level of Service

Lifecycle Activity	New Activity for Desired LoS	Adjustments from Current LoS Required
Ditch Inspections	✓	-
Mechanical Ditching	-	✓
Screens and Inlet Inspections	-	✓
Street Sweeping	-	-
Culvert Inspections	-	✓
Culvert Maintenance	-	-
Culvert Resets	-	-
Culvert Cleaning	-	✓
Culvert Snow Removal	-	-
Storm Structure Cleaning	-	✓
O&S Maintenance (Inspect/Clean/Repair)	✓	-
Pond Maintenance (Inspect/Clean/Repair)	✓	-
Stormwater Compliance	-	✓
Storm Sewer CCTV	-	✓
Storm Sewer Flushing	-	✓
Storm Sewer Repairs	-	✓

As shown most operations and maintenance activities are recommended to be increased or new activities added. The recommended operations and maintenance program to meet the desired levels of service would result in an annual budget increase from approximately \$5M to \$7.7M. There are proposed scenarios where this increase would be phased in over a number of years as resources are developed to complete this increased service.

Subwatershed Studies

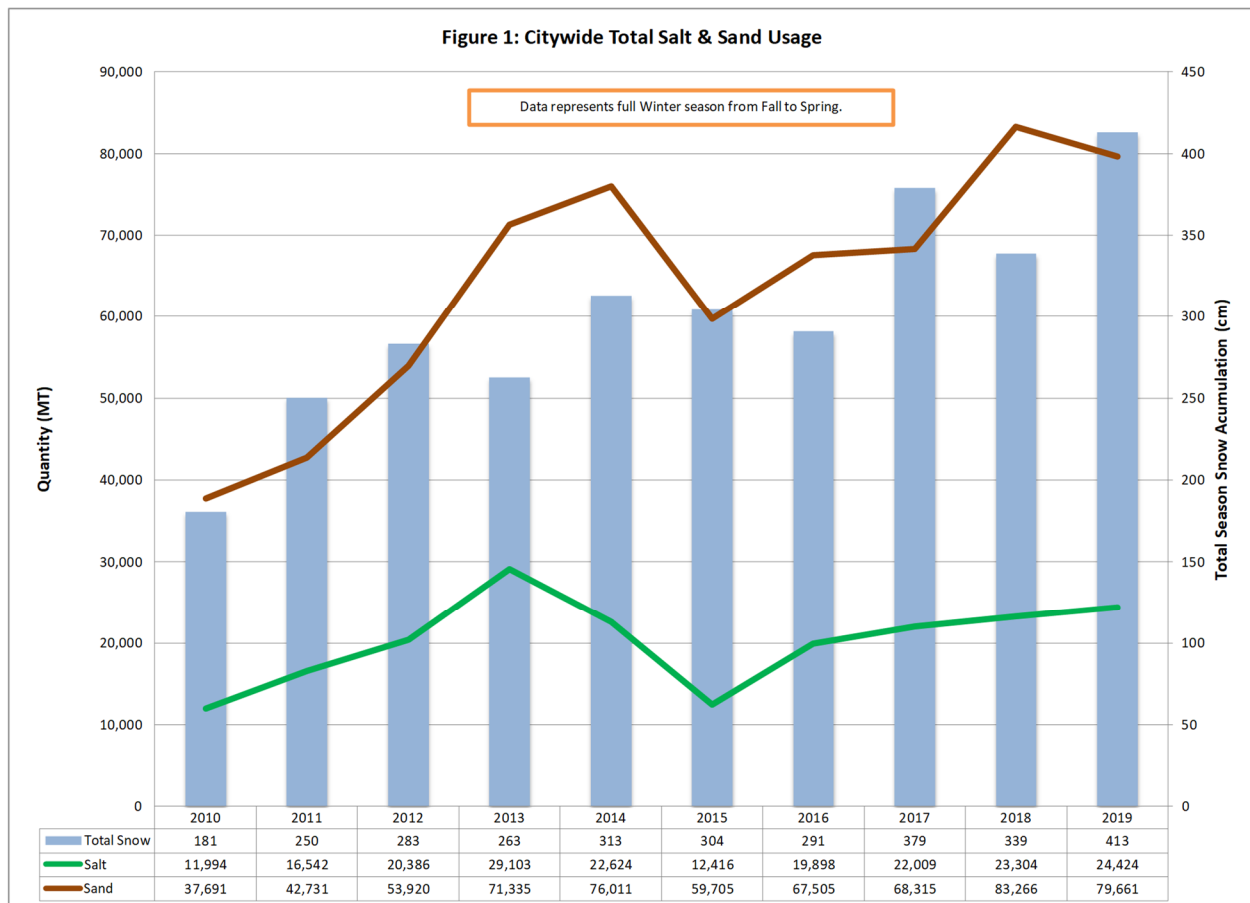
The City has been in the process of completing several Subwatershed Studies and Stormwater Master Plans throughout the community, notably the Ramsey Lake, Junction Creek, Whitewater Lake, Whitson River and Richard Lake subwatersheds. Each of these studies are at different points of completion, but there is enough information and recommendations to recognize that there are several major improvement projects recommended in each that seek to improve flood resiliency, improve the quality of water reaching the environment or both.

These major master plan projects can come with significant costs to construct and some recent grants have been secured to assist with them (Disaster Mitigation and Adaptation Fund). Across all of the above studies the recommended projects would be in excess of \$100M but are only to be constructed as funding and opportunities exist, none of them are mandatory.

These projects are primarily intended to improve existing conditions with City infrastructure not future development. Future develop is intended to manage their stormwater impacts within their development through the best guidance of the respective subwatershed study the development is within. However, opportunities to best serve stormwater management needs through partnership with the development community are encouraged.

Winter Control and Stormwater Management

Greater Sudbury has taken a very progressive approach to manage cost and environmental concerns through the winter control plan. In 2005 the City's first Salt Management Plan (SMP) was initiated which has been updated periodically since. The main goal of the SMP was to optimize the use of salt as a winter control agent and to adopt a continuous improvement method in its approach to winter control. In addition a Risk Management Plan for the Frobisher Facility and a Salt Optimization Plan were completed as part of Source Water Protection efforts, that further help the City maintain a safe road network while protecting the environment. Through these efforts the usage of salt as a winter control agent has been managed through a changing winter season where more freeze thaw cycles have been experienced in the winter and increased snow accumulation. Some salt usage has been replace with a greater usage of winter sand as a winter control agent, as depicted in Figure 1.



This is an important change for the stormwater system as the winter sand that is not collected through the intensive spring sweeping program ends up in stormwater assets. This is most impactful to catch basins and ditches where the accumulation of sand can inhibit these assets to function properly. Sand can migrate to pipes, where system capacity can be reduced, and ultimately the environment if no stormwater management facilities like ponds or Oil and Grit Separators (OGS) exist to remove it. Once in the environment it can have adverse affects on habitat for natural species, transport pollutants or inhibit the capacity of these natural systems to convey storm flows.

The dominant use of winter sand in the City is much different than the practices of many southern Ontario municipalities where nearly all of their roads are treated with salt, Greater Sudbury salts 25% of roads while the remaining 75% are sanded. While this has a positive effect on reducing the amount of salt that reaches the environment there are consequences for the stormwater system that can be managed through maintenance.

Stormwater System Operations and Maintenance

The City owns and operates several stormwater management facilities like ponds and small and large OGSs. The stormwater management facilities all have Environmental Compliance Approvals (ECA) through the Ministry of Environment, Conservation and Parks. These ECAs dictate varying levels of inspection, sampling, reporting and maintenance dependant on the facility. The City's stormwater management facilities are in compliance with these ECAs.

A catch basins primary purpose is to provide an outlet for precipitation events on urban streets, however they are also intended to capture and store winter sand and other road debris. If not cleaned out they could fill quickly and inhibit the designed capacity of the stormwater system. The debris in a catch basin if not cleaned out routinely will migrate into the stormwater pipe where it could potentially reduce system capacity and ultimately reach the environment.

As the debris builds up it can reach above the pipe outlets and block the flow of water. It can also built up and block the road subdrain outlets that keep the road subgrade free of water. This is very different than other municipalities in Ontario where sand is not a dominant winter control product. In Ontario several municipalities are testing products to manage the resuspension of solids in the bottom or sump of catch basins. They report that when inspected annually a catch basin sump never reaches above 50% capacity year after year. Winter sand is quite gritty and dense when compared to typical road debris a catch basin will capture and does not resuspend easily, meaning Greater Sudbury catch basins see very different conditions than that of many peers in Ontario. As such catch basin cleaning is a more vital function in Greater Sudbury than other regions.

When a catch basin fills beyond the pipe outlet and/or subdrain connection ponding on the road surface could occur in lesser precipitation events than designed meaning water ponds on the road more often than intended. Water ponding on the road can lead to user inconvenience, asphalt surface damages, seasonal ice accumulation and property damage. This can further lead to blockages of the road subdrain system that is intended to keep the engineered road base free of water. The road subgrade is a critical structural support of the road and designed to be free of water, if saturated with water the road subgrade is compromised leading to premature failure of the road surface.

Poor drainage as described above can have long term consequences to the service life of the road and increases, or shortens the interval between, more significant intervening maintenance activities, like crack sealing, and resurfacing.

An extensive literature review was completed by Staff in support of this report to determine how poor drainage can affect road service life or how many years poor drainage could remove from the expected service life of a road. Through this review it is apparent that a great deal of study on road drainage has been completed and the importance of good drainage for meeting performance and service life are recognized but no indication of decrease in service life or increase in road maintenance were found through the literature review. This may be due to significant additional factors for the service life of a road, like; traffic volumes, traffic types, ground conditions, water table, design, age and materials. All of these factors also contribute to the life span of a road and in Greater Sudbury a number of these factors could change several times on a single road, from swamp to rock cut to rock fill.

In addition Staff reached out to the National Water/Wastewater Benchmarking Initiative Stormwater Task Force through a survey to determine if any participating municipalities have compared road service life to drainage issues or stormwater maintenance activities. All respondents did recognize the relationship between stormwater maintenance/subgrade drainage and road service life. None of the respondents had done a financial analysis on the benefit of stormwater maintenance to road service life nor were they aware of such an analysis. The responding municipalities that use sand as part of their winter control program have annual catch basin cleaning programs at a minimum for arterial roads if not all roads.

Sustainable Stormwater Funding Study

Like many municipalities across Canada, the City is reviewing its current stormwater funding model, which is primarily supported by the general tax levy. The City wishes to investigate funding options that provide a sustainable and reliable source of funding as recommended in the City of Greater Sudbury 2015-2018 Corporate Strategic Plan.

In addition to exploring sustainable and reliable sources of funding, the Sustainable Stormwater Funding Study, along with the Stormwater Asset Management Plan, helps the City meet its regulatory requirements under *Ontario Regulation 588/17: Asset*

Management Planning for Municipal Infrastructure. This regulation states that “All Asset Management Plans must include information about the levels of service that the municipality proposes to provide, the activities required to meet those levels of service, and a strategy to fund activities.”

The Sustainable Stormwater Funding Study will propose options to Council to address the funding gap between current stormwater funding and the proposed levels of service in the second quarter of 2021. The proposed service levels include increases to the operations and maintenance program, capital reinvestment/asset renewal and support the stormwater management improvements recommended in the Subwatershed Studies and Stormwater Master Plans.

The City's current annual stormwater budget is approximately \$12.8 million per year. This is broken down into \$5 million for operations and maintenance, \$2.5 million for asset renewal, primarily large culvert replacement, \$300,000 for Conservation Sudbury stormwater assets and \$5 million for stormwater improvements like flood resiliency and water quality improvements. The proposed levels of service would see an increase in operations and maintenance, and asset renewal to a proposed annual budget of \$16.9 million.

Conclusions and Next Steps

The SAMP has demonstrated the need for new and increased/enhanced stormwater operations and maintenance activities to meet the desired service levels and best practices. This is most seen in the recommended increase in preventative maintenance of the linear stormwater assets, primarily catch basin cleaning, pipe cleaning and ditch cleanouts. Cleaning these assets will ensure they meet the design lifespan but predominantly the cleaning is necessary to ensure they function as designed.

The current service level for catch basin maintenance is a 1 in 7 year cycle. While the funding is 1 in 7 years in practice some catch basins see less maintenance and some see more maintenance. Catch basins along Paris Street, in areas of the Flour Mill and know problem catch basins are cleaned on an annual frequency while others are not cleaned within the 7 years. What has been seen is that the effort to clean a catch basin once every seven years is very high and time consuming compared to annual cleaning as they have been allowed to accumulate much debris that becomes very compacted in the catch basin. This can also lead to drainage issues for the road surface and subgrade.

2020 annual funding for catch basin cleaning is approximately \$435K. As requested increasing the catch basin cleaning in the Ramsey Lake watershed to annual would require an additional \$144K per year. If all catch basins were cleaned annually a total of \$730K would be required. The first year of an annual program would likely be more costly as the effort to clean the catch basins the first time is higher and the above numbers are based on a typical annual program. The first year would likely require double the effort, or \$288K for the Ramsey Lake watershed or \$1.46 M for all catch

basins. Once the first cleaning is done costs would be reduced in subsequent years to the above annual values.

As the Sustainable Stormwater Funding Study is completed and potentially implemented there is likely a number of years before a sustainable funding source for the recommended service levels is available. Providing funding for enhanced catch basin cleaning in the interim would help ensure that the stormwater system manages typical rainfall events, the risk of flooding and improve the quality of water reaching the environment for the community. If requested staff could prepare a business case for the 2021 budget process for enhanced catch basin cleaning.

Presented To:	Operations Committee
Presented:	Monday, Aug 10, 2020
Report Date	Friday, Jul 24, 2020
Type:	Managers' Reports

Request for Decision

Pothole Patching Equipment Report

Resolution

THAT the City of Greater Sudbury directs staff to prepare a business case for the purchase of pothole patching equipment for inclusion in the 2021 municipal budget process as recommended in the report, entitled “Pothole Patching Equipment”, from the General Manager of Growth & Infrastructure, presented at the Operations Committee meeting on August 10, 2020.

Relationship to the Strategic Plan / Health Impact Assessment

This report refers to operational matters.

Report Summary

This report describes and compares the various pavement maintenance categories and applicable techniques performed by Roads Maintenance as well as various pothole repair equipment currently available on the market and their uses.

Financial Implications

There are no direct financial implications resulting from the information contained within this report.

Signed By

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Pothole Patching Equipment

Background

The City of Greater Sudbury is committed to continuously reviewing and testing creative solutions for roads maintenance. This report highlights the various types of pothole repair equipment available today. It is well understood that the effective repair of potholes as part of a routine road maintenance program minimizes the interruption of movement of goods and services across the City.

Pavement Maintenance

There are many forms of pavement maintenance. A combination of techniques, applied at the right time, is required for a program to be effective. The categories listed below are typical to the City of Greater Sudbury's pavement maintenance program and consistent with industry best practices:

1. Preventive Maintenance – Treatments to prevent premature deterioration of the pavement or to slow the progression of the pavement defects. This is completed when the pavement is in very good or good condition. An example of this type of treatment would be crack sealing or crack repair.
2. Corrective Maintenance – Actions taken to repair defects that seriously affect serviceability. This can also be referred to as “reactive maintenance”. This is applied when the pavement structure is in good to fair condition.
3. Holding Maintenance – This includes maintenance actions designed to hold the pavement surface together until a more permanent or substantial rehabilitation takes place.

The repair of potholes is typically considered corrective maintenance or holding maintenance. These repairs are to address potentially hazardous conditions affecting the safety of the travelling public. These repairs are considered temporary or semi-permanent depending on the technique used.

Quality pothole patching is achieved through a combination of material selection and repair procedures. A pothole repair study is currently underway, as presented to Operations Committee June 15, 2020, to monitor the effectiveness of both new and current materials and placement techniques. This study would also include any new pothole repair equipment or technology as it becomes available.

Pothole Repair Techniques

1. Temporary Pothole Repairs

a) Throw and Roll

Most frequently used pothole repair technique. This approach is used regardless of the weather and is considered an efficient method of repair due to how quickly it can be completed. Because of this, it is the most commonly used repair method during pothole repair campaigns or where high productivity is required due to a high volume of potholes.

This repair process involves:

- Identifying the pothole area to be repaired
- Clearing debris, water and ice from the pothole by sweeping
- Shoveling cold mix, hot mix, warm mix, recycled mix asphalt into the pothole
- Tamping with a vibratory roller, hand tamper
- Moving on to the next pothole

2. Semi-Permanent Pothole Repairs

a) Detailed Patching

The second most frequently used repair technique. This approach is used in favourable, dry, weather conditions. This technique uses Hot Mix Asphalt that is available during the late spring, summer and fall months. Occasionally, this method is also utilized when potholes are particularly severe during the spring melt and increased freeze – thaw cycle periods. Warm Mix Asphalt is hauled in a heated truck box from Southern Ontario for these repairs. This type of repair takes more time to complete than the “throw and roll” technique but provides greater performance because of the repair technique.

The repair process involves:

- Identifying the pothole area to be repaired
- Remove all of the deleterious asphalt with a mechanical grinder
- Sweeping the hole removing any loose debris
- Applying a tack coat to the bottom and sides of the area to be patched
- Shoveling and raking hot mix, warm mix or recycled mix asphalt into the pothole
- Tamping with a vibratory plate tamper, double drum or mechanical (finishing) roller
- Moving on to the next pothole

Also in this category is the large asphalt patching program completed each year through contract services. This program uses techniques very similar to the approach described above. The difference being that the areas are generally larger, removing further deleterious materials and the hot mix asphalt is placed using a mechanical spreader rather than by hand providing increased compaction and smoothness. This technique can address a combination of preventive, corrective or holding maintenance. When used as corrective or holding maintenance, it can extend the service life of a pavement by approximately 3 to 5 years and when used as

preventive maintenance it can extend the service life of the pavement up to 7 to 11 years.

b) Spray Patching

This pothole patching technique has been used infrequently at the City. It involves spraying a heated asphalt emulsion/aggregate mix into a pothole with a spray injection device.

The repair process involves:

- Identifying the pothole area to be repaired
- Using a blast of air, clean all the loose debris and water out of the pothole.
- Applying a tack coat to the bottom and sides of the area to be patched with the spray nozzle
- Using the same nozzle, fill the pothole with a heated mixture of asphalt emulsion and aggregate.
- Once filled, applying a coat of heated aggregate to finish the repair
- Moving on to the next pothole

When performing pothole repairs, matching the material surrounding the repair aids in its longevity. Because of its material composition, as well as the method of placement, spray patching can also be used to effectively address potholes on surface treated roadways. The durability of this repair is dependent on the quality of the aggregate and the curing of the asphalt emulsion. Colder temperatures can affect the curing process and dry aggregate may be difficult to access during the winter months.

c) Infrared Patching

This pothole patching technique has been used infrequently at the City. It involves heating the surface surrounding the pothole to a sufficient temperature that allows the area to be reworked with hand tools and augmented with additional asphalt and/or an asphalt rejuvenator leveled and compacted.

The repair process involves:

- Sweeping of the pavement area clean and free of moisture.
- Marking the repair area.
- Placing the infrared panel over the repair area.
- Heating the pavement to approximately 190 degrees Celsius.
- Raking the repair area.
- Working new asphalt into the repair area, and adding a rejuvenator if required.
- Grading the repair area to match existing surrounding pavement and compacting with a vibratory plate tamper, double drum roller or mechanical (finishing) roller.
- Moving on to the next pothole

Infrared is generally a more costly repair. Colder air temperatures affect the equipment's ability to reach the temperatures required to heat and rework the asphalt therefore the time it takes to complete the repair can result in loss of productivity. Roads Maintenance currently has a small infrared device that is used to level off asphalt around structures and with small patches.

Equipment/Labour Requirements for the Various Pothole Patching Techniques

The equipment and labour requirements vary based on traffic volume and lane configuration. For the purpose of this exercise, a high traffic volume multi-lane roadway (posted speed 60 km/hr) was considered. Table 1 indicates the equipment and labour requirements

Table 1 – Equipment/Labour Requirements

Repair Technique	Crew Size	Utility Truck	Blocker Truck	Asphalt Grinder	Plate Tamper	Finishing Roller	Comments
Throw and Roll	3	yes	yes	no	yes	no	<ul style="list-style-type: none"> - If pothole patching equipment is used, the utility truck can be swapped out for the pothole patching truck. - If automated pothole patching equipment is used the number of crew members can be reduced by 1-2 people.
Detailed Patching	4	yes	yes	yes	no	yes	<ul style="list-style-type: none"> - Additional operator is required for the municipal tractor with grinder. - If pothole patching equipment is used, the utility truck can be swapped out for the pothole patching truck. - If automated pothole patching equipment is used the number of crew members can be reduced by 1-2 people.
Spray Patching	2	yes	yes	no	no	no	<ul style="list-style-type: none"> - Assumed the spray patching unit is mounted (roll off unit) on a truck with all applicable accessories. If the spray patching were a tow behind model, the truck would be a single axle dump to carry the aggregate.
Infrared Patching	3	yes	yes	no	no	yes	<ul style="list-style-type: none"> - Assumed the infrared unit is mounted on a truck with all applicable accessories. If the infrared heater were a tow behind model, the truck would be a single axle truck capable of holding a supply of hot mix asphalt, emulsion, compressed air and rejuvenator.

Pothole Patching Equipment

1. Asphalt Heaters/Recyclers (Hot Boxes)

A hot box is used to transport hot mix asphalt, warm mix asphalt or recycled asphalt to various locations year-round when needed to repair patches and potholes while maintaining a constant asphalt temperature of up to 150 degrees Celsius. Numerous manufacturers and configurations can provide customized hot boxes to meet operational needs. Hopper design can have a capacity of 2 to 8 tonnes depending upon the manufacturer and the agency requirements, and may be trailer-or truck-mounted, as shown in Figures 1 and 2 below.

Typically, agencies will have two-tonne or larger hot box trailer units subject to operational requirement towed by a truck to carry additional tools and supplies, and may also have a truck-mounted hot box to carry larger quantities of hot mix, tack tank and tools. In addition, self-contained all-in-one units can be outfitted to complete a range of pothole and patch repairs. Currently, the City of Greater Sudbury operates with five, two-tonne hot boxes that are towed by a truck.

When utilizing a two-tonne trailer mounted hot box, there can be significant crew downtime depending on the distance to the pothole repair area and where the crew refills the hot box with more asphalt. The benefit to the truck mounted hot box would be the ability to carry more material, reducing downtime.

The costs of truck and trailer mounted hot boxes vary significantly with user requirements. For example, a typical 4-tonne trailer mounted hot box will cost approximately \$50,000, while a well-equipped self-contained all-in-one unit will cost approximately \$250,000, including the truck.



Figure 1 – Truck-mounted Hot Box
(Transportation Association of Canada, Best Practices in Pothole Repair - 2019)



Figure 2 – Trailer-mounted Hot Box
(Transportation Association of Canada, Best Practices in Pothole Repair - 2019)

2. Spray Patchers

Spray patchers can be either trailer-mounted, requiring a separate truck to supply and load aggregate, as shown in Figure 3 or self-propelled with aggregate hopper, as shown in Figure 4.

The self-propelled spray patcher is a two-person operation, including traffic control requirements, as described in Table 1. Repairs are performed from the truck cab with minimal disruption and open to traffic immediately upon the completion of the repair. Self-propelled spray patchers vary in capacity and may carry eight tonnes of aggregate. They provide a relatively quick pothole and patch repair using a spray injection system. Rear-mounted boom systems are also available; these are operated and controlled from the ground.

Depending upon options required, a trailer-mounter spray patcher might cost approximately \$100,000 and a self-propelled all-in-one spray patcher approximately \$300,000.



Figure 3 – Trailer-mounted Spray Patcher
(Transportation Association of Canada, Best Practices in Pothole Repair - 2019)



Figure 4 – All-in-one Spray Patcher
(Transportation Association of Canada, Best Practices in Pothole Repair - 2019)

3. Infrared Patchers

Infrared equipment manufacturers offer different-sized equipment and configurations to fit different size and shaped repairs. Larger infrared road repair units, are mounted on a truck with space for a hot box, propane tanks, hand tools, compaction equipment and rejuvenator tank storage, as shown in Figure 5. Smaller infrared units, may be loaded and transported to a location by trailer.

Infrared road repairs are generally suitable for shallow surface distress patch repairs up to 50 to 75 mm in depth. An advantage of the infrared road repair method is that it recycles asphalt, compared to removing and replacing distressed pavement areas and replacing with new asphalt. Repairs can take over 20 minutes depending upon the size of the repair area. The result is a sealed surface preventing water penetration that may cause additional damage, providing a longer-lasting repair.

Depending upon the options required, trailer-mounter infrared units may cost in excess of \$50,000, and self-propelled all-in-one infrared units can cost in excess of \$300,000.



Figure 5 – Trailer-mounted infrared unit
(Transportation Association of Canada, Best Practices in Pothole Repair - 2019)

4. Automated Pothole Repair Unit

When compared to conventional hot box repair systems, this equipment does not require the operator to leave the cab to complete the repair. Given the configuration of the equipment, the operator has a good view of the repair area from the cab. This is a two-person operation, including traffic control requirements, as described in Table 1. This equipment can dispense either hot or cold mix asphalt that is maintained at the desired temperature and repairs potholes typical to the “throw and roll” technique. To complete detailed patching, a separate municipal tractor equipped with a grinder would be required.

Depending upon the options required, an automated self-propelled pothole patcher will cost approximately \$350,000 to \$400,000.



Figure 6 – Automated self-propelled pothole patcher
(Transportation Association of Canada, Best Practices in Pothole Repair - 2019)

Analysis of Pothole Repair Equipment

Table 2 – Pothole Repair Equipment Comparison

Repair Equipment Type	Temporary Repair	Semi-Permanent Repair	Applicable in Wet Conditions	Applicable in Dry Conditions	Pavement Surface	Surface Treatment Surface	Crew Size
Asphalt Heater/Recyclers (Hot Boxes)	Yes	Yes	Yes	Yes	Yes	Yes	3 or 4
Truck Mounted/All-in-one Spray Injector	Yes	Yes	No	Yes	Yes	Yes	1 or 2
Truck Mounted Infrared Patcher	No	Yes	No	Yes	Yes	No	3 or 4
Automated Pothole Repair Unit	Yes	No	Yes	Yes	Yes	Yes	1 or 2

Note: The Asphalt Heaters/Recyclers (Hot Boxes) can be used for both “throw and roll” and detailed patching. Refer to Table 1.

Conclusion and Next Steps

When carrying out a pavement maintenance program, it is important to utilize the right techniques at the appropriate time to maintain the serviceability of a road network. All of the techniques and equipment described in this report are viable options to consider when repairing potholes. When evaluating the decision to purchase pothole repair equipment, it is important to evaluate the benefit the equipment provides compared to the cost to purchase and maintain it.

It is therefore recommended to prepare a business case that includes a net present value analysis of each pothole repair equipment described above. This analysis would evaluate the initial equipment investment and ongoing maintenance expenses compared to the benefits realized through labour savings and efficiency of performed repairs.

References

1. David Hein, P.Eng. Romualdo D'Ippolito, P.Eng. Chris Olidis, P.Eng., Transportation Association of Canada (TAC), August 2019, Best Practices for Pothole Repairs in Canada,
2. APWA (American Public Works Association), 1993. The Hole Story: Facts and Fallacies of Potholes, Chicago, IL. American Public Works Association
3. Jay Dailey, Manik Barman, and Robert D. Kostick, Department of Civil Engineering, University of Minnesota Duluth, Eshan V. Dave , Department of Civil and Environmental Engineering University of New Hampshire, June 2017, Minnesota Department of Transportation Research Services & Library, Comprehensive Field Evaluation of Asphalt Patching Methods and Development of Simple Decision Trees and a Best Practices Manual, Research Project, Final Report 2017-25
4. Ministry of Transportation, Materials Engineering and Research Office, Pavement Design Manual, Second Edition, 2013

Presented To:	Operations Committee
Presented:	Monday, Aug 10, 2020
Report Date	Tuesday, Jul 28, 2020
Type:	Managers' Reports

Request for Decision

Active Transportation Winter Maintenance Plan

Resolution

THAT the City of Greater Sudbury approves the winter maintenance plan for the Active Transportation Network as outlined in the report entitled "Annual Active Transportation Winter Maintenance Plan", from the General Manager of Growth & Infrastructure, presented at the Operations Committee meeting of August 10, 2020.

Relationship to the Strategic Plan / Health Impact Assessment

This report refers to operational matters.

Report Summary

This report identifies the plan for winter maintenance services for the active transportation network (sidewalks, bicycle paths and off-road recreational trails) including minor changes to the sidewalk winter maintenance plan, for the upcoming winter season (October 31, 2020 to April 30, 2021). If the plan is approved, staff will finalize a Bylaw closing all of the active transportation network that will not be maintained (snow plowed/sanded) during the winter season. There are no budgetary impacts identified in this report.

Financial Implications

There are no financial implications associated with this report.

Signed By

Report Prepared By

Randy Halverson
Director of Linear Infrastructure
Services
Digitally Signed Jul 28, 20

Division Review

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Director of Linear Infrastructure
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Digitally Signed Jul 28, 20

Financial Implications

Steve Facey
Manager of Financial Planning &
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Digitally Signed Jul 28, 20

Recommended by the Department

Tony Cecutti
General Manager of Growth and
Infrastructure
Digitally Signed Jul 28, 20

Recommended by the C.A.O.

Ed Archer
Chief Administrative Officer
Digitally Signed Jul 28, 20

Active Transportation Maintenance Plan

Background:

As of May 3, 2018, substantive changes to the Minimum Maintenance Standards for Municipal Highways, O. Reg. 239/02 came into force and effect. The most notable changes impacting the maintenance of active transportation facilities are:

1. The introduction of winter maintenance standards, including patrol obligations, for sidewalks;
2. The introduction of winter maintenance standards for bicycle lanes;
3. The ability for municipalities to declare a "significant weather event" with implications for winter maintenance on roadways, bicycle lanes and sidewalks during the duration of the event

On August 12, 2019, by resolution (OP2019-14) the Operations Committee passed the "Active Transportation Winter Maintenance Policy" which was subsequently ratified by Council on August 13, 2019. The report recommended the following:

1. Designated cycling facilities be closed by Bylaw seasonally during the winter months;
2. Any changes to the existing sidewalk winter maintenance routes be consistent with the criteria established in Table 2 of the Active Transportation Winter Maintenance Policy;
3. Winter maintenance sidewalk and off-road trails be annually approved, through Operations Committee, subject to the annual budget process. The complete report to Operations Committee can be viewed at the following link:
<http://agendasonline.greatersudbury.ca/index.cfm?pg=agenda&action=navigator&lang=en&id=1344&itemid=17288>

Recommendation:

This report seeks to fulfill the requirements of the Active Transportation Policy by returning to Operations Committee to approve minor changes to the winter maintained portion of the Active Transportation Network for the upcoming winter season (October 31st, 2020 to April 30th, 2021). Table 1 summarizes the said changes. It also lists the off-road trails that are officially being included as part of the winter maintained portion of the Active Transportation Network.

Table 1 – Active Transportation Winter Maintenance Changes for the 2020 / 2021 Winter Season

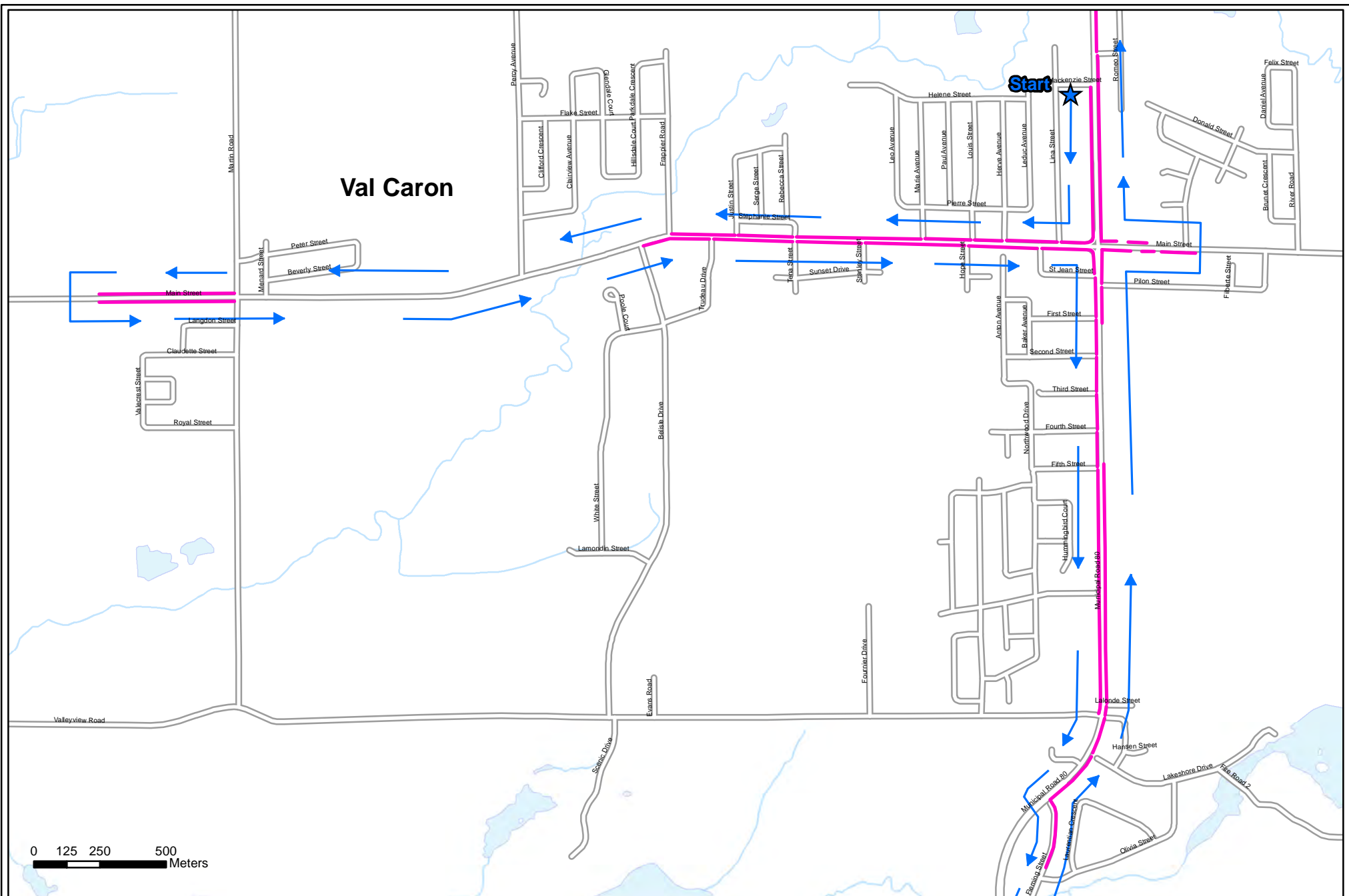
Sidewalks			
Additions to Winter Maintenance in 2020 / 2021	Location of Route	Bus Stops on Route	Reason for Change
1. Léger Crescent, from Jeanne D'Arc Street (north) to Jeanne D'Arc Street (south)	Val Therese	None	Meets Criteria #7 of the Active Transportation Winter Maintenance Approach. Forms a connected route.
2. O'Donaghue Drive (south side), from Margaret Street North to Orell Street	Garson	None	Meets Criteria #1 of the Active Transportation Winter Maintenance Approach. Maintain both sides of a connected sidewalk on a collector road.
3. MR 80 (south side), from Glenn Street to Notre Dame Avenue (new construction)	Hanmer	Yes	Meets Criteria #1 of the Active Transportation Winter Maintenance Approach. Maintain both sides of a connected sidewalk on an arterial road.
4. Auger Street (west side), from Hawthorne Drive to Falconbridge Hwy (new construction)	Sudbury	Yes, (to Hawthorne only)	Meets Criteria #1 of the Active Transportation Winter Maintenance Approach. Maintain both sides of a connected sidewalk on a collector road.
5. Notre Dame Avenue (east side), from Louis Street to Leslie Street (new construction)	Sudbury	Yes	Meets Criteria #1 of the Active Transportation Winter Maintenance Approach. Maintain both sides of a connected sidewalk on an arterial road.
6. Beatty Street (east side), from Poplar Street to Kathleen Street (new construction)	Sudbury	Yes, (partial from McNeill Blvd to Kathleen Street)	Meets Criteria #1 of the Active Transportation Winter Maintenance Approach. Maintain both sides of a connected sidewalk on a collector road.
Sidewalks			
Deletions to Winter Maintenance in 2020 / 2021	Location of Route	Bus Stops on Route	Reason for Change
No deletions for the Winter Maintenance season 2020 / 2021.			
Cycling Facilities			
All 21 Km's of the designated cycling facilities will not be maintained from October 31 st to April 30 th			
Off-road Trails			
Continue Winter Maintenance in 2020 / 2021	Location	Comments	
1. Jim Gordon Boardwalk by Ramsey Lake	Sudbury	No change from past years	
2. Ramsey Lake Road trail	Sudbury	No change from past years	
3. Delki Dozzi path, off Glover Avenue	Sudbury	No change from past years	

Schedule 1 provides a complete list of sidewalks that will be maintained during the upcoming winter season (October 31st, 2020 to April 30th, 2021).

Next Steps:

If approved, staff will conduct the following:

1. Finalize a bylaw that will temporarily close all unmaintained portions of the Active Transportation network during the winter months (October 31st, 2020 to April 30th, 2021).
2. To ensure the public is made aware of any approved changes to the winter maintenance of active transportation facilities, staff will work with Communications and Community Engagement staff to ensure all relevant information, including lists of closed sidewalks and cycling facilities, will be posted to the City's website, be communicated by Public Service Announcement each year as well as sending letters to the impacted residents (abutting the infrastructure) who will be impacted by the changes to the active transportation winter maintenance plan.



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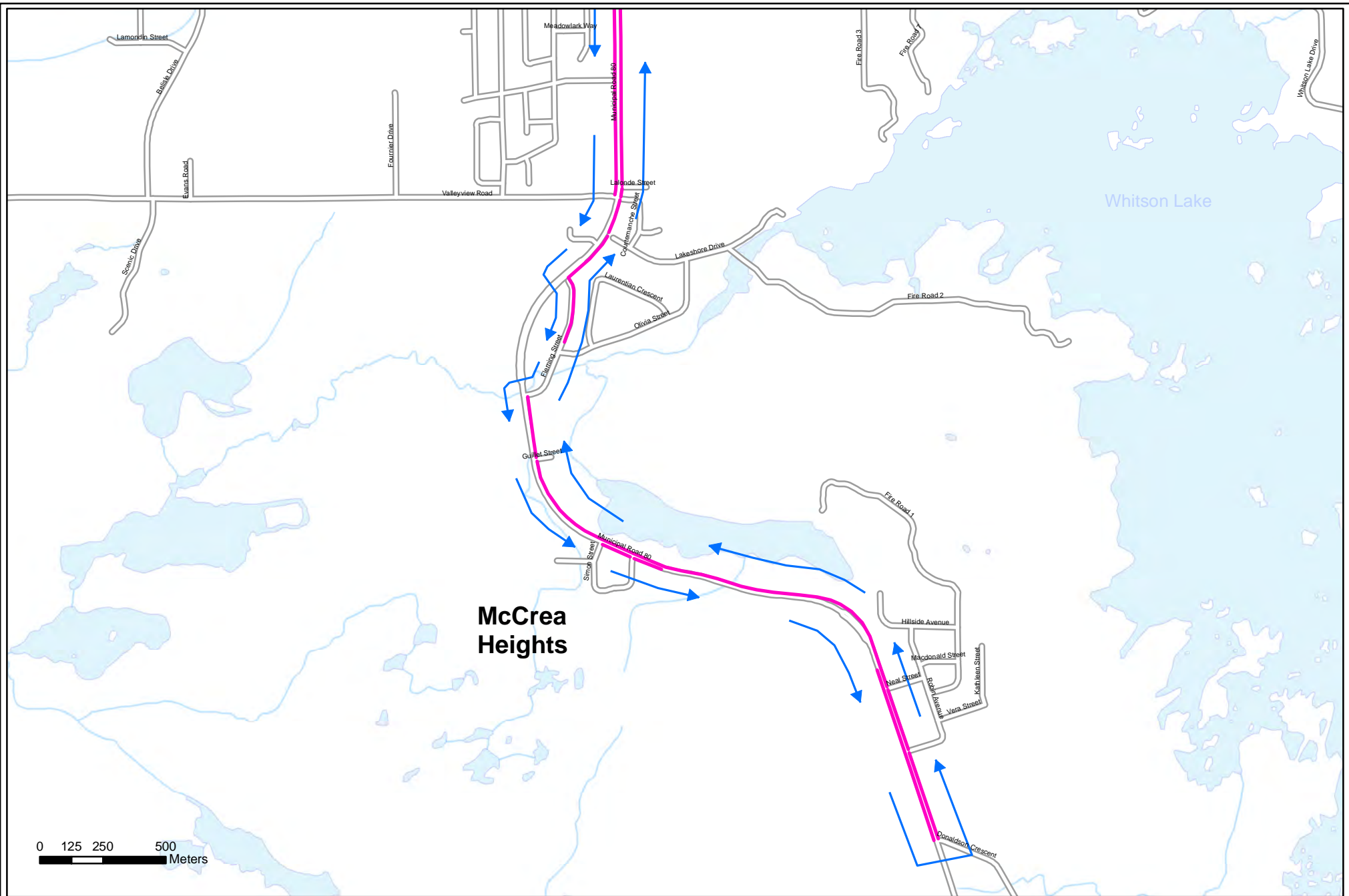
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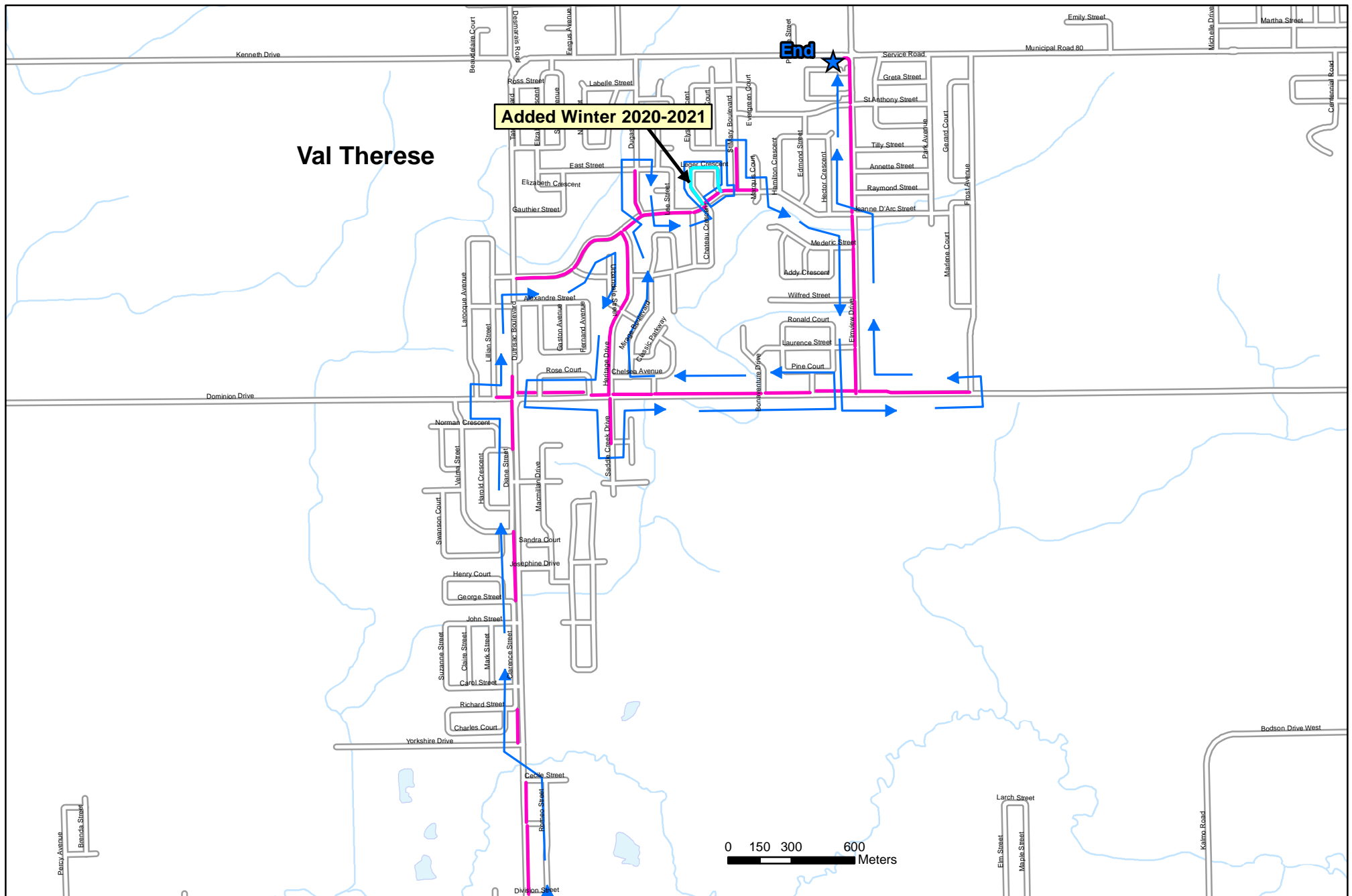
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48 of 80

Vehicle: S-235-15



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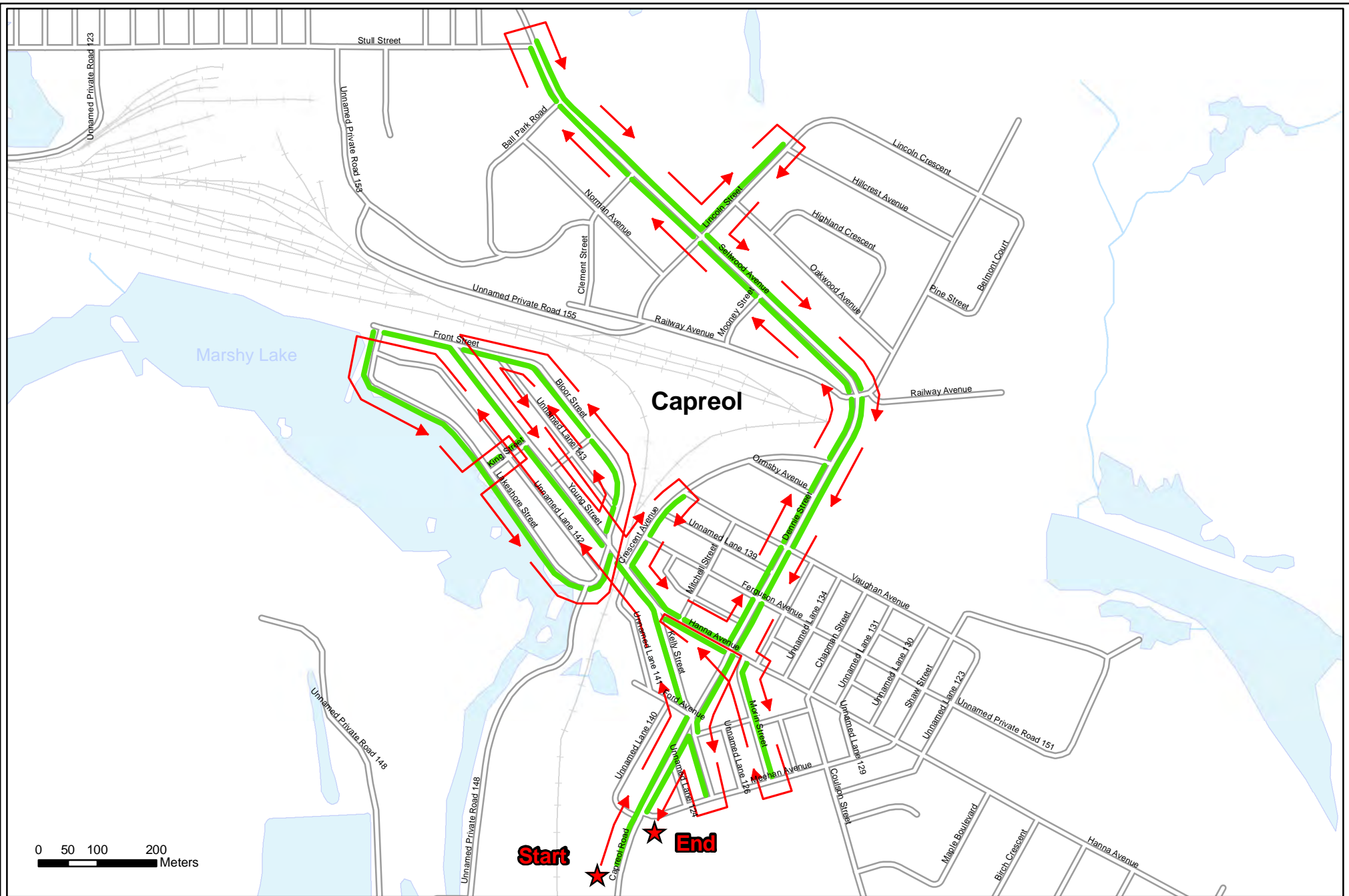
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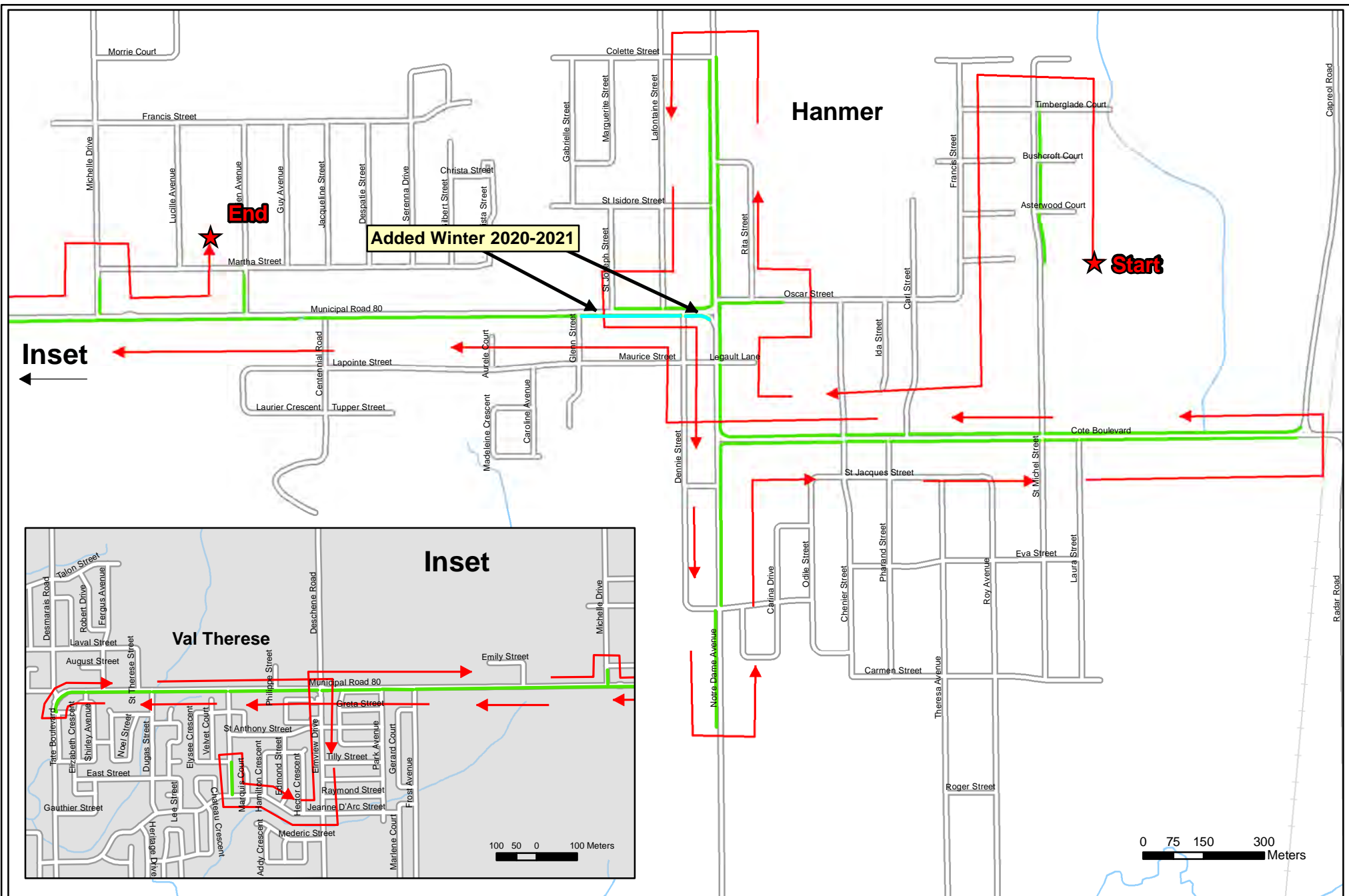
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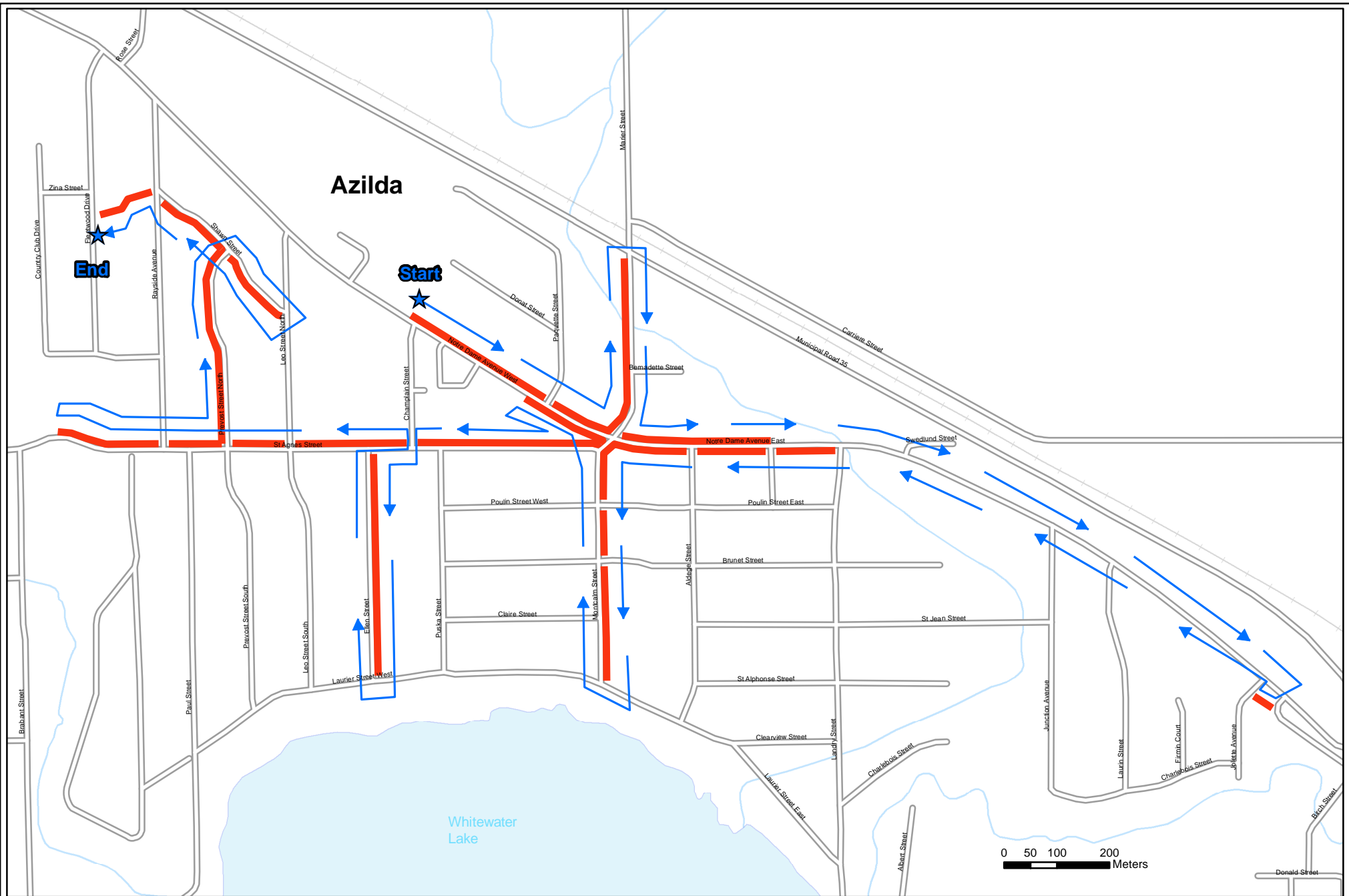
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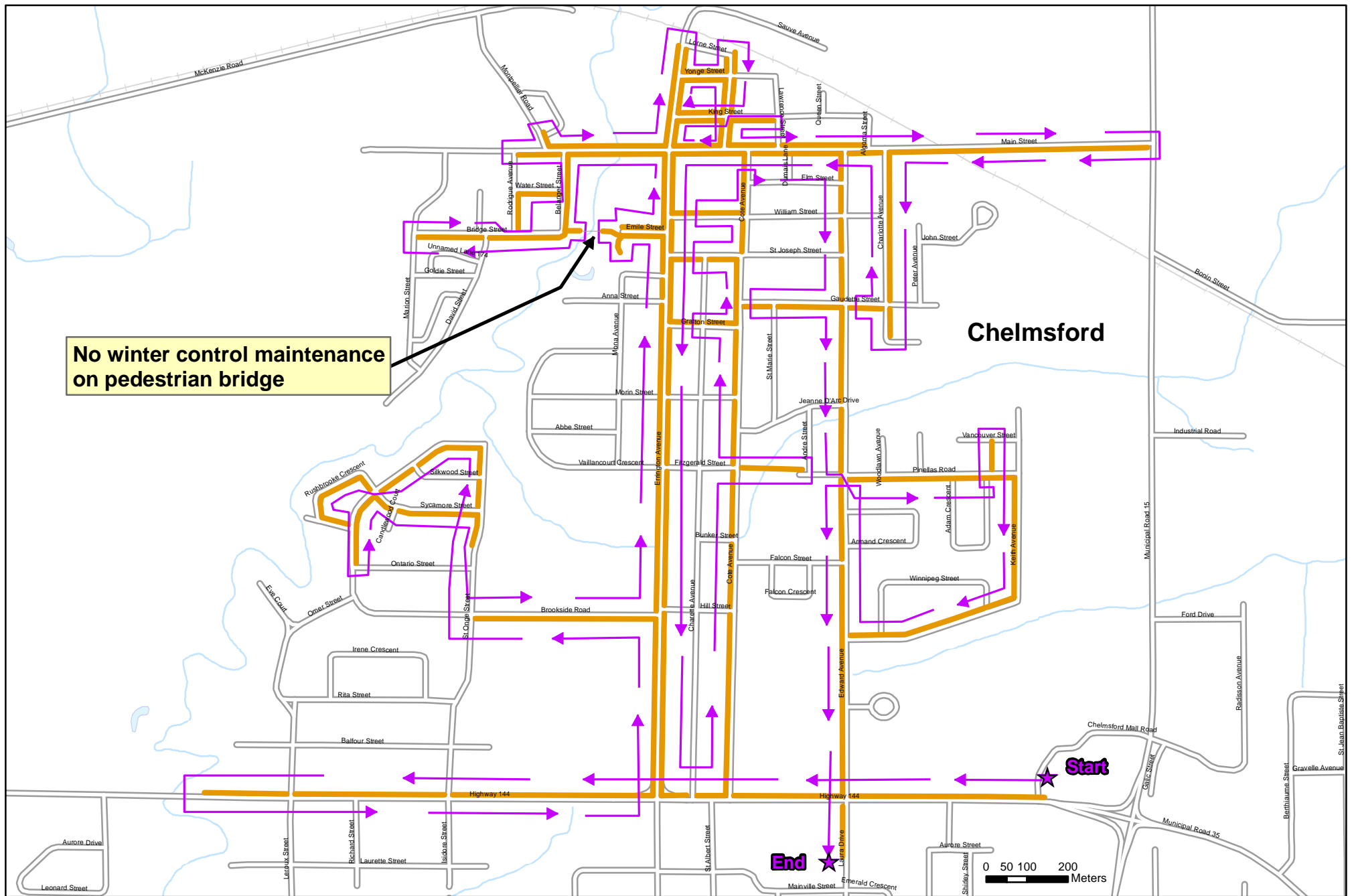
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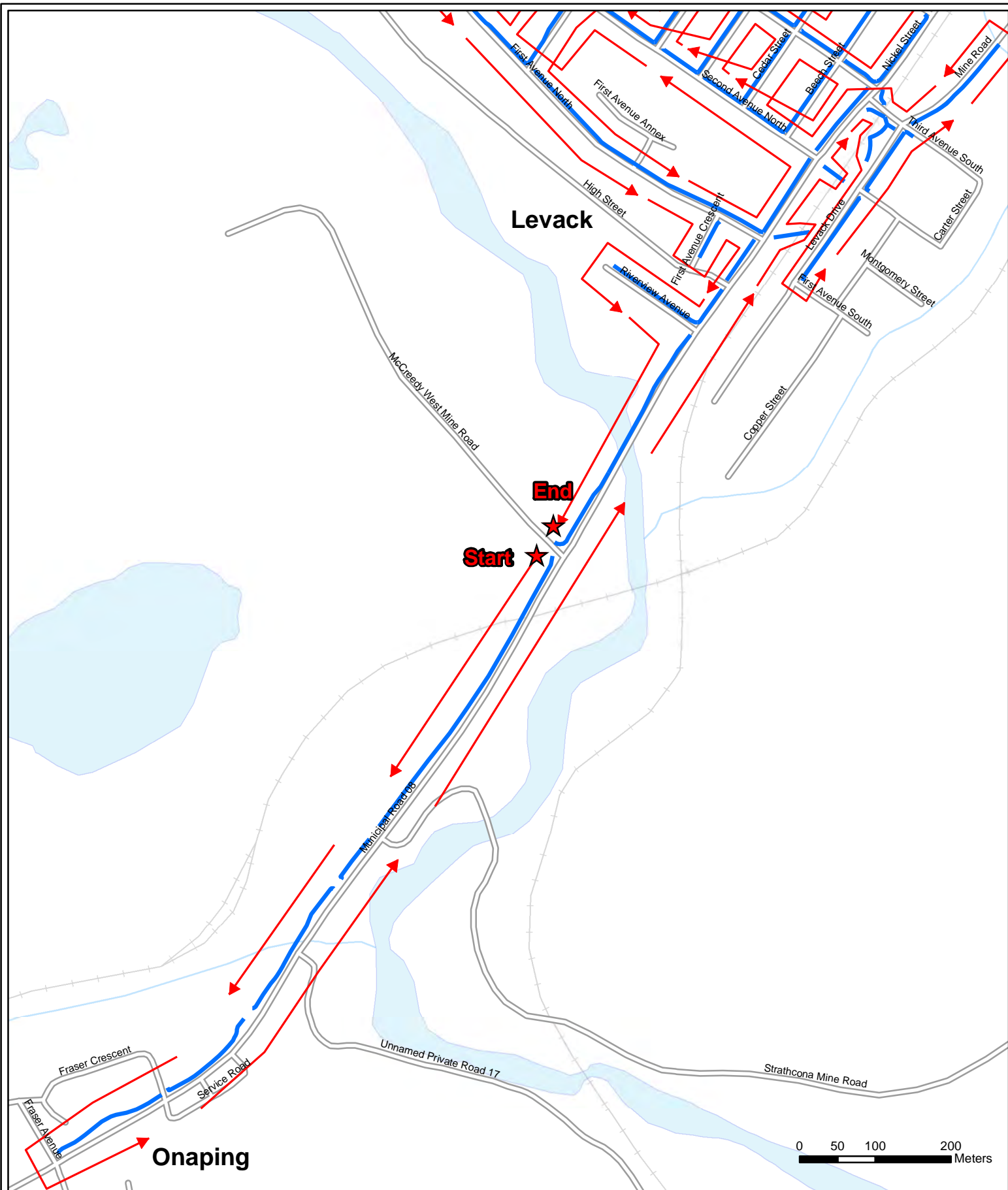
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NORTHWEST SECTION 2020-2021

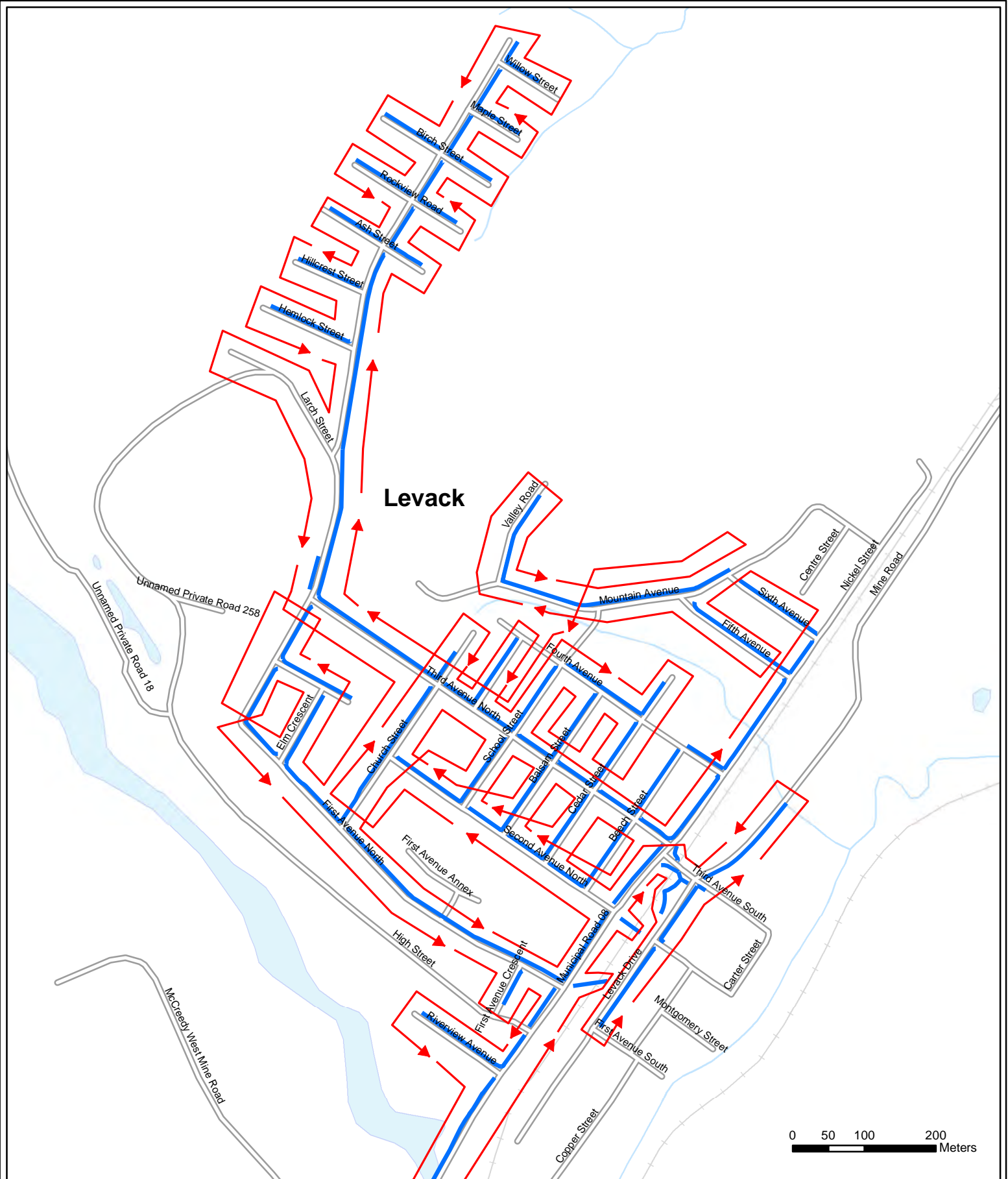
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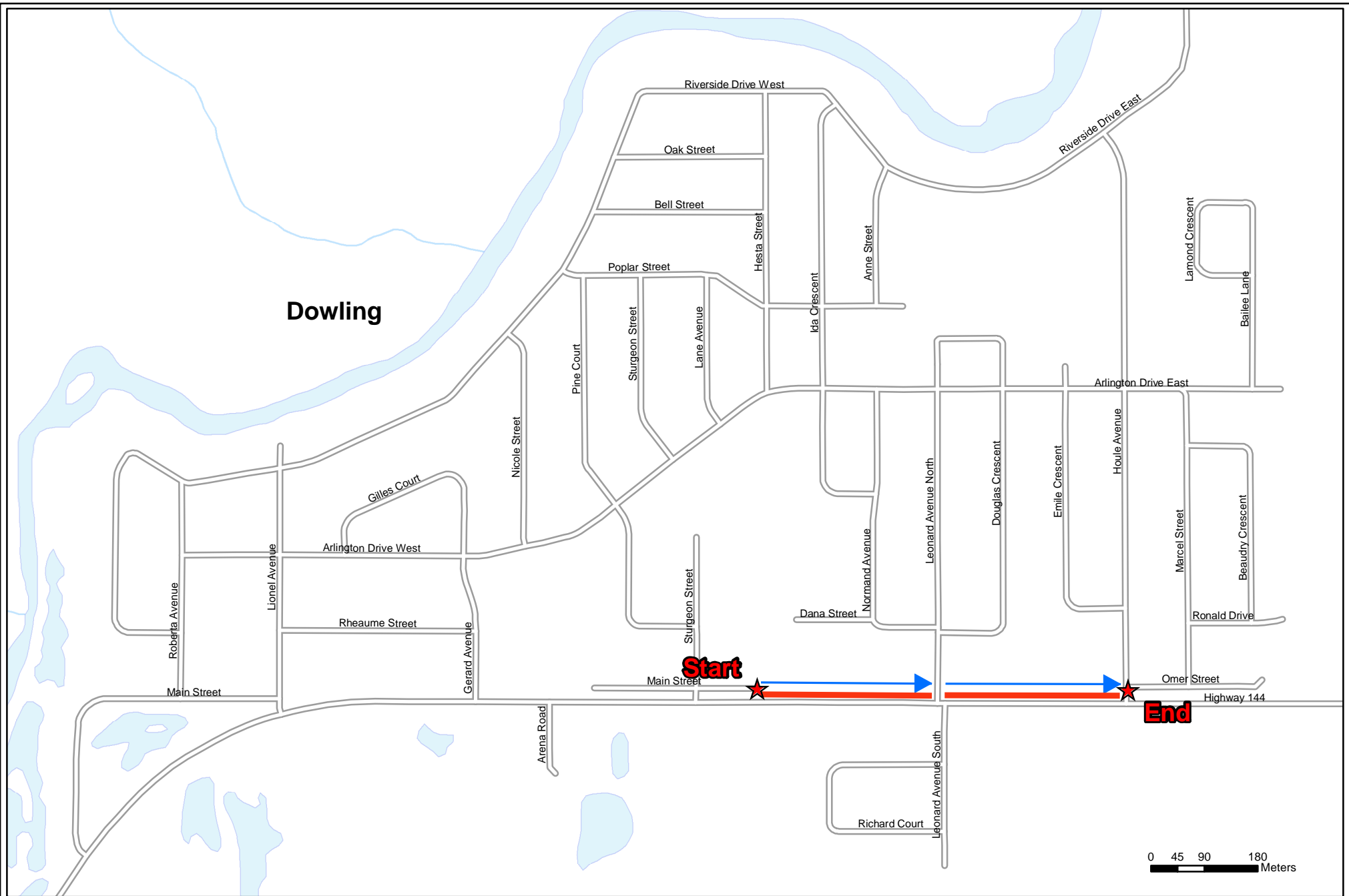
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NORTHWEST SECTION 2020-2021

SIDEWALK 3



NORTHWEST SECTION 2020-2021

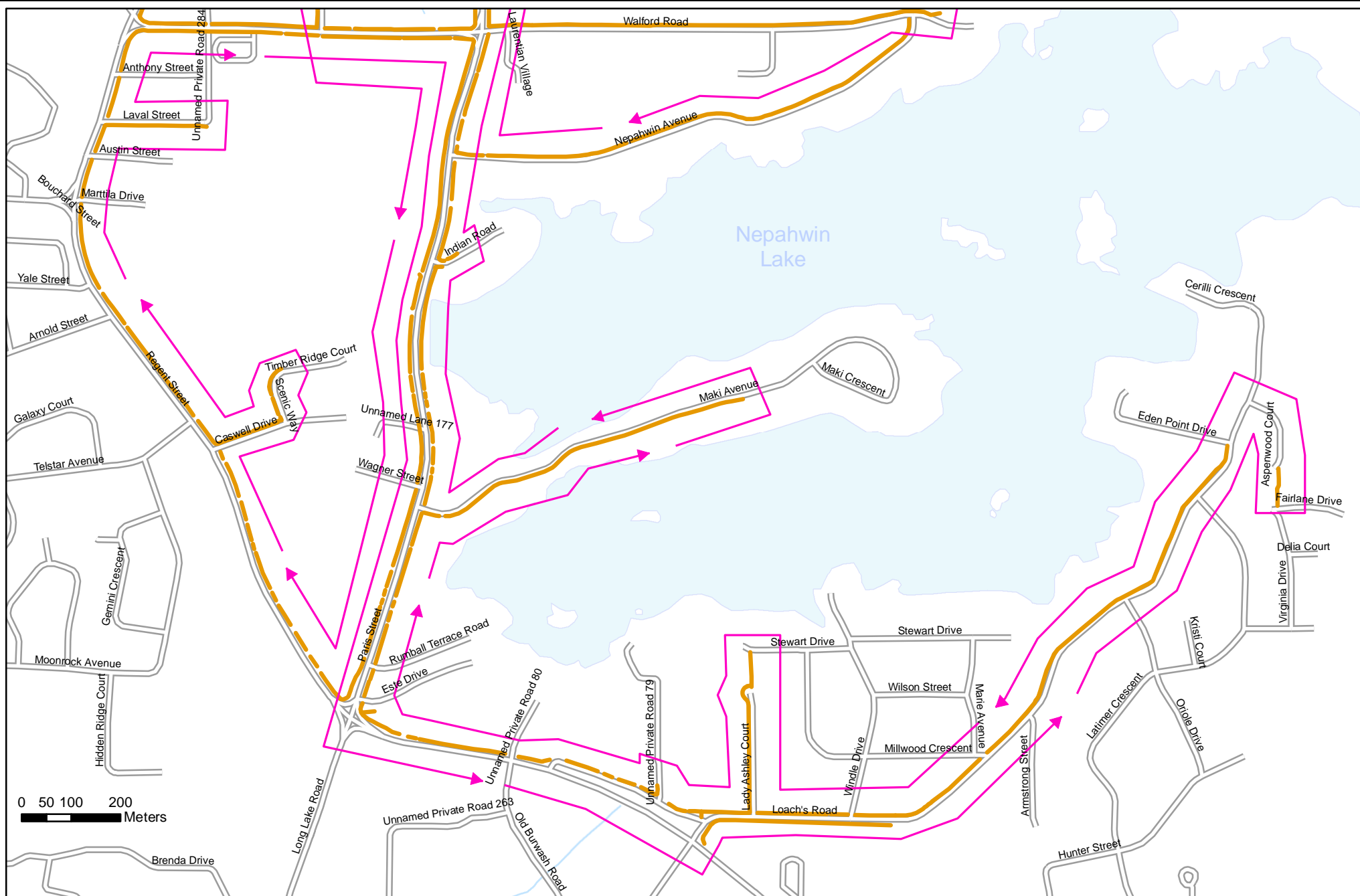
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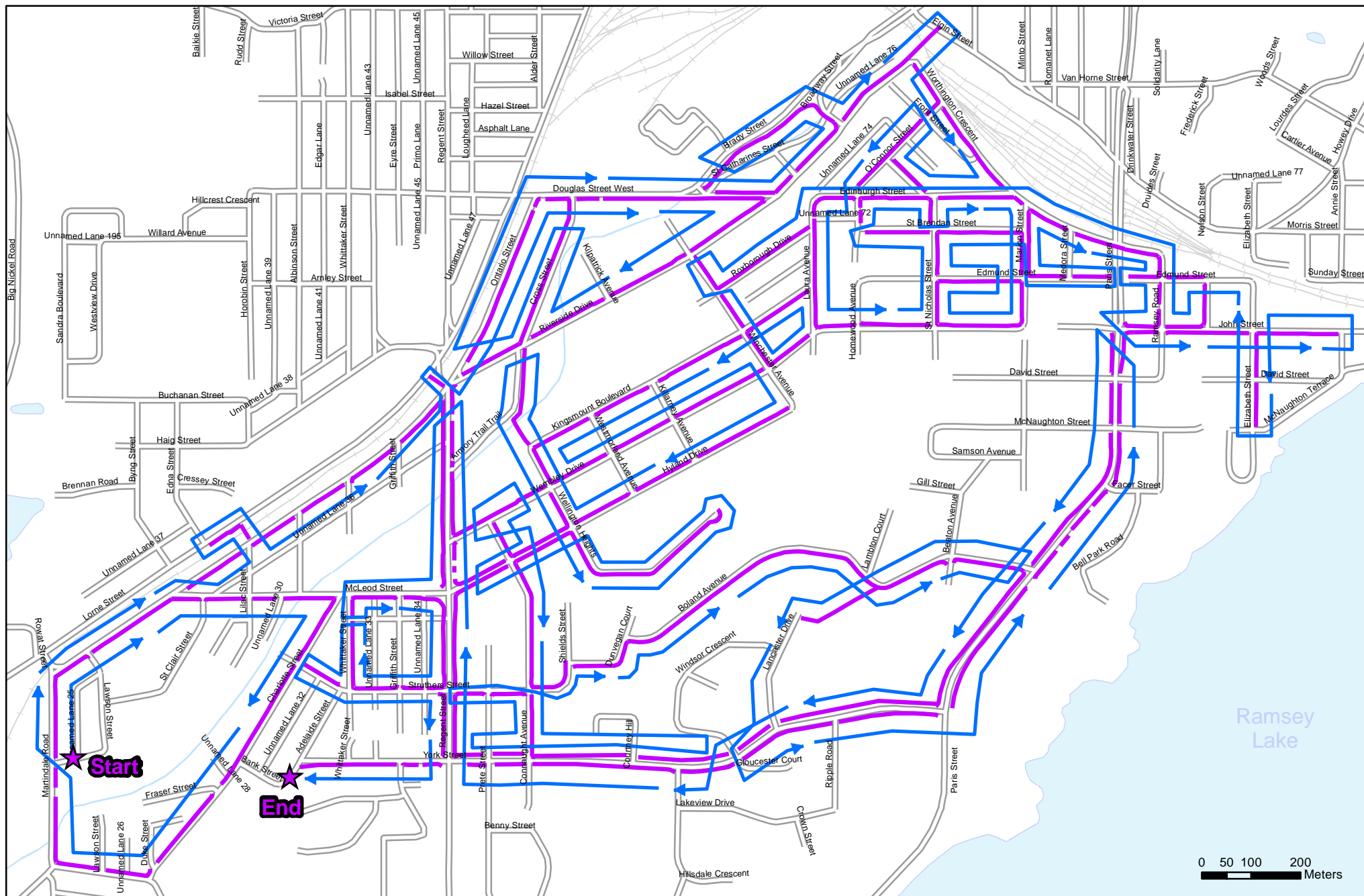


SOUTH SECTION 2020-2021

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SOUTH SECTION 2020-2021

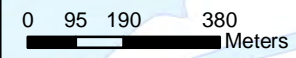
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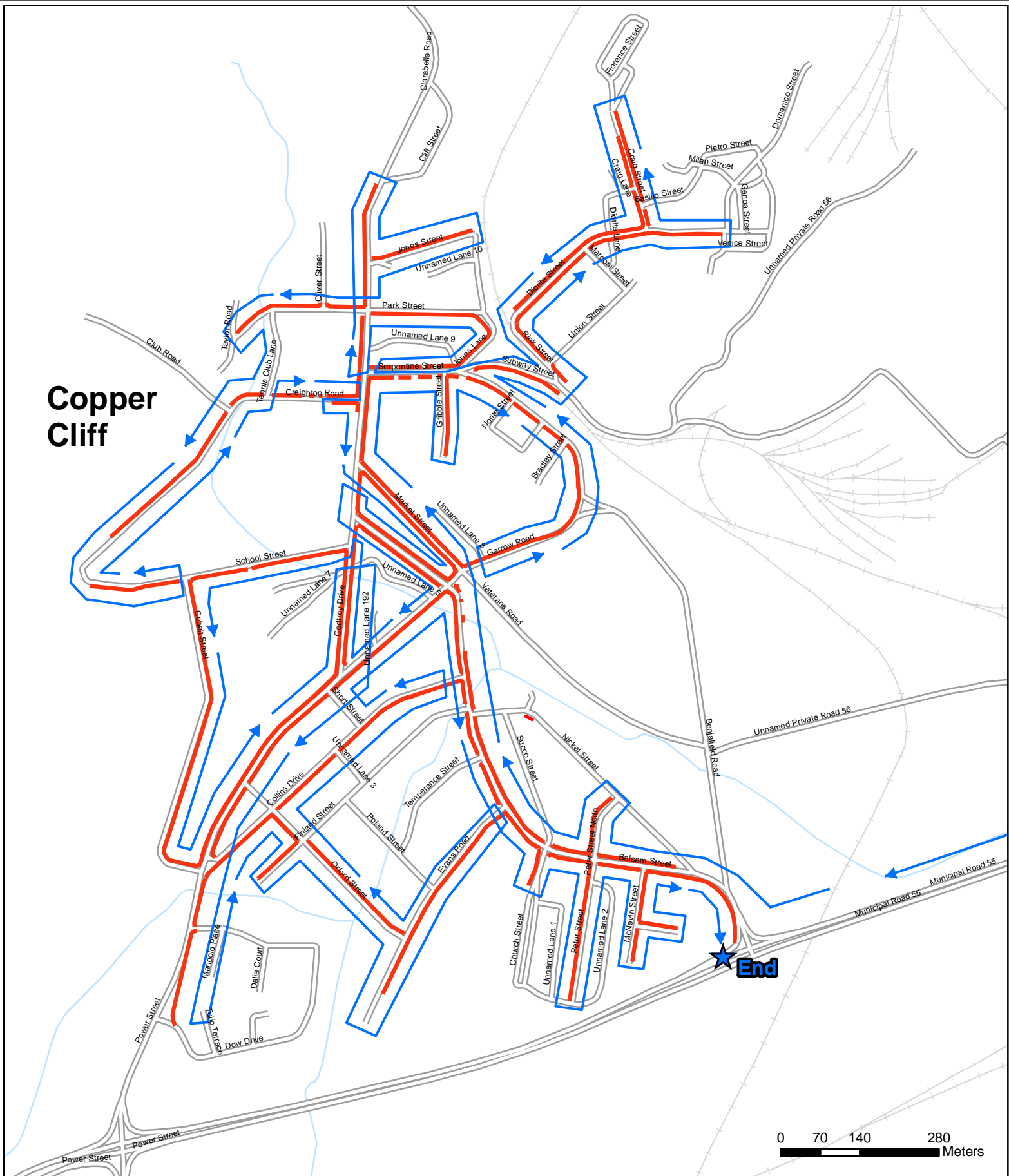
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SIDEWALK 3

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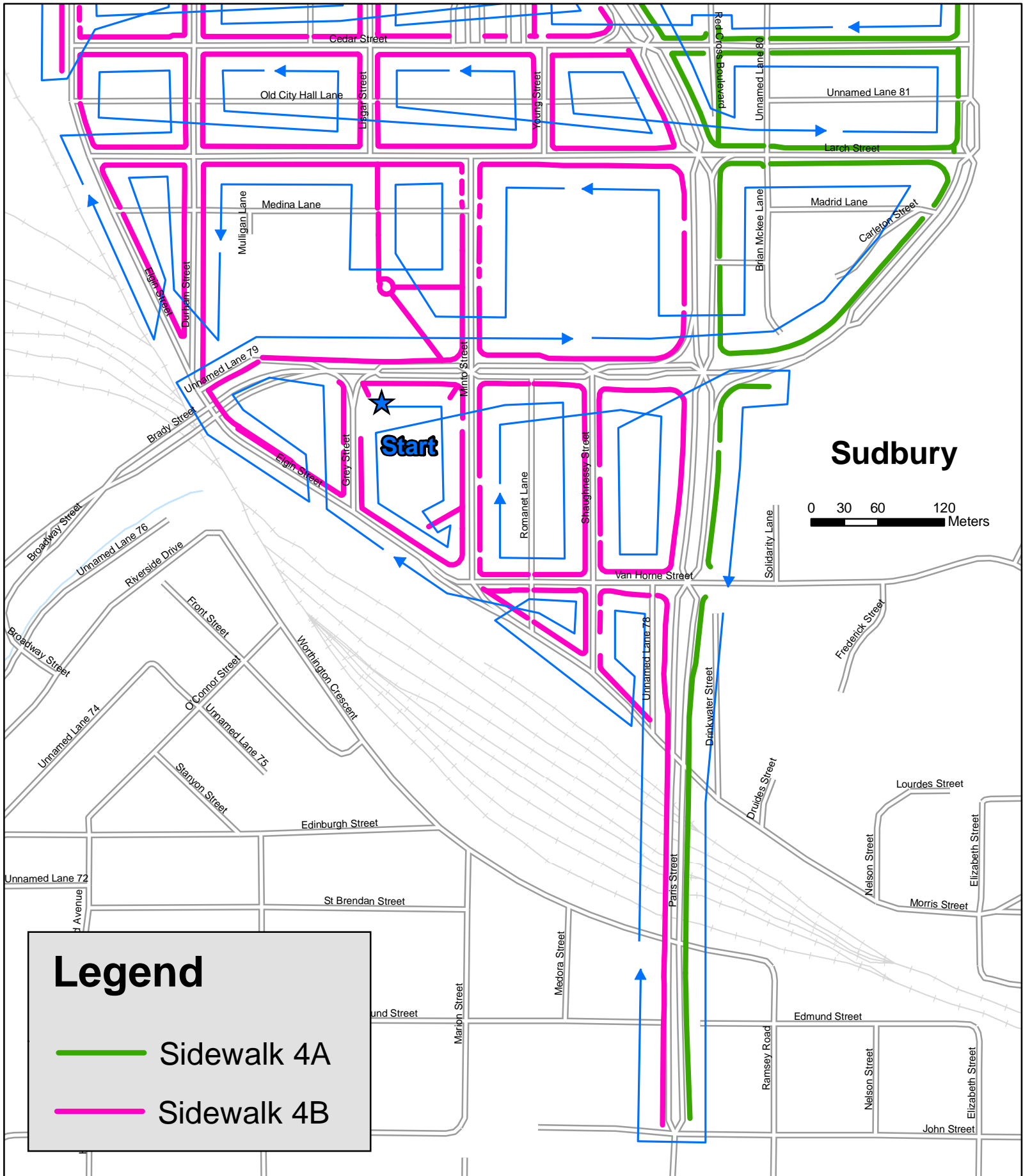
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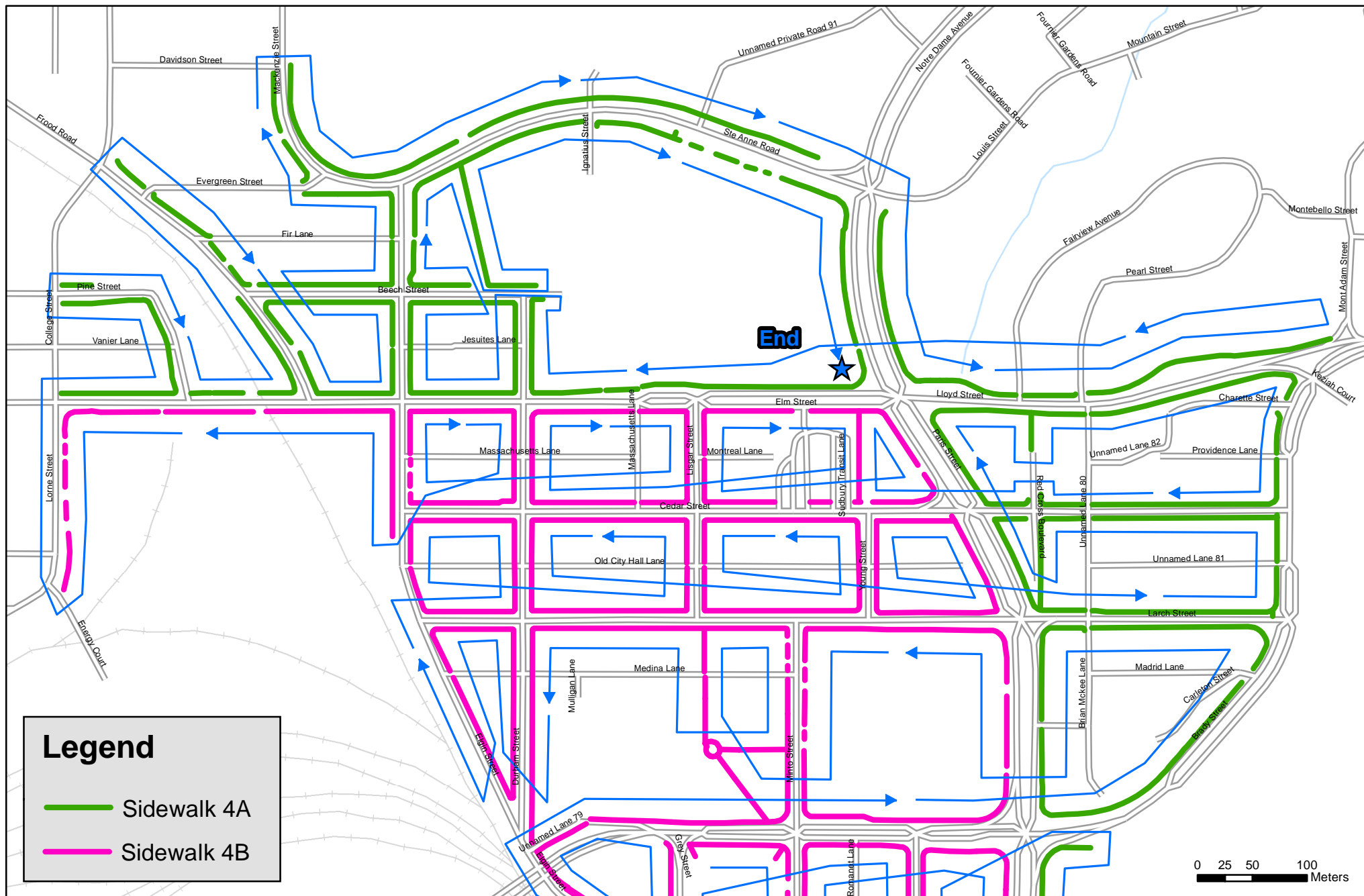
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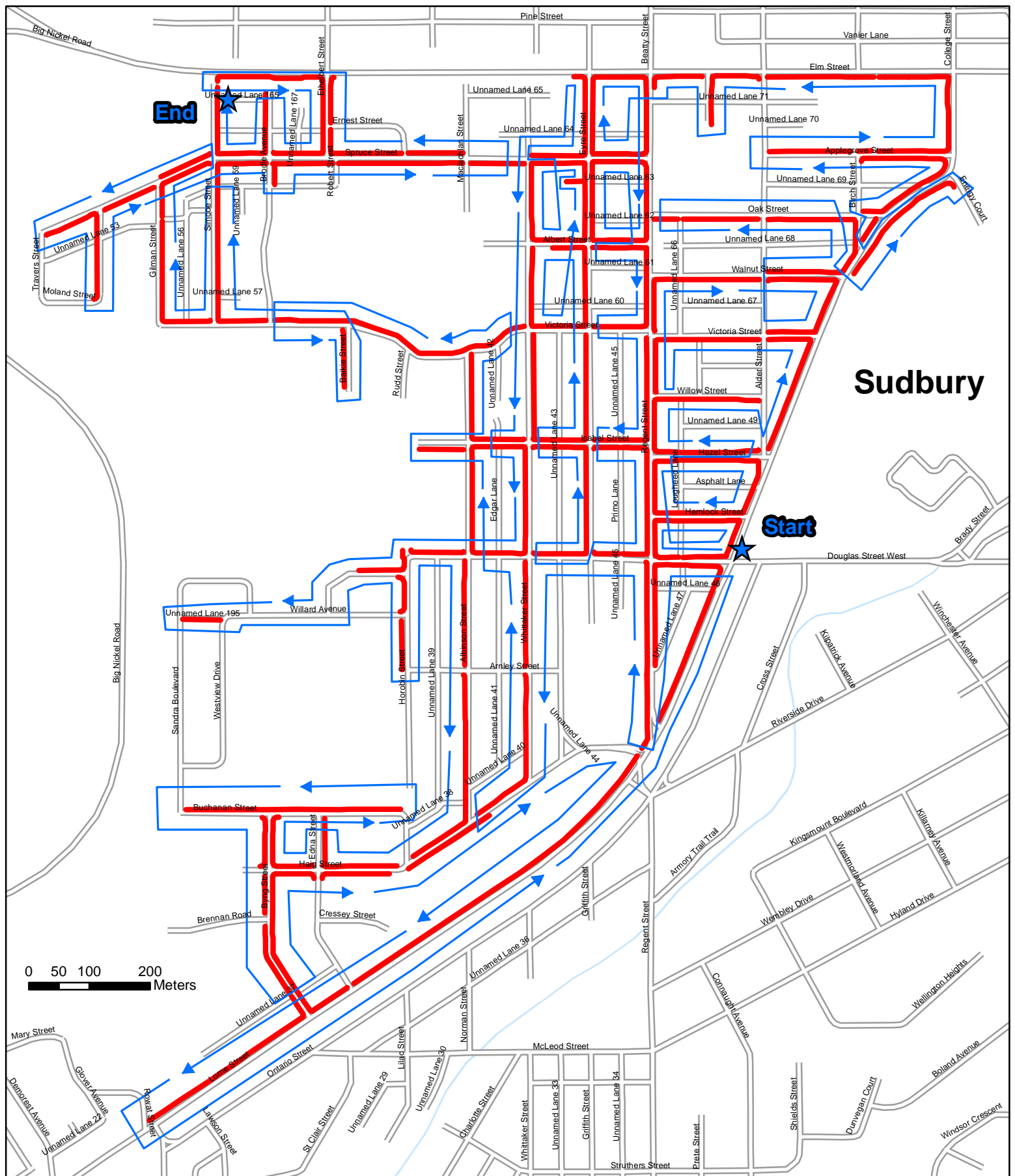
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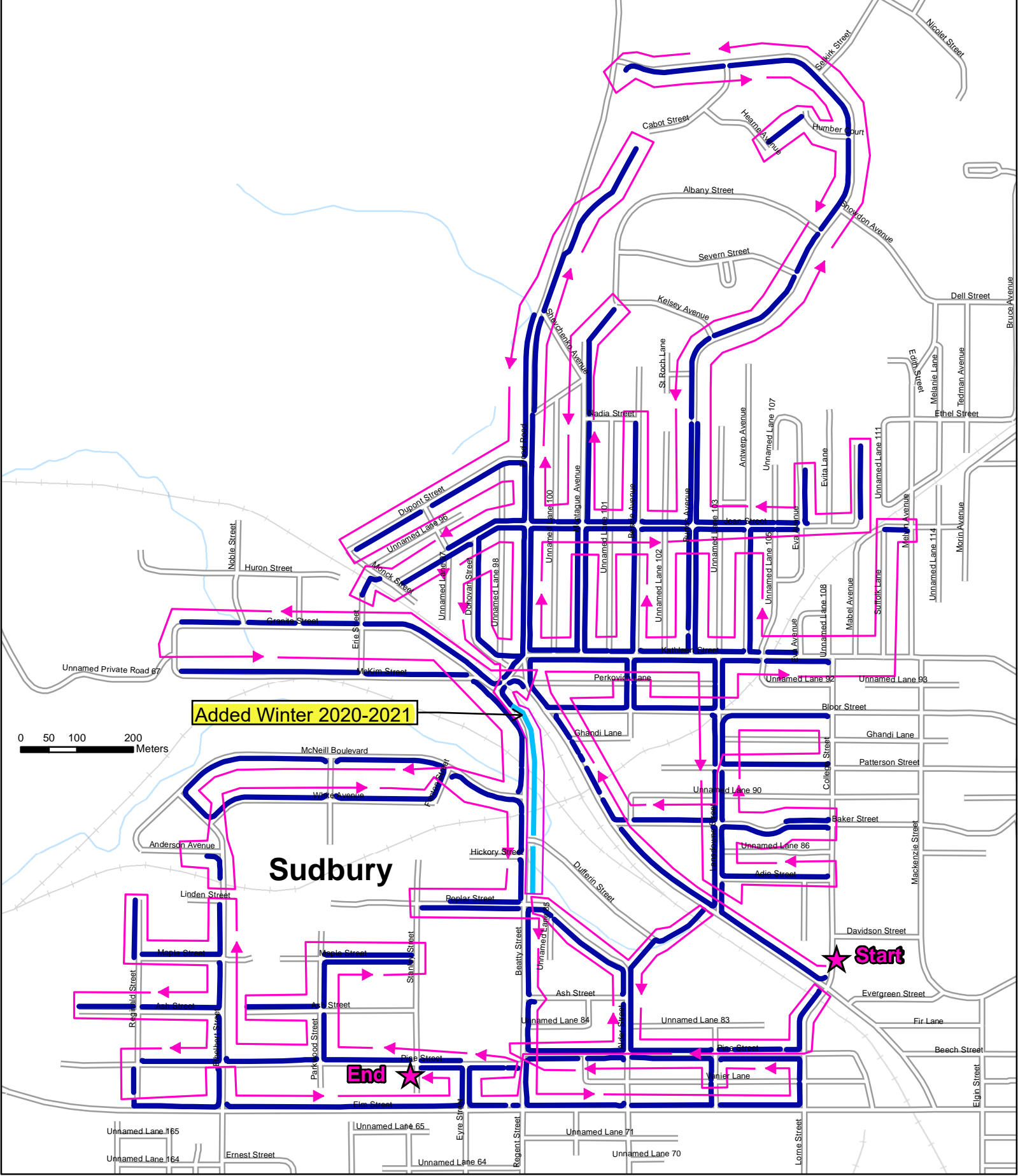


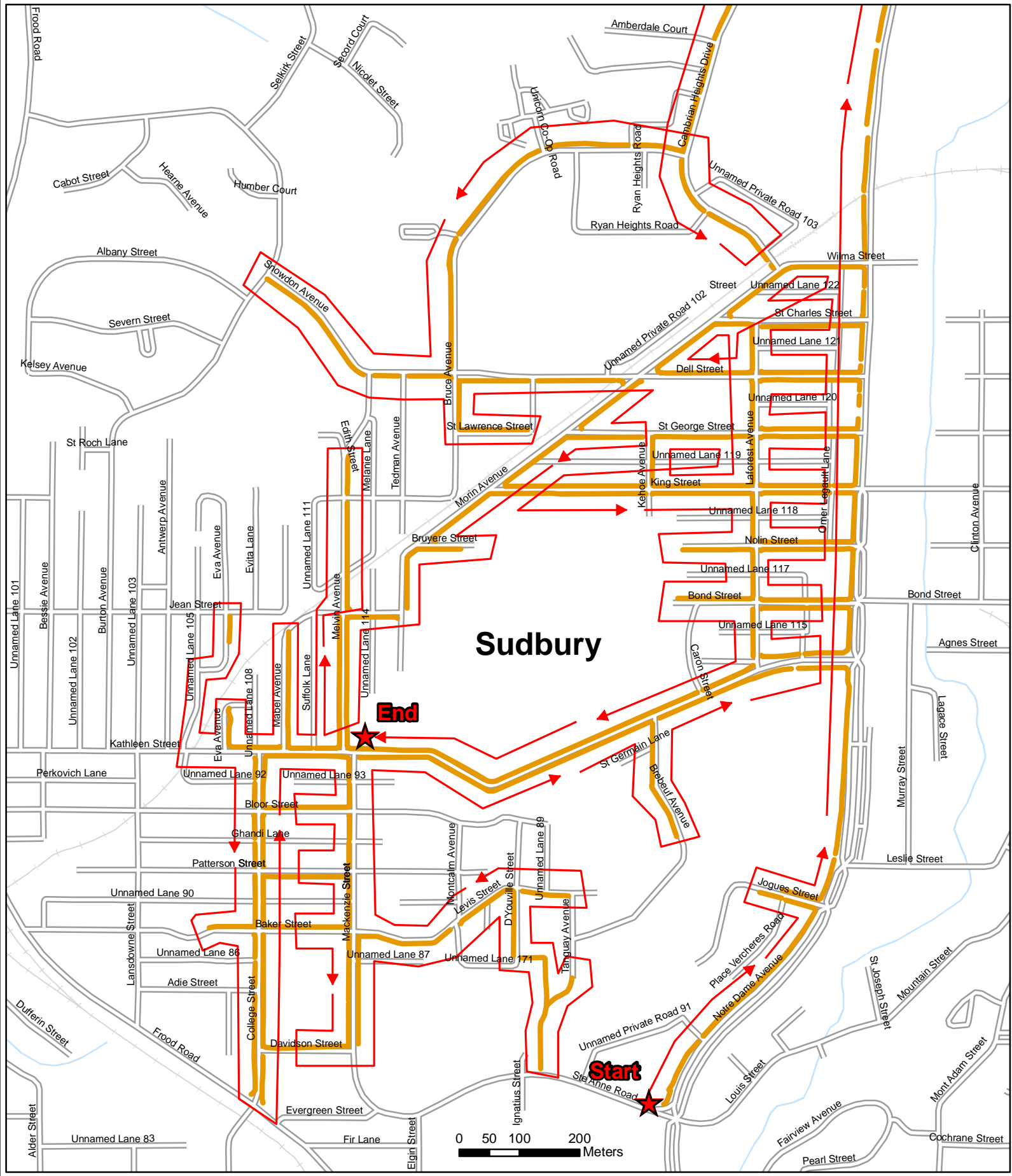
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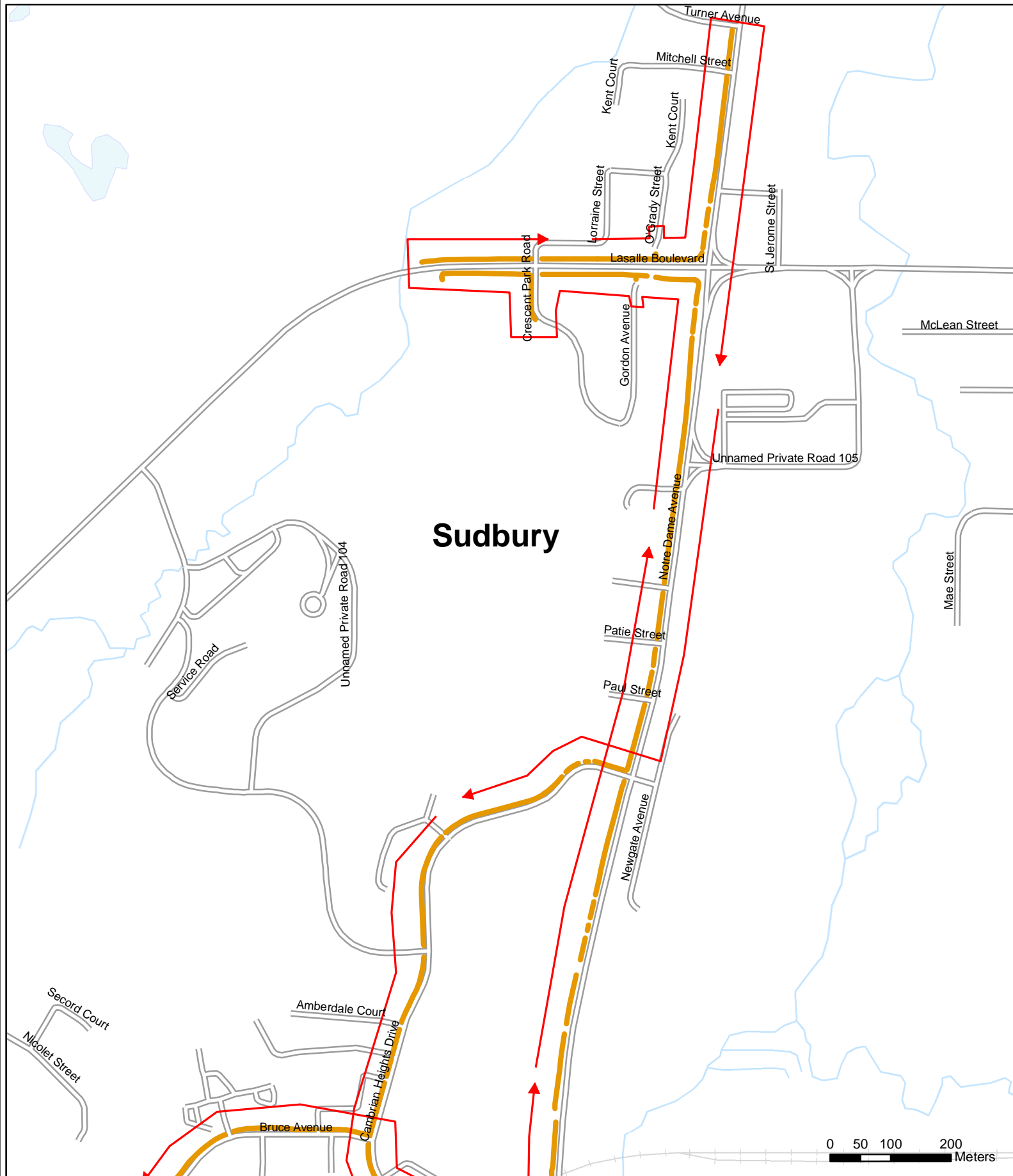
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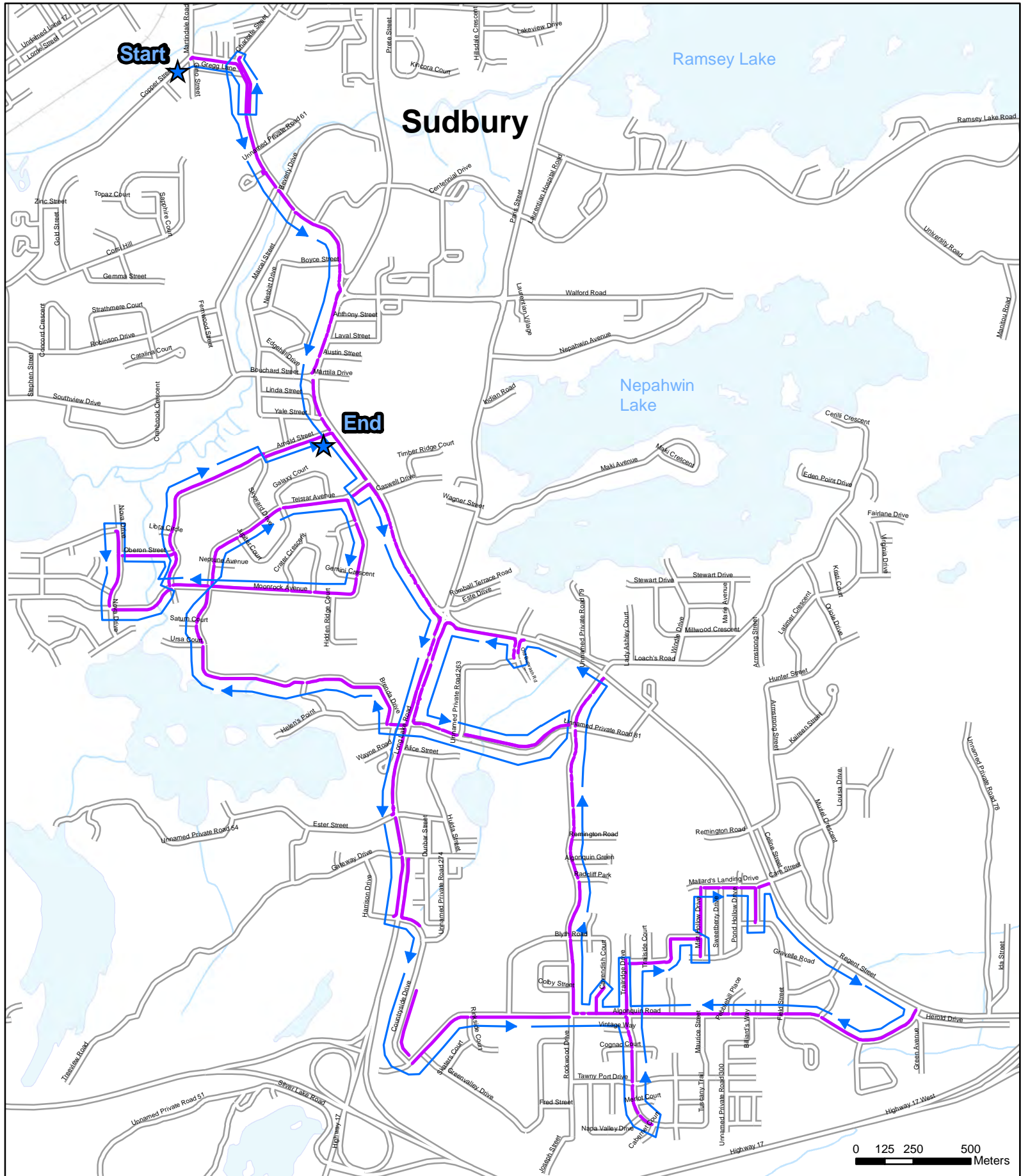
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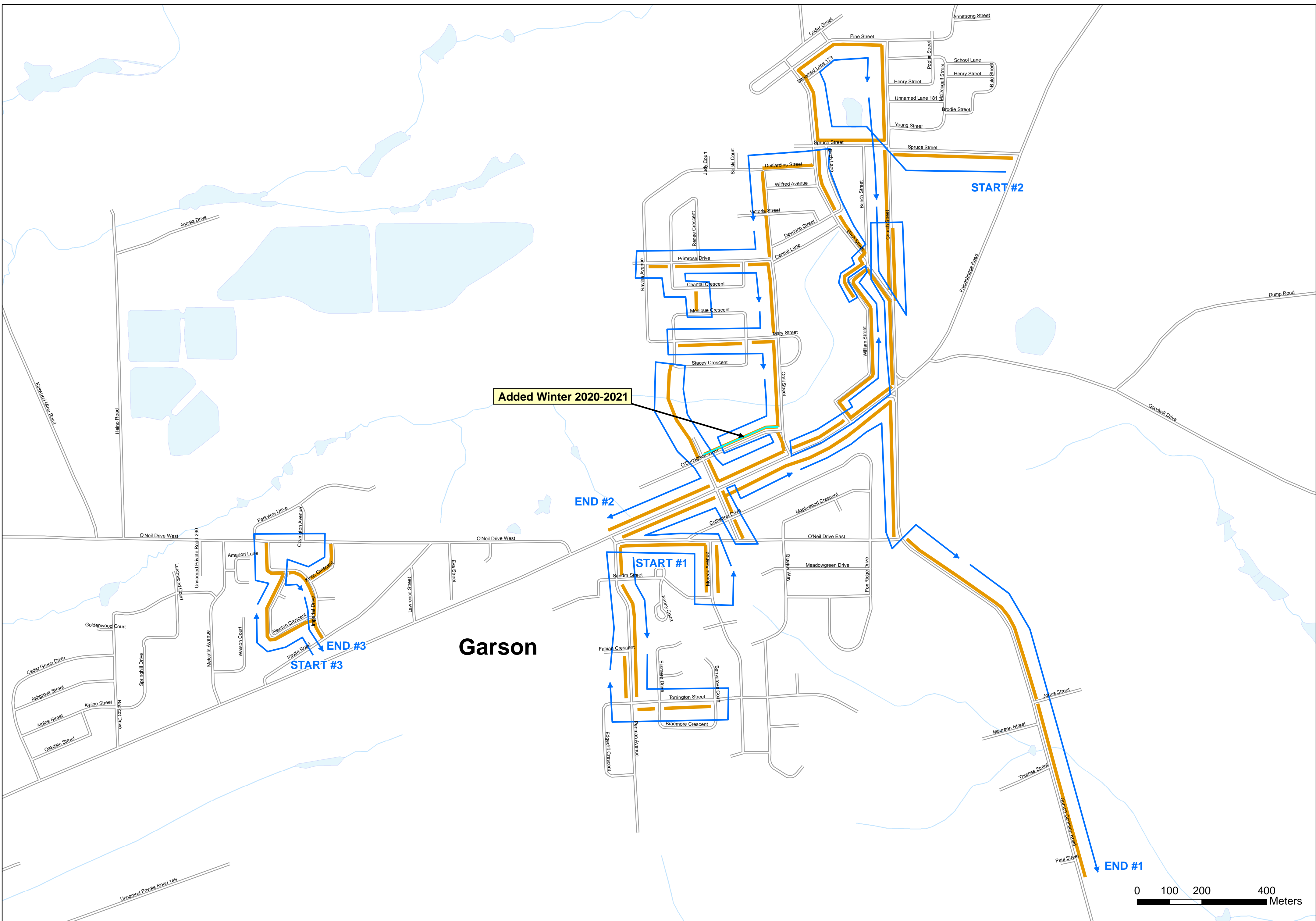
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SIDEWALK 7



SOUTH SECTION 2020-2021

SIDEWALK 8



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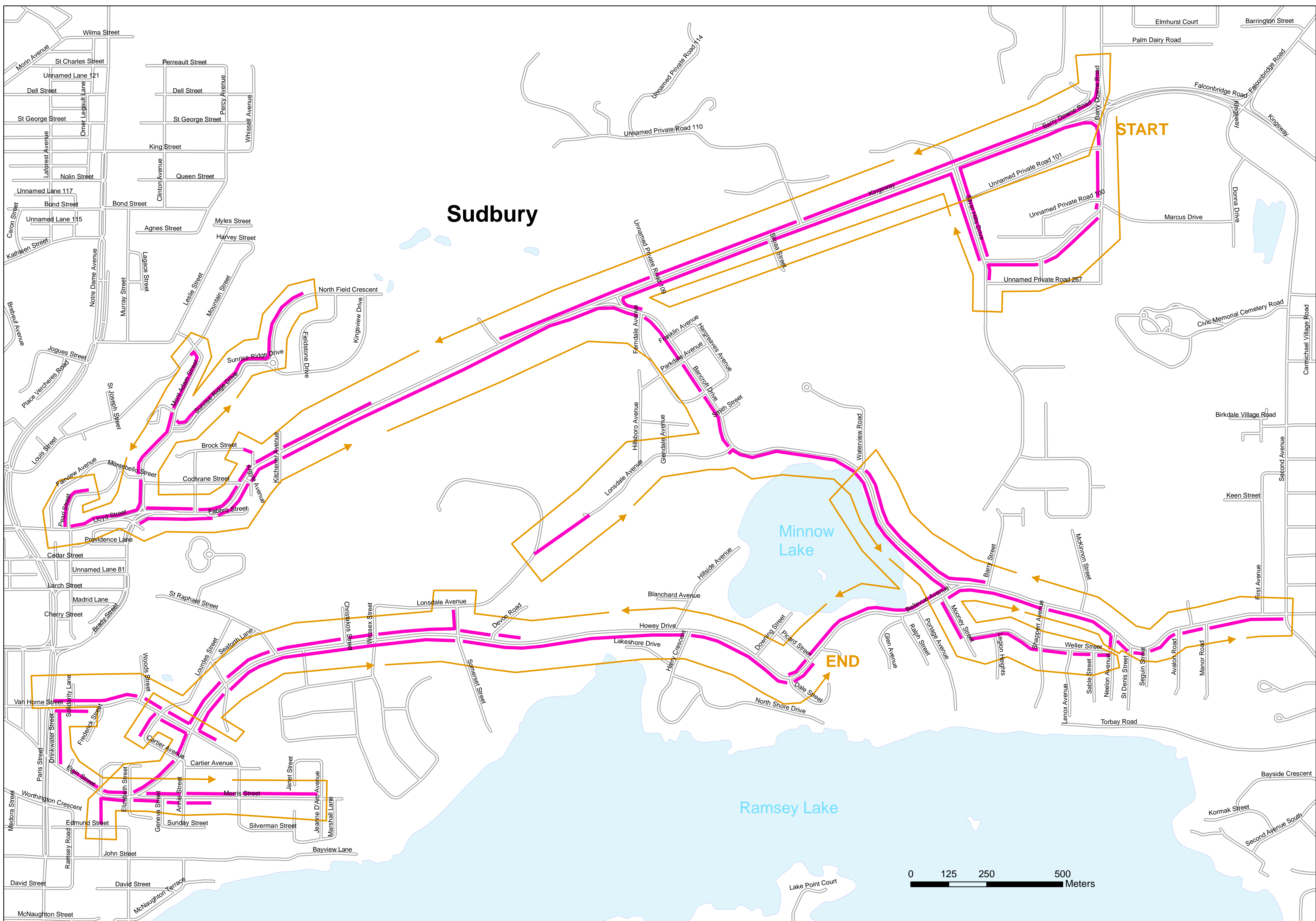


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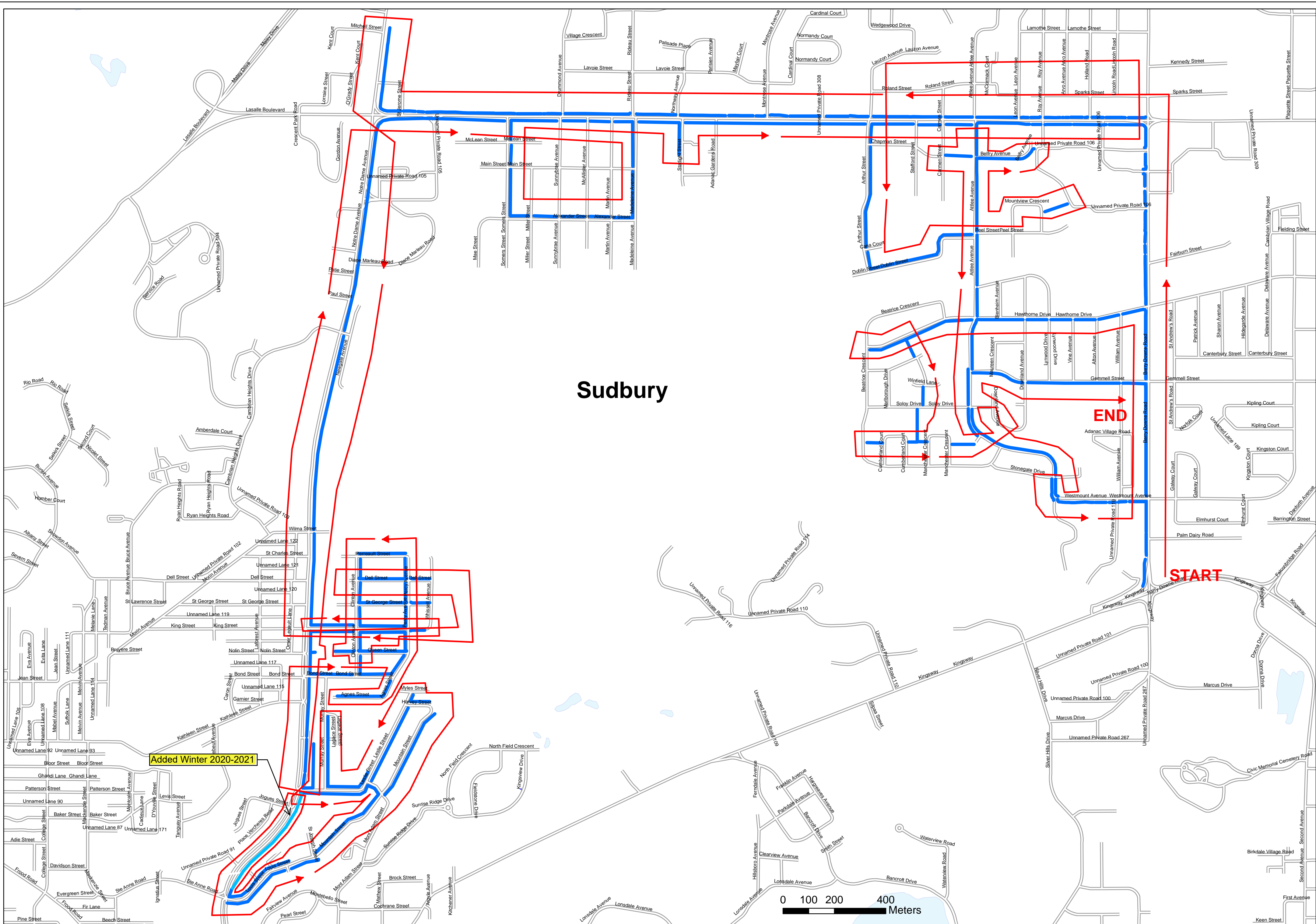
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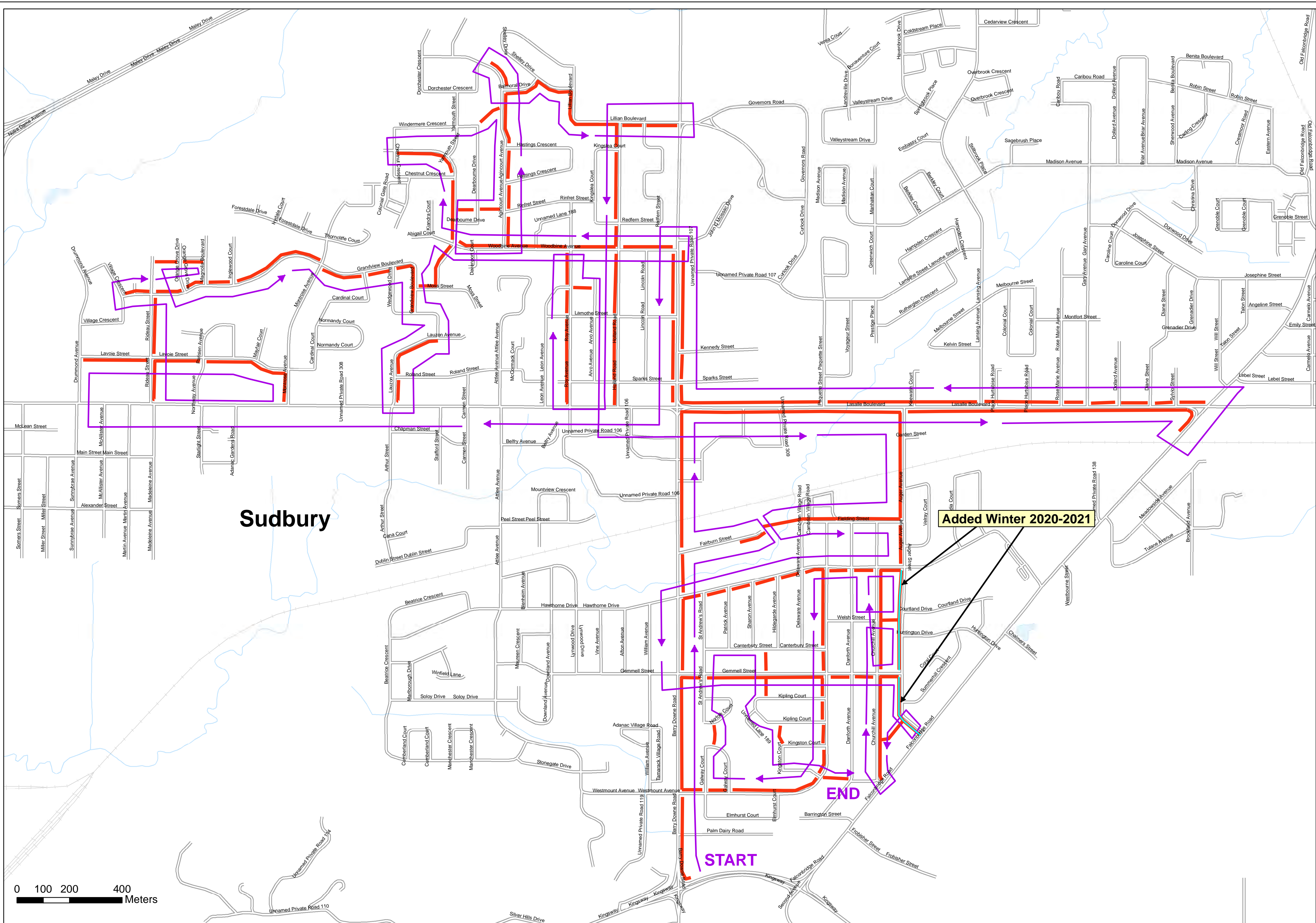
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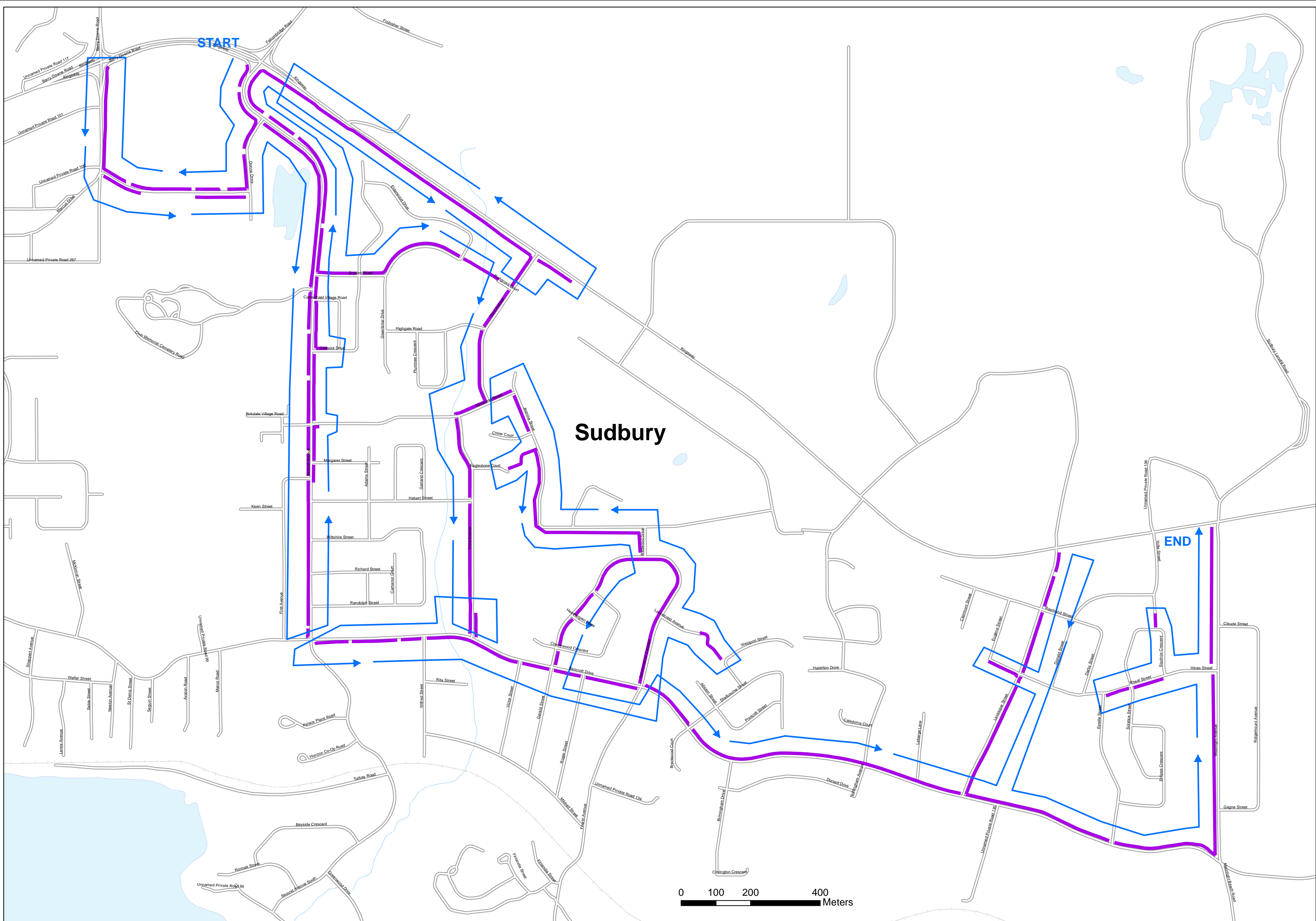
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SIDEWALK 4

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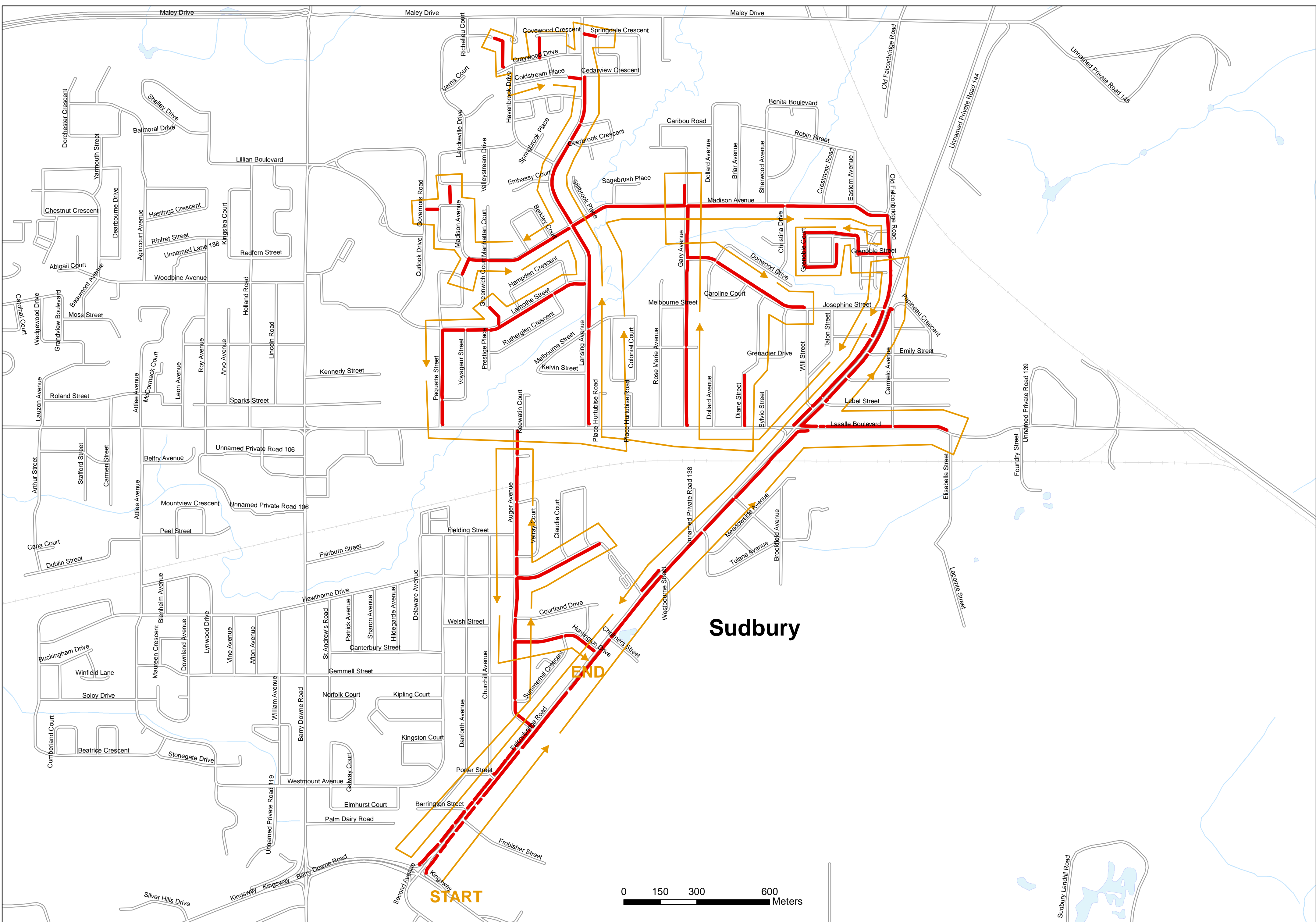
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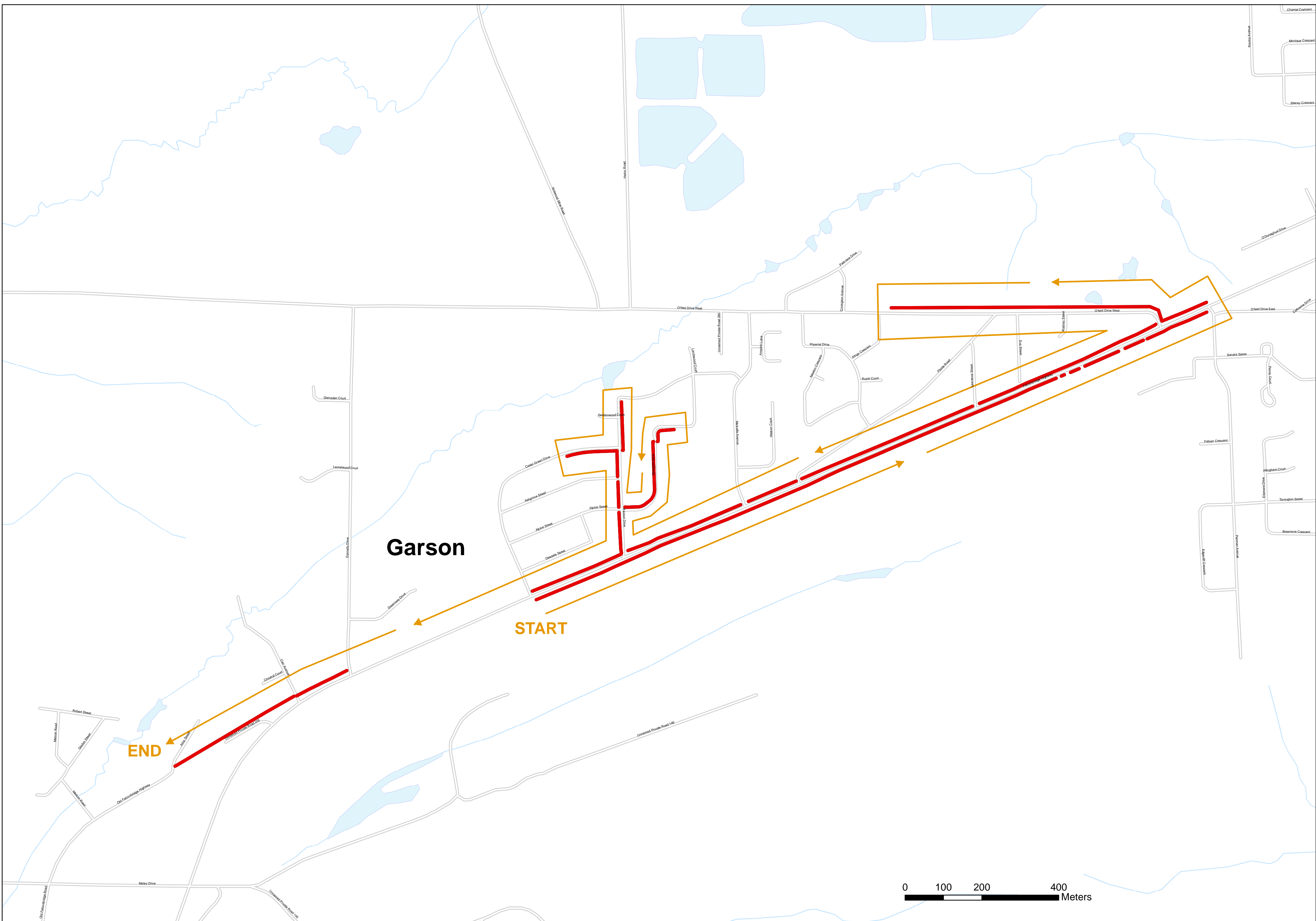
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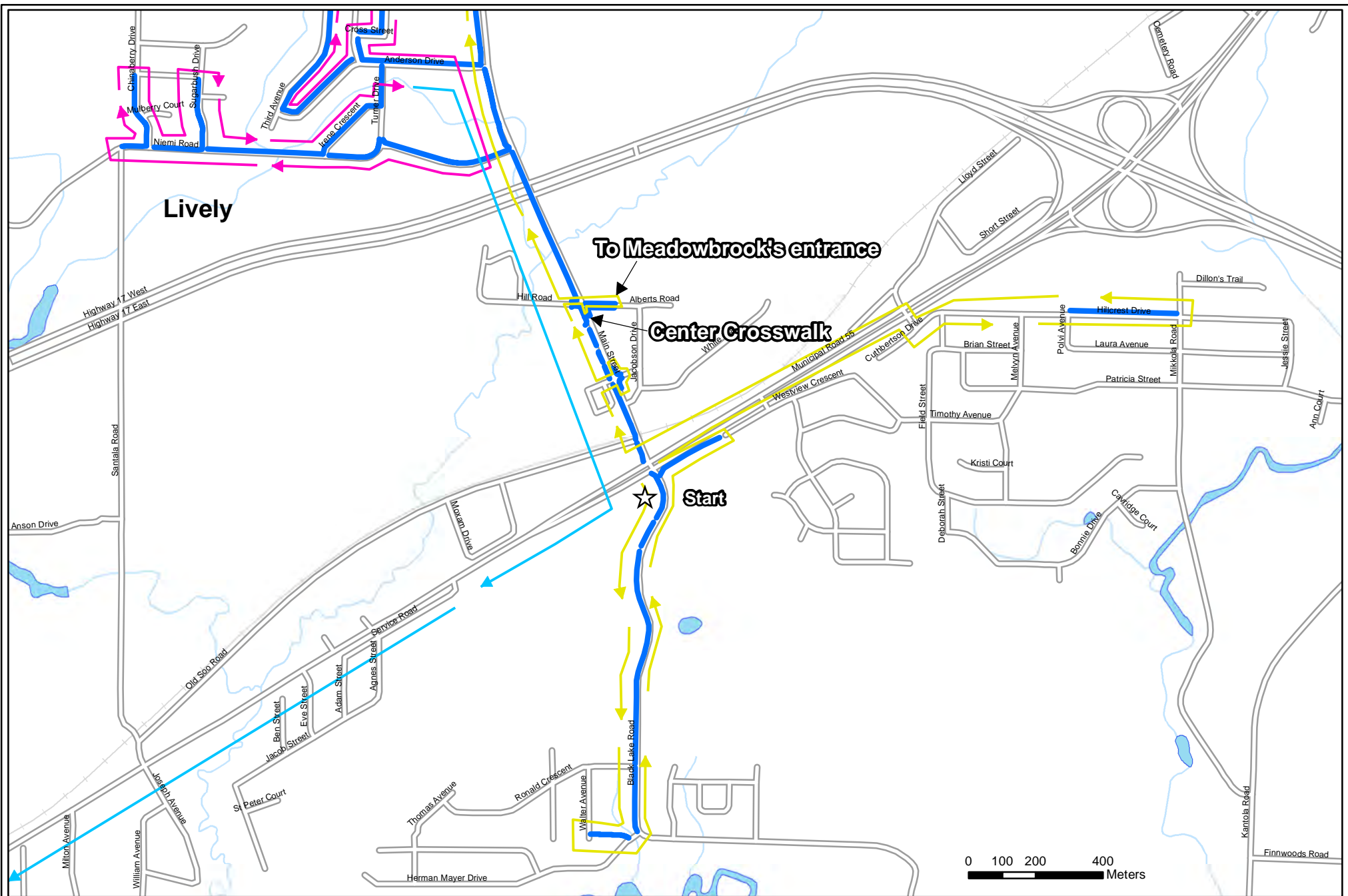
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SIDEWALK 6

2 of 2

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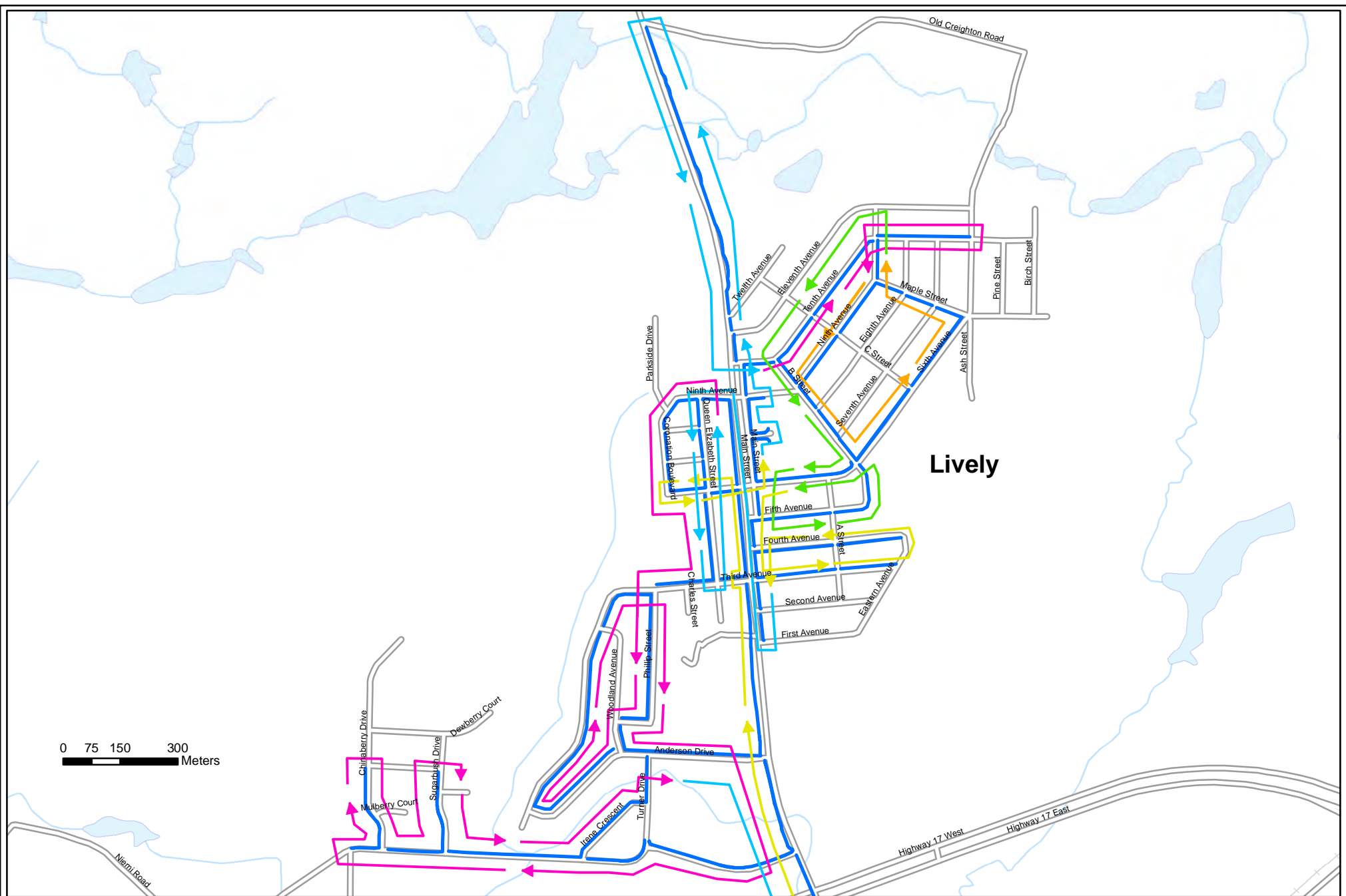


SOUTHWEST SECTION 2020-2021

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SOUTHWEST SECTION 2020-2021

SIDEWALK 1

Date: July 13, 2020

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SOUTHWEST SECTION 2020-2021

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Date: July 13, 2020

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