

October 3, 2025

Ron Davidson Land Use Planning Consultant Inc.
265 Beattie Street
Owen Sound, Ontario
N4K 6Z

Attention: Ron Davidson
ronalddavidson@rogers.com

**Re: Response to Peer Review Comments
Bentinck Gravel Pit
382063 Concession 4 NDR
West Grey, Ontario
VCL File: 123-0064**

Dear Mr. Davidson:

On behalf of the Municipality of West Grey, WSP Canada Inc. (WSP) has completed a peer review of our Noise Impact Study, dated August 17, 2023, prepared in support of the proposed Bentinck Gravel Pit. The peer review comments are outlined in WSP's letter dated May 27, 2025. Responses to the peer review comments are provided herein.

1.0 SECTION 1.0 INTRODUCTION

1. *No response required.*
2. *WSP notes the NIS does not mention it reviewed and considered the West Grey Noise Control Bylaw No. 55-2016. Please confirm this Bylaw was considered and how it could impact site construction or operation activities.*

There are several items in the Town's Noise Control Bylaw that could impact the gravel pit activities:

- i) The Prohibitions portion prohibits the following noises that could occur at the gravel pit from occurring at any time if the sound is clearly audible at a point of reception:
 - a. The operation of a motor vehicle horn or other warning device except where required or authorized by law or in accordance with good safety practices.
 - b. The operation of any item of construction equipment without effective muffling devices in good working order and in constant operation.
- ii) The Prohibitions by Time and Place prohibits the following noises that could occur at a gravel pit within the prohibited time period from being clearly audible at a point of reception:

- a. The operation of any auditory signalling device, including but not limited to the ringing of bells or gongs and the blowing of horns or sirens or whistles, or the production, reproduction or amplification of any similar sounds by electronic means except where required or authorized by law or in accordance with good safety practices is prohibited at all times.
- b. The operation of any construction equipment or in connection with construction is prohibited between 11:00 pm and 6:00 am.

Vehicles that operate on the site will have back up alarms which are considered an auditory signalling device. Back up alarms are used as a good safety practice and are permitted according to the Noise Bylaw. To minimize the potential noise from back up alarms, the report recommends alternative to back-up beepers, such as broad band alarms be used on the site.

All pieces of construction equipment operating on the site will need to have effective mufflers in good working order. This will be added to the list of noise control requirements outlined on the site plans.

The equipment used on the site is intended for material handling and fits the definition of construction equipment. The proposed operating hours at the pit are from 7 am to 7 pm which are within the permitted hours for construction equipment to be operating on the site.

It should also be noted that perimeter berms will be constructed to mitigate the sound emissions from the pit operations. Once these berms are in place, they will also provide noise attenuation for the above noted noise sources.

3. *No response required.*
4. *WSP agrees with the closest noise sensitive receptors chosen for the NIS: existing single-family dwellings to the east, south and west, Camp McGovern to the north, and vacant noise sensitive lands to the east and west. Please provide justification as to why outdoor points of reception were not used in the modeling analysis.*

Outdoor points of reception were considered in our assessment but the results were not reported since higher sound levels from the gravel pit operations were predicted at the second storey plane of window receptors (all existing dwellings are two storey). This is because the second storey receives reduced ground effect which overcomes the slight sound level increase due to the outdoor receptors being up to 30 m closer to the proposed gravel pit. In addition, the berms will be slightly less effective for the upper storey receptor location. Thus, the second floor plane of window receptor location was used since it represents the worst case location where the highest unmitigated sound level excess above the guideline limits is predicted.

2.0 PROGRAMME OF OPERATION

5. *No response required.*
6. *The NIS mentions that equipment to be used on site including a processing plant (crusher, screen and stacker(s)), front end loader and shipping trucks, however the Operational Plan mentions the following equipment: hydraulic excavators, hydraulic hammer, dozers, loaders, skid steers, grader, crusher, screener, generators, air compressors and trucks. Please provide a rational for not including all equipment listed on the Operation Plan. All sources that could operate on site should be considered in the NIS.*

The equipment that will be used for excavating, processing and shipping, which constitute the stationary source, have been included in the assessment. Other equipment can be used for construction and rehabilitation which, according to the definitions in NPC-300, are not part of the stationary source and have not been included as part of the stationary source assessment. As per the recommendations in our report, this equipment needs to comply with the sound emission limits in NPC-115 Construction Equipment.

7. *The NIS based the truck traffic from a traffic study prepared by Paradigm and was included as Reference 9 in the NIS, however not included in an Appendix to verify the numbers used in the NIS. Please provide a copy of the Traffic Study or pertinent sections should be included as an attachment to the NIS.*

A copy of the Transportation Study is provided as Appendix A to this letter.

8. *WSP notes that the NIS did not address the noise impact of the truck traffic on public roadways. Please update provide haul route analysis or provide justification why it was not conducted within this NIS.*

There are no specific statutes, regulations or formal policies related to noise under the Planning Act applicable to adding licensed motor vehicles to public roadways. There is, however, a draft MECP Noise Guidelines for Landfill Sites (Landfill Guideline) document that provides guidance on assessing the noise impacts along the haul routes to and from a landfill site. The haul route requirements are often used for pit applications. The Landfill Guideline has been used to assess the noise impacts from trucks travelling to and from the site along the off-site haul route.

The assessment requires that an access route for off-site source vehicles be selected which results in the minimum noise impacts. A detailed quantitative assessment is to be completed that determines the potential noise impact on the receptor locations. The noise impacts are to be assessed using the qualitative ratings in Table 1 which are taken directly from the Landfill Guideline.

TABLE 1: QUALITATIVE NOISE IMPACT (OFF-SITE HAUL ROUTE)

Sound Level Increase (dB)	Qualitative Rating
1 to 3	Insignificant
3 to 5	Noticeable
5 to 10	Significant
10 and over	Very Significant

The transportation study prepared for the proposed pit (Appendix A) indicates outbound trucks will travel east along Concession 4 NDR and then south along Mulock Road until they reach Grey Road 4 (approximately 4 km south of the site). The same route will be used for inbound trucks.

Trucks travelling to and from the site will increase the amount of heavy truck traffic on Concession 4 NDR and Mulock Road by up to 10 vehicles per hour.

The transportation study included 2021 traffic counts in the form of peak AM and PM turning movements counts at the intersection of Concession 4 NDR and Mulock Road. Daily (24-hour) volumes were obtained by multiplying the peak hourly data by a factor of 10. The minimum hourly traffic volume determines the worst-case (i.e. highest) haul route noise impact since the percentage of haul truck volume is greatest for the minimum background hour. The minimum daytime volume was obtained by applying a typical traffic distribution for roadways. According to the typical distribution, the minimum daytime hour is 1000 to 1100, where 3.5% of the daily volume occurs.

Using the minimum hourly daytime volume, the change in one-hour equivalent sound levels ($L_{eq, 1 \text{ hr}}$) at the dwellings along Concession 4 NDR and Mulock Road was determined using STAMSON V5.04 – ORNAMENT, the computerized road noise prediction model of the MECP. The background traffic volumes were assumed to include 1 medium and 1 heavy truck, with the remainder cars.

The minimum hourly sound level due to the background road traffic was calculated at a height of 1.5 m above grade, representing a first-floor window. The future hourly sound level was calculated by adding the 10 shipping trucks to the existing minimum hourly volume. The hourly road traffic volumes are summarized in Table 2.

TABLE 2: ROAD TRAFFIC DATA

Roadway	Time Period	Minimum # of Cars Per Hour	Minimum # of Medium Trucks Per Hour	Minimum # of Heavy Trucks Per Hour	Speed Limit (kph)
Concession 4 NDR (Existing Volumes)	Daytime (0700-1900)	6	1	1	80
Concession 4 NDR (Existing Volumes with Pit Trucks Added)	Daytime (0700-1900)	6	1	11 ⁽¹⁾	
Mulock Road (Existing Volumes)	Daytime (0700-1900)	17	1	1	80
Mulock Road (Existing Volumes with Pit Trucks Added)	Daytime (0700-1900)	17	1	11 ⁽¹⁾	

Notes:

(1) 10 heavy trucks added due to peak hour shipping truck traffic from the pit.

The worst-case noise impact (or change in sound level due to the addition of the gravel pit traffic) would be the same at all receptors since the only change is the increase in noise emissions due to the addition of the haul truck traffic. All other attenuating features (i.e. distance, ground surface, etc.) remain the same.

The additional truck traffic on Concession 4 NDR and Mulock Road is predicted to increase the daytime sound levels at the dwellings adjacent to these roadways by up to 8 dBA and 9 dBA, respectively. This increase is considered “significant” according to the MECP Landfill Guideline.

The off-site haul route noise impact conservatively estimates the “predictable worst case” as required by the MECP guidelines. The worst case assessment reflects the impact of adding the maximum hourly truck volume to/from the pit to the minimum hourly background traffic volume. This maximizes the predicted noise impact.

The noise impacts will generally be less since:

- the maximum hourly truck volume to/from the gravel pit would occur rarely, if ever; and
- even if the maximum hourly truck volume were to occur, it is unlikely that it would occur during the minimum background traffic hour.

It should also be noted that the existing dwellings along the haul route have a significant setback from the roadway. The front façade of the closest dwellings is about 30 m from

the roadway centreline. The minimum ambient sound level at 30 m from the roadway is 49 dBA along Concession 4 NDR and 50 dBA along Mulock Road. Adding the peak hour gravel pit traffic increases the resulting sound levels to 57 dBA and 58 dBA along Concession 4 NDR and Mulock Road, respectively. These sound levels are below the maximum permitted in an Outdoor Living Area (OLA) by the MECP noise guidelines. Since the dwellings along the haul route generally front towards the haul route, not only are their OLAs further removed from the roadway but also benefit from significant acoustical screening provided by the dwelling itself.

9. *No response required.*

3.0 SECTION 3.0 ENVIRONMENTAL NOISE GUIDELINES

10. *No response required.*

11. *No response required.*

12. *The NIS modelled all receptors at a height of 4.5 m, representing the upper floor of a two storey dwelling/cabin. Please confirm that the outdoor area (i.e. located within 30 m of the structure) were reviewed and the elevated receptor was the worst-case scenario.*

See response to comment 4 above.

13. *No response required.*

14. *No response required.*

15. *No response required.*

16. *No response required.*

17. *No response required.*

18. *No response required.*

19. *No response required.*

20. *No response required.*

21. *No response required.*

22. *As per the assessment the worst-case operations at the pit include: one (1) front end loader operating at the bottom of the working face, one (1) front end loader operating at the processing area, crushing and screening plants and associated equipment (i.e., conveyors, stacker, etc.) in the processing area, truck traffic which includes a haul route between the working face and the processing area, and then shipping trucks between the processing area and offsite. As noted above, please provide reasons for not*

including all equipment listed on Operation Plan.

See response to comment 6.

23. *No response required.*

24. *The NIS refers to Reference 9 for sound level data for the Shipping Trucks. Reference 9 refers to "Transportation Study: Proposed Burnstead Pit, Concession 4NDR, Grey County prepared by Paradigm Transportation Solutions, dated December 16, 2021". Please confirm the reference is correct. Does the Transportation Study provide sound level data for the Shipping Trucks?*

This is a typo. Sound data for Shipping Trucks was obtained from Reference 8.

25. *The NIS considered a single worst-case location for all the processing plant equipment with a combined sound power level of all equipment. Please confirm that includes the equipment as noted on the Operational Plans provided in the Appendix such as the generator, air compressors and hydraulic hammer.*

A single location was used as the noise source for all of the processing equipment. As per the noise mitigation recommendations, Table 5 limits the combined sound level from the combined processing plant noise source. A single point is used since it is not possible to confirm the exact separation distance or orientation for the individual noise sources. Using a single point ensures the predictable worst case has been captured.

26. *No response required.*

27. *The location of each piece of equipment varied on which phase of extraction was being assessed as displayed in Figures 3A to 5C. Please confirm that various iterations of locations were assessed for each Phase to determine the worst-case location was used in that analysis, as the modelling is not available, WSP cannot confirm the actual locations assessed correlated to the worst-case location. WSP notes that only Phases 2, 4 and 5 were assessed. Please provide justification as to why Phases 1 and 3 analyses were not conducted or shown within the NIS.*

The NIS does not state that Phases 1 and 3 were not modelled or considered in the assessment. It states that the worst case (i.e., highest) sound levels occurred during operations in Phases 2, 4 and 5.

Worst case operating locations were determined by assessing a tight grid of operating locations across the entire site (and not just phase 2, 4 and 5). From this assessment, the worst case sound levels that could result at the receptors were determined. These worst case sound levels are what is reported in the NIS.

28. *No response required.*

29. *The speed considered in the NIS was 20 km/hr as per provided in Appendix B of the NIS. Please confirm this will be the noted speed limit onsite and consistent with what*

was used in other assessments (i.e. air quality) and that a lower speed limit is not posted as a means of dust control.

This is to confirm that 20 km/hr will be the posted speed limit on the site and that this does not conflict with any of the other assessments.

30. *WSP reviewed the number of shipping trucks used in the analysis (Appendix B, ID: TRKS_P1, P2, P4, P5), the number of haul trucks going from the working face to the processing plant vary between phases. As per Section 4.0 in the report, it was mentioned that there was only up to 5 loads of aggregate that could be hauled to the processing area in an hour, which would mean 10 haul truck pass bys, however the analysis shows 20 haul truck pass bys during Phase 1, 2 and 4, however only 10 during Phase 5. Please confirm the number of haul trucks.*

As stated in Section 4.0 of the report, up to 5 loads of aggregate could be hauled to the processing area in an hour. A higher number of truck loads was modelled for Phases 1, 2 and 4 which would result in higher sound levels. This does not change the noise mitigation recommendations.

31. *No response required.*

32. *No response required.*

33. *The NIS noted that topography (for the site was taken from the Operation Plan and surrounding area taken from Grey County interactive map), ground attenuation absorption parameters (hard ground (pit, river, paved areas/roadways) as 0 and soft ground (everywhere else) as 1) were taken into account. Please provide confirmation on what order of reflection was used in the analysis.*

Two (2) orders of reflection were used to complete the assessment.

34. *The NIS mentions that it used the CadnaA feature “foilage” for existing woodlots at a height of 12 m. WSP notes this was not shown in any figure which woodlots this feature was used for. WSP also notes that in past discussions with the MECP noise review engineers regarding the use of the foliage feature in CadnaA, that this feature needs to be used with caution. It should only be used if the consultant can confirm the noise model represents the actual expected performance of the predictable worst case conditions (i.e. when foliage is minimized). Please provide a map illustrating the extent of the woodlots considered. Please provide technical justification for the height of 12 m, location and size of the woodlot and for using the foliage feature in CadnaA to be representative of conditions that could occur throughout the year.*

A figure showing the woodlots used in the assessment is included as Appendix B. The light blue hatched areas are the woodlots that the feature was used for. Also included in the Appendix is a ground level photo from Concession 4NDR towards R4 to provide some context regarding the woodlots.

The dense woodlots were observed to be a combination of deciduous and coniferous trees of adequate density such that there would be no view of the receptors through the woodlots even during the winter season. As per ISO 9613-2, trees and shrubs provide sound attenuation if they completely block the view along the sound propagation path. Mature trees vary in height (oak 50 to 70 feet, maple 40 to 60 feet, pine 70 to 100 feet and fir 70 to 200 feet). A conservative height of 12 m or about 40 feet was used for the woodlots.

35. *The noise emissions as noted above were modelled as either: a stationary point source (loaders, processing plants) or as a line source (e.g. haul routes). As the processing plant includes multiple pieces of equipment, and considering a barrier installed local to the processing plant is required to mitigate noise levels at various receptors. Please provide justification on the appropriateness of modelling the processing plant as a point source. What is the distance of the barriers to the processing plant?*

The processing plant was modelled as a single point source to be conservative. As indicated previously, the layout and separation distance between the sources cannot be determined. By modelling the processing plant as a single point source and using the grid analysis system ensures that the worst case has been captured and that some sources do not benefit from extra distance attenuation.

A local barrier for the processing plant is only needed if a dwelling is constructed on the vacant lot (R10). A maximum separation distance of 30 m between the processing plant noise sources and the top of the barrier would be required.

36. *No response required.*
37. *WSP agrees that the results shown in Table 3 for Phase 2, 4 and 5 are in excess above the MECP NPC-300 Class 3 daytime (as noted in Operational Plan only proposed to operate during the day) limit at four (4) existing receptors R5 to R8, and both vacant lot receptors R10 and R11 thus requiring mitigation recommendations. It is noted that modelling results were not provided for Phase 1 and 3. Please provide.*

The modelling results provided in Table 3 are the worst case or highest unmitigated sound levels each receptor is predicted to receive over the life of the pit which includes Phases 1 and 3. The report simply notes that the worst case sound levels occurred when operations were in Phases 2, 4 and 5. Thus, no further response is needed.

38. *Figure 4A in the NIS is to reflect facility operations during Phase 2 with the two (2) noise barriers as recommended in Section 5 of the report while operating in Phase 1 or 2 for the existing receptors, however it also shows the additional 4 m barrier along Phase 5. Please confirm that this barrier along Phase 5 is not included in the analysis for Phase 1 or 2 and is only needed while conducting operations Phase 5.*

This is to confirm the 4 m high sound barrier along Phase 5 is not required when operations are in Phases 1 and 2. The 4 m high sound barrier along the southern boundary of Phase 2 provides the required sound attenuation for the receptors to the southwest when operations are in Phases 1 and 2.

39. Figure 4B and 4C display the predicted sound levels during facility operations during Phase 4 and 5, and it includes all three noise barriers recommended in Section 5 for the existing receptors. The interpretation is that the first two (2) barriers along Phases 1 and 2 remain during all phases and that the barrier along the west side of Phase 5 is added to the start of any work in Phases 3 to 5. *Please confirm.*

WSP's interpretation is correct, all three barriers are required for operations in Phases 3 to 5.

40. Figures 5A to Figures 5C display the predicted sound levels during facility operations during Phase 2, 4 and 5 and it includes 5 (5) noise barriers recommended in Section 5 for the vacant lot receptors, however it also includes the additional 4 m barrier along the west side of Phase 5 and 17 m high barrier along east side of Phase 3 and 4. *Please confirm that these barriers are necessary as indicated in Section 5 of the NIS while conducting operations in all Phases if a noise sensitive use is built on either of these lots, and please indicate which barriers are required for each individual lot.*

As per the response to comment 38, the 4 m barrier along the west side of Phase 5 is not required until operations commence in Phase 3. This barrier is not intended to provide acoustical screening for the vacant lots during Phase 1 and 2 operations.

The barrier along the east side of Phases 3 and 4 and the local processing plant barrier are to provide noise mitigation only for vacant lot receptor R11. The increased height for the barrier along the west side of Phase 2 and the increased barrier height for the barrier along the west side of Phase 1 are to provide increased noise mitigation for vacant lot receptor R10.

It should be noted that the additional barriers are only required if a dwelling were to be constructed on a vacant lot. It is not possible to determine when or if such a dwelling would be constructed. Mitigation for each vacant lot receptor is needed even when operations are in Phase 1. The barriers shown on the figures represent the worst case (i.e., highest) that could be required.

41. Barriers of 10 m and 17 m in height are referenced in the NIS. These are extensive barriers. *As requested above, at what distance from the equipment are these berms required? In Section 5.1.1 it is stated that earth berms can be used. Can earth berms be installed within the required distance such that the crest is located within the required distance? If the author identifies certain barrier construction are not practical for certain required barriers, it should be identified in the NIS.*

The 17 m barrier is along the perimeter of the site and does not have a maximum separation requirement.

The 10 m local barrier is to be no more than 30 m from the processing plant equipment. With 2:1 or even 2.5:1 side slopes, the crest of an earth berm can be accommodated within the setback distance. Thus, an earth berm is a practical option.

42. *Please confirm if the extraction face was used as a shielding feature in the noise modelling. If it was, please provide the distance considered between the source and working face. Will this need to be maintained for the entirety of the life of the Pit? How will it be ensured that these operating distances to the working face will be maintained?*

The extraction face was used as a shielding feature in the noise modelling. The extraction face was always assumed to be at the perimeter of the extraction area to be conservative. Thus, no maximum distance needs to be maintained.

43. *No response required.*

44. *The NIS recommended several barriers Section 5 providing location and heights and Phase of operation and are displayed in Figures 4A to 5C. WSP recommends that barrier heights and lengths be reviewed if there is a change in the design or grade elevations. Please clarify during what Phase of the development the barrier should be installed and for which receptors it is required. This would be helpful perhaps in a table format, as currently, the figure and report do not align.*

To mitigate the noise impact from the gravel pit at existing noise sensitive uses:

- A 2.0 m high sound barrier is recommended at the north end of Phases 1 and 2. This barrier is required prior to the start of any work in Phases 1 or 2. This barrier provides noise mitigation for the receptors to the north of the facility (i.e., R7 and R8).
- A 4.0 m high sound barrier is recommended along the west side of Phase 2, returning east along the south extent. This barrier is required prior to the start of any work in Phases 1 or 2. This barrier provides noise mitigation for the receptors to the west of the facility (i.e., R5 and R6).
- A 4.0 m high sound barrier is recommended along the west side of Phase 5, extending east approximately 30 m at the north end. This barrier is required prior to the start of any work in Phases 3 to 5. This barrier provides noise mitigation for the receptors to the west and south of the facility (i.e., R4, R5 and R6).

Mitigating the noise levels at the vacant noise sensitive lots is only required if a noise sensitive use (such as a residential dwelling) is built on the lots. Mitigation is required regardless of what phase the operations are occurring. To mitigate the sound levels at the vacant noise sensitive lots:

- A localized sound barrier up to 10 m in height would be required around the west side of the processing area if a dwelling is constructed at R10;
- A sound barrier up to 17 m in height would be required along the east side of Phases 3 and 4 if a dwelling is constructed at R11; and
- The 4.0 m high sound barrier along the west and south sides of Phase 2 (as noted above) would need to increase to 5.0 m in height if a dwelling is constructed at R10.

45. *The NIS accurately defines in the NIS an acoustic barrier as per MECP guidance, and what it should be comprised of. Beyond the request made above, no further response is required.*

It is not clear what, if anything is being requested by this comment.

46. *No response required.*

47. *No response required.*

48. *No response required.*

49. *WSP suggests a policy be implemented onsite that minimizes tailgate banging when unloading dump trucks onsite. Recommendation to be included.*

An updated list of noise mitigation requirements is provided in response to comment 51 which includes a recommendation to minimize tailgate banging.

50. *No response required.*

4.0 SECTION 6.0 RECOMMENDATIONS

51. *WSP agrees with the noise control recommendations which are provided in Section 6 of the NIS (i.e. hours of operation, equipment operating, equipment shall satisfy the noise level emissions specified in Table 5, construction equipment shall comply with NPC-115) and they should be included on final Site Plans. WSP notes that noise barrier recommendations from Section 5 were not included within Section 6 and should be included on the final site plans.*

An updated list of noise mitigation recommendations is provided below. This includes mitigation measures recommended by the WSP peer review.

Mitigation Recommendations

These noise mitigation measures are recommended for the gravel pit and should be included on the Site Plans:

- All operations at the pit should only be done during the daytime (i.e., 0700 to 1900 hours) period.
- The sound emission level for all pieces of equipment used for construction activities including site preparation and rehabilitation must comply with the limits outlined in MECP Publication NPC-115, "Construction Equipment".

- Construction activities should only be done during the daytime (0700 to 1900 hours) Monday to Friday and should not be done on weekends or statutory holidays.
- Alternative technologies to back-up beepers (such as broadband alarms) should be used on the equipment operating at the site. Internal haul routes should be designed to minimize the need for reversing to reduce the use of back-up alarms.
- The amount and sound emission levels from the equipment operating on site must not exceed those outlined in Table 5.

TABLE 3: EQUIPMENT LIMITS

Type	Maximum Number	Maximum Sound Emission Level (dBA)
Front End Loader (Pit Face)	1	76 @ 15 m
Front End Loader (Shipping)	1	76 @ 15 m
Processing Plant	1	90 @ 15 m
Haul Trucks	5 loads per hour	82 @ 15 m
Shipping Trucks	10 per hour	75 @ 15 m

- To ensure noise emissions comply with the recommendations of the NIS, sound emission levels from equipment to be used on site should be measured to ensure they do not exceed the levels outlined herein (Table 3). For equipment brought to the site on an as-needed basis, they may have appropriate C of A's or ECA's implying that measurements would have been completed prior to approval.
- An off-site noise audit should be completed within 6 months of the start of extraction while processing operations are being done on the site to confirm the MECP noise guideline limits are not exceeded. The audit must be done by a qualified acoustical engineer.
- If alternate noise mitigation measures are to be implemented, if there are any changes to the site operations or if there are any changes to the noise mitigation measures, they be reviewed and approved by a qualified acoustical consultant to ensure the MECP noise guideline limits will not be exceeded.
- All equipment operating on the site must have effective and continuously operating mufflers.
- The speed limit for trucks operating on the site be posted as being 20 km/hr.
- There should be policy to minimize or eliminate tail gate banging from occurring on the site.

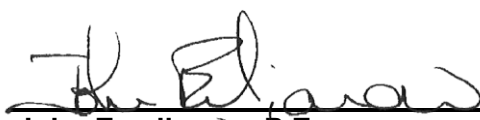
- To mitigate the noise impact from the gravel pit at existing noise sensitive uses:
 - A 2.0 m high sound barrier is recommended at the north end of Phases 1 and 2. This barrier is required prior to the start of any work in Phases 1 or 2.
 - A 4.0 m high sound barrier is recommended along the west side of Phase 2, returning east along the south extent. This barrier is required prior to the start of any work in Phases 1 or 2.
 - A 4.0 m high sound barrier is recommended along the west side of Phase 5, extending east approximately 30 m at the north end. This barrier is required prior to the start of any work in Phases 3 to 5.
- Mitigating the noise levels at the vacant noise sensitive lots is only required if a noise sensitive use (such as a residential dwelling) is built on the lots. To mitigate the sound levels at the vacant noise sensitive lots:
 - A localized sound barrier up to 10 m in height would be required around the west side of the processing area. The crest of this barrier must be no more than 30 m from the equipment in the processing plant;
 - A sound barrier up to 17 m in height would be required along the east side of Phases 3 and 4; and
 - The 4.0 m high sound barrier along the west and south sides of Phase 2 would need to increase to 5.0 m in height.

If there are any questions, please do not hesitate to call.

Yours truly,

VALCOUSTICS CANADA LTD.

Per:


John Emeljanow, P.Eng.

APPENDIX A

TRANSPORTATION STUDY

APPENDIX B

FOLIAGE

16 December 2021
Project: 210578

Donald K Tremble
c/o Matt Nelson
GM Blue Plan
1260-2nd Avenue East
Owen Sound ON N4K 2J3

Dear Mr. Tremble:

**RE: TRANSPORTATION STUDY: PROPOSED BURNSTEAD PIT, CONCESSION 4 NDR,
GREY COUNTY**

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct an operational analysis and sightline review for the lands located at 382063 Concession 4 NDR in the Municipality of West Grey, Grey County, Ontario.

Development Concept

The property owner is proposing to operate an aggregate pit with a haul route from the site using Concession 4 NDR and Mulock Road to Grey Road 4.

Figure 1 illustrates the location of the subject site. **Figure 2** illustrates the haul route.

Existing Conditions

Road Network

Concession 4 NDR is under the jurisdiction of the Municipality of West Grey. It is local east-west two rural lane-lane road with the posted speed limit of 80 km/h.

Mulock Road is under the jurisdiction of West Grey. It is local north-south two lane-lane rural road with the posted speed limit of 80 km/h.

Figure 3 illustrates the existing lane configuration and traffic control.

Traffic Volumes

The existing weekday AM and PM peak period intersection traffic counts were recorded at Concession 4 NDR and Mulock Road by Paradigm in November 2021.

Figure 4 illustrates the existing traffic volumes during the AM and PM peak hours.

Traffic Operations

The operation at the intersection of the Mulock Road and Concession 4 NDR was evaluated with existing volumes using Synchro 10.

The intersection analysis considered two separate measures of performance:

- ▶ the volume to capacity (v/c) ratio for each intersection;
- ▶ the LOS for each turning movement (LOS is based on the average control delay per vehicle); and
- ▶ The estimated 95th percentile queue lengths(s).

Table 2 summarizes the existing operations. No critical movements are identified.

Appendix A contains the details Synchro 10 Reports.

TABLE 2: EXISTING TRAFFIC CONDITIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Mulock Road /Mulock Road & Concession Road 4	TWSC	LOS Delay V/C Q	< < < <	A 9 0.01 0	> > > >	A 9 >	< < < <	A 9 0.01 >	> > > >	A 9 >	A 7 0.00 0	A 0 0.00 0	A 0 0.00 0	A 1 >	A 7 0.00 0	A 0 0.00 0	A 0 0.00 0	A 0 >	
PM Peak Hour	Mulock Road /Mulock Road & Concession Road 4	TWSC	LOS Delay V/C Q	< < < <	A 9 0.02 1	> > > >	A 9 >	< < < <	A 9 0.02 >	> > > >	A 9 >	A 7 0.00 0	A 0 0.00 0	A 0 0.00 0	A 1 >	A 7 0.00 0	A 0 0.00 0	A 0 0.00 0	A 0 >	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

TWSC - Two-Way Stop Control

</> - Shared with through movement

Site Operations

The estimated site trip generation is based on the number of trips made by trucks utilizing the proposed hauling route during the operation. It is expected that the trucks used for operations would be standard sized single-unit trucks or tri-axle trucks, but will have the potential to use



WB-19 tractor-trailer trucks. The number of forecast trips was calculated using the following information regarding expected pit operations:

- ▶ **Licensed Extraction Rate:** The maximum amount of tonnage applied for the aggregate licence is 200,000 tonnes per year. This rate represents the maximum amount of material that can be extracted from the site on yearly basis.
- ▶ **Pit Operations:** The operational plan for the pit notes that the trucks will be loaded between 7:00 AM and 6:00 PM daily, weekdays and Saturday mornings for a duration of 10 months. Realities of market forces and weather have shown that this activity can be sustained for 232 operating days per year.
- ▶ **Vehicle Size:** An average payload of 25 tonnes per truck was assumed for the purposes of the analysis.

Table 1 summarizes the estimated daily average and peak hour traffic generation at the aggregate pit. From the calculations, it was found that an average of 6 trips per hour can be expected. To account for minor variances in the average hourly volume throughout the day and to present a conservative analysis, the average hourly volume of 6 trips per hour has been rounded to 10 trips per hour.

TABLE 1: TRIP GENERATION ESTIMATES

Measure	Units	Input	Calculation
Annual Rate of Extraction	tonnes/year	200,000	
Operating Days per Year	day/year	232	
Average Extraction per day	tonnes/day		862
Average Payload per Truck	tonnes/truck	25	
Average Number of Trucks per Day	trucks/day		35
Operating Hours per Day	hours/day	11	
Average Number of Trucks Load per Hour	truck/hour		3
Trip per Truck Load	trips/truck	2	
Average Hourly Truck Volume	trips/hours		6

Figure 5 illustrates the site traffic volumes during the AM and PM peak hours.

Trip Distribution and Assignment

The distribution of the site traffic consists only of truck load transportation. The truck hauling involves two steps:

- ▶ a trip of the loaded truck from the proposed pit destined to Grey County Road 4; and
- ▶ a return trip of the unloaded trucks to the proposed pit.



Hence, the trips were evenly split between inbound and outbound trips.

Evaluation of Future Traffic Conditions

Future traffic conditions assessed include estimates of future background and total traffic volumes for the 2026 horizon. The future traffic volumes near the development will consist of:

- ▶ Increased non-site traffic (generalized background traffic growth of 2.0% per annum was assumed); and
- ▶ Traffic generated by the subject site.

No nearby in-stream developments were identified which would impact the background traffic in the study area.

Figure 6 (attached) illustrates the 2026 background AM and PM peak hour traffic volumes for the peak hour.

Figure 7 (attached) illustrates the 2026 total AM and PM peak hour traffic volumes for the peak hour.

Five- Year Horizon Traffic Operations

The study area intersection operation analysis followed the same methodology used for the existing traffic conditions. No critical movements are forecasts to occur.

Table 3 summarizes the 2026 Background level of service conditions.

Table 4 summarizes the 2026 Total level of service conditions.

Appendix B contains the details Synchro 10 reports.

TABLE 3: 2026 BACKGROUND TRAFFIC CONDITIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Mulock Road /Mulock Road & Concession Road 4	TWSC	LOS Delay V/C Q	< 9 < 0.01 < 0	A > > >	A 9	< 9 < 0.01 < 0	A > > >	A 9	A 7 0.00 0	A A 0.00 0	A 1 0.00 0	A 7 0.00 0	A A 0.00 0	A 0 0.00 0	A 0 0.00 0	A 0 0.00 0	A 0		
PM Peak Hour	Mulock Road /Mulock Road & Concession Road 4	TWSC	LOS Delay V/C Q	< 9 < 0.03 < 1	A > > >	A 9	< 9 < 0.02 < 1	A > > >	A 9	A 7 0.00 0	A A 0.00 0	A 1 0.00 0	A 7 0.00 0	A A 0.00 0	A 0 0.00 0	A 0 0.00 0	A 0 0.00 0	A 0		

MOE - Measure of Effectiveness

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TABLE 4: 2026 TOTAL TRAFFIC CONDITIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Mulock Road /Mulock Road & Concession Road 4	TWSC	LOS Delay	<	A	>	A	<	A	>	A	A	A	A	A	A	A	A		
			V/C	<	9	>	9	<	10	>	10	7	0	0	2	7	0	0		
			Q	<	0.01	>		<	0.01	>		0.01	0.00	0.00		0.00	0.00	0.00		
				<	0	>		<	0	>		0	0	0		0	0	0		
PM Peak Hour	Mulock Road /Mulock Road & Concession Road 4	TWSC	LOS Delay	<	A	>	A	<	A	>	A	A	A	A	A	A	A	A		
			V/C	<	9	>	9	<	9	>	9	7	0	0	2	7	0	0		
			Q	<	0.03	>		<	0.02	>		0.01	0.00	0.00		0.00	0.00	0.00		
				<	1	>		<	1	>		0	0	0		0	0	0		

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

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Sight Distance Assessment

It was requested that the sight distance be measured for trucks making an eastbound right-turn from Concession 4 NDR onto Mulock Road. The required sight distance for this movement was assessed based on the methodology outlined in the Transportation Association of Canada (TAC) *Geometric Design Guide for Canadian Roads*¹ ("TAC Guide").

The sight distance requirement at the study intersection of Concession 4 NDR and Mulock Road was determined based on a design speed of 100 km/h, which is 20 km/h above the posted speed limit of 80 km/h on Mulock Road. This results in requirement of 295 metres of sightline distance.

Paradigm staff completed a site visit in November 2021 to measure the sightlines at the intersection of interest. Sightlines were measures assuming standard driver eye and object height². The vision of a driver, set back 5.4 metres from the edge of roadway is obstructed by vegetation on the west side of Mulock Road, north of Concession Road NDR. However, without the obstruction, it was confirmed that the 295 metres of sight distance recommended in the TAC Guide can be achieved. Therefore, it is recommended that some trees within the right-of-way be removed to allow for adequate sight distance.

Figure 8 illustrates the relative departure sight triangle and decision point. **Figure 9** highlights the trees that may be subject to be removal to achieve adequate sight distance from the driver's eye position noted in the TAC Manual. Any removal of trees to achieve adequate sight lines should be confirmed with a detailed survey.

¹ Geometric Design Guide for Canadian Roads, *Transportation Association of Canada*, June 2017.

² Table 2.5.1, TAC Geometric Design Guide for Canadian Roads



It is noted that this is an existing condition, and not caused by the addition of traffic from the subject site.

Turning Assessment

Figure 10 shows an AutoTurn assessment of a WB-19 truck making an eastbound right-turn from Concession 4 NDR onto Mulock Road. The analysis shows that the truck would need to make a wide right-turn into the opposing lanes and would travel over the unpaved shoulder on the southwest corner of the intersection. To accommodate a WB-19 truck, the southwest shoulder should be paved.

Similar to the sight distance assessment, it is noted that this is an existing condition, and not caused by the addition of traffic from the subject site. **Figure 11** shows the existing condition of that corner which shows evidence of vehicles driving over the unpaved shoulder.

Conclusions

Based on the analyses contained in this letter, it is concluded that:

- ▶ Existing Traffic Operations: The study area intersection is currently operating at a good levels of service during the AM and PM Peak hour periods;
- ▶ Site-generated Traffic: The proposed development is forecast to generate 10 truck trips per hour at full build-out;
- ▶ Total Traffic Operations: The observed intersection is forecasted to operate well by the 2026 horizon without any problem movements
- ▶ Sight Distance Assessment: The sight distance required for truck driver's eye height meets the recommended minimum if the appropriate vegetation is removed. This is an existing condition, not introduced by the subject development.
- ▶ The southwest corner of the intersection of Mulock Road and Concession 4 NDR should be paved to better accommodate truck movements. This is an existing condition, not introduced by the subject development.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

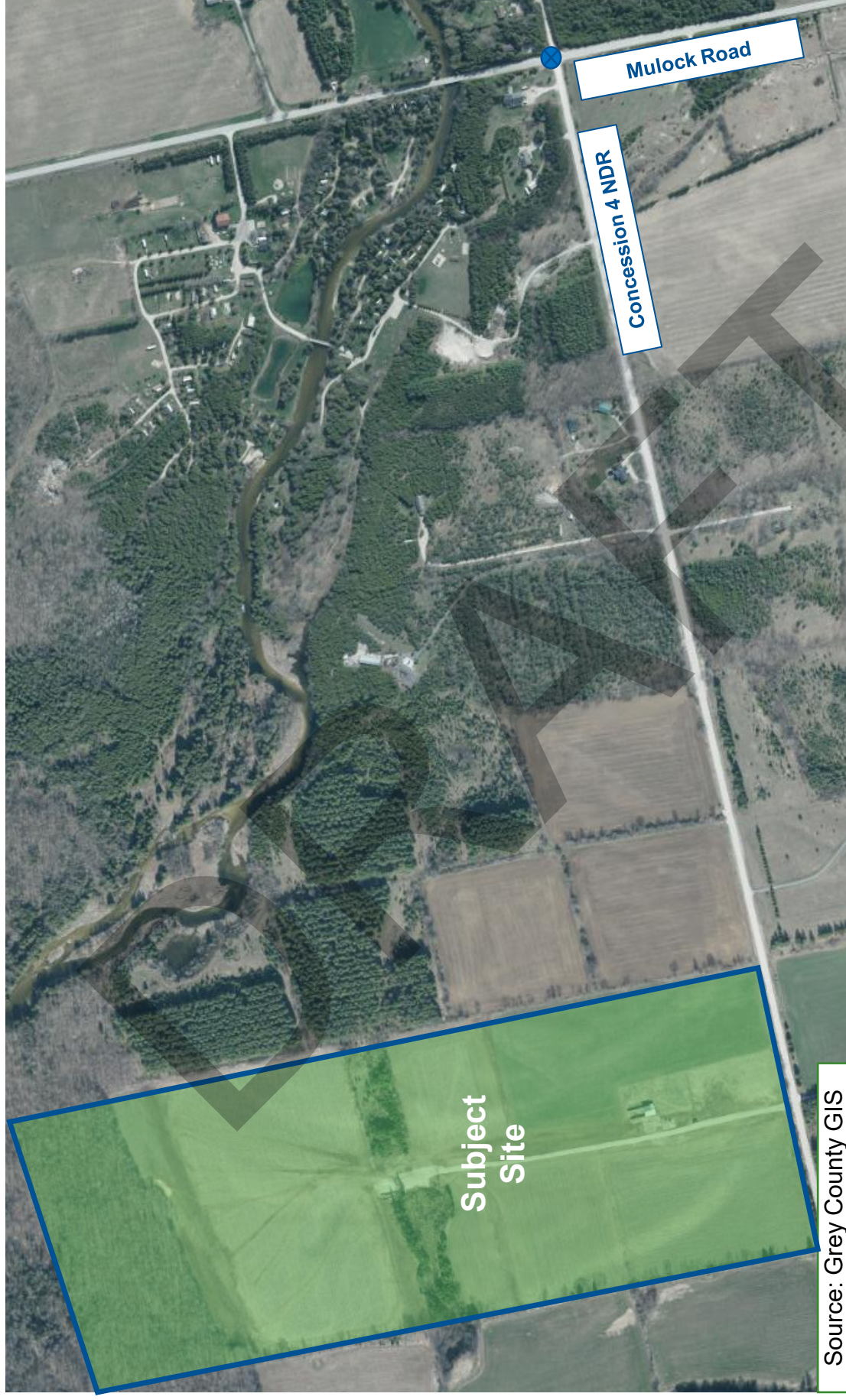


Matt Brouwer

P.Eng.

Senior Project Manager





Source: Grey County GIS

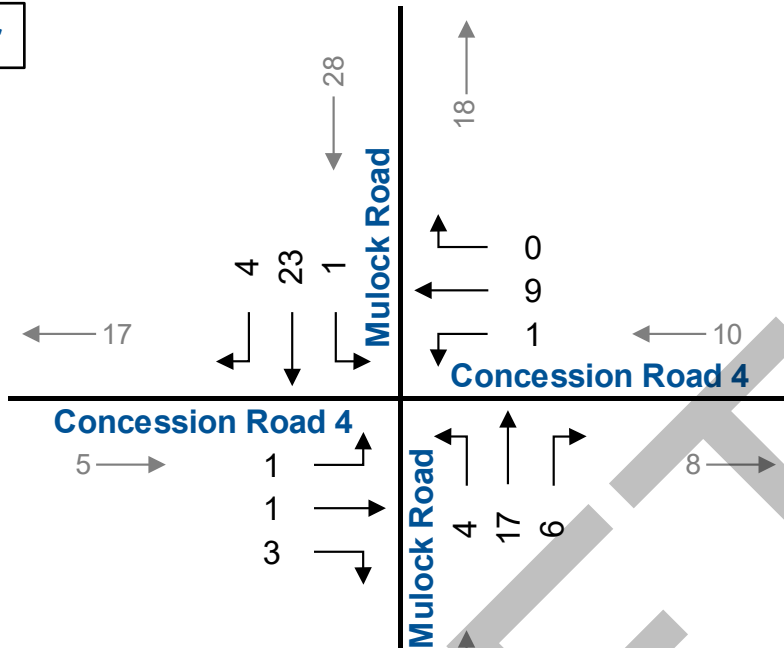


Location of Subject Site

Figure 1



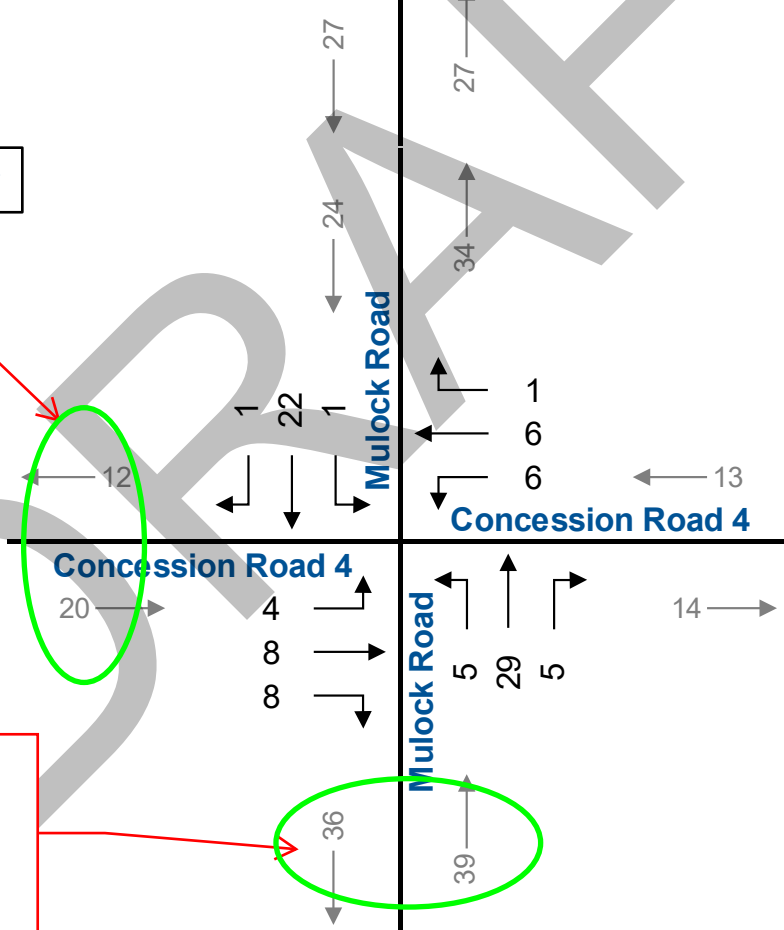
AM Peak Hour



Peak hour has 32 behicles.
AADT is 320. At 3.5% min
daytime hour = 12 vehicles.

10 cars
1 med
1 hvy

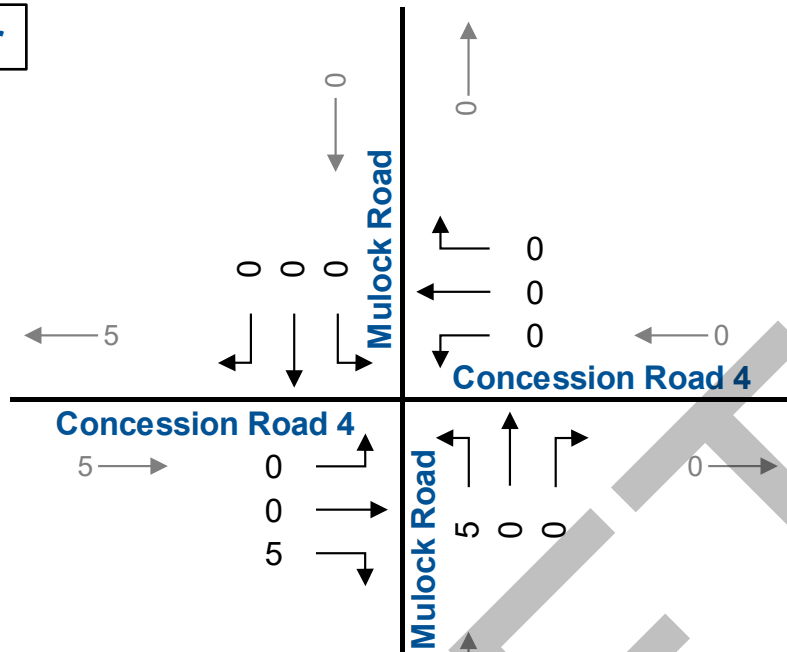
PM Peak Hour



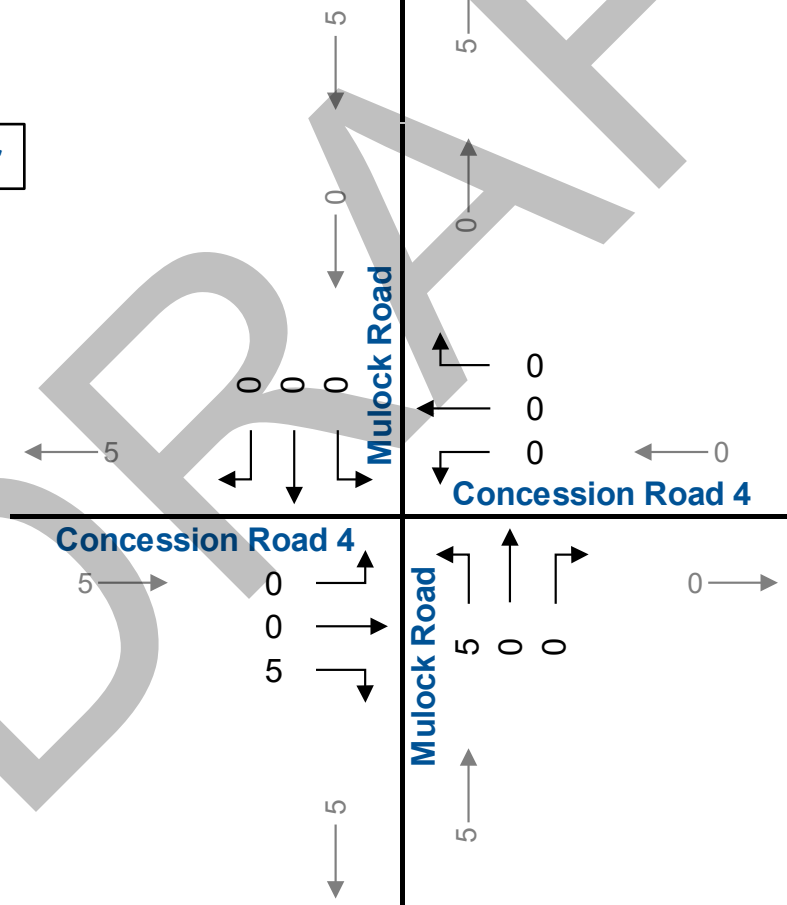
Peak hour has 75 vehicles.
AADT is 750. At 3.5% min
daytime hour = 26 vehicles.

24 cars
1 med
1 hvy

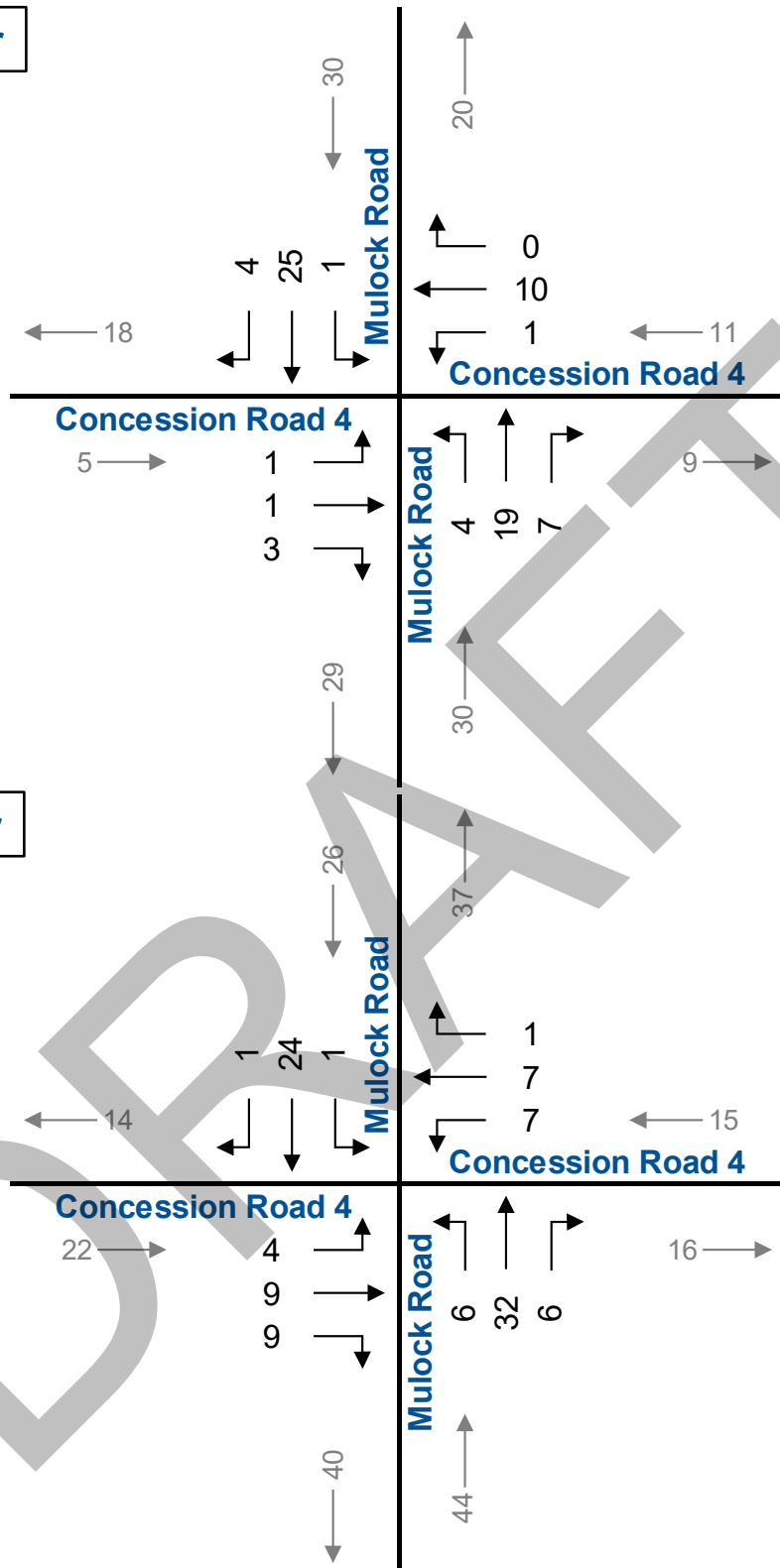
AM Peak Hour



PM Peak Hour

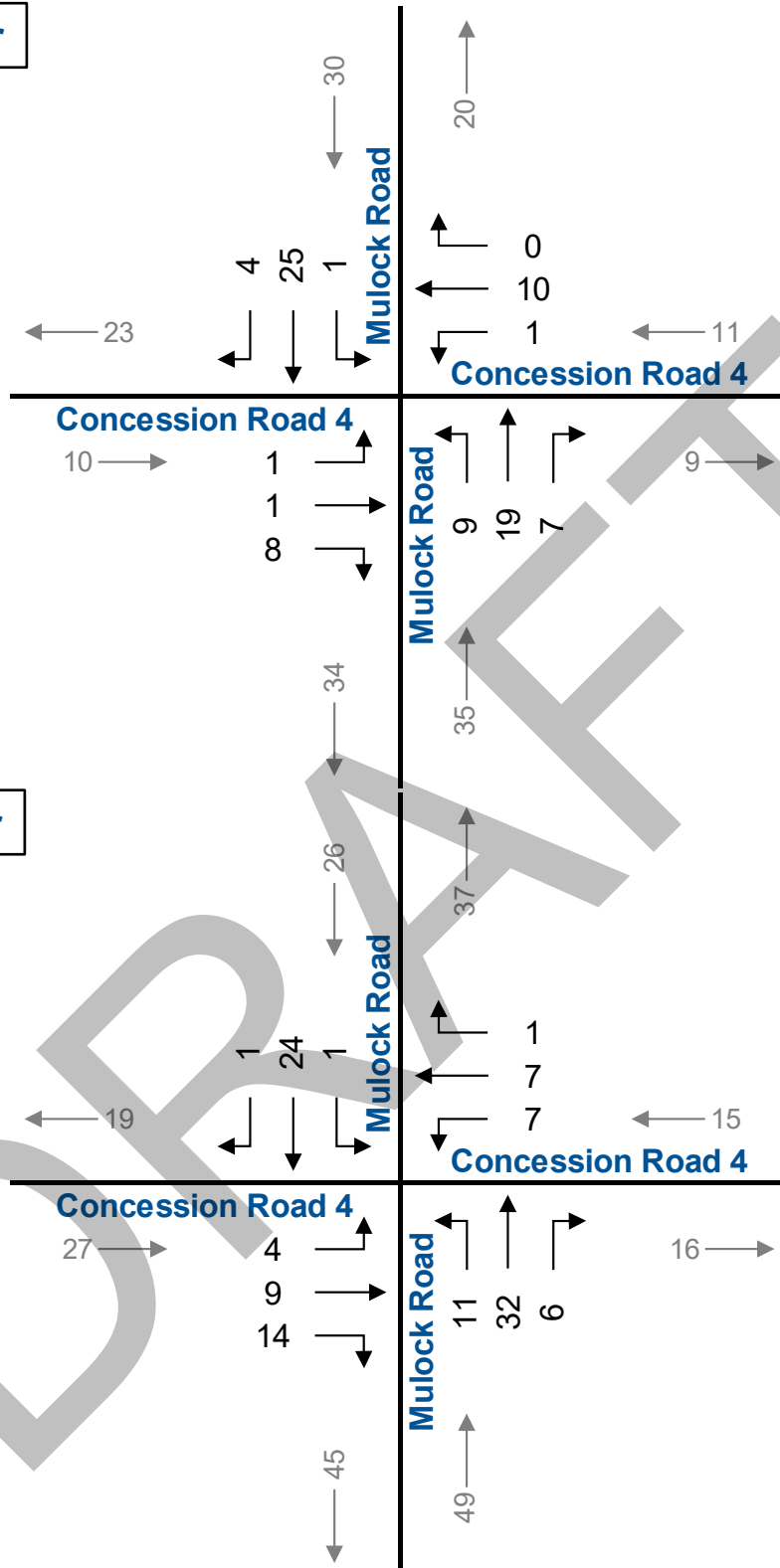


AM Peak Hour

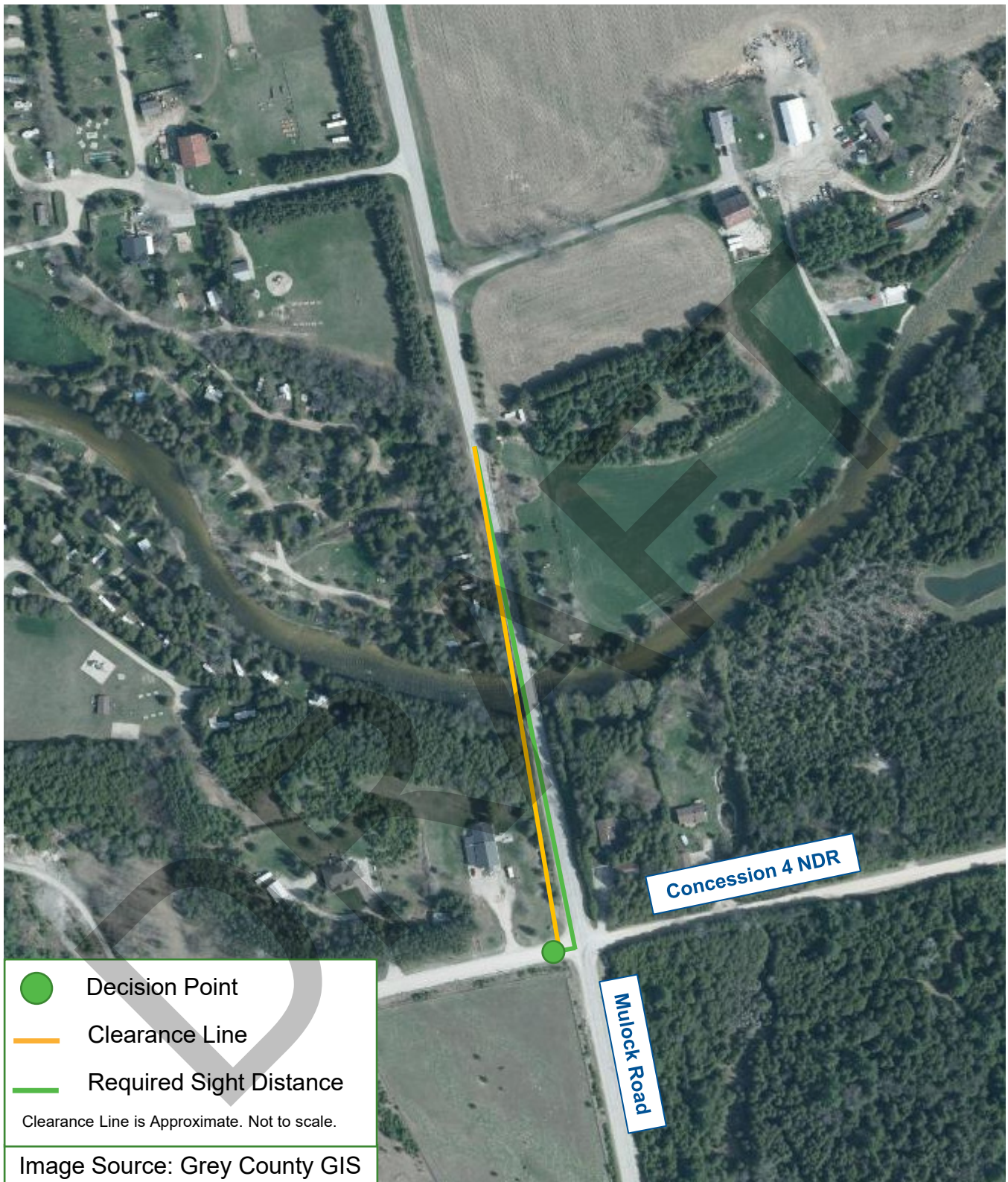


PM Peak Hour

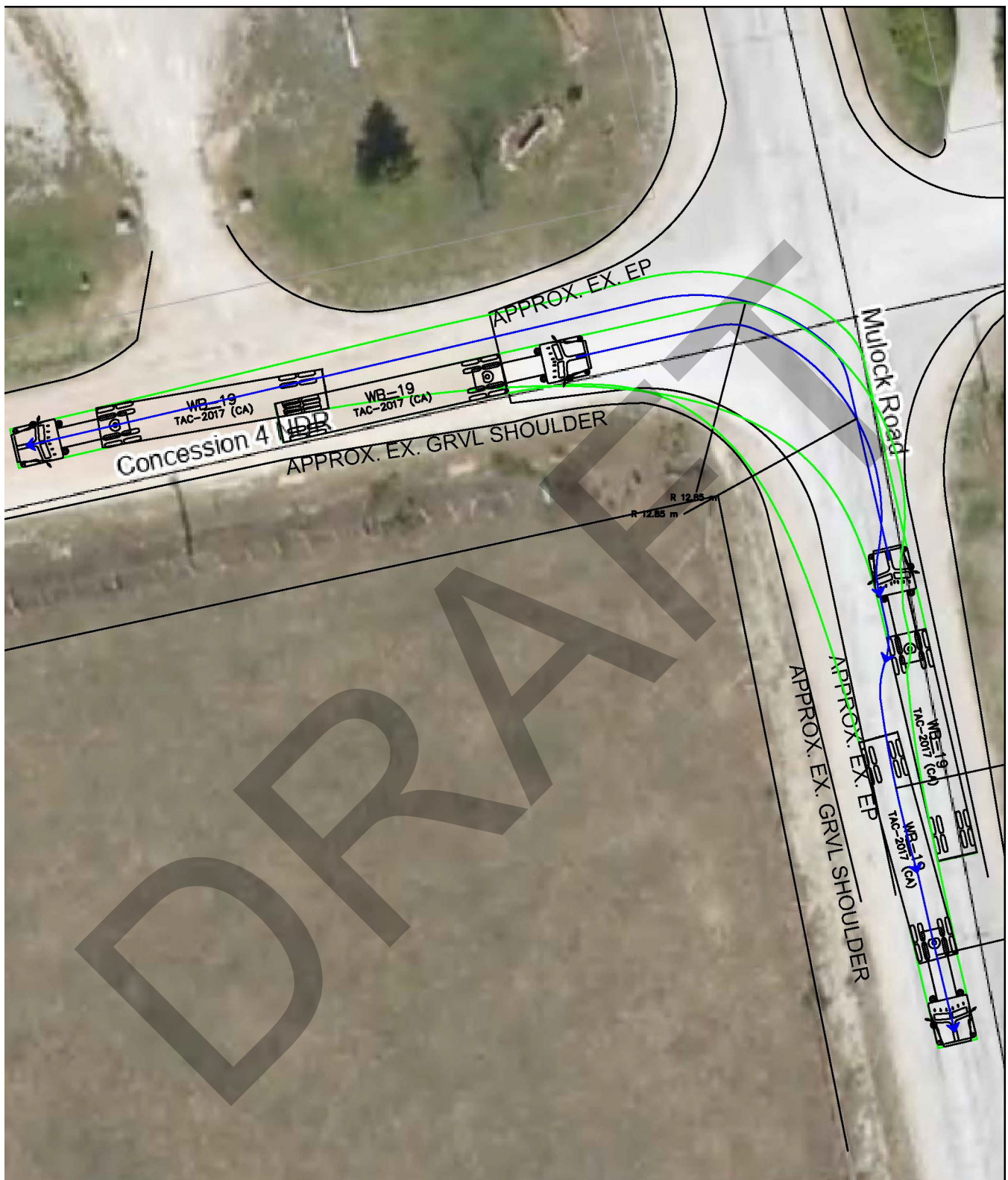
AM Peak Hour



PM Peak Hour









Appendix A

Existing Synchro 10 Reports

DRAFT



Appendix B

Future Background and Total Synchro 10 Reports

DRAFT



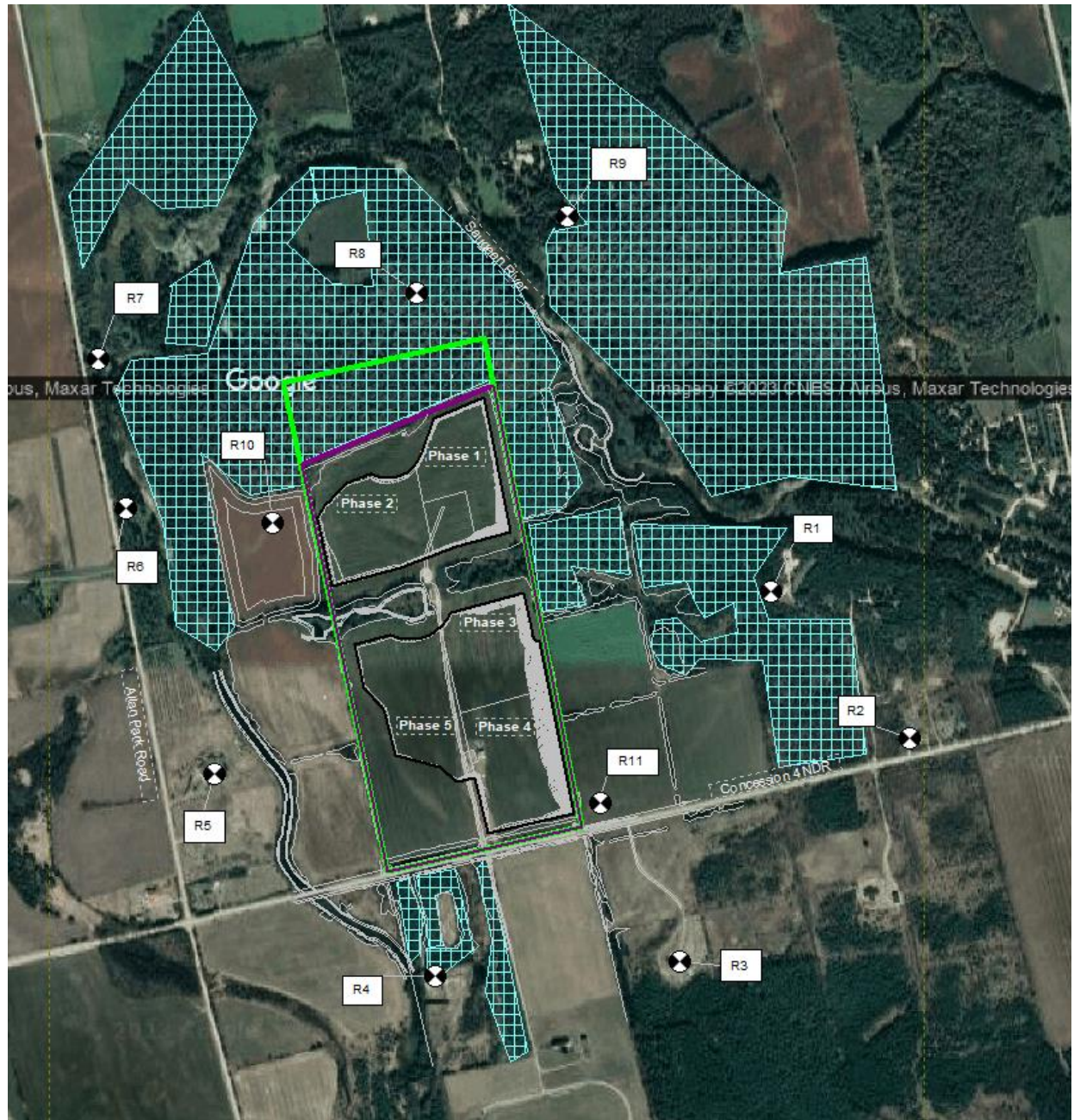


FIGURE 1: FOLIAGE AREAS



FIGURE 2: PHOTO FROM CONCESSION 4 NDR TOWARDS R4