

**Ramsey County Position on Discrepancies  
between the MRCC Road Attributes for  
Emergency Service Numbers (ESN) and  
Municipalities and their Polygon  
Representations**



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## EXECUTIVE SUMMARY

Ramsey County recognizes that there may be discrepancies between the value for an ESN or Municipality at a given point along a road segment when the boundary is roughly equivalent to a roadway.

Ramsey County believes that these discrepancies do not degrade the quality or timeliness of emergency response, reduce locational accuracy of the data, or limit the capabilities or effectiveness of any functioning system. Correcting these discrepancies would result in one or more of the following:

- Consumption of resources from the County that could better be spent improving our data in ways that will improve quality of emergency response (such as collecting and improving address and landmark data)
- Increased overhead of maintenance of roadway data by increasing feature counts, which may decrease system performance
- Creation of polygons that do not reflect the best interpretations of established boundaries
- Alterations of roadway representations in such a way as to degrade their use for other county needs of higher value, such as routing or mapping.

For these reasons, Ramsey County will not be adjusting ESNs, municipal boundaries, or roadway data based solely on discrepancies between these items.

## DISCUSSION

Emergency Service Numbers (ESN) are identifiers attached to telephone numbers by telephone companies and used by them to link to specific responder information to an emergency call. The only use these to a county would be if their Public Safety Answering Point (PSAP) does not have a Computer Aided Dispatch System (CAD). In a county with a CAD, the CAD converts this information into the appropriate response agencies. The area in which telephone numbers have the same ESN can be represented as a polygon, called an Emergency Service Zone (ESZ).

In Ramsey County, the CAD does not rely on any polygon information or ESN data for the assigning of service providers to a call. Instead, all of the information is attributed to the road centerlines based on the location of the call. Ramsey County has spent considerable time and effort to accurately attribute this information, and proper maintenance of this information is a high priority. Polygonal representations of Municipalities are used merely as backdrops for mapping images, and serve no greater functional purpose.

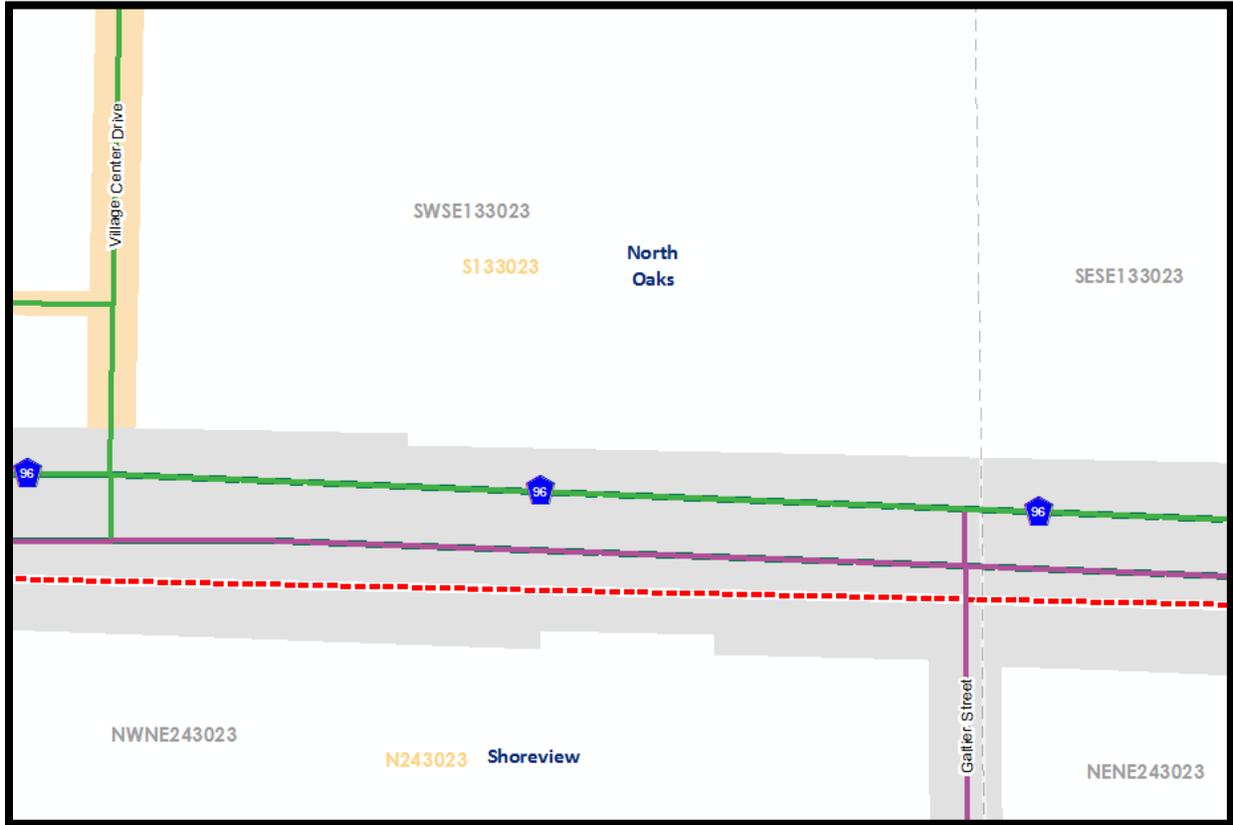
For the vast majority of the road network which falls inside of a single ESZ or municipality, there should be no discrepancy between the assign values on the road and the appropriate polygon. However, when ESZ's or municipal borders are roughly coincident with a road, there are possibilities for discrepancies based on several issues:

1. The road representation may be a digitization based on pavement or center of road right of way while the municipal boundary may be based on other factors such as cadastral records and surveys.
2. Agreements for coverage among responders may not match exactly match the surveyed or otherwise agreed upon boundaries for municipal jurisdictions.

3. Divided roads can generate road segments in a road system required for connectivity of the network but which logically do not follow the attribution of their polygons in which they fall.

## EXAMPLE OF CONFLICTING CONDITIONS

Examples of these issue may be seen in the image below:



**MUNICIPAL BOUNDARY (dashed red line):** The boundary between North Oaks and Shoreview is set at the Public Land Survey boundary between sections 13 and 24 of Township 3023. This is the appropriate location for this boundary.

**ROAD REPRESENTATION:** Common understanding is that the highway represents the boundary of the communities. The grey area in the image represents the Right of Way for the road, and it can be seen that the boundary does fall within this area. However, the specific road representations for this stretch of Highway 96 were created based on high accuracy imagery and follow the approximate centerline of the divided road carriageways. This results in all of the Highway 96 road features in this area as falling entirely within the North Oaks polygon. Despite this, we maintain attribution on the roads that indicates that the east-bound lanes are in Shoreview, to match common understanding.

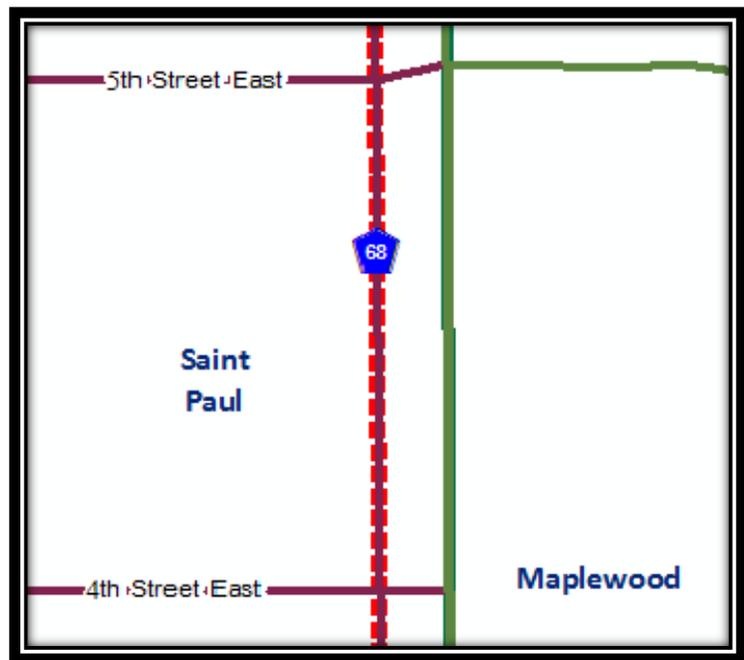
Further issues with removing any discrepancies between the various polygons and the road network are revealed when considering the small portions of Village Center Drive and Galtier Street which are required in the road network to link the opposing carriageways. No part of Village Center Drive exists in Shoreview nor does any part of Galtier exist in North Oaks. However any change that harmonizes the

road network with the municipal boundaries would either violate these facts or require a municipal boundary that is clearly distorted to meet this goal, and therefore questionable for other purposes.

Emergency Service Zones: In the case above, Shoreview and North Oaks are both in the same ESZ; however, this could change at some point. In addition, one can image other municipal boundaries where similar situations exist, yet they do not share the same ESZ. In these cases, it one could clearly image where responders divide this road based on the common understanding of the boundary with the east-bound lanes being served by the southern responders and the west-bound lanes being served by the northern responders. Attempting to harmonize this situation would result in the same issues as attempting to match the municipal boundaries.

### A MORE COMMON EXAMPLE

The image at right illustrates a more common example of this type of issue. The municipal boundary between Saint Paul and Maplewood has been established as the south-bound lane of County Highway 68, which is co-incident with the survey boundary between Sections 35 and 36 of Township 2922. In this case, the ESZ would have the same boundary. The extensions of the 4<sup>th</sup> and 5<sup>th</sup> Streets to connect with the north-bound lane are required to enter into Maplewood. However, there is no response from Maplewood on either of these streets, nor should they be considered in Maplewood as part of a street inventory. The solution is to code the ESZ and City values for the streets as Saint Paul, despite their existence in Maplewood.



### LIMITED VALUE OF ESZ DATA TO COUNTIES

ESZ are largely useless for most counties. The use they may have in cases where an emergency call needs to go to another PSAP is very limited, especially as municipal information can be substituted in nearly all cases. Due to this, creation and maintenance of an ESZ polygon requires the county to dedicate resources to a pursuit for which they have no business need. These resources should be used in efforts that will improve our emergency services. Ramsey County has no problem providing “generalized” which correspond to the appropriate municipal boundaries, but creating ESZ’s that “match” the street data is not an activity with any value to the county, nor is it entirely clear how it would be done, based on the issues above.

## PERCIEVED NEED FOR RECONCILING DIFFERENCES

Given the difficulties with reconciling the representations of the roads with the actual conditions in the field, it is important to understand the business needs behind requests for this reconciliation. Ramsey County is aware of four potential drivers for this reconciliation and would like to address each in turn.

1. *Belief that discrepancies will result in confusion in assigning emergency response resources:* How any particular CAD system dispatches units for response is based on the architecture of that system. Each system also has highly specific requirements and configurations for GIS data for it to be used. As such GIS features produced for other functions, even similar functions such as NG-911 call routing, are unlikely to be consumed by the CAD system. Ramsey County has put in considerable effort to ensure that the emergency response system works appropriate with the data we supply it, and this will continue to be of primary importance to the county. Any discrepancies currently in our data do not result in any confusion or degradation of service – in fact, perceived discrepancies may actually be required for desired functionality.
2. *Belief that discrepancies will degrade call routing capacity of NG911:* The exact means by which NG-911 call routing will be accomplished is a vendor specific function. However, we are confident that the areas where discrepancies are identified are such that they will not significantly impact any geolocation process. Many discrepancies will fall on road segments without address values, so they are not options for geocoding call locations based on addresses. If a call is being geocoded based on an X/Y location, Ramsey County believes that there are other issues that may result in just as great an error as would be represented by these discrepancies. For instance, cell phone calls are currently assigned to a PSAP based on the location of the cell tower. This inaccuracy dwarfs the issues of these discrepancies. Even if a GPS location is used based on the phones location, it is likely the inaccuracy of the GPS measurement is greater than the distance of most of these discrepancies. Clear articulation of the methods for geocoding calls for routing and improvements in mobile cell GPS accuracy would be two reasons for a re-evaluation of this position.
3. *Belief that discrepancies will result in confusion regarding steward or owner of core data:* All data elements should be identified with ownership information independent of their spatial location. Agreements between local jurisdictions regarding the submission of these features to common datasets may result in differences between the presumed and actual steward or owner. While the existence of some “master” geometry that defines ownership/stewardship for all elements inside of it would be a very simple solution, Ramsey County does not feel that a single polygon could be developed for all required features, and that querying individual features as needed is a better solution.
4. *Discrepancies will be flagged in any automated processes which compare values on road data related to the polygons in which they fall:* Ramsey County agrees that this issue would be unavoidable with the discrepancies in the system. However, we have no business case for which this generates any significant issues. The generation of these discrepancies as part of a QC check of the data would be helpful and it would take someone to review the list of errors to determine if any of them are actual issues that need to be addressed. This is no different than

many of the automated queries we run on systems now which return a set of flagged items, some of which may be actual errors but many others are not.

## **CONCLUSION**

Given that the types of discrepancies noted in this document do not have clear solutions, may be unavoidable to maintain valid data in other ways, and present no clear issues for any business cases at the County, or we believe, in the larger community, we will not be making any concerted effort to eliminate these items from our data sets. Where they can be addressed during the course of our regular editing without doing a disservice to our data for other uses, they will likely be addressed.