

F.S.M. Traffic Study Checklist Acceptance Form (07/2013)
Loudoun County Department of Transportation Capital Infrastructure (DTCI)
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Application Name: Loudoun Water - Red Hill Road Date: 12/26/13

LMIS Numbers: SPEX 2013-0040

Scoping / Pre-Application Meeting Number: PRAP - -

DTCI Reviewer: Aaron Zimmerman

of Guidelines Satisfied: 14 of 14 Accept or Reject: Accept

Reviewer Comments: Traffic statement letter as scoped.

- (1) **Project Description:** A description of the existing and proposed uses, as well as the size of the proposed development (i.e., square footage, acreage, etc.), shall be included in the traffic study. Additionally, the type of application (i.e., ZMAP, SPEX, ZCPA, etc.), relevant previous site approvals, relevant previously approved proffers, and proposed project phasing shall be discussed. The proposed development program analyzed in the traffic study shall match the land development application being proposed at time of submittal, or as agreed to at the traffic scoping meeting.

Additional Scoping Guidance: All study graphics should show the locations of the proposed site driveways and an outline of the project site location. The study should include a description of all roadways in the study area including speed limits, VDOT route numbers, number of lanes, CTP classification, CTP ultimate conditions, bike/ped facilities, and transit stops. Include a graphic depicting the existing lane configurations and traffic control devices for all roadways/intersections in the study area.

Does Study Meet Guidelines? yes Comments: Water tanks on Red Hill Road

- (2) **Study Area and Traffic Count Locations:** Roadways internal or adjacent to the development site shall be included in the traffic study. The study area should be defined at the scoping meeting and as a guideline traffic count locations should include intersections adjacent to the project's frontage and other external roads to the extent that the project's generated traffic is anticipated to exceed 10 percent of the road's current/existing traffic volumes (at the time of application).

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Does Study Meet Guidelines? Yes Comments: N/A

- (3) **Data Collection:** The AM/PM peak period traffic counts shall not be more than twelve (12) months old at the time of the application submission. Twenty-four hour weekday traffic counts or estimates (based on the application of historical VDOT 'k' factors to peak hour traffic volumes) are also required for roadway segments.

Additional Scoping Guidance: Traffic counts should be collected from 6:30 to 9:30 AM and 4:00 to 7:00 PM, unless otherwise agreed upon, on Tuesdays, Wednesdays, or Thursdays during the school year (early September through early June), excluding federal holidays and the remainder of the week surrounding the holiday. Traffic counts on Saturdays and Sundays should generally be collected between 11:00 AM and 1:00 PM, unless otherwise discussed and agreed upon due to the specifics of a land development proposal. Pedestrian, bicycle, and truck counts should be collected at the same time as vehicular counts. Pedestrians and bicycles should be included in the analysis but not be treated as vehicles. Existing traffic count worksheets should be including the appendix.

Does Study Meet Guidelines? Yes Comments: N/A

- (4) **Trip Generation:** As a general guide to vehicle trip generation, rates or equations published in the latest editions of the Institute of Transportation Engineer's (I.T.E.) Trip Generation Manual and Trip Generation Handbook shall be used. If the applicant chooses to use an alternate trip generation methodology or if the County requests that the applicant conduct a local trip generation count at a similar facility, it shall be documented and agreed to prior to usage in the traffic analysis. Primary trip reductions associated with pass-by trips and methodologies for trip reductions associated with pass-by trips shall be discussed and agreed upon at the scoping meeting. Refer to VDOT traffic study regulations and the ITE Trip Generation Handbook for appropriate trip generation and pass-by reduction methodologies. The traffic study shall include a comparison of trip generation for existing and approved uses with trips generated by the proposed development program.

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Additional Scoping Guidance: The study should clearly state whether rates, equations, observed counts, local rates, or other sources were used to determine trip generation.

Does Study Meet Guidelines? Yes Comments: N/A

- (5) **Traffic Volume Projections:** The traffic study shall provide existing and projected traffic volumes, with and without the subject project, for Average Daily Traffic, as well as AM and PM peak hours and weekend peak periods, if necessary, for the agreed upon phasing program and build out years. Projections shall also be made for date of completion plus six (6) years or to an agreed upon forecast year, for planning purposes only. The peak hour of the project/individual land use(s) (as given in the ITE *Trip Generation Manual*) should be added to the corresponding AM/PM existing peak hour of the adjacent roadway traffic volumes to show the 'worst case' scenario. The existing peak hour of traffic on the roads adjacent to the subject project site shall be identified. These traffic volumes shall be provided at roadway intersections and commercial or private accessways/entrances within the study area.

Does Study Meet Guidelines? Yes Comments: N/A

- (6) **LOS Analyses:** Level of Service (LOS) calculations for existing and projected conditions, with and without the subject project, for highway segments, intersection legs, and entrances shall be provided. Calculations shall be in accordance with the latest edition of the *Highway Capacity Manual* (HCM) and/or the Highway Capacity Software (HCS), Synchro, SIDRA, VISSIM, CORSIM, or as may be agreed at the scoping meeting. Traffic volumes and level of service information shall be provided for each phase of development, to include conditions at date of project completion. Traffic counts and LOS worksheets and projected traffic volume LOS analyses, using agreed upon analysis techniques, including existing AM/PM peak hour signal timing, shall be included as a part of the traffic study. Electronic files associated with the LOS worksheets shall be provided to the County with traffic study submission.

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Additional Scoping Guidance: Default software inputs should be used unless otherwise discussed and agreed upon. A minimum peak hour factor (PHF) of 0.85 should be used for existing conditions (unless it is the average of three counts). For future conditions, the minimum PHF may be adjusted up to 0.92. No other adjustments should be made to PHFs in the analysis unless discussed and agreed upon. Document the reason if a software package other than Synchro was used. Also include a PDF of the traffic study on the disc containing capacity analysis printouts.

Does Study Meet Guidelines? yes Comments: N/A

- (7) **Minimum Roadway/Intersection LOS Standards:** Recommendations for phased improvements to the road network links in order to maintain an acceptable level of service (minimum LOS "D") shall be provided. For each phase up to and including build-out, a minimum approach and overall LOS "D" at intersections shall apply. Levels of service at study intersections shall be presented by lane group in traffic study tables and graphics.

Does Study Meet Guidelines? yes Comments: N/A

- (8) **Background Traffic and Roadway Assumptions:** Assumptions which determine projected background traffic, including through traffic growth rate to be applied on roadway links, shall be confirmed at the scoping meeting. The sources for determining future traffic projections will include one or more of the following:

- Loudoun County Demographic Estimates & Forecasts or similar documents from Loudoun County.
- The Loudoun County transportation model which incorporates COG's Cooperative Forecasts for Loudoun County.
- Historical daily traffic counts published annually by VDOT or compiled through other approved traffic studies and sources.
- Approved developments in the vicinity of the proposed development.

Specific other approved development names and respective development square footage or residential units used in the study shall be provided. Assumptions for the anticipated roadway network at each phase of development shall be discussed and agreed upon at the scoping meeting.

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Additional Scoping Guidance: Include a graphic showing the locations of background developments. Include graphics that show the distribution of trips for each background development or the rerouting of trips based on roadway network/land use changes. Generally, growth rates above 2% should not be used unless otherwise discussed and agreed upon. Growth rates should be compounded annually and applied to all movements, not just through volumes, unless otherwise discussed and agreed upon. Provide clear justification for inclusion of background roadway improvements (i.e., County CIP, VDOT SYIP, proffered improvement).

Does Study Meet Guidelines? yes Comments: N/A

- (9) **Traffic/Trip Distribution:** Directional trip distribution information shall be provided for project entrances and collector and arterial intersections within the study area for the phases and categories (e.g., residential, office, retail, industrial and institutional) of development.

Additional Scoping Guidance: Percentage distribution graphics should be included in the study and depict percentages of site traffic turning at each intersection and site driveway. Separate graphics should be provided for primary and pass-by trips distributed throughout the study area. Some mixed-use land development proposals may require multiple distributions for each land use and peak hour period. Generally, each study should take a "fresh look" at the distribution of trips based on population, employment, and retail centers, as well as the existing and future transportation network. Existing traffic patterns and assumptions from previously analyzed nearby developments should help aid in the development of a distribution but should not be the only factors considered.

Does Study Meet Guidelines? yes Comments: N/A

- (10) **Safety Locations:** Road safety hazards as identified at the scoping meeting, within the study area, shall be analyzed for all roadway links and intersections in the traffic study. Analyses requested by the County in the traffic study could include discussion of sight distances, three-year summary of accident data at potential problem intersections, vertical and horizontal roadway alignments, signal warrants, turn lane warrants, speed studies, and/or queuing studies.

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Additional Scoping Guidance: Accident data should be obtained from the Loudoun County Sheriff's Office for the most recent three year period. Queuing analyses should include a side-by-side comparison of 50% and 95% queue and storage lengths in table format (ideally in a single table for all study scenarios). Traffic signal and turn-lane warrant worksheets should be included in the appendix of the study. Include discussion of traffic calming, design of internal streets, and cut-through traffic for residential rezonings and applications for other development proposals in established neighborhoods. Include discussion of a transportation operations and parking plan (TOPP) for proposals that generate a significant amount of traffic on an irregular basis (e.g., baseball stadium).

Does Study Meet Guidelines? Yes Comments: N/A

- (11) **Trip Reduction Factors:** If trip reduction factors are used in the study, such as TDM, internal capture, and mode share reductions, measures necessary at each phase of development to implement the reduction must be specified, with supporting documentation (e.g., COG model, WMATA, VDOT, USDOT, ULI, etc.). Refer to the VDOT traffic study regulations and the ITE *Trip Generation Handbook* for guidance regarding use of trip reductions.

Additional Scoping Guidance: Internal capture diagrams and other sources of information for trip reductions assumed should be included in the appendix of the study.

Does Study Meet Guidelines? Yes Comments: N/A

- (12) **Bicycle and Pedestrian Facilities:** When bicycle and pedestrian accommodations are used to reduce anticipated traffic volume, a description of the physical and functional characteristics of the existing and proposed bicycle and pedestrian facilities shall be provided. If such separate bicycle accommodations (e.g., striped lanes or multi-purpose trails) are anticipated, they shall also be identified. A description of the functional characteristics shall be provided to identify the transportation options that these accommodations provide (e.g., pedestrian access to retail center, safe bicycle route to elementary school, inter-parcel connections to adjacent neighborhoods, access to W&OD trail, etc.)

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