Lummi Nation Road Safety Audit Report

Prepared by
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LUMMI INDIAN NATION ROAD SAFETY AUDIT (RSA)

SUMMARY REPORT

Host: Lummi Indian Nation

Rural Safety Audit (RSA) Team Leaders and Presenters:
  Craig Allred, Transportation Specialist
  (FHWA - Resource Center)
  Adam Larsen, Safety Engineer & Tribal Coordinator (FHWA)

Sponsor: NW TTAP, and EWU Tribal Planning, Eastern Washington University

March 1-2, 2016
To Lummi Nation:

The NW Tribal Technical Assistance Program (NW TTAP) is pleased to support the Lummi Indian Nation Road Safety Audit Workshop that involved participants creating this RSA as described in this report. The Lummi Indian Nation served as host for this RSA training and workshop to strengthen community safety and wellness in transportation. The Lummi Nation has placed a priority on a tribal transportation planning and development that have produced major accomplishments including the Lummi Shore Road Project, 2008 adoption of the Lummi Nation Transportation Plan and the Lummi Nation Haxton Way Pedestrian Path/Lighting Project. The Lummi Nation has a highly professional staff that addresses the priorities for sound transportation and transportation safety. The Lummi Nation hosted this RSA workshop and completed the RSA to continue this leadership and progress for a safe community.

The Lummi Nation Transportation Program worked with consultants in 2015 to update their Tribal Traffic Safety Plan and also partnered with our EWU Tribal Planning Programs in a Washington Traffic Safety Commission funded demonstration project for data driven Tribal Transportation Safety. During 2015 Lummi Nation identified the need to hold a Road Safety Audit workshop as a “next step” in the development and implementation of traffic safety projects and programs. This request was made to the NW TTAP, and we are very pleased that this RSA workshop was carried out successfully thanks to the presenters, participants, and the Lummi Nation. We had strong participation that will strengthen the successful efforts to achieve Target Zero—no fatalities, no serious injuries, on Lummi Nation reservation roads, and to promote safety and wellness throughout the reservation. I would like to thank Mr. Craig Allred and Mr. Adam Larsen from the Federal Highway Administration, and Kurt Vinish, Diane Bern, Matthew Enders, and tribal council member Henry Cagey for their support in this effort.

The NW TTAP was pleased to support this workshop and RSA report to promote the knowledge and skills to continue to improve the reservation transportation systems, specifically through safe roads. We hope that community leaders and staff will build on the knowledge and results of this workshop, report, and subsequent videos. We are pleased to offer this Lummi Nation RSA Report as documentation of the process and work of an RSA team, and how it can be applied on reservations to lead to road safety improvement projects and programs.

Sincerely,

Rowena Yeahquo, Director

NW TTAP

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LUMMI ROAD SAFETY AUDIT REPORT
1.0 Introduction to the Road Safety Audit in Transportation Planning

A Road Safety Audit (RSA) is a proven countermeasure for improving safety and saving lives by reducing injuries. The RSA is a formal and independent safety performance review of a road transportation project by an experienced, multi-disciplinary team of safety professionals, addressing the safety of all road users. The Lummi Tribe, in an effort to make their transportation system as safe as possible, initiated a Transportation Safety Plan in 2015.

The Northwest Tribal Technical Program (NW TTAP) arranged a RSA workshop at the Lummi Reservation in March 2016. This report is the product of that review with the findings and suggestions for improvements.

1.1 Purpose of the RSA Training Workshop

The Lummi Nation’s 2015 Transportation Safety Plan identified several collision clusters that require safety improvements. The Transportation staff chose two locations to conduct a RSA review for the workshop: Intersections (1) Haxton Way & Slater Road and (2) Lummi Shores Road/Kwina Rd/Marine Drive.

Figure (1) Haxton Way & Slater Road

Figure (2) Lummi Shores Rd /Kwina Rd/ Marine Drive

Training Activities and Workshop Schedule included the following activities:
• Field Reviews: Day and Night on March 1-2, 2016
• Stakeholder Meetings on March 1-2, 2016 with:
  ▪ Lummi Nation Planning Department
  ▪ Lummi Nation Business Council Representatives
  ▪ Lummi Nation Law Enforcement
  ▪ Eastern Washington University Student
  ▪ Parametrix Engineering
  ▪ Island County
  ▪ Business Owners and Citizens
• Attended Lummi Tribal Planning Department Meeting, March 3, 2016
• Delivered RSA Report to Lummi Nation April 2016

1.3 The RSA team consisted of the following individuals:
• Craig Allred, Transportation Specialist (FHWA - Resource Center)
• Adam Larsen, Safety Engineer & Tribal Coordinator (FHWA)
• Diane Bern, Deputy Director Public Works (Lummi Nation)
• Officer Phil Ginn (Lummi Nation)
• Spencer Keane (Island County)
• Carol Brown (Lower Elwha Klallam Tribe)
• Tresia Gonzalez (Parametrix Engineering)
• Marty Allen, Roads Department (Skokomish Tribe)
• Adam Amundson (EWU Student)
• Dale Andert (Lummi Nation)
• Don Davis, Engineer (Kootenai Tribe of Idaho)
• Matt Jensen, Transit Mgr/Transportation Planner (Lummi Nation)
• Dwayne Valentine, Engineer (Yakama Nation DNR Engineering)
• Teresa Wright (Squaxin Island Tribe)
• Tysa Cooper (Lummi Indian Business Council)
• Rowena Yeahquo, Director NW TTAP

2.0 The Lummi Indian Nation RSA
2.1. Identification of Need
This safety assessment was intended to identify apparent operational and safety related issues related to recorded crash experience or observation of operational conditions in the field. The data analyzed as part of the Safety Plan was obtained from WSDOT for the period from January 1, 2010 through approximately June 1, 2015 for collisions occurring on the Lummi Nation reservation. Collision data was also analyzed for the major roadways leading to Lummi Nation, including Slater Road and the Marine Drive/Country Lane corridor, for the period from January 1, 2010 through approximately June 2014. The collision data for the major roadways leading to Lummi Nation in this report is consistent with the collision data identified by the Northwest TTAP traffic safety assessment project for Lummi Nation.
An inventory of collision locations were mapped to determine if collisions were clustered in specific locations. The locations of the collisions are shown in Figure 1 for collision from January 1, 2010 to June 2014. Two sites were chosen because they are high traffic generating destinations.

Figure (3) Map of Collision Data on Lummi Reservation

2.2 Site A - Haxton Way & Slater Road

Haxton Way & Slater Road intersection is one of the highest trip generators on the reservation. It has a convenience store and Silver Reef casino on the southeast corner, with truck and traffic from SH 5 going west through intersection to businesses and housing. Going south from intersection is the entrance to reservation and traffic to Ferndale going to the north. This intersection also has the only signal light in Whatcom County.

Figure (4)
Intersection of Haxton Way and Slater Road

2.2.1 USEFUL FEATURES:
- Pedestrian accommodations at intersection;
- Adequate Lighting;
- Good pavement; and
- Adequate condition of pavement markings.

2.2.2 KEY SAFETY ISSUES:
- Mixed users, many unfamiliar drivers use this intersection (local/non-local);
- High number of older drivers;
- Major traffic generators convenience store, gas station, casino/hotel, ferry, and main reservation access;
- Wayfinding to Interstate 5; and
- Commercial use of Slater, large trucks for oil industry.
2.2 Haxton Way & Slater Road

2.2.3 CRASH HISTORY:
- At least 12 high severity angle crashes westbound to southbound;
- Crashes and near-collisions with northbound right turns;
- Ten years crash data: 13+ Serious Crashes, 16+ Property Damage Only, 3 Deaths
- 29 total crashes in 10 years;
- 2 additional fatalities recently

2.2.4a AREAS OF CONCERN:
- Permissive left turns, westbound to southbound.
- Sun glare impairs for oncoming vehicles.
- Frequent fog

2.2.4b AREAS OF CONCERN:
- Eastbound vehicles turning right (south) may obscure other eastbound vehicles.
- Posted speed on Slater Road is 50 mph compared to Haxton Way which is 35 mph.
2.2 Haxton Way & Slater Road

2.2.5 LOW COST/SHORT TERM COUNTERMEASURES:

- Add protected left turn phase for westbound to southbound;
- Add protected northbound right turn arrow (same time as westbound left turn phase);
- Add eastbound acceleration lane for northbound right turns or prohibit northbound right turns on red;
- Continue 45 mph zone eastbound until east of Haxton Road;
- Over-sized, retroreflective back plates on signals;
- Upgrade to 12-inch signal heads; and
- Upgrade to LED signal heads.

2.2.6 LONG TERM RECOMMENDATIONS:

- Roundabout
  - Reduce crash severity, frequency, and maintenance costs.
  - Potential gateway to Reservation.
  - Eliminates only signal in the county.

Figure (9) Example of Roundabout on Haxton Way and Northgate Rd. on Lummi Reservation.
2.3 Site B - Lummi Shores Rd/Kwina Rd/ Marine Rd

Figure (10) Lummi Shore Rd has North/South traffic. Marine Drive has west/east traffic entering/leaving reservation. Kwina Rd. main road entering tribal administration buildings and NW Tribal College.

2.3.1 USEFUL FEATURES:
- Signs and markings are in good condition
- Complex road layout yet low collisions to date

2.3.2 KEY SAFETY ISSUES:
- Unconventional layout is challenging to negotiate
- Uncertainty by drivers on who has the Right-of-way, especially at the south intersection
- Limited pedestrian accommodations, pedestrian traffic present
- Skewed intersections
- Not stop bars
- Sight distance due to grade and vegetation
- Ice influenced by tree canopy
- Intersection ahead signs may not convey situation.

2.3.3 CRASH HISTORY:
- Difficult to understand crash data for this area
- Crash Reports are mainly Law Enforcement observations
- Unreported crashes

Figure (11) Going southeast from Kwina Rd. to Lummi Shore Rd.
2.3 Lummi Shores Rd/Kwina Rd/Marine Rd

### 2.3.4 AREAS OF CONCERN:

- Reduced sight distance due to horizontal and vertical alignment.
- No lighting on 3 of the 4 intersections. Difficult to detect alignment at night.
- Signs on the road not related to traffic.

Figure (12) Marine Drive going west taking left at fork approaching Lummi Shore Rd. to turn south. Limited sight distance to oncoming traffic.

Figure (13) View going west on Marine Drive toward Y-shaped intersection leading to Lummi Shore Rd in both directions. In order to get on Kwina Rd. vehicles would have to make a sharp 45 degree turn onto Lummi Shore Rd. Sight distance obstructed to oncoming traffic.

Figure (14) Viewing southwest coming off Marine Drive taking left at fork going on to Lummi Shore Rd. Many unnecessary signs in the middle of divided road, distracting to drivers.
2.3 Lummi Shores Rd/Kwina Rd/ Marine Rd

2.3.5 LOW COST/ SHORT TERM COUNTERMEASURES:
- Revise striping to define primary route;
- Add delineation or chevron signs;
- Rumble strips across travel lane on westbound and northbound to alert driver of unusual conditions; and
- Enhanced vegetation maintenance.

2.3.6 MID-TERM RECOMMENDATIONS:
- Eliminate westbound Marine to northbound Lummi Shore;
  - Consider dedicating this to pedestrians.
- Lighting would enhance intersection operation; and
- Improved shoulders;
  - would help reduce vehicle roadway departure crashes;
  - would help pedestrian movements.

Above Figure (15) Viewing west on Marine Dr. toward Y- shaped intersection leading to Lummi Shore Rd. Added chevrons to direct traffic would be low cost countermeasure for this confusing intersection.

Figure (16) Viewing east on Lummi Shore Rd. Recommend better lighting and improved shoulders for pedestrian use.
2.3 Lummi Shores Rd/Kwina Rd/ Marine Rd

Figure (17) Conceptual design to construct two small roundabouts on Lummi Shore Rd.

2.3.7 Long Term Alternative 1 – Install two smaller Roundabouts:

- Ice/canopy: about the same.
- Sight Distance: some enhancement.
- Speed Concerns: reduced.
- Conflict Points: 12 versus existing 36.
- Configuration: meets driver expectation.
- Pedestrians: traffic calming better for pedestrians.
2.3 Lummi Shores Rd/Kwina Rd/ Marine Rd

Figure (18) Conceptual design to take out the Y-shape in Marine Drive and construct bridge. The bridge from Marine Drive would go up to Lummi Shore Rd connecting with Kwina Rd.

2.3.7 Long Term Alternative 2 – Construct Bridge from Marine Rd to Kwina Rd:
- Ice/Canopy: bridge or ramp may ice; but may reduce canopy issue.
- Sight Distance: eliminates concerns.
- Speed Concerns: mitigate with traffic calming.
- Conflict Points: 32 vs. 36 existing.
- Configuration: meets driver expectations.
- Pedestrians: mitigation needed to east; mitigation needed if not 4-way
2.3. Lummi Shores Rd/Kwina Rd/ Marine Rd

Figure (19) Conceptual design to excavate and level the area of intersection and construct Roundabout.

2.3.7 Long Term Alternative 3 – Install One Large Roundabout:

- Ice/canopy: may reduce canopy issue.
- Sight distance: no longer a concern.
- Speed Concerns: mitigates speed.
- Conflict points: 8 vs. 36 existing.
- Configuration: meets driver expectation.
- Pedestrians: accommodated as part of design.
- Less maintenance than signal option.
- Reservation gateway
2.3 Lummi Shores Road/Kwina Road/ Marine Road

Figure (20) Rough design to construct modified Roundabout with minimum grade change.

Long Term Option 4 – Construct modified Roundabout with existing roads:

- Consider a larger modified “round” about intersection that could be lower cost and have a significant grade change.

The two intersections reviewed by the RSA team are main entrances into the reservation and have significant traffic volume generated from the administration offices, Northwest Tribal College on Kwina Rd, and the casino/convenience store on Haxton Way. The RSA team took into consideration many aspects and discussed various countermeasures at each intersection. This report is the product of that deliberation. This was a successful review because there were various ideas for countermeasures because of the different professions and backgrounds of the RSA team.
3.0 Follow up Steps in RSA Process

The results of the RSA were presented to the Lummi Planning Department after the review and analysis was complete and the findings were discussed (#6). The tribe then develops a response to the RSA report by outlining the actions to each safety concern. This should include a priority list of options for each intersection, taking into consideration time frame, partner coordination (county), traffic disruption and construction costs to determine course of actions (#7). Once course of action is established they can then incorporate those finding to develop an implementation plan with the countermeasures and improvements to specific aspects of the intersections (#8). The report should be made available to the public to help garner support for the corrective actions.

3.0 FOLLOW UP STEPS IN RSA PROCESS:

1. Identify Project
2. Select RSA Team
3. Conduct Kick-off Meeting
4. Perform Data & Field Review
5. Conduct Analysis & Prepare Report
6. Present Findings to Project Owner
7. Prepare formal Response
8. Incorporate Findings