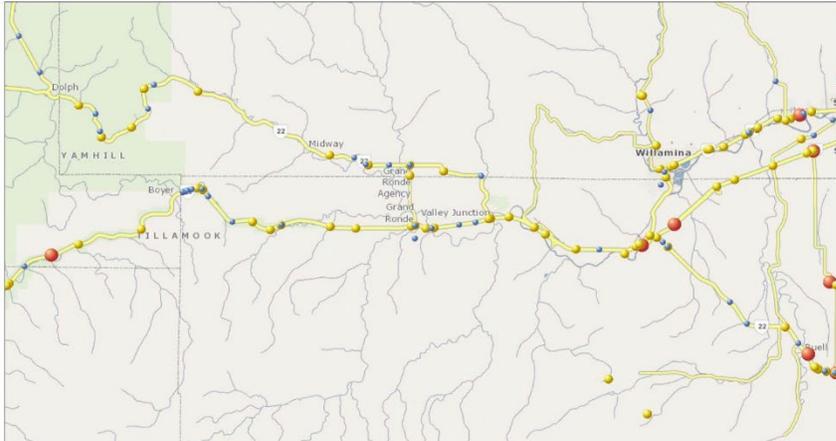


The Confederated Tribes of Grand Ronde

Local Road Safety Plan (LRSP) November 2018



2015 Local Crashes



Legend

Tribal Land Status

Land_status

-  Fee Land
-  Trust-Reservation
-  Trust Land
-  Trust pending

 Historic Grand Ronde Reservation



CONFEDERATED TRIBES OF THE GRAND RONDE RESERVATION

LOCAL ROADS SAFETY PLAN

November 2018

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Introduction

In the United States, during the period 1999-2016, traffic fatalities resulting from motor vehicle crashes decreased by approximately 7.2%. However, during the same period, Native American fatalities increased 10.1%. According to the Centers for Disease Control and Prevention, motor vehicle crashes are the leading cause of death for Native Americans and Alaska Natives ages 1-44. Overall, the death rate from motor vehicle crashes for Native Americans/Alaska Natives is 1.5 times that of Caucasians and African Americans.

With the prior enactment of the Moving Ahead for Progress in the 21st Century Act (MAP–21) and with the recently passed (December 2015) Fixing America’s Surface Transportation Act (FAST Act), it is evident that the Federal Government is placing a great deal of emphasis on becoming proactive in improving traffic safety and reducing fatalities on the nation’s road system. Future funding is likely to center on traffic safety projects. As a result, the Federal Highway Administration is promoting developing Local Road Safety Plans (LRSP) by state and local governments, including Indian Tribes.

To initiate a Local Roads Safety Plan and traffic safety program, the Confederated Tribes of the Grand Ronde Reservation (CTGR) received a small amount of grant funding from the Bureau of Indian Affairs (BIA). CTGR retained the services of a professional transportation consulting firm to assist with developing a Local Roads Safety Plan that began with initiating the planning effort and establishing a Working Group. This initial planning effort sets in motion an ongoing safety program for future planning and implementation efforts.

Mission

The mission statement established by the Tribe and Working Group is:

Improve vehicular and pedestrian safety on and near tribal lands to reduce serious injuries and fatalities through safety improvements at highway intersections and along OR 18 and OR 22 corridors, and addressing the seasonal mix of recreational and logging traffic on rural forest roads.

Goals

The overall goal of this planning effort is to initiate a local road safety program for the CTGR. Near term goals are:

- + Implement an ongoing safety program through the establishment of a permanent Working Group to direct safety planning efforts and to monitor results.
- + Develop an initial Local Road Safety Plan that identifies safety issues but focuses, at this point, on recommendations, strategies, and countermeasures that can be implemented in the next several years and are relatively low cost. Future updates of the Plan will be able to focus on the more complex issues that require higher cost solutions and need to be



integrated into the Grand Ronde Long-Range Transportation Plan both from the standpoint of priority and funding availability.

Methodology

The CTGR LRSP was developed based on the FHWA guide. In its publication *Developing Safety Plans, A Manual for Local Rural Road Owners* (March 2012), the FHWA sets out a six-step process for developing and maintaining Safety Plans. These steps include:

Step 1: Establish Leadership

Step 2: Analyze Safety Data

Step 3: Determine Emphasis Areas

Step 4: Identify Strategies

Step 5: Prioritize and Incorporate Strategies

Step 6: Evaluate and Update the LRSP

The initial step in the development process was to establish leadership and convene a Working Group responsible for developing the LRSP. During April 2018, the consultant team worked with the Tribe looking at road and safety conditions of roads serving the Reservation, followed by a meeting and presentation to the Working Group. Other State and Federal stakeholders were also contacted by phone or email.

Following an inventory of reservation roads and meetings with the Tribe, Working Group, and other stakeholders, several working papers were prepared in May, June and September 2018. The working papers, which were provided to the CTGR and Working Group for review, summarized planning efforts and results, state and local crash data, and implementation strategies. The Working Papers served as the basis for development of this Draft Plan and are provided as Appendix A of this plan, along with meeting materials and summaries. Following Tribal and Working Group review and comment, the Draft Plan will be revised and a Final Local Road Safety Plan will be prepared.

Step 1: Establish Leadership

The initial step in developing the CTGR LRSP was identification of plan leadership and establishment of a Working Group to guide the plan and bring together the right agencies and individuals to implement the plan and to monitor and update the plan in the long term. A list of potential stakeholders (federal, state, and local agencies) were identified, then contacted and invited to participate in the planning effort. From this list the Working Group was established. Table 1 lists stakeholders and the Working Group.



TABLE 1
Local Road Safety Plan Stakeholders

Stakeholders	Working Group
Confederated Tribes of the Grand Ronde Reservation (CTGR)	Confederated Tribes of Grand Ronde John Mercier, Public Works (Champion)
Bureau of Indian Affairs (BIA)	Jeff Kuust – Timber & Roads Dept.
Federal Highway Administration	Joani Dugger – Housing
Oregon Department of Transportation	Ron Reibach – Spirit Mountain Casino
Polk County	Jake McKnight – Police Chief
Yamhill County	Bureau of Indian Affairs - John LaVerdure
Local engineering and public works departments	ODOT – Keith Blair, Traffic Manager
Local State and County Enforcement Agencies	Polk County – Todd Whitaker, Public Works
CTGR Police Department	Yamhill County – John Phelan, Public Works
County Sheriff’s Departments	First Student/Willamina School District – Jay
Oregon State Police	Bechtol, Willamina Lead Driver
Willamina School District	

Step 2: Analyze Safety Data

State Crash Data

In Oregon for the 5-year period 2011 to 2015, an average of 335 people were killed in crashes and another 1440 were seriously injured annually. Also, a little over half of these fatalities and serious injuries occurred in rural areas. Rural collector and local roads accounted for 21% of all fatalities and serious injuries. The 2016 Draft Transportation Safety Action Plan (ODOT) further reports that over 30% of all fatal and serious injury crashes involve young drivers, 25 years and younger, and 15% involve elderly drivers, 65 years and older. When compared to the number of drivers in these age groups, the number of crashes is disproportionately higher, particularly for young drivers.

State safety data collected included traffic volumes and crash rate on state highway, and fatality and serious injury crash rates for the state. Data are summarized in Tables 2, 3, and 4.



TABLE 2
ODOT Crash Rates (per 1 Million Vehicle Miles)

Location	Crash Rates*				
	2015	2014	2013	2012	2011
Oregon: State Rural Areas	0.70	0.72	0.65	0.68	0.69
Interstate	0.32	0.37	0.30	0.31	0.30
All Other Roads	0.95	0.95	0.89	0.93	0.91
Other Principal Arterials	0.81	0.81	0.76	0.81	0.80
Minor Arterials	1.24	1.22	1.15	1.14	1.13
Rural Major Collectors	1.50	1.43	1.36	1.43	1.37
Rural Minor Collectors	0.76	1.02	2.96	1.71	2.00
Rural Roads	0.00	0.00	0.00	0.00	0.00
OR 18 (State Hwy)	0.87	0.73	0.86	0.89	0.78
OR 22 (State Hwy)	1.98	1.57	1.79	2.10	1.08

TABLE 3
Fatal and Serious Injuries (per 100 Million Vehicle Miles)
2015

Location	Fatal Crashes	Deaths & Serious Injuries	Fatal & Serious Injury Crash Rate	Fatal & Serious Injury Casualty Rate
Oregon: State Rural Areas	417	526	4.45	5.62
Interstate	46	57	1.22	1.52
All Other Roads	371	469	6.62	8.37
Other Principal Arterials	213	29	5.36	7.02
Minor Arterials	111	136	8.49	10.40
Rural Major Collectors	47	55	14.82	17.02
Rural Minor Collectors	0	0	0.00	0.00
Rural Roads	0	0	0.00	0.00

* *Crash Rate Formula (Crashes * 100 million)/VMT*

** *Casualty Rate Formula: ((Death+Serious Injuries)*100 million)/VMT*



TABLE 4
State of Oregon Crash Data (2011-2015)

	2015	2014	2013	2012	2011	% Change
Fatal Crashes	410	321	292	305	310	32.3%
Non-fatal Injury Crashes	28,721	24,208	22,984	24,457	23,887	20.2%
Property Damage Only Crashes	26,025	26,716	26,234	25,036	24,856	4.7%
Total Crashes	55,156	51,245	49,510	49,798	49,053	12.4%
Fatality Rate*	1.24	1.03	0.93	1.01	0.99	25.3%
Fatality & Serious Injury Rate*	6.17	5.35	5.13	NA	NA	
Crashes Driver 15-20 years	9,849	8,503	8,150	8,264	8,602	14.5%
% of All Crashes	1.8	16.6	16.5	16.6	11.5	1.7%

* *Crash Rate Formula (Crashes * 100 million)/VMT*

** *Casualty Rate Formula: ((Death+Serious Injuries)*100 million)/VMT*

Grand Ronde Crash Data

From 2012 through 2016, 142 crashes were reported in and near the Grand Ronde Community as shown in Figure 1. (It should be noted that not all crashes are reported.) During this five-year period, the vast majority of reported crashes occurred along the OR 18 (Salmon River Highway) corridor from the west side of Grand Ronde to Fort Hill. Most occurred between Grand Ronde Road and Fort Hill. A number of crashes also occurred along OR 22 (Three Rivers Highway); most were either at or near curves or at intersections. Relatively few crashes were reported along Grand Ronde Road (excludes OR 18 and OR 22 intersections). Passenger cars/trucks were involved in 95% of all reported crashes, and slightly more than half involved residents living within 25 miles of the crash site.

The most prevalent types of collisions were hitting a fixed object, rear-end, and turning movements. These types of crashes accounted for 76% of all reported crashes. Rear end collisions were the most predominant along OR 18. Most collisions occurred in daylight (70%), in clear weather conditions (58%), and on dry road surfaces (68%). Single vehicle crashes accounted for 34% of all crashes while two-vehicle crashes accounted for 63%.

The top three crash causes, which accounted for almost half of all crashes, were: failure to yield right-of-way, speeding, and following too closely. Crash locations are shown in Figure 2. Males were involved and were at-fault in crashes far more often than females, a rate of just less than 2 to 1. Young drivers, ages 16 to 29, were involved in 21% of crashes and were at-fault in 29% of the instances.

As shown in Figure 3, during the five-year period, there were three fatal crashes reported, two on OR 18 and 1 at the intersection of Grand Ronde Road and OR 22. Another 15 people were



incapacitated and 94 occupants had possible injuries. Only four instances were reported where seat belts were not used. Approximately 72% of all crashes involved three or less participants. Property damage only was reported in 41% of the cases.

Crashes per year were relatively consistent from 2012 through 2015, ranging from 21 to 27. However, in 2016, crashes jumped to 44, more than double that of the year before. No particular reason is evident for this sudden increase.

Crash data show that Sunday and Saturday have the highest number of crashes. This would be consistent with increased weekend travel to the coast from residents in the valley and peak usage of the Spirit Mountain Casino and Resort, both of which would generate additional trips along OR 18.

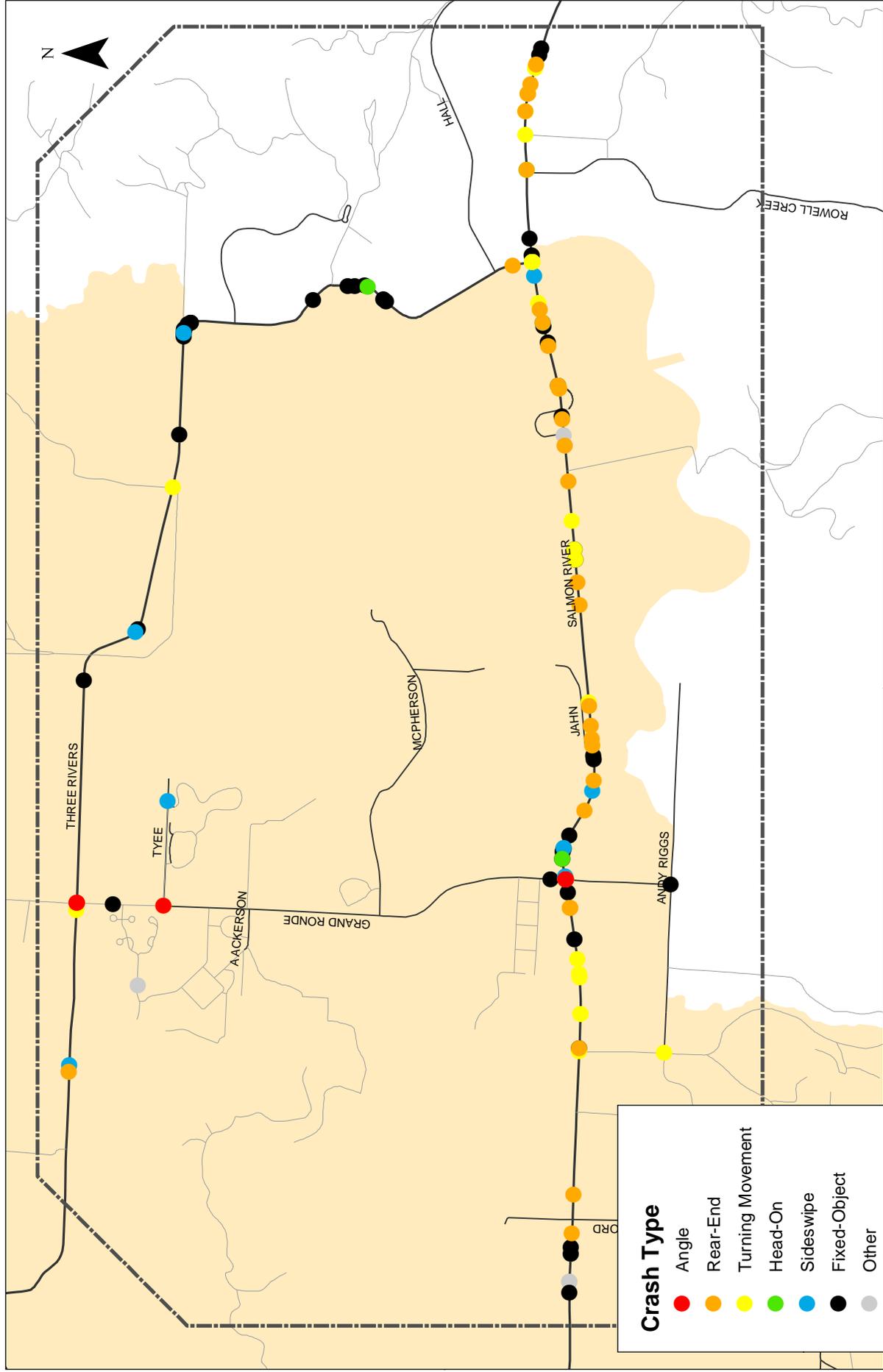
When looking at crashes by time of day, the 3 to 4 pm hour stands out as this time of day experiences 30% more crashes than any other hour. The next highest hour is from 4 -5 pm, possibly due to shift change at the Casino/Resort, people leaving the Casino to return to the valley, traffic returning from the coast, especially on the weekends, or tribal offices closing.

Crash data by month vary greatly from month to month, but seems to be higher in the vacation season and with months that have major holidays when more people visit the coast generating more trips and resulting congestion.

Alcohol use was involved in 4% of crashes and drug use was involved in 2%. No crashes occurred in School Zones or Work Zones during the five-year period. Also, it appears that people were using seatbelts and child restraints and in the case of motorcyclists are using helmets as only four crashes involve no safety restraints.

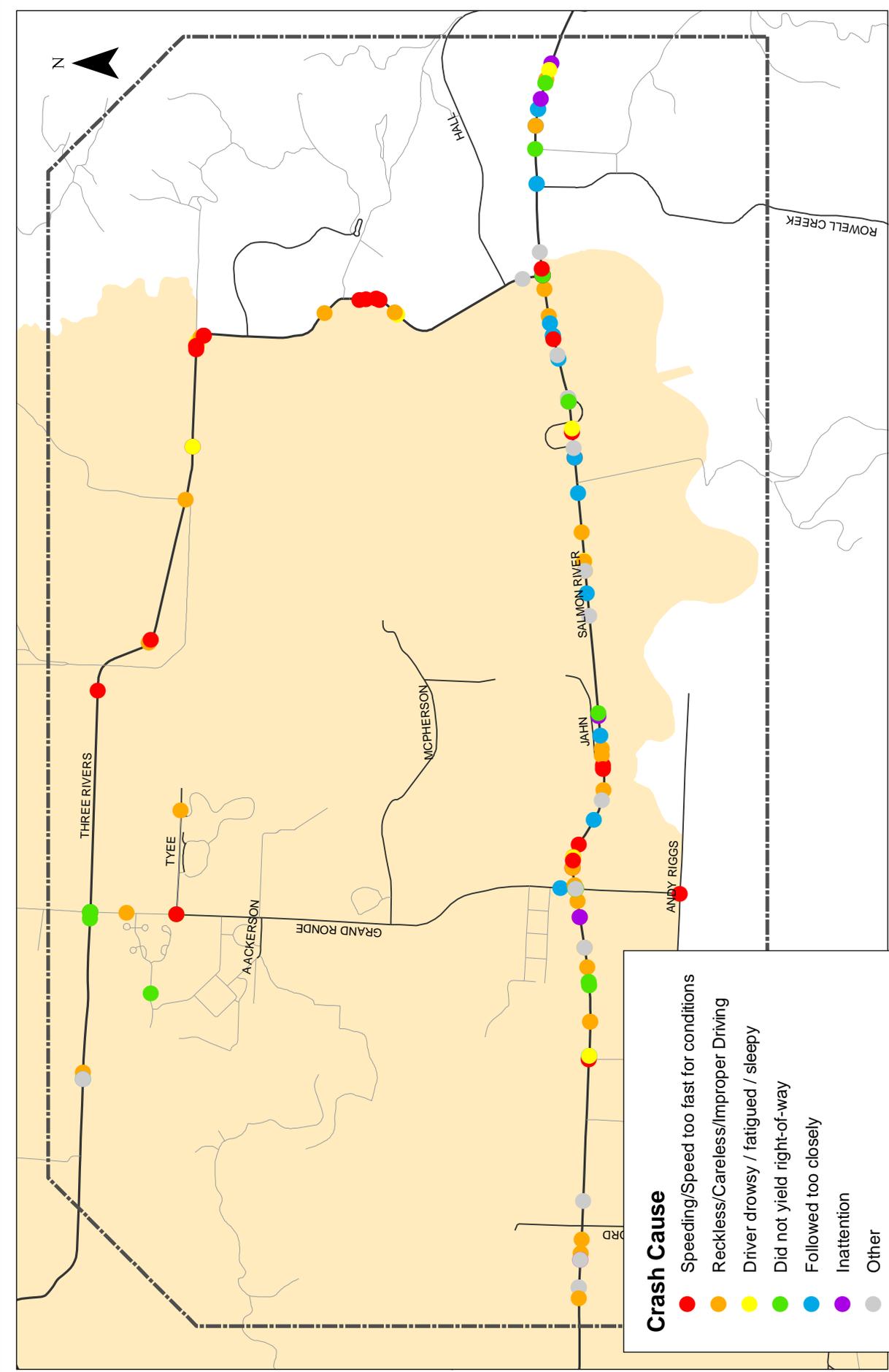
The full Grand Ronde Crash Data Working Paper is provided in Appendix B of this Plan.





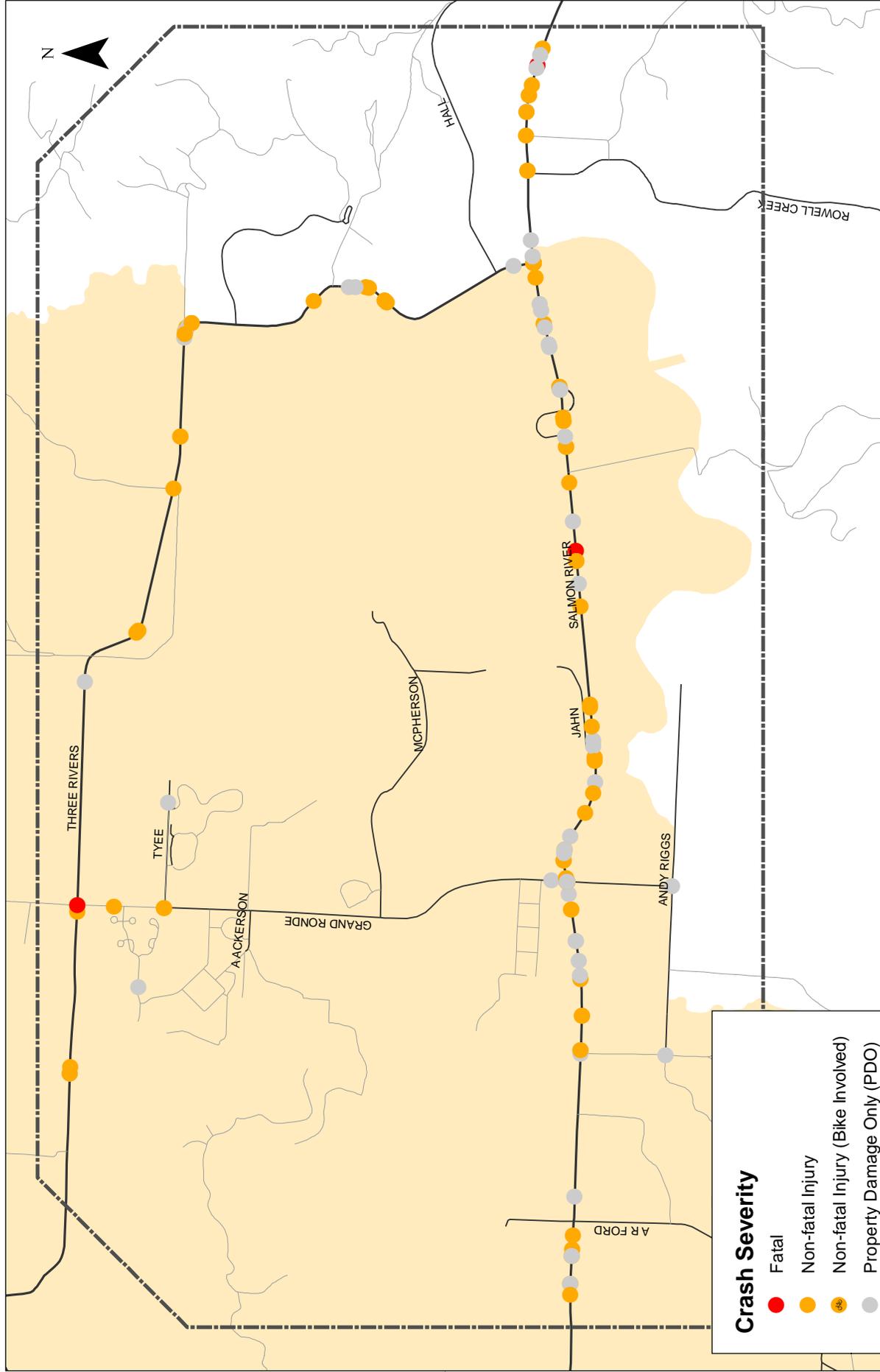
**Crashes by Type (Angle, Rear-end, Turn, etc.)
January 1, 2012 - December 31, 2016
Grand Ronde, OR**

**Figure
1**



**Crashes by Cause (Speeding, Inattention, etc.)
January 1, 2012 - December 31, 2016
Grand Ronde, OR**

Figure
2



Crash Severity

- Fatal
- Non-fatal Injury
- Non-fatal Injury (Bike Involved)
- Property Damage Only (PDO)
- Study Area
- Grand Ronde

**Crashes by Severity (Fatal, Injury, PDO)
January 1, 2012 - December 31, 2016
Grand Ronde, OR**

Figure **3**

Steps 3 and 4: Determine Emphasis Areas and Identify Strategies

The identification of key emphasis areas for the CTGR LRSP is focused primarily on addressing safety issues and concerns identified by the Working Group, other various stakeholders, and the community. In April 2015, an initial meeting was held with the Tribe, members of the Working Group, and other stakeholders, at which crash data, traffic safety issues and emphasis areas to be addressed in the LRSP were identified. At a subsequent meeting in August 2018, the Working Group further examined collected crash data in more detail, particularly at intersections and along corridors in the Grand Ronde community, as well as countermeasures and potential strategies to address emphasis areas. Emphasis areas identified for inclusion in this LRSP are:

- + Intersection Safety
- + Corridor Safety
- + Recreational Traffic on Forest Roads
- + Pedestrian Safety
- + Public Education and Outreach

Emphasis areas and potential strategies are summarized in Table 5 and described below.

TABLE 5
Emphasis Areas/Potential Strategies

Emphasis Area	Measure(s)	Potential Strategies
INTERSECTION SAFETY	<ul style="list-style-type: none"> + Reduce intersection-related crashes + Improve pedestrian safety 	<ul style="list-style-type: none"> + Conduct road safety audit targeting problem locations to identify contributing crash factors and identify effective countermeasures + West and east bound turn lanes on OR 22 at Grand Ronde Road + Analyze OR 18/Grand Ronde Road intersection for improvements to relieve backup problems during the pm peak hour. + OR 18/OR22 intersection—grade separation interchange or possible relocation of OR 22 to Ft. Hill Road + Pedestrian crosswalks on Grand Ronde Road



TABLE 5
Emphasis Areas/Potential Strategies

Emphasis Area	Measure(s)	Potential Strategies
CORRIDOR SAFETY	<ul style="list-style-type: none"> + Reduce impact of closures on OR 18/22 intersection to Wallace Bridge + Reduce impact of OR 18/22 closure on casino shift changes + Reduce impact on incident response times due to highway closures + Increase safety of school bus traffic on OR 22 + Reduce/eliminate use of Grand Ronde Road by heavy trucks avoiding curves on OR 22 	<ul style="list-style-type: none"> + Conduct road safety audit targeting problem locations to identify contributing crash factors and identify effective countermeasures + Evaluate alternate routes/bypass of OR 18 and OR 22 intersection + Speed management – Speed readers on Grand Ronde Road, extension of the OR 18 safety corridor through Grand Ronde, increased enforcement + Provide warning lights to indicate school buses are on OR 22 during am and pm school pickup and drop off times + OR 22 realignment of curves at Kissing Rock area to accommodate trucks, so loaded log trucks do not have to use Grand Ronde Road + Improve OR 18 from Fort Hill Rd to AR Ford Road in Grand Ronde (ODOT STIP project) + Implement and enforce weight restrictions on Grand Ronde Road to prohibit loaded log trucks + New access to Spirit Mountain Casino— either from a new interchange at OR 18/OR 22 intersection (Valley Junction) and/or new right in/right out access at the west parking lot
RECREATIONAL TRAFFIC ON FOREST ROADS	<ul style="list-style-type: none"> + Reduce risk of seasonal recreational/log truck traffic conflicts on forest roads north of the Grand Ronde community + Reduce roadway/lane departures 	<ul style="list-style-type: none"> + Install guardrail at specific locations where there is risk of vehicles leaving the roadway and entering waterways + Provide more warning signage, particularly when timber harvesting is occurring



TABLE 5
Emphasis Areas/Potential Strategies

Emphasis Area	Measure(s)	Potential Strategies
	+ Reduce risk of environmental impacts from hazardous spills	
PEDESTRIAN SAFETY	+ Reduce potential for vehicular - pedestrian/ bike crashes	+ Construct bike/pedestrian path from housing off of Tyee Road to the tribal center Install high intensity flashing warning beacons for selected pedestrian crosswalks on Grand Ronde Road
PUBLIC EDUCATION & OUTREACH	+ Increase awareness of vehicular, bike, and pedestrian safety issues	+ Establish a public information/education campaign targeting specific audiences and focused on existing safety issues, e.g. driving around vulnerable users (pedestrians, bicyclists, school bus riders, etc.) + Inform the public on traffic trends (high-volume times of day, locations, etc.) to enable better trip planning

Intersection Safety

The consensus of the Working Group was that intersection safety was a top priority, in particular at the OR 18/ Grand Ronde Road, OR 22/Grand Ronde Road, and OR 18/OR 22 intersections.

OR 18/Grand Ronde Road Intersection: Volume as well as speed creates safety issues at this intersection. It has been reported by the Tribes that there is a lengthy back up at the OR 18/Grand Ronde Road intersection when tribal offices and the health clinic closes at the end of the work day. A total of 15 crashes occurred at this intersection in the past 5 years, the majority of which involved a motorist turning left from Grand Ronde Rd. and failing to yield the right-of-way to another motorist traveling through on OR 18.

Identified safety issues include inadequate deceleration lanes, lack of illumination along the corridor, especially at the crosswalk, and at the intersection. Possible countermeasures identified include beacons for the crosswalk and for intersection warning signing, street and intersection lighting, and traffic calming measures, e.g. pavement marking, rumble strips, narrowing the center lane, and speed reduction. Signalizing the intersection or constructing a roundabout were other suggested measures; however, ODOT has indicated that the State is moving away from signalized intersections on rural highways. ODOT is looking at the OR



18/Grand Ronde Road intersection in its 2021-2024 STIP, including an enhanced crossing, offset turn lanes, cross-traffic activated intersection warning signing, and speed reduction signs on OR 18, and the intersection would be improved as part of the proposed Fort Hill to AR Ford Road corridor improvement for OR 18. Consequently, any interim countermeasures should be low-cost improvements.

Potential mitigation measures were developed for the intersection based on a review of the reported crashes and discussions with the project team.

Near-term Mitigation Measures

- + Install street illumination at the intersection and along Grand Ronde Rd. and OR 18 as feasible.
- + Replace the existing intersection ahead warning signs on OR 18 with high visibility signs and flashing beacons consistent with similar applications further east along OR 18.
- + Remove the school crossing ahead signs and pavement markings on OR 18 and consider removing the crosswalk striping at the intersection, and replace the school crossing ahead warning signs with high visibility pedestrian crossing ahead warning signs and install pedestrian crossing signs with flashing beacons at the crosswalk.
- + Install gateway features at the intersection that highlight the Grand Ronde area and provide wayfinding to various Grand Ronde facilities.
- + Install signs and pavement markings on OR 18 that are aimed at slowing traffic at the eastbound and westbound approaches.

Long-term Mitigation Measures

- + Manage access points to private developments near intersection.
- + Increase the length of the right-turn deceleration lane.
- + Install off-set left-turn lanes.
- + Install a traffic signal or roundabout.
- + Install an interchange.

OR 22/Grand Ronde Road Intersection: A total of five crashes were reported at this intersection over the period 2012-2016, one of which involved a fatality. The majority of crashes involved a motorist turning left or traveling through on Grand Ronde Rd. and failing to yield the right-of-way to another motorist traveling through on OR 22.

Similar issues exist at this intersection as at the OR 18 intersection, including narrow lanes and lack of lighting at the intersection and along the corridor, lack of adequate shoulders along OR 22, and lack of left turn lanes on OR 22 to access Grand Ronde Road. Sight distance is clear to the east, but appears to be somewhat limited to the west by a crest curve in the roadway, and with a shorter visibility distance west of the intersection east-bound traffic on OR 22 can appear quickly and conflict with left-turn traffic headed south on Grand Ronde Road, particularly truck traffic, or with north-bound traffic stopped in the east-bound OR 22 travel lane waiting to make



the left turn. Also, lack of shoulder space in conjunction with a utility pole requires eastbound trucks to make a wide turn onto Grand Ronde Road causing them to use part of the northbound lane on Grand Ronde Road.

Potential mitigation measures were developed to address issues at the intersection based on a review of the reported crashes and discussions with the project team.

Near-term Mitigation Measures

- + Relocate the northbound stop sign closer to the stop bar.
- + Provide a double yellow centerline on OR 22 at the eastbound and westbound approaches.
- + Install street illumination at the intersection and along Grand Ronde Rd. and OR 22 as feasible.
- + Install gateway features at the intersection that highlight the Grand Ronde area and provide wayfinding to various Grand Ronde facilities.
- + Install signs and pavement markings on OR 22 that are aimed at slowing traffic at the eastbound and westbound approaches.

Long-term Mitigation Measures

- + Widen the shoulders on OR 22 as feasible.
- + Install shoulder/edge line and/or centerline rumble strips as feasible.
- + Install Through Route Actuated Warning Signs on OR 22.
- + Install separate left-turn lanes/acceleration lanes at the eastbound and westbound approaches.
- + Install separate right-turn lanes/acceleration lanes at the eastbound and westbound approaches.
- + Install a traffic signal or roundabout.

OR 18/OR 22 Intersection: A total of seven crashes were reported at the OR 22/OR 18 intersection over the five-year period 2012-2016, the majority of which occurred on a clear, dry day when a motorist, typically turning left from OR 22, failed to yield the right-of-way to another motorist, typically traveling through on OR 18. Safety issues at this intersection include lack of intersection and street lighting, and inadequate acceleration and deceleration lanes. Possible countermeasures identified are similar to the other intersections discussed, with the additional possible measures of raised medians and roadway warning beacons, which are easy to maintain and allow driver eye-level visibility. Also, ODOT is looking at construction of a grade separation intersection at this location as part of the proposed improvement of OR 18 from Fort Hill to AR Ford Road in Grand Ronde.

Potential mitigation measures were developed for the intersection based on a review of the reported crashes and discussions with the project team.



Near-term Mitigation Measures

- + Install street illumination at the intersection and along OR 22 and OR 18.
- + Install high visibility intersection ahead warning signs with flashing beacons on OR 18 consistent with similar applications further east along OR 18.
- + Install signs and pavement markings on OR 18 that are aimed at slowing traffic at the eastbound and westbound approaches.

Long-term Mitigation Measures

- + Increase the length of the right-turn deceleration lane. This measure would require a new/wider OR22 bridge, which is considered by ODOT highly unlikely to occur.
- + Install a southbound right-turn acceleration lane.
- + Install a southbound left-turn acceleration lane.
- + Install an indirect left-turn (J-turn) for the southbound approach.
- + Install raised islands within the striped areas of the channelized right-turn lanes.
- + Install a traffic signal or roundabout.
- + Close intersection, realign OR 22, and install an interchange near the Casino along OR 18.

Corridor Safety

Several issues were identified relative to safety along the OR 22 and OR 18 corridors and along Grand Ronde Road.

OR 18

ODOT has over the years made improvements to the Salmon River Highway (OR 18). The last improvement extended from the Willamina junction to Ft. Hill and included the grade separation interchange at Ft. Hill Road. The ODOT STIP lists a 3.59-mile major modernization project planned for Highway 18 between Ft. Hill and AR Ford Road in Grand Ronde (Name: OR18: Ft. Hill Road to AR Ford Road; Key: 18854). This project, which is scheduled for completion in 2020, will make improvements to the Highway through the Community of Grand Ronde, by the Spirit Mountain Casino and Resort site, and on to Ft. Hill and tie into the previous improvement. This improvement may also have a grade separation interchange at the OR 18/OR 22 intersection in Valley Junction which would relieve the safety concerns at the current OR81/OR 22 intersection. Modernizing this section should improve safety as well as presenting improved access opportunities to the Casino.

All internal casino traffic must utilize one of two intersections on the east side of the casino to either enter or exit the site. When the casino was expanded and the hotel was added, the main entry to the casino was relocated to the west side near the hotel entry. Most traffic now has to navigate from the east around the facility to the west side through the parking lots. When the improvement of OR 18 is implemented, it would greatly benefit traffic flow to have a right-in



and right-out access to and from the highway (with deceleration/acceleration lanes) on the west end of the site.

OR 22

OR 22 is a two-lane roadway with a posted speed limit of 55 mph; however, there are multiple curve warning signs along the roadway with rider speeds that range from 25-35 mph. ODOT recently updated the majority of signs along the corridor, including new retro reflective curve warning signs, and adjusted the rider speeds. Lighting is limited along the roadway and at all major intersections.

Kissing Rock Curves: A total of seven crashes were reported along the segment of Hebo Road (OR 22) near the Kissing Rock curves over the five-year period, the majority of which were reported as fixed-object or run-off-the-road crashes. The lack of shoulders and speeding (i.e. traveling too fast for the condition of the road) are issues along the OR 22 corridor at the Kissing Rock curves. The terrain in this area is a problem as there is a creek on one side and a rocky cliff on the other, which makes it difficult and extremely costly to straighten or widen this section of road.

Alternative Alignment: The lack of alternate routes in the event of road closures from OR 22/OR 18 intersection to Wallace Bridge due to crashes or other problems leaves no other way for traffic to pass, thus backing up both east and west bound traffic on the State Highways for long periods of time, impacting shift changes at the casino, and impacting incident response time. Developing an alternate emergency route is needed. The Tribe was looking at an alternative alignment for OR 22 from north of the Powwow Grounds to Fort Hill Road and the existing interchange at Fort Hill with OR 18. This alternate alignment would not only eliminate the need for another grade separation interchange at Valley Junction and the difficult turns at Kissing Rock, but also would provide a means of diverting traffic in the event of an accident or some other event that closes OR 18 between Fort Hill and Grand Ronde Road. ODOT has indicated interest in looking at the option.

Also, to avoid the sharp curves and difficult turn radii on OR 22 between Grand Ronde Road and the OR 18 intersection at Valley Junction, truck traffic uses Grand Ronde Road as an alternative route, increasing traffic and causing deterioration of Grand Ronde Road. The Tribe had discussed setting weight limits on Grand Ronde Road to address this issue, but the decision has been made to wait to work with the counties to set weight limits until after OR 22 has been improved or realigned.

School Bus Stops: The School District indicated in discussions with the Tribes that highway school bus stops and traffic speed also are issues on OR 22 where there are numerous curves with short horizontal site distances. A school bus driver reported to the Tribe earlier that he had concerns about the need for additional signing for school bus stops on OR 22 west of Grand Ronde Road. This area is in the coast range, and as a result the road is fairly curvy which affects sight distance for stopping. It was also ascertained that there is no "School Bus Turnaround" sign at the end of the bus route. Signing has helped, but reduced speed limits and/or flashing warning signs are needed in the am and pm when students are picked up and left off.



Potential mitigation measures were developed for the corridor based on a review of the reported crashes and discussions with the project team.

Near-term Mitigation Measures

- + Install a speed feedback sign at the southern end of the corridor in the northbound direction and a speed feedback sign at the northern end of the corridor in the southbound direction. The signs in the northbound and southbound directions could be installed on the first curve warning signs in both directions.
- + Reduced speed limits and/or flashing warning signs at school bus stops in morning and afternoon.

Long-term Mitigation Measures

- + Remove obstacles along the sides of the roadway (mailboxes, rocks, trees, etc.).
- + Widen the shoulders as feasible.
- + Install shoulder rumble strips as feasible.
- + Install centerline rumble strips as feasible.
- + Install street illumination at major intersections and along roadway segments as feasible.
- + Reconstruct the roadway with high-friction surface treatment.
- + Regrade the sides of the roadway to provide more gradual slopes/ditches.
- + Explore the feasibility of an alternative alignment for OR 22 from north of the Pow Wow Grounds to Fort Hill Road and the existing interchange at Fort Hill with OR 18.

Grand Ronde Road

Grand Ronde Rd. is a two-lane roadway with a posted speed limit of 35 miles per hour (mph). There are multiple signed and striped crosswalks along the roadway. A total of four crashes were reported along the segment of Grand Ronde Rd. in the period 2012-2016, one of which involved a “right-hook” crash with a bicyclist.

Potential mitigation measures were developed for the roadway based on a review of the reported crashes and discussions with the project team.

Near-term Mitigation Measures

- + Install a speed feedback sign at the southern end of the corridor in the northbound direction and a speed feedback sign at the northern end of the corridor in the southbound direction. The sign in the northbound direction could be installed on the 35 mph sign located north of the Rogue River Bridge and the other could be installed on the 35 mph sign located south of OR 22.



- + Install pedestrian actuated flashing beacons on the pedestrian crossing signs at the crosswalks near the tribal center.

Long-term Mitigation Measures

- + Install street illumination at major intersections and along roadway segments as feasible.

Recreational Traffic on Forestry Roads

Seasonal recreational traffic that coincides with timber harvesting impacts traffic safety on rural forest roads north of Grand Ronde. More intensive signing warning of log trucks has been suggested during periods of timber harvesting.



In addition, the lack of guardrail on Agency Creek Road and the steep slope high above the creek create unsafe conditions. Installation of guardrail at problem locations can reduce the risk of vehicles leaving the roadway as well as the potential for environmental impacts from chemical spills into the creek.

Pedestrian Safety

Sidewalks and pedestrian crosswalks were installed on Grand Ronde Road when the road was reconstructed several years ago which has greatly improved pedestrian safety. However, there was recently a pedestrian death in a crosswalk during a period when traffic was detoured onto Grand Ronde Road as a result of a crash on the State Highway. It was reported that the driver could not see the pedestrian enter the crosswalk because of the traffic backed up on Grand Ronde Road. The installation of pedestrian activated, high intensity crosswalk warning lights at critical crosswalks would improve safety.

With the development of tribal housing east of Grand Ronde Road and off of Tyee Road, there is a considerable amount of trips generated between the housing area and the Tribal Center area on the west side of Grand Ronde. A bike/pedestrian path is needed to directly connect this area with the crosswalk at the intersection of Grand Ronde Road and Salmon Way.

Public Education and Outreach

Public education and outreach is a cost-effective measure to focus on safety issues such as cell phone use while driving, impaired driving, using seatbelts and child safety seats, and knowing the rules of the road.

Strategies could include public information campaigns targeting specific audiences (e.g. young drivers); and information fairs and education programs on specific topics, such as seatbelts and proper child restraints, and high hazard locations; and media and outreach programs to educate



drivers, including public service announcements, public information brochures, local newspaper articles, etc.

Step 5: Prioritize and Incorporate Strategies

The consensus of the Working Group was to focus initially on lower-cost countermeasures during the short term in order to address as many issues as possible, as opposed to more costly major improvement projects. This was emphasized, as over the long term, the proposed ODOT improvement to OR 18 from Ft. Hill to AR Ford Road in Grand Ronde will resolve some major safety concerns, particularly at the Grand Ronde Road and OR 22 intersections. Implementing high-cost interim countermeasure in these locations that would later be replaced or removed was deemed to be an unwise expenditure of funds.

Priority strategies were initiation of a public education/awareness program and installation of traffic control measures, e.g. additional signing, striping and rumble strips, lighting, warning beacons, and shoulder widening. Higher cost safety projects, such as road widening and reconstructed intersections, need to be coordinated with the Long-Range Transportation Plan as they will need to be prioritized with other tribal transportation needs for funding and implementation.

Initial, lower cost countermeasures that could be implemented throughout the community include additional signing, striping, lighting, warning beacons, and shoulder widening.

- + Signing: Signing could include additional warning signs, including speed feedback signs and crosswalk/intersection warning beacons which are installed at the shoulder edge or outside the curb line.
- + Street and Intersection Lighting: There is limited street/intersection lighting in the Grand Ronde area. Installation of lighting, particularly at critical intersections would be effective.
- + Pavement Markings: Pavement markings, particularly a double solid centerline on OR 22 at Grand Ronde Rd. and use of rumble strips to delineate centerlines and fog lines in areas where highways have little or no shoulders.
- + Traffic Calming: Traffic calming techniques are effective in residential areas and on roads with a 25 mph or less speed limit. Techniques include speed humps, skinny streets, and curb bump-outs all of which have proven to be helpful in keeping traffic moving within lower speed limits, particularly on residential streets.
- + Shoulder widening: Shoulder widening at major intersections and in areas with curves provide large trucks, recreational vehicles, and school buses the turn radii they need



without entering an oncoming traffic lane. Wider shoulders also provide drivers with better visual sight distance to see oncoming cross-traffic.

In addition to structural countermeasures, the Tribe indicated that a public awareness program, e.g. public information, articles in Smoke signals (tribal newspaper) informing the public on traffic issues to enable them to better plan trips, was an important, cost-effective short-term measure

The use of cost-effective measures first, e.g. signing, striping, lighting, and crosswalk beacons, as opposed to major improvements and/or costly construction countermeasures were identified by the Working Group as top priorities. ODOT indicated they would work with the Tribe to potentially permit the Tribe's installation of speed feedback signs at appropriate locations. Such signs need to be funded and maintained by the local jurisdiction and are permitted by ODOT to be within ODOT right-of-way. These have proven to be cost-effective countermeasures in reducing speeding.

Near-term Strategy and Recommendations

During the near term (next 6 years) the strategy is to focus on implementing cost-effective countermeasure along Grand Ronde Rd. and at/near the intersections of Grand Ronde Rd. and OR 18 and OR 22 and then to reevaluate safety issues in the area after ODOT implements the OR 18 improvement from Ft. Hill to AR Ford Rd. as this improvement is expected to mitigate many of the safety issues along the highway and at the intersection with OR 22 at Valley Junction.

Grand Ronde Rd.

- + Install pedestrian activated warning beacons at selected crosswalks.
- + Install speed feedback signs (north end and south end of the segment between OR 18 and OR 22).
- + Install a warning beacon for logging activities north of OR 22 that can be activated during periods of timber harvesting.

OR 22/Grand Ronde Rd.

- + Install high visibility intersection ahead warning signs with flashing beacons east and west of the Grand Ronde Rd. intersection.
- + Install double yellow centerline striping both east and west of the intersection
- + Widen OR 22 shoulders at Grand Ronde Rd. (SW corner) and relocate utility pole.
- + Relocate the "stop" sign closer to the stop bar on Grand Ronde Rd. (north bound lane).
- + Provide intersection street lighting at Grand Ronde Rd.
- + Install warning beacons for school buses and school bus turn-around signs west of the Grand Ronde Rd. intersection.



OR18/Grand Ronde Rd.

- + Install high visibility intersection ahead warning signs with flashing beacons consistent with similar applications further east along OR 18
- + Install street lighting at the intersection

Implementation Time Frame

Essentially, the next steps should be undertaken within the next six month and are the responsibility of the CTGR. They include:

1. Adoption of this Local Road Safety Plan by the Tribal Council.
2. Update both the CTGR Long Range Transportation Plan and the Transportation Improvement Program (TIP) to include identified safety projects, so FHWA funds can be used.
3. Formulate and initiate a public education/information program, identifying target audiences, methods, and implementation schedule.
4. Initiate coordination with the Polk County to install pedestrian activated warning beacons at three crosswalks locations on Grand Ronde Road: at South Street, Hubert Road, and at Salmon Way.
5. Initiate coordination with the Counties and State to facilitate installation of speed feedback signs on Grand Ronde Road and on OR 18 and 22 near their intersection with Grand Ronde Road.
6. Initiate coordination with the State to install a warning beacon for school bus stops (morning and afternoon) west of Grand Ronde Road and also a “school bus turn around” sign at the end of the bus route.

The proposed short-term implementation schedule is as follows:

FY 2019: Adoption of the Local Road Safety Plan

FY 2019: Implementation of a Public Education Program

FY 2019: Install “school bus turn around” sign on OR 22

FY 2019: Move stop sign (north bound lane) on Grand Ronde Road closer to the intersection

FY 2020: Install crosswalk beacons and speed feedback signs on Grand Ronde Road

FY 2020: Relocate utility pool at Grand Ronde Road/OR 22 intersection, install street light, and provide a double yellow, continuous center line strip on OR 22 each side of the intersection

FY 2020: Install an intersection street light at the OR 18/Grand Ronde Road intersection



FY 2021: Install intersection warning beacons and speed feedback signs on OR 18 in the vicinity of the Grand Ronde Road intersection

FY 2022: Install intersection warning beacons and speed feedback signs on OR 22 in the vicinity of the Grand Ronde Road intersection

FY 2022: Install warning beacon for frequent school bus stops morning and afternoon west of Grand Ronde Road

Step 6: Evaluate and Update the LRSP

At this stage, it is recommended that the Working Group meet twice a year, approximately every 6 months, to monitor the progress of the Safety Program. Based on the agenda items, it may be possible that one or both meetings could be accomplished through a conference call to reduce travel time for several of the members who are located some distance away. Objectives of the meeting would be to review and evaluate progress, discuss potential funding sources, to redirect priorities as appropriate or as improvements are implemented, and to guide periodic updating of the Plan. It is suggested that the LRSP be updated on a two-year cycle. It will be the responsibility of the CTGR “Champion” to ensure that the activities identified in the Plan are carried out and that open communications are maintained with the Working Group members to apprise them of progress and problems as well as seeking guidance and support as appropriate.



APPENDICES

A

References

References

A Primer on Safety Performance Measures for the Transportation Planning Process, U.S. Department of Transportation, Federal Highway Administration with support from Transportation Safety Planning, Transportation Safety Planning Working Group

Centers for Disease Control and Prevention, Native American Road Safety data

Developing Safety Plans, A Manual for Local Rural Road Owners, U.S. Department of Transportation, Federal Highway Administration

National Traffic Safety Administration, Fatality Analysis Reporting System, National Statistics

Oregon Department of Transportation. *2015 State Highway Crash Rate Tables; 2016 Traffic Volume Tables*; various traffic safety publications, including the *2016 Oregon Transportation Safety Action Plan*

B

Public Involvement

**CONFEDERATED TRIBES OF GRAND RONDE
LOCAL ROAD SAFETY PLAN**

Working Group Meeting No. 1

**April 26, 2018, at 8:00 am at the Employment Services Center
(Open to the Public)**

MEETING SUMMARY

Present: John Mercier, CTGR Public Works
Todd Whitaker, Polk County Public Works
John Phelan, Yamhill County Public Works Keith
Blair, ODOT Traffic Manager
Mark Garton, Polk County Sheriff
Ron Riebach, Spirit Mountain Casino
Jeff Kuust, CTGR Timber & Roads Dept. Danielle
Frost, Smoke Signals (Tribal Newspaper) Dennis
Petrequin, Akana
Lonny Macy, Akana
Carolyn Slatt, Akana
Susan Wright, Kittleson

Attendance sheet attached.

INTRODUCTIONS

John Mercier, CTGR Public Works Director, opened the meeting at 8:00am with introduction of the Akana consulting team and the LRSP Working Group in attendance (see attached list for complete Working Group), then turned the meeting over to Dennis Petrequin, Akana Project Manager and Principal Planner.

LOCAL ROAD SAFETY PLANNING

Mr. Petrequin summarized the purpose of developing a tribal Local Road Safety Plan and the planning process (see attached Powerpoint presentation), and the objectives of the meeting (see attached agenda). He identified Mr. Mercier as the Plan "Champion" of the planning effort, advocating for the plan and coordinating on a day-to-day basis with the Working Group, other stakeholders, and the public for the duration of the project.

As part of the Powerpoint presentation, Mr. Petrequin discussed AADT and crash data assembled to date, including state data and Grand Ronde Police Department and Polk County crash data, and safety issues on the SR 18 and SR 22 Corridors. It was noted that Polk County has placed counters on Grand Ronde Road at the Polk County Line to obtain data on the difference between weekday and weekend traffic. The raw counts will be provided to the study team by the County.

SAFETY ISSUES

The discussion of key safety issues/emphasis areas to be addressed in the plan centered on intersection safety, corridor improvements, and recreational traffic on forestry roads.

Intersection safety – better safety at intersections, west and east bound turn lanes (SR 22/Grand Ronde Road); pedestrian crosswalks on Grand Ronde Road;

SR 18 and SR22 Corridors

- + The lack of alternate routes in the event of road closures on SR 22 and SR18 to Wallace Bridge due to accident or other problems leaves no other way to connect to the highway, backing up traffic for long periods of time, impacting shift changes at the casino, and impacting incident response time. Finding an alternate route is needed, and a bypass through tribal property from north of the pow wow grounds to Fort Hill Road new interchange on SR 18 is one alternate route that has been considered.
- + The School District indicated – highway bus stops and traffic speed are issues on SR22 where there are site distance issues. Signing has helped, but reduced speed limits and flashing warning signs in the am and pm when students are picked up and left off are needed.

Trucks on Grand Ronde Road – Because of sharp curves and difficult turn radii on SR 22 between Grand Ronde road and the SR 18 intersection at Valley Junction, trucks are using Grand Ronde Road instead which is causing deterioration of Grand Ronde Road.

Recreational Traffic on Forestry Roads – Issues related to recreational traffic on forest roads are:

- + Seasonal recreation traffic coinciding with timber harvest impacts traffic safety
- + The lack of guardrail on Agency Creek Road and the steep slope high above the creek create unsafe conditions and increase the potential for environmental impacts from chemical spills.

Asked to prioritize these safety concerns, the Working Group indicated that intersection safety was a top priority followed by corridor improvements and recreational traffic on forestry roads.

GOALS OF THE LRSP

Based on a discussion of safety issues and identified goals of this LRSP, the following overall vision statement has been suggested:

To improve vehicular and pedestrian safety on and near tribal lands through safety improvements at highway intersections and along SR 18 and SR 22 corridors, and addressing safety and seasonal recreational and logging traffic on rural forest roads.

PROJECT TIME FRAME

Based on the discussions at this first Working Group meeting, the consultant will develop a list of emphasis areas and potential strategies to address them. A draft working paper will be provided to the Working Group for review by mid-May, followed by a Draft LRSP in late May.

The next Working Group meeting will be held to discuss the Draft Plan. Following that meeting, the Plan will be finalized.

The meeting was adjourned at approximately 9:15 am

CONFEDERATED TRIBES OF GRAND RONDE
LOCAL ROAD SAFETY PLAN

Working Group Meeting No. 1
April 26, 2018, at 8:00 am at the Employment Services Center
(Open to the Public)

Discussion Items

Introductions

What is a Local Road Safety Plan?

- + Why the study is being done.
- + Elements of a LRSP

Meeting Objectives

- + Establish the Working Group
- + Identify All Other Stakeholders
- + Establish the Vision and Goals of the LRSP
- + Review Traffic Data
- + Identify & Prioritize Safety Issues

Working Group Established

- + Identify "Champion"
- + Critical Participants Needed

Establish Vision, Goals, Objectives

- + What are the Safety Plan and Safety Program to accomplish

Identify All Other Stakeholders

Review Traffic Data

- + AADT
- + Crash Data

Identify Emphasis Areas

Prioritize Safety Concerns

Project Time Frame

Other

Dennis Petrequin, Principal Planner, dennis.petrequin@akana.us
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Carolyn Slatt, Planner, carolyn.slatt@akana.us
Jade Mc Daniel, Assistant Planner, jade.mcdaniel@akana.us
Susan Wright, Traffic Engineer, swright@kittleson.com



CONFEDERATED TRIBES OF GRAND RONDE
LOCAL ROAD SAFETY PLAN

Working Group Meeting No. 1
April 26, 2018, at 8:00 am at the Employment Services Center
(Open to the Public)
SIGN-IN SHEET

PRINT NAME/SIGN	REPRESENTING	EMAIL
Jake McKnight	Grand Ronde Tribal Police	jake.mcknight@grandronde.org
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John Phelan <i>John Phelan</i>	Yamhill County Public Works	phelanj@co.yamhill.or.us
Keith Blair <i>Keith Blair</i>	ODOT Traffic Manager	Keith.P.BLAIR@odot.state.or.us
Mark Garton <i>Mark Garton</i>	Polk County Sheriff	garton.mark@co.polk.or.us
Ron Riebach <i>Ron Riebach</i>	Spirit Mountain Casino	ron.reibach@spiritmtn.com
Danielle Frost <i>Danielle Frost</i>	Smoke Signals (Tribal Newspaper)	Danielle.Frost@grandronde.org
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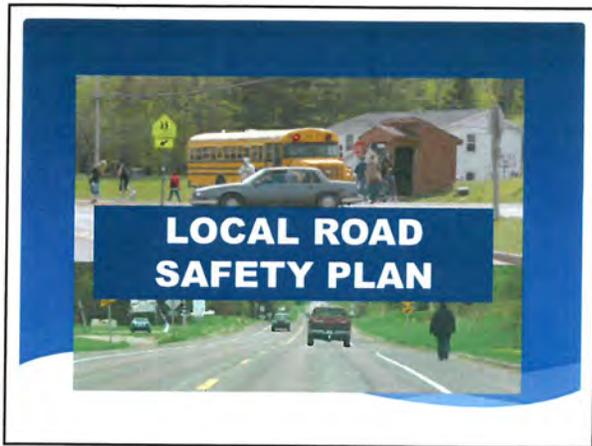
Jade Mc Daniel, Assistant Planner, jade.mcdaniel@akana.us

Susan Wright, Traffic Engineer, swright@kittleson.com



Grand Ronde Local Road Safety Plan Working Group

NAME	AGENCY	POSITION	STAKEHOLDER INTEREST
John Mercier	Confederated Tribes of Grand Ronde	Publics Works Project Manager	Tribe and local community
Jake McKnight or Tim Hernandez	Grand Ronde Tribal Police	Police Chief/ Lieutenant	Emergency Services
Jay Bechtol	First Student	Willamina Lead Driver	Willamina School District school bus transportation safety
Keith Blair, PE or representative	ODOT	Interim Region Traffic Manager ODOT Region 2	State Department of Transportation
Ron Reibach or Lisa Martin	Spirit Mountain Casino	Facilities Services Director/ Executive Administrative Supervisor	Spirit Mountain Casino transportation safety
Todd Whitaker	Polk County	Public Works Director	Polk County transportation safety
John Phelan	Yamhill County	Public Works Director	Yamhill County transportation safety



TRAFFIC SAFETY PLANNING IS AN ONGOING PROCESS

Developing a Safety Plan

Monitoring the Plan

Periodic Plan Updating



Why Have a Safety Plan

- ✓ Save lives and prevent personal injury
- ✓ Reduce property damage
- ✓ Future access to funding sources



6-Step Process

- Step 1: Establish Leadership**
- Step 2: Analyze Safety Data**
- Step 3: Determine Emphasis Areas**
- Step 4: Identify Strategies**
- Step 5: Prioritize and Incorporate Strategies**
- Step 6: Evaluate and Update the LRSP**



Step 1: Establish Leadership

Identify Stakeholders

- Tribal officials & tribal members*
- BIA, city, state, & county transportation officials*
- Emergency services*
- Law enforcement agencies*
- School district & Head Start*
- Local transit providers*
- Economic development agencies*



Establish the Working Group

Vision, Mission Statement, Goals and Objectives

Conduct Working Group Meeting



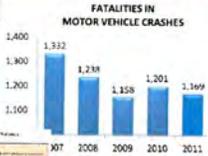
Step 2: Analyze Safety Data

Crash Data

Traffic Volumes

Traffic Data Analysis

FATALITIES IN MOTOR VEHICLE CRASHES



Year	Fatalities
2007	1,332
2008	1,238
2009	1,158
2010	1,201
2011	1,169





Step 3: Determine Emphasis Areas

Comprehensive Approach
Public education
Enforcement of traffic laws
Engineering to improve roadway design
Emergency services to provide rapid response and quality of care

Objective will be established for each emphasis



Step 4: Identify Strategies

What types of countermeasures are available to address emphasis areas?

Traffic calming measures
Signage
Rumble strips
Signal lights
Pavement markings
Reconstruction
Law Enforcement
Public education



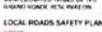
Step 5: Prioritize & Incorporate Strategies

Prioritize Proposed Strategies
Cost-Benefit Comparison
Ability to Implement Countermeasures
Manpower Availability
Implementation Schedule
Relative Importance of the Emphasis Area



Step 6: Plan Development

- Prepare Draft Plan
- Review Draft Plan
- Prepare Final Plan
- Adopt the Plan
- Incorporate the Plan into the L RTP



CONFEDERATED TRIBES OF THE
UMATILLA INDIAN RESERVATION
LOCAL ROADS SAFETY PLAN
2015-2018





State of Oregon Crash Data 2011-2015

	2015	2014	2013	2012	2011	%Change
Fatal Crashes	410	321	292	305	310	32.3%
Non-fatal Injury Crashes	28,721	24,208	22,984	24,457	23,887	20.2%
Property Damage Only Crashes	26,025	26,716	26,234	25,036	24,856	4.7%
Total Crashes	55,156	51,245	49,510	49,798	49,053	12.4%
Fatality Rate*	1.24	1.03	0.93	1.01	0.99	25.3%
Fatality & Serious Inj. Rate*	6.17	5.35	5.13	NA	NA	
Crashes Driver 15-20 years	9,849	8,503	8,150	8,264	8,602	14.5%
% of All Crashes	17.8	16.6	16.5	16.6	17.5	1.7%

* Casualty Rate is per 100 Million Vehicle Miles

Crash Rates Per 1 Million Vehicle Miles

	Crash Rates*				
	2015	2014	2013	2012	2011
Oregon: State Rural Areas	0.70	0.72	0.65	0.68	0.69
Interstate	0.32	0.37	0.30	0.31	0.30
All Other Roads	0.95	0.95	0.89	0.93	0.91
Other Principal Arterials	0.81	0.81	0.76	0.81	0.80
Minor Arterials	1.24	1.22	1.15	1.14	1.13
Rural Major Collectors	1.50	1.43	1.36	1.43	1.37
Rural Minor Collectors	0.76	1.02	1.96	1.71	2.00
Rural Roads	0.00	0.00	0.00	0.00	0.00
SR 18 (State Hwy)	0.87	0.73	0.86	0.89	0.78
SR 22 (State Hwy)	1.98	1.57	1.79	2.10	1.08

* Crash Rate Formula: (crashes*1,000,000)/VMT

SR 18 Crashes per Million Vehicle Miles

State Route 18 (Highway 39 Salmon River Hwy.)

Start M.P.	Section Description	Miles	Crashes	ADT	2015	2014	2013	2012	2011
0.22	US 101 to Alvord Rd./Otis Jct.	1.48	4	10,300	0.72	0.56		0.75	1.13
1.26	Alvord Rd. to Tillamook County Line	9	45	8,356	1.64	1.06	1.47	1.49	1.39
10.26	Tillamook County Line to Polk County Line	4.64	4	6,924	0.34	0.18	0.71	1.16	0.96
14.9	Polk County Line to Fire Hall Rd.	5.62	17	7,061	1.17	0.87	0.79	0.22	0.6
20.67	Fire Hall Rd. to Grand Ronde Rd.	0.51	1	8,300	0.65	1.36	3.4	2.71	
21.18	Grand Ronde Rd. to SR 22/Valley Jct.	1.86	10	14,967	0.98	1.33	1.03	0.83	0.77
23.04	SR 22/Valley Jct. to Hwy. 22	4.13	7	16,273	0.29	0.25	0.26	0.51	0.28
27.17	Hwy. 22 to Yamhill County Line	2.59	3	7,159	0.44	0.77	0.62	0.16	
29.76	Yamhill County Line to Harmony Rd.	0.87		7,200		0.91	0.91	0.46	1.07
30.63	Harmony Rd. to Sheridan Conn Rd	1.75	4	7,423	0.84	0.88	1.32	1.75	1.02
TOTAL US 101 to Sheridan Urban Area		32.45	95	9,224	0.87	0.73	0.86	0.89	0.78
State Rural: Principal Arterials					0.81	0.81	0.76	0.81	0.8

SR 22 Crashes per Million Vehicle Miles

State Route 22 (Highway 32 Three Rivers)

Start M.P.	Section Description	Miles	Crashes	ADT	2015	2014	2013	2012	2011
0.00	US 101 to Jct. Little Nestucca Hwy.	10.63	7	1,259	1.43	2.17	1.82	2.54	1.4
10.63	Jct. Little Nestucca Hwy. to Yamhill County	0.33		1,600		10.35		5.52	
10.96	Yamhill County to Old Toll Rd.	4.47	9	1,600	3.49	0.74	3.32	1.54	0.99
15.28	Old Toll Rd. to Polk County Line	8.46	11	1,811	1.97	1.24	1.41	1.88	0.83
23.84	Polk County Lin to SR 18 (Salmon River Hwy.)	1.13	1	2,230	1.09	0.92	2.87	1.93	1.52
TOTAL US 101 to SR 18		24.97	28	1,555	1.98	1.57	1.79	2.1	1.08
State Rural: Minor Arterials					1.24	1.22	1.15	1.14	1.13

Grand Ronde Police Department & Polk County Crash Data

Numbers represent the agency acting as primary investigator during reported crash

2011 Grand Ronde Tribal Police = None Reported Polk County Sheriff's Office = 7	2015 Grand Ronde Tribal Police = 16 Polk County Sheriff's Office = 2
2012 Grand Ronde Tribal Police = 1 Polk County Sheriff's Office = 8	2016 Grand Ronde Tribal Police = 29 Polk County Sheriff's Office = 6
2013 Grand Ronde Tribal Police = 2 Polk County Sheriff's Office = 5	2017 Grand Ronde Tribal Police = 32 Polk County Sheriff's Office = 4
2014 Grand Ronde Tribal Police = 8 Polk County Sheriff's Office = 4	2018 Grand Ronde Tribal Police = 4 Polk County Sheriff's Office = 1

Total 2011-2018 = 129
Grand Ronde Tribal Police = 92
Polk County Sheriff's Office = 37

Safety Issues

- ✓ SR 18 Corridor: Ft. Hill to Grand Ronde
 - SR 18/SR22 Intersection
 - Casino Access
 - Grand Ronde Rd. Intersection
- ✓ SR 22 Corridor: Narrow road and curves prior to the SR 18 intersection
 - Grand Ronde Rd. Intersection



**CONFEDERATED TRIBES OF GRAND RONDE
LOCAL ROAD SAFETY PLAN**

Working Group Meeting No. 2

**August 30, 2018, 8:00 am at the CTGR Employment Services Center
(Open to the Public)**

MEETING SUMMARY

Present: John Mercier, CTGR Public Works (Safety Plan Champion)
Stephen Kahl, Polk County
Keith Blair, ODOT Traffic Manager
Mark Garton, Polk County Sheriff
Ron Riebach, Spirit Mountain Casino
Danielle Frost, Smoke Signals (Tribal Newspaper)
Dennis Petrequin, Akana
Lonny Macy, Akana
Carolyn Slatt, Akana
Matt Bell, Kittelson

Attendance sheet attached.

INTRODUCTIONS

John Mercier, CTGR Public Works Director, opened the meeting at 8:00am with introductions, then turned the meeting over to Dennis Petrequin, Akana Principal Planner.

PURPOSE OF THE MEETING

Mr. Petrequin summarized the safety planning effort to date, and the purpose of the meeting—to review crash data and potential countermeasures for the Grand Ronde Study Area, review emphasis areas and strategies, and to identify proposed strategies priorities (*see attached agenda*).

CRASH DATA

Mr. Petrequin provided an overview of the crash data assembled to date by Kittelson for the Grand Ronde community, which focuses on OR 18, OR 22, and Grand Ronde Road (*see attached Working Paper No. 2*). He noted that 142 accidents occurred in the area in the 5-year period from 2012-2016, most occurring during daylight hours, in clear weather, and on dry surface conditions. The top three crash causes, which accounted for almost half of all crashes, were: failure to yield right-of-way, speeding, and following too closely. There were three fatal crashes reported, two on OR 18 and one at the Grand Ronde Road/OR 22 intersection.

The vast majority of the accidents involved hitting a fixed object, rear-end, or in a turning movement, and almost all rear-end accidents were on OR 18. On OR 22, speeding and reckless or careless driving was a problem from Grand Ronde Rd. to Valley Junction at the curves on the road, particularly in the Kissing Rock area.

Mr. Petrequin then turned the discussion over to Mr. Bell to discuss safety issues in the study area and potential countermeasures.

Mr. Bell's discussion centered on the OR 18/Grand Ronde Road intersection, the OR 22/Grand Ronde Road intersection, OR 22 in the Kissing Rock area, and in the area of the casino, characterizing key safety issues at each location, and identifying possible countermeasures to address the issues.

- + *OR 18/Grand Ronde Rd. Intersection* - 15 accidents occurred at this intersection in the past 5 years. The No. 1 cause was failure to yield right-of-way. Safety issues include inadequate deceleration lanes, lack of street lighting along the corridor, especially at the crosswalk, and at the intersection. Possible countermeasures include: beacons for the crosswalk and for intersection warning signing, street and intersection lighting, and traffic calming measures, e.g. pavement marking, rumble strips, narrowing the center lane, and speed reduction. He also suggested signaling the intersection or constructing a roundabout as other possible measures.

Keith Blair, ODOT indicated that 3 accidents/year was not an abnormally high number. He indicated that ODOT is looking at the OR 18/Grand Ronde Road intersection in its 2021-2024 STIP, including an enhanced crossing, offset turn lanes, cross-traffic activated intersection warning signing, and speed reduction signs on OR 18. i.e. "your speed is..." However, he indicated that ODOT is moving away from signalized intersections on rural highways and that this was not a likely measure. He also indicated that project funding was an issue as the State would not look favorably at implementing a high cost improvement now as this intersection would be improved at part of the proposed Fort Hill to AR Ford Road corridor improvement for OR 18. Any interim countermeasures should be low cost improvements.

Mr. Mercier stated that it was not necessarily speed, but rather volume at the intersection that creates safety issues.

- + *OR 22/Grand Ronde Road. Intersection* – 5 crashes occurred at the OR22/Grand Ronde Road intersection from 2012-2016, one of which involved a fatality. Similar issues exist at this intersection as at the OR 18 intersection, including narrow lanes and lack of lighting at the intersection and along the corridor, as well as a lack of adequate shoulders along OR 22. Measures to address these issues include left turn/right turn lanes, deceleration lanes, right and left turn acceleration lanes, speed signing, wider shoulders to allow more recovery time, warning lighting/beacons, and double stripe center line at the intersection.

Mr. Blair, ODOT, indicated that left turn lanes were not warranted at the intersection as the number of crashes is low. Also, lack of shoulder space in conjunction with a utility pole requires eastbound trucks to make a wide turn onto Grand Ronde Road causing them to use part of the northbound lane on Grand Ronde Road.

- + *OR 18/OR 22 Intersection* – Safety issues at this intersection include lack of intersection and street lighting, and inadequate acceleration and deceleration lanes. Possible countermeasures are similar to the other intersections discussed, with the additional possible measures of overhead flashing warning beacons, and raising the medians.

Mr. Blair indicated that ODOT was moving away from overhead beacons to roadside beacons, because they are easier to maintain and allow driver eye-level visibility. He also stated that ODOT was looking at construction of a grade separation intersection at this location as part of a proposed improvement of OR 18 from Fort Hill to AR Ford Road in Grand Ronde.

OR 22 – The lack of shoulders and speeding (i.e. traveling too fast for the condition of the road) are issues at the Kissing Rock curves. The terrain in this area is a problem as there is a creek on one side and a rocky cliff on the other, which makes it difficult and extremely costly to straighten or widen this section of road. Possible countermeasures include shoulder enhancement, rumble strips (shoulder and centerline), enhanced pavement markings, skid resistant pavement, and removal of roadside obstacles, e.g. mailboxes.

Mr. Blair indicated that ODOT had upgraded signage along the corridor two years ago, including new retro reflective curve warning signs.

Mr. Mercier stated that the Tribe was looking at an alternative alignment for OR 22 from north of the Powwow Grounds to Fort Hill Road and the existing interchange at Fort Hill with OR 18. This alternate alignment would not only eliminate the need for another grade separation interchange at Valley Junction and the difficult turns at Kissing Rock, but also would provide a means of diverting traffic in the event of an accident or some other event that closes OR 18 between Fort Hill and Grand Ronde Road. Mr. Blair indicated that ODOT would be interested in looking at the option.

- + *School Bus Stops* – A school bus driver reported to the Tribe earlier that he had concerns about the need for additional signing for school bus stops on OR 22 west of Grand Ronde Road. This area is in the coast range, and as a result the road is fairly curvy which affects sight distance for stopping. It was also ascertained that there is no “School Bus Turnaround” sign at the end of the bus route.

At the request of Mr. Petrequin, Mr. Mercier will contact the Willamina School District to obtain school bus data including a map showing problem areas.

Spirit Mountain Casino – Mr. Petrequin indicated that internal circulation has long been a problem at the casino. All internal traffic must utilize one of two intersections on the east side of the casino on either entering or exiting the site. When the casino was expanded and the hotel was added, the main entry to the casino was relocated to the west side near the hotel entry. Most traffic now has to navigate from the east side around the facility to the west side through the parking lots. When the improvement to OR 18 is implemented, it would be great benefit to traffic flow to have a right-in, right-out access to and from the highway (with deceleration/acceleration lanes) on the west end of the site. (There is currently an emergency access in this general location which is gated.)

Mr. Reibach, Casino Facilities Director, indicated that improved, simplified internal directional signage provided in recent years had helped to some degree. In response to a question regarding development plans for the casino, he indicated no major modifications to buildings are planned, but did say that there are plans to expand the RV area, perhaps to the southwest of the current location.

- + *Grand Ronde Road* – Mr. Petrequin mentioned that the Working Group in their first meeting in April had discussed setting weight limits on Grand Ronde Road to address the increased truck traffic on the road that are avoiding the curves on OR 22 between Grand Ronde Road and the SR 18 Intersection at Valley Junction. Mr. Mercier stated that the Tribe will wait to work with the counties to set weight limits until after SR 22 has been improved or realigned.

PRIORITIES

Asked what were the top priorities for implementing countermeasures, Mr. Mercier indicated that a public awareness program, e.g. public information, articles in Smoke Signals, the tribal newspaper informing the public on traffic issues to enable them to better plan trips, was an important, cost-effective short-term measure. The use of cost-effective measures first, e.g. signing, striping, lighting, and crosswalk beacon, as opposed to major improvements, was a priority. Mr. Blair indicated that ODOT would work with the Tribe to install speed reader board signs at appropriate locations. These have proven to be cost-effective countermeasures in reducing speeding.

WHAT'S NEXT?

Based on the discussions at this Working Group meeting, the consultant will develop an implementation approach for strategies (working paper), and prepare a draft plan which will be reviewed at the third and final working group meeting. Based on comments, the draft will be revised as needed and a Final Plan will be prepared.

With no further discussion, the meeting was adjourned at approximately 9:50 am.

C

Working Papers

WORKING PAPER

CTGR Local Road Safety Plan

Traffic Safety Emphasis Areas and Potential Strategies

Introduction

In the United States, during the period 1975-2002, traffic fatalities resulting from motor vehicle crashes decreased by 2.2%. However, during the same period, Native American fatalities resulting from crashes increased 53%. According to the Centers for Disease Control and Prevention, motor vehicle crashes are the leading cause of death for Native Americans and Alaska Natives ages 1-44. Overall, the death rate from vehicle crashes for Native Americans/Alaska Natives is 1.5 percent higher than for Caucasians and African Americans.

With the prior enactment of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and with the recently passed (December 2015) Fixing America's Surface Transportation Act (FAST Act), it is evident that the Federal Government is placing a great deal of emphasis on becoming proactive in improving traffic safety and reducing fatalities on the nation's road system. Future funding is likely to center on traffic safety projects. As a result, the Federal Highway Administration is promoting developing Local Road Safety Plans (LRSP) by state and local governments, including Indian Tribes.

To initiate a Local Roads Safety Plan and traffic safety program, the Confederated Tribes of the Grand Ronde Reservation (CTGR) received a small amount of grant funding from the Bureau of Indian Affairs (BIA). This initial planning effort sets in motion an ongoing safety program for future planning and implementation efforts.

This working paper summarizes planning efforts to date, including establishing plan leadership and a Working Group to guide plan development and implementation, collection and analysis of available safety data, and identification of key emphasis areas and potential strategies to address them.

Plan Leadership and Working Group

The initial step in developing CTGR LRSP was identification of plan leadership and establishment of a Working Group to guide the plan and bring together the right agencies and individuals to implement the plan and to monitor and update the plan in the long term. The consultant, working with the Tribe, first identified potential stakeholders who were contacted and invited to participate in the planning effort. From this list the Working Group was established. Table 1 lists stakeholders and the Working Group.



TABLE 1**Local Road Safety Plan Stakeholders/Working Group**

Stakeholders	Working Group
Confederated Tribes of the Grand Ronde Reservation (CTGR)	Confederated Tribes of Grand Ronde
Bureau of Indian Affairs (BIA)	John Mercier, Public Works (Champion)
Federal Highway Administration	Jeff Kuust – Timber & Roads Dept.
Oregon Department of Transportation	Joani Dugger – Housing
Polk County	Ron Reibach – Spirit Mountain Casino
Yamhill County	Jake McKnight – Police Chief
Local engineering and public works departments	Bureau of Indian Affairs - John LaVerdure
Local State and County Enforcement Agencies	ODOT – Keith Blair, Region 2, Traffic
CTGR Police Department	Polk County – Todd Whitaker, Public Works
County Sheriff’s Departments	Yamhill County – John Phelan, Public Works
Oregon State Police	First Student/Willamina School District – Jay
Willamina School District	Bechtol, Willamina Lead Driver

Mission Statement

The following Mission Statement has been suggested:

Improve vehicular and pedestrian safety on and near tribal lands to reduce serious injuries and fatalities through safety education, enforcement, emergency services, and engineering improvements at highway intersections and along OR 18 and OR 22 corridors, and addressing the seasonal mix of recreational and logging traffic on rural forest roads.

Safety Data Collection and Analysis

In Oregon for the 5-year period 2011 to 2015, an average of 335 people were killed in crashes and another 1440 were seriously injured annually. Also, a little over half of these fatalities and serious injuries occurred in rural areas. Rural collector and local roads accounted for 21% of all fatalities and serious injuries. The 2016 Draft Transportation Safety Action Plan (ODOT) further reports that over 30% of all fatal and serious injury crashes involve young drivers, 25 years and younger, and 15% involve elderly drivers, 65 years and older. When compared to the number of drivers in these age groups, the number of crashes is disproportionately higher, particularly for young drivers.



Safety data collected included traffic volumes and crash rate on state highway, fatality and serious injury crash rates for the state, and crash data recorded by CTGR police over the period 2011-2017. Data is summarized in Tables 2, 3, 4 and 5.

TABLE 2
ODOT Crash Rates (per 1 Million Vehicle Miles)

Location	Crash Rates*				
	2015	2014	2013	2012	2011
Oregon: State Rural Areas	0.70	0.72	0.65	0.68	0.69
Interstate	0.32	0.37	0.30	0.31	0.30
All Other Roads	0.95	0.95	0.89	0.93	0.91
Other Principal Arterials	0.81	0.81	0.76	0.81	0.80
Minor Arterials	1.24	1.22	1.15	1.14	1.13
Rural Major Collectors	1.50	1.43	1.36	1.43	1.37
Rural Minor Collectors	0.76	1.02	2.96	1.71	2.00
Rural Roads	0.00	0.00	0.00	0.00	0.00
OR 18 (State Hwy)	0.87	0.73	0.86	0.89	0.78
OR 22 (State Hwy)	1.98	1.57	1.79	2.10	1.08

TABLE 3
Fatal and Serious Injuries (per 100 Million Vehicle Miles)
2015

Location	Fatal Crashes	Deaths & Serious Injuries	Fatal & Serious Injury Crash Rate	Fatal & Serious Injury Casualty Rate
Oregon: State Rural Areas	417	526	4.45	5.62
Interstate	46	57	1.22	1.52
All Other Roads	371	469	6.62	8.37
Other Principal Arterials	213	29	5.36	7.02
Minor Arterials	111	136	8.49	10.40
Rural Major Collectors	47	55	14.82	17.02
Rural Minor Collectors	0	0	0.00	0.00
Rural Roads	0	0	0.00	0.00

* *Crash Rate Formula (Crashes * 100 million)/VMT*

** *Casualty Rate Formula: ((Death+Serious Injuries)*100 million)/VMT*



TABLE 4
State of Oregon Crash Data
2011-2015

	2015	2014	2013	2012	2011	% Change
Fatal Crashes	410	321	292	305	310	32.3%
Non-fatal Injury Crashes	28,721	24,208	22,984	24,457	23,887	20.2%
Property Damage Only Crashes	26,025	26,716	26,234	25,036	24,856	4.7%
Total Crashes	55,156	51,245	49,510	49,798	49,053	12.4%
Fatality Rate*	1.24	1.03	0.93	1.01	0.99	25.3%
Fatality & Serious Injury Rate*	6.17	5.35	5.13	NA	NA	
Crashes Driver 15-20 years	9,849	8,503	8,150	8,264	8,602	14.5%
% of All Crashes	1.8	16.6	16.5	16.6	11.5	1.7%

* *Crash Rate Formula (Crashes * 100 million)/VMT*

** *Casualty Rate Formula: ((Death+Serious Injuries)*100 million)/VMT*

TABLE 5
Grand Ronde Tribal Police Department and Polk County Crash Data: 2011-2017*

	2017	2016	2015	2014	2013	2012	2011	TOTAL
CTGR Police	32	29	16	8	2	1	0	88
Polk Co. Sheriff's Office	4	6	2	4	5	8	7	36
TOTAL	36	35	18	12	7	9	7	124

* *Numbers represent the agency acting a primary investigator during reported crash*

Source:



Emphasis Areas

The identification of key **emphasis areas** for the CTGR LRSP is focused primarily on addressing safety issues and concerns identified by the Working Group, other various stakeholders, and the community.

On April 26, 2018, a public meeting with the Working Group and other stakeholders was held at which traffic safety issues and emphasis areas to be addressed in the LRSP were identified. Emphasis areas identified for inclusion in this LRSP are: **intersection safety, corridor safety, and mix of recreational traffic and logging traffic on forest roads. Pedestrian safety and public education and outreach** were also added. Emphasis areas and potential strategies are summarized in Table 6 and described below.

TABLE 6
Emphasis Areas/Potential Strategies

Emphasis Area	Measure(s)	Potential Strategies
INTERSECTION SAFETY	<ul style="list-style-type: none"> + Reduce intersection-related crashes + Improve pedestrian safety 	<ul style="list-style-type: none"> + Conduct road safety audit targeting problem locations to identify contributing crash factors and identify effective countermeasures + West and east bound turn lanes on OR 22 at Grand Ronde Road + Analyze OR 18/Grand Ronde Road intersection for improvements to relieve backup problems during the pm peak hour. + OR 18/OR22 intersection—grade separation interchange or possible relocation of OR 22 to Ft. Hill Road + Pedestrian crosswalks on Grand Ronde Road
CORRIDOR SAFETY	<ul style="list-style-type: none"> + Reduce impact of closures on OR 18/22 intersection to Wallace Bridge + Reduce impact of OR 18/22 closure on casino shift changes + Reduce impact on 	<ul style="list-style-type: none"> + Conduct road safety audit targeting problem locations to identify contributing crash factors and identify effective countermeasures + Evaluate alternate routes/bypass of OR 18 and OR 22 intersection + Speed management – Speed feedback signs on Grand Ronde Road, extension



Emphasis Area	Measure(s)	Potential Strategies
	<p>incident response times due to highway closures</p> <ul style="list-style-type: none"> + Increase safety of school bus traffic on OR 22 + Reduce/eliminate use of Grand Ronde Road by heavy trucks avoiding curves on OR 22 	<p>of the OR 18 safety corridor through Grand Ronde, increased enforcement</p> <ul style="list-style-type: none"> + Provide warning beacons to indicate school busses are on OR 22 during am and pm school pickup and drop off times + OR 22 realignment of curves at Kissing Rock area to accommodate trucks, so loaded log trucks do not have to use Grand Ronde Road + Improve OR 18 from Fort Hill Rd to A R Ford Road in Grand Ronde (ODOT STIP project) + Implement and enforce weight restrictions on Grand Ronde Road to prohibit loaded log trucks + New access to Spirit Mountain Casino—either from a new interchange at OR18/OR 22 intersection (Valley Junction) and/or new right in/right out access at the west parking lot
RECREATIONAL TRAFFIC ON FOREST ROADS	<ul style="list-style-type: none"> + Reduce risk of seasonal recreational/log truck traffic conflicts on forest roads north of the Grand Ronde community + Reduce roadway/lane departures + Reduce risk of environmental impacts from hazardous spills 	<ul style="list-style-type: none"> + Install guardrail at specific locations where there is risk of vehicles leaving the roadway and entering waterways + Provide more warning signage, particularly when timber harvesting is occurring



Emphasis Area	Measure(s)	Potential Strategies
PEDESTRIAN SAFETY	+ Reduce potential for vehicular - pedestrian/ bike crashes	+ Construct bike/pedestrian path from housing off of Tyee Road to the tribal center Install some type of pedestrian activated warning beacon at selected pedestrian crosswalks on Grand Ronde Road
PUBLIC EDUCATION & OUTREACH	+ Increase awareness of vehicular, bike, and pedestrian safety issues	+ Establish a public information/education campaign targeting specific audiences and focused on existing safety issues, e.g. impaired driving, distracted driving, driving around vulnerable users (pedestrians, bicyclists, school bus riders, etc.)

Intersection Safety

The consensus of the Working Group was that intersection safety was a top priority, in particular at the OR 22/Grand Ronde Road intersection, OR 18 at Grand Ronde Road, and the OR 18/OR 22 intersection. There are no left-turn lanes on OR 22 to access Grand Ronde Road and with sight distance being a problem west of the intersection east-bound traffic on OR 22 can appear quickly and conflict with left-turn traffic headed south on Grand Ronde Road, particularly truck traffic, or with north-bound traffic stopped in the east-bound OR 22 travel lane waiting to make the left turn. Installation of left-turn lanes on OR 22 would be an effective countermeasure.

OR 18/OR 22 intersection safety concerns center on large vehicles, such as logging trucks and recreational vehicles, having to cross two travel lanes when making a left-turn from OR 22 to access the east-bound lane on OR 18. The only effective measures to eliminate this safety problem is to have a grade separated interchange or re-route OR 22 traffic (new alignment) to tie into the existing Ft. Hill Road interchange.

It has been reported by the Tribes that there is a lengthy back up at the OR 18/Grand Ronde Road intersection when tribal offices and the health clinic closes at the end of the work day. This issue will be looked at to see if there are any actions that can be taken to mitigate the problem over the short term. Over the long term, a grade separated at the OR 18/OR 22 intersection (or realignment of OR 22 to Ft. Hill) would provide a safe alternative to traffic heading east

Corridor Safety

Several issues were identified relative to safety along the OR 22 and OR 18 corridors.



The lack of alternate routes in the event of road closures from OR 22/OR 18 intersection to Wallace Bridge due to crashes or other problems leaves no other way for traffic to pass, thus backing up both east and west bound traffic on the State Highways for long periods of time, impacting shift changes at the casino, and impacting incident response time. Developing an alternate emergency route is needed. A realignment and extension of OR 22 through tribal property from north of the pow wow grounds to Fort Hill Road and the grade-separated interchange on OR 18 are two alternatives that have been suggested.

ODOT has over the years made improvements to the Salmon River Highway (OR 18). The last improvement extended from the Willamina junction to Ft. Hill and included the grade separation interchange at Ft. Hill Road. The ODOT STIP lists a 3.59-mile major modernization project planned for OR 18 between Ft. Hill and AR Ford Road in Grand Ronde (Name: OR 18: FT Hill Road to AR Ford Road; Key: 18854). This project will make improvements to the Highway through the Community of Grand Ronde, by the Spirit Mountain Casino and Resort site, and on to Ft. Hill and tie into the previous improvement. This improvement may also have a grade separation interchange at the OR 18/OR 22 intersection in Valley Junction which would relieve the safety concerns at the current OR18/OR 22 intersection. Modernizing this section should improve safety as well as presenting improved access opportunities to the Casino.

The School District indicated in discussions with the Tribes that highway school bus stops and traffic speed are issues on OR 22 where there are numerous curves with site distance limitations. Signing has helped, but reduced speeds and/or flashing warning beacons are needed in the am and pm when students are picked up and left off.

Because of sharp curves and difficult turn radii on OR 22 between Grand Ronde Road and the OR 18 intersection at Valley Junction, trucks are using Grand Ronde Road instead which is causing deterioration of Grand Ronde Road. A possible strategy to address this issue could be implementation and enforcement of weight restrictions on Grand Ronde Road to prohibit loaded log trucks.

Recreational Traffic on Forestry Roads

Seasonal recreational traffic that coincides with timber harvesting impacts traffic safety on rural forest roads north of Grand Ronde. More intensive signing warning of log trucks has been suggested during periods of timber harvesting.

In addition, the lack of guardrail on Agency Creek Road and the steep slope high above the creek create unsafe conditions. Installation of guardrail at problem locations can reduce the risk of vehicles leaving the roadway as well as the potential for environmental impacts from chemical spills.



Pedestrian Safety

Sidewalks and pedestrian crosswalks were installed on Grand Ronde Road when the road was reconstructed several years ago which has greatly improved pedestrian safety. However, there was recently a pedestrian death in a crosswalk during a period when traffic was detoured onto Grand Ronde Road as a result of a crash on the State Highway. It was reported that the driver could not see the pedestrian enter the crosswalk because of the traffic backed up on Grand Ronde Road. The installation of some type of pedestrian activated warning beacon at critical crosswalks would improve safety.

With the development of tribal housing east of Grand Ronde Road and off of Tye Road, there is a considerable amount of trips generated between the housing area and the Tribal Center area on the west side of Grand Ronde. A bike/pedestrian path is needed to directly connect this area with the crosswalk at the intersection of Grand Ronde Road and Salmon Way.

Public Education and Outreach

Public education and outreach is a cost-effective measure to focus on safety issues such as cell phone use while driving, impaired driving, using seatbelts and child safety seats, and knowing the rules of the road.

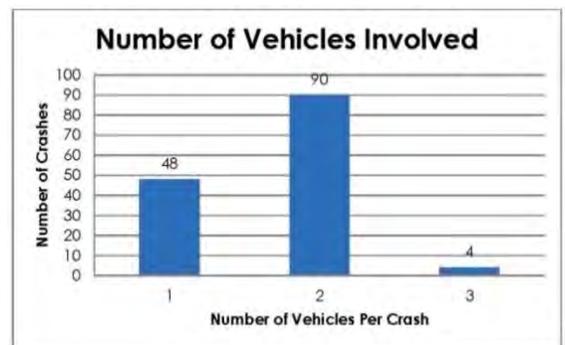
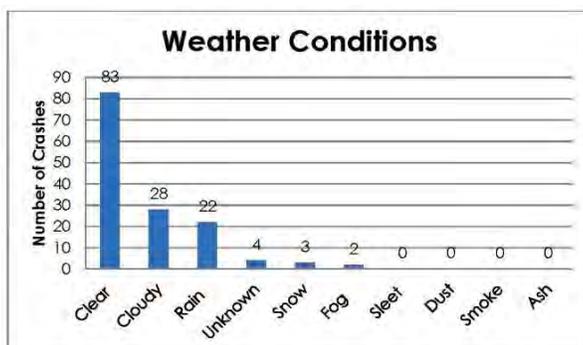
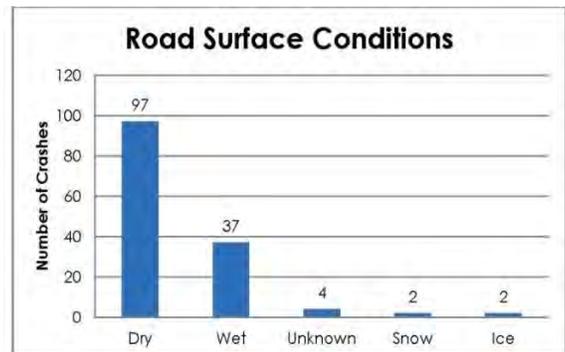
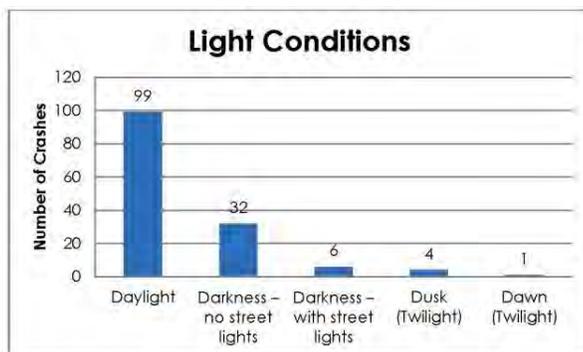
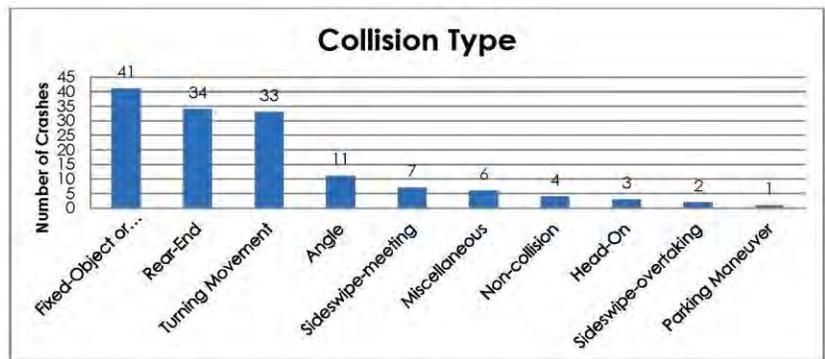
Strategies could include public information campaigns targeting specific audiences (e.g. young drivers); and information fairs and education programs on specific topics, such as seatbelts and proper child restraints, and high hazard locations; and media and outreach programs to educate drivers, including public service announcements, public information brochures, local newspaper articles, etc.

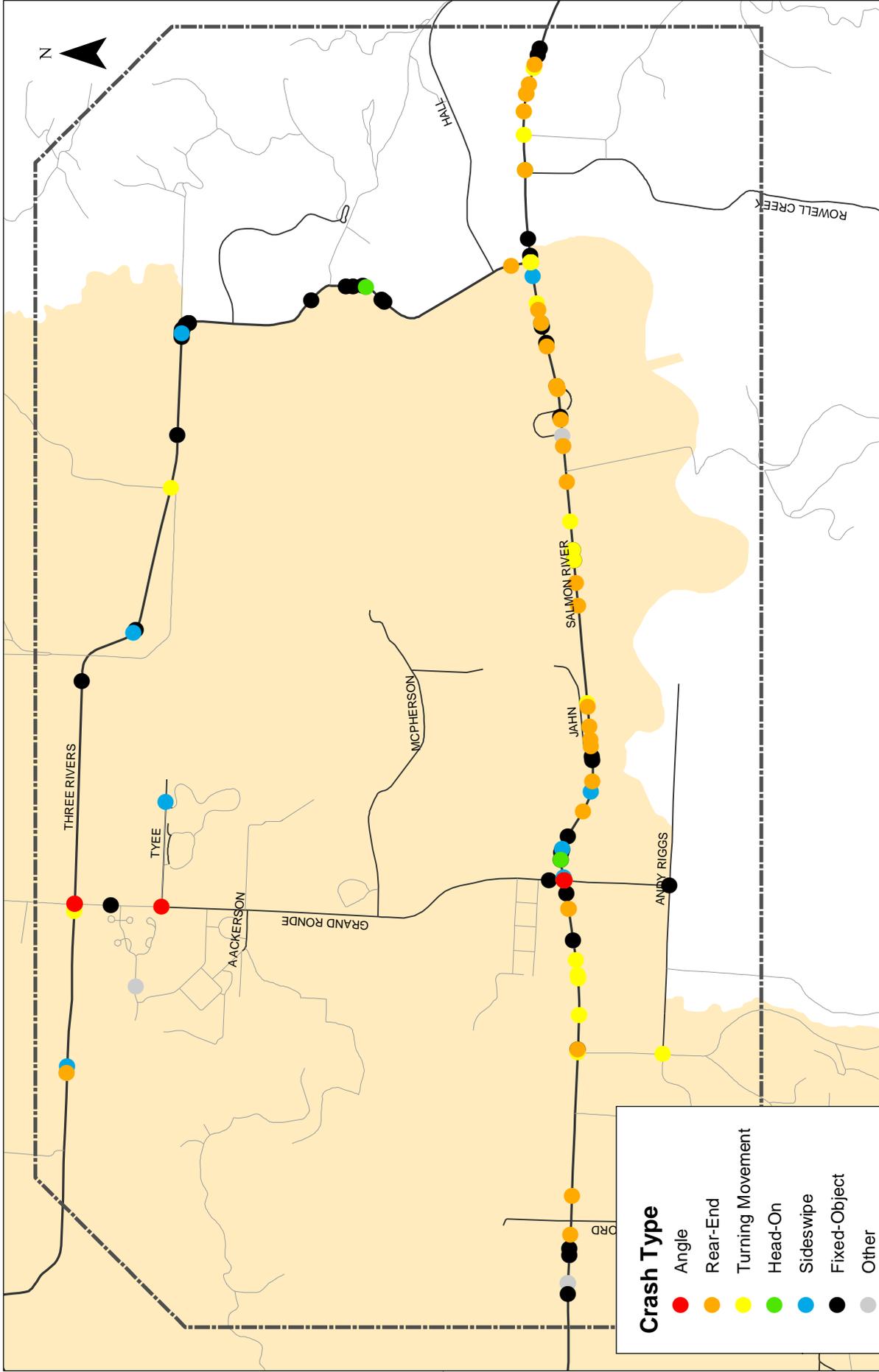


WORKING PAPER No. 2 CTGR Local Road Safety Plan Grand Ronde Crash Data

From 2012 through 2016, 142 crashes were reported in and near the Grand Ronde Community as shown in Figure 1 (see the following page). During this five-year period, the vast majority of these crashes occurred along the SR 18 (Salmon River Highway) corridor from the west side of Grand Ronde to Fort Hill. Most occurred between Grand Ronde Road and Fort Hill. A number of crashes also occurred along SR 22 (Hebo Highway); most were either at or near curves or at intersections. Relatively few crashes were reported along Grand Ronde Road (excludes SR 18 and SR 22 intersections). Passenger cars/trucks were involved in 95% of all reported crashes, and slightly more than half involved residents living within 25 miles of the crash site.

The most prevalent types of collisions were hitting a fixed object, rear-end, and turning movements. These types of crashes accounted for 76% of all reported crashes. Rear end collisions were the most predominant along SR 18. Most collisions occurred in daylight (70%), in clear weather conditions (58%), and on dry road surfaces (68%). Single vehicle crashes accounted for 34% of all crashes while two-vehicle crashes accounted for 63%.

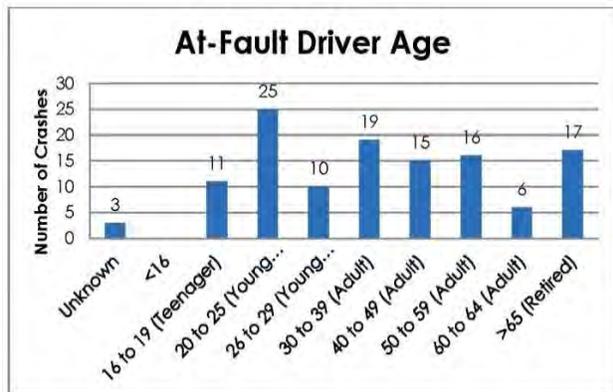
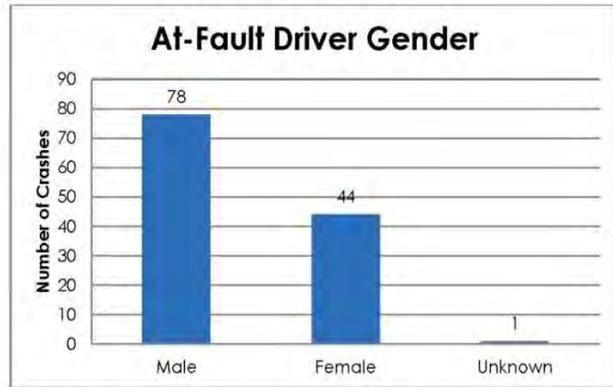
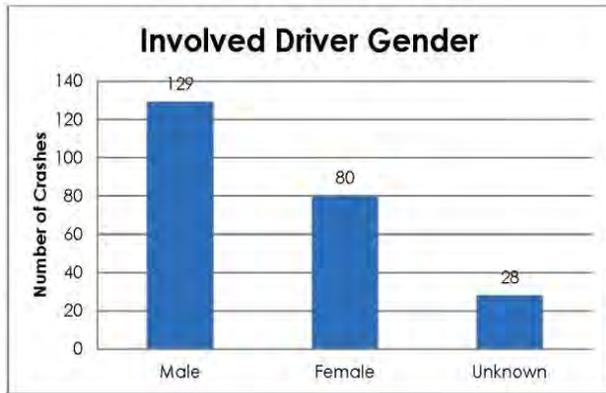
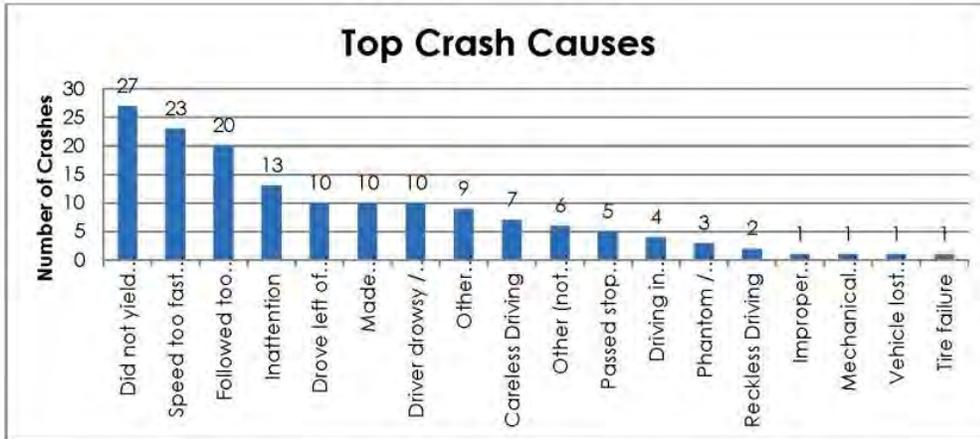


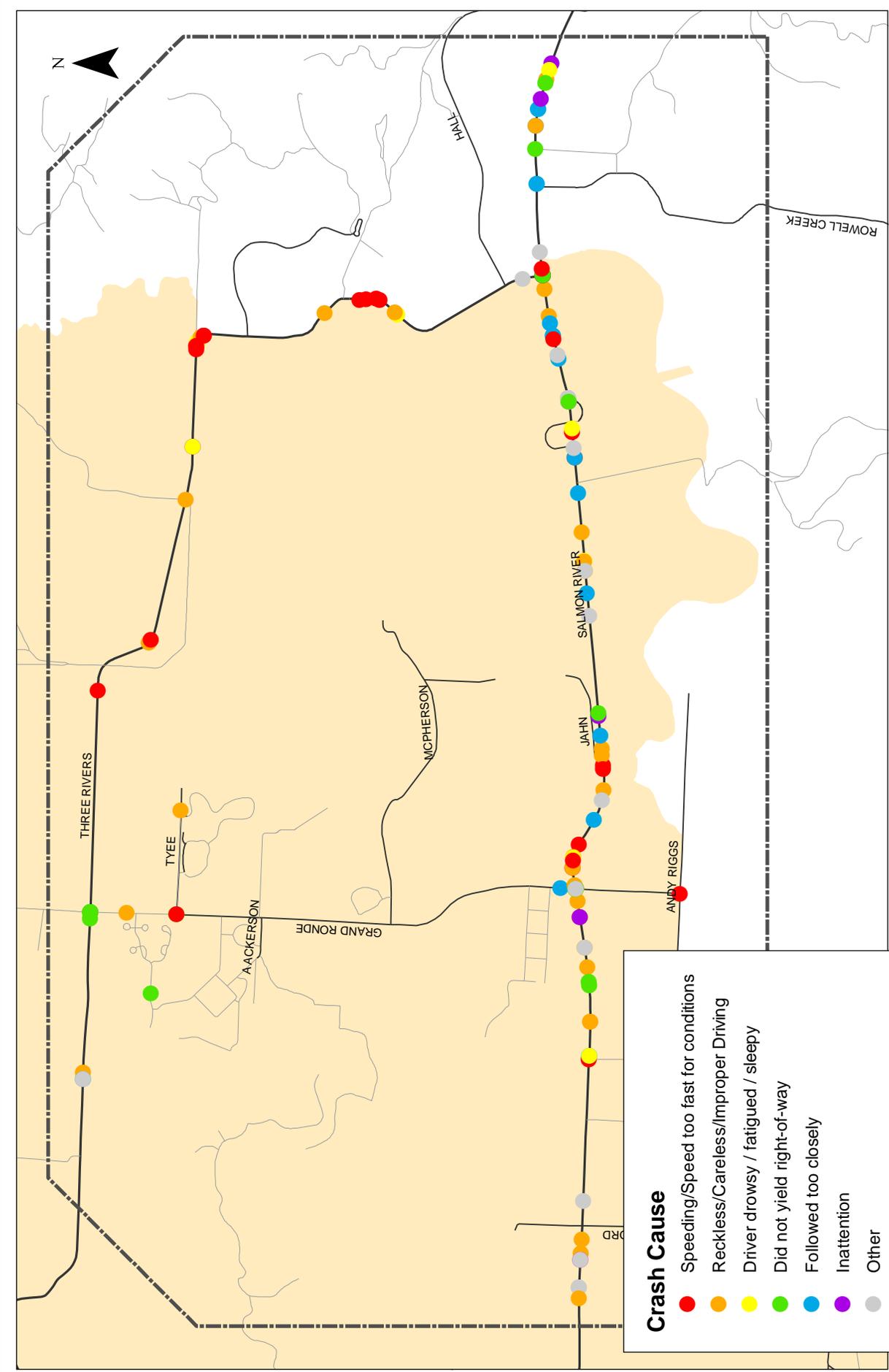


**Crashes by Type (Angle, Rear-end, Turn, etc.)
January 1, 2012 - December 31, 2016
Grand Ronde, OR**

**Figure
1**

The top three crash causes, which accounted for almost half of all crashes, were: **did not yield right-of-way**, **speeding**, and **following too closely**. See Figure 2 for crash locations. Males were involved and were at-fault in crashes far more often than females, a rate of just less than 2 to 1. Young drivers, ages 16 to 29, were involved in 21% of crashes and were at-fault in 29% of the instances.

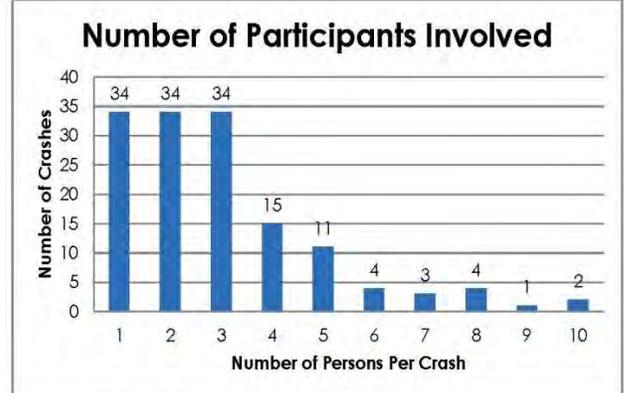
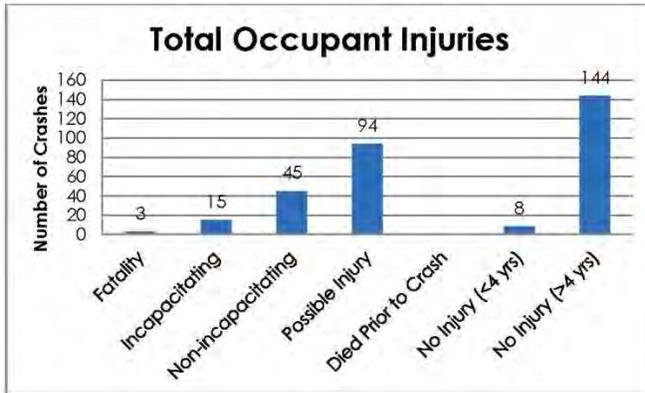


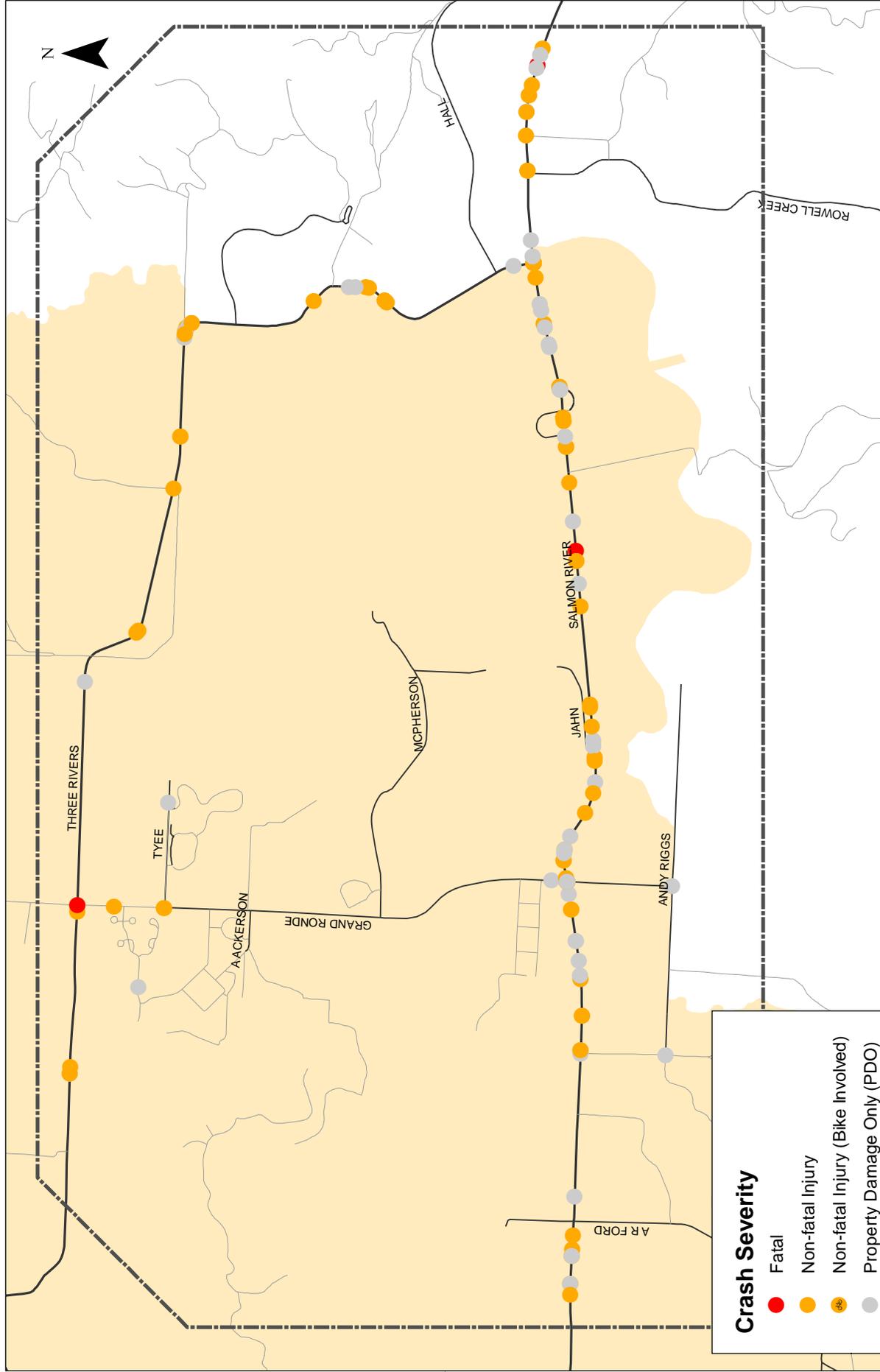


**Crashes by Cause (Speeding, Inattention, etc.)
January 1, 2012 - December 31, 2016
Grand Ronde, OR**

Figure
2

As shown in Figure 3 on the following page, during the five-year period, there were three fatal crashes reported, two on SR 18 and 1 at the intersection of Grand Ronde Road and SR 22. Another 15 people were incapacitated and 94 occupants had possible injuries. Only four instances were reported where seat belts were not used. Approximately 72% of all crashes involved three or less participants. Property damage only was reported in 41% of the cases.





**Crashes by Severity (Fatal, Injury, PDO)
January 1, 2012 - December 31, 2016
Grand Ronde, OR**

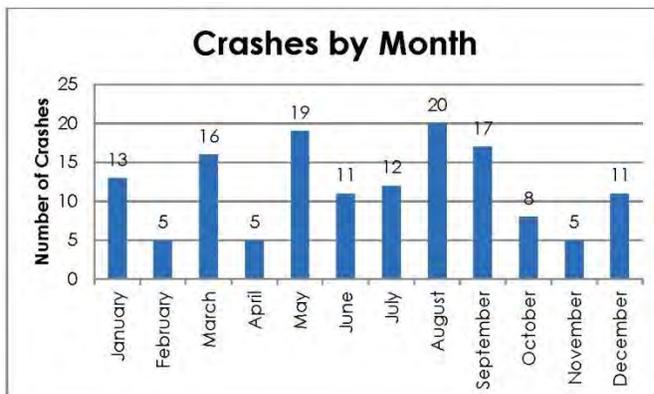
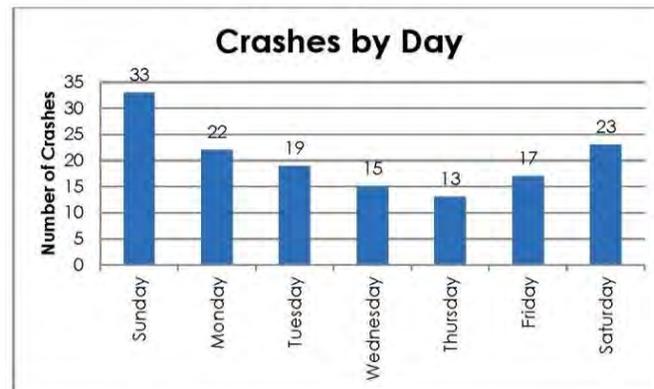
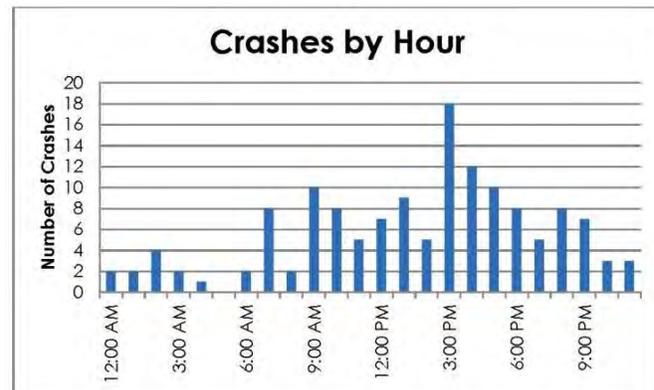
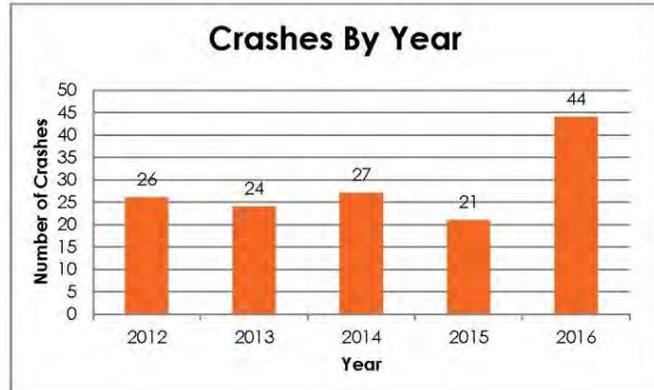
Figure 3

Crashes per year were relatively consistent from 2012 through 2015, ranging from 21 to 27. However, in 2016, crashes jumped to 44, more than double that of the year before. No particular reason is evident for this sudden increase.

Crash data show that Sunday and Saturday have the highest number of crashes. This would be consistent with increased weekend travel to the coast from residents in the valley and peak usage of the Spirit Mountain Casino and Resort, both of which would generate additional trips along SR 18.

When looking at crashes by time of day, the 3 to 4 pm hour stands out as this time of day experiences 30% more crashes than any other hour. The next highest hour is from 4 -5 pm. (Possible reasons ??? Shift change at the Casino/Resort, people leaving the Casino to return to the valley, traffic returning from the coast, especially on the weekends, tribal offices closing, something else that produces trips and more congestion at that time.) Crash data by month varies greatly from month to month, but seems to be higher in the vacation season and with months that have major holidays when more people visit the coast generating more trips and resulting congestion.

Alcohol use was involved in 4% of crashes and drug use was involved in 2%. No crashes occurred in School Zones or Work Zones during the five-year period. Also, it appears that people were using seatbelts and child restraints and in the case of motorcyclists are using helmets as only four crashes involve no safety restraints.



WORKING PAPER No. 3
CTGR Local Road Safety Plan
Detailed Crash Summary, Mitigation Measures, & Implementation Strategy

Detailed Crash Summary

The crash history of the following intersections and roadway segments was reviewed by Kittleson & Associates in an effort to identify potential safety issues in the study area as well as potential mitigation measures for the Grand Ronde Local Road Safety Plan. The crash data presented below reflects all reported crashes within the period January 1, 2012 through December 31, 2016.

Grand Ronde Rd. /Salmon River Hwy (OR 18)

A total of 15 crashes were reported at the Grand Ronde Rd./Salmon River Hwy (OR 18) intersection over the five-year period. Of the 15 crashes, eight crashes resulted in a minor injury and seven resulted in property damage only (PDO). The majority of crashes involved a motorist turning left from Grand Ronde Rd. and failing to yield the right-of-way to another motorist traveling through on OR 18.

The Grand Ronde Rd./OR 18 intersection is a two-way stop-controlled intersection with a two-way left-turn lane on the highway and separate right-turn lanes at the westbound and southbound approaches. The two-way left-turn lane provides separation between through vehicles and slowed or stopped vehicles waiting to turn left onto Grand Ronde Rd.. It also provides the ability for vehicles from Grand Ronde Rd. to complete two-stage left-turn movements onto OR 18. The right-turn lane at the westbound approach is channelized (via pavement marking only) and includes minimal deceleration. There is a marked crosswalk across the west leg of the intersection with advance school crossing ahead warning signs and pavement markings located approximately 1,000 ft from the intersection at the eastbound and westbound approaches. Per discussions with the project team, the crosswalk no longer serves a local school. There are also advance intersection ahead warning signs located approximately 750 ft from the intersection at the eastbound and westbound approaches. There is clear sight distance at the northbound and southbound approaches and wide shoulders along the highway. Street lights are also limited at the intersection and along the roadways.

Potential mitigation measures were developed for the intersection based on a review of the reported crashes and discussions with the project team.

Near-term Mitigation Measures:

- + Install street illumination at the intersection and along Grand Ronde Rd. and OR 18 as feasible.



- + Replace the existing intersection ahead warning signs on OR 18 with high visibility signs and flashing beacons consistent with similar applications further east along OR 18.
- + Remove the school crossing ahead signs and pavement markings on OR 18 and consider removing the crosswalk striping at the intersection, and replace the school crossing ahead warning signs with high visibility pedestrian crossing ahead warning signs and install pedestrian crossing signs with flashing beacons at the crosswalk.
- + Install gateway features at the intersection that highlight the Grand Ronde area and provide wayfinding to various Grand Ronde facilities.
- + Other potential near-term mitigations:
 - Install signs and pavement markings on OR 18 that are aimed at slowing traffic at the eastbound and westbound approaches.

Long-term Mitigation Measures

- + Manage access points to private developments near intersection.
- + Increase the length of the right-turn deceleration lane.
- + Install off-set left-turn lanes.
- + Install a traffic signal or roundabout.
- + Install an interchange.

Grand Ronde Rd./ Three Rivers Hwy (OR 22)

A total of five crashes were reported at the Grand Ronde Rd./Three Rivers Hwy (OR 22) intersection over the five-year period. Of the five crashes, one resulted in a fatality, one in a minor injury, and three in PDO. The majority of crashes involved a motorist turning left or traveling through on Grand Ronde Rd. and failing to yield the right-of-way to another motorist traveling through on OR 22.

The Grand Ronde Rd./OR 22 intersection is a two-way stop-controlled intersection. There are advance intersection ahead warning signs located on OR 22 approximately 750 ft from the intersection at the eastbound and westbound approaches. Sight distance is clear to the east, but appears to be somewhat limited to the west by a crest curve in the roadway (sight distance has not formerly been measured in the field). Shoulders are somewhat limited along OR 22. Street lighting is also limited at the intersection and along the roadways.

Potential mitigation measures were developed for the intersection based on a review of the reported crashes and discussions with the project team.

Near-term Mitigation Measures

- + Relocate the northbound stop sign closer to the stop bar.



- + Provide a double yellow centerline on OR 22 at the eastbound and westbound approaches.
- + Install street illumination at the intersection and along Grand Ronde Rd. and OR 22 as feasible.
- + Install gateway features at the intersection that highlight the Grand Ronde area and provide wayfinding to various Grand Ronde facilities.
- + Other potential near-term mitigations:
 - Install signs and pavement markings on OR 22 that are aimed at slowing traffic at the eastbound and westbound approaches.

Long-term Mitigation Measures

- + Widen the shoulders on OR 22 as feasible.
- + Install shoulder/edge line and/or centerline rumble strips as feasible.
- + Install Through Route Actuated Warning Signs on OR 22.
- + Install separate left-turn lanes/acceleration lanes at the eastbound and westbound approaches.
- + Install separate right-turn lanes/acceleration lanes at the eastbound and westbound approaches.
- + Install a traffic signal or roundabout.

Three Rivers Hwy (OR 22) /Salmon River Hwy (OR 18)

A total of seven crashes were reported at the Three Rivers Hwy (OR 22)/Salmon River Hwy (OR 18) intersection over the five-year period. Of the seven crashes, six crashes resulted in a minor injury and one resulted in PDO. The majority of crashes occurred on a clear, dry, day when a motorist, typically turning left from OR 22, failed to yield the right-of-way to another motorist, typically traveling through on OR 18.

The OR 22/OR 18 intersection is a minor approach stop-controlled intersection with a separate left-turn lane at the eastbound approach and separate right turn lanes at the westbound and southbound approaches. The right-turn lanes are channelized, and the westbound right-turn lane includes minimal deceleration. There is also a striped median at the westbound approach with rumble strips. There are wide shoulders on both sides of OR 18 and sight distance appears to be clear at the southbound approach facing east and west.

Potential mitigation measures were developed for the intersection based on a review of the reported crashes and discussions with the project team.



Near-term Mitigation Measures:

- + Install street illumination at the intersection and along OR 22 and OR 18.
- + Install high visibility intersection ahead warning signs with flashing beacons on OR 18 consistent with similar applications further east along OR 18.
- + Other potential near-term mitigations:
 - Install signs and pavement markings on OR 18 that are aimed at slowing traffic at the eastbound and westbound approaches.

Long-term Mitigation Measures

- + Increase the length of the right-turn deceleration lane. This measure would require a new/wider OR22 bridge, which is considered by ODOT highly unlikely to occur.
- + Install a southbound right-turn acceleration lane.
- + Install a southbound left-turn acceleration lane.
- + Install an indirect left-turn (J-turn) for the southbound approach.
- + Install raised islands within the striped areas of the channelized right-turn lanes.
- + Install a traffic signal or roundabout.
- + Close intersection, realign OR 22, and install an interchange near the Casino along OR 18.

Grand Ronde Rd.

A total of four crashes were reported along the segment of Grand Ronde Rd. from the Three Rivers Hwy (OR 22) to the Salmon River Hwy (OR 18) over the five-year period. Of the four crashes, two resulted in serious injuries, one in a minor injury, and one in PDO. One of the crashes involved a “right-hook” crash with a bicyclist.

Grand Ronde Rd. is a two-lane roadway with a posted speed limit of 35 miles per hour (mph). There are multiple signed and striped crosswalks along the roadway.

Potential mitigation measures were developed for the roadway based on a review of the reported crashes and discussions with the project team.

Near-term Mitigation Measures:

Install a speed feedback sign at the southern end of the corridor in the northbound direction and a speed feedback sign at the northern end of the corridor in the southbound direction. The sign in the northbound direction could be installed on the 35 mph sign located north of the Rogue River Bridge and the other could be installed on the 35 mph sign located south of OR 22.



- + Install pedestrian actuated flashing beacons on the pedestrian crossing signs at the crosswalks near the tribal center.

Long-term Mitigation Measures

- + Install street illumination at major intersections and along roadway segments as feasible.

Hebo Rd. (OR 22) – Kissing Rock Curves

A total of seven crashes were reported along the segment of Hebo Rd. (OR 22) near the kissing rock curves over the five-year period. Of the seven crashes, one resulted in a serious injury, four in minor injuries, and two in PDO. The majority of crashes were reported as fixed-object or run-off-the-road crashes.

OR 22 is a two-lane roadway with a posted speed limit of 55 mph; however, there are multiple curve warning signs along the roadway with rider speeds that range from 25 to 35 mph; ODOT recently updated the majority of signs along the roadway to high visibility signs and adjusted the rider speeds. Shoulders are limited along the majority of the roadway, particularly near the kissing rock curves; however, there are multiple segments with guard rails. Lighting is also limited along the roadway and at all major intersections.

Potential mitigation measures were developed for the roadway based on a review of the reported crashes and discussions with the project team.

Near-term Mitigation Measures:

- + Install a speed feedback sign at the southern end of the corridor in the northbound direction and a speed feedback sign at the northern end of the corridor in the southbound direction. The signs in the northbound and southbound directions could be installed on the first curve warning signs in both directions.

Long-term Mitigation Measures

- + Remove obstacles along the sides of the roadway (mailboxes, rocks, trees, etc.).
- + Widen the shoulders as feasible.
- + Install shoulder rumble strips as feasible.
- + Install centerline rumble strips as feasible.
- + Install street illumination at major intersections and along roadway segments as feasible.
- + Reconstruct the roadway with high-friction surface treatment.
- + Regrade the sides of the roadway to provide more gradual slopes/ditches.



Implementation Strategy

The consensus of the Working Group was to focus initially on lower-cost countermeasures during the short term in order to address as many issues as possible. This was emphasized as over the long term the proposed ODOT improvement to OR 18 from Ft. Hill to AR Ford Rd. in Grand Ronde will resolve some major safety concerns, particularly at the Grand Ronde Rd. and OR 22 intersection. Implementing high-cost interim countermeasures in these locations that would later be replaced or removed would not be a wise expenditure of funds.

Initial, lower cost countermeasures that could be implemented throughout the community could include additional signing, striping and rumble strips, lighting, warning beacons, and shoulder widening.

- + **Signing:** Signing could include additional warning signs, including speed feedback signs and crosswalk/intersection warning beacons which are installed at the shoulder edge or outside the curb line.
- + **Street and Intersection Lighting:** There is limited street/intersection lighting in the Grand Ronde area. Installation of lighting, particularly at critical intersections would be effective.
- + **Pavement Markings:** Pavement markings, particularly a double solid centerline on OR 22 at Grand Ronde Rd. and use of rumble strips to delineate centerlines and fog lines in areas where highways have little or no shoulders.
- + **Traffic Calming:** Traffic calming techniques are effective in residential areas and on roads with a 25 mph or less speed limit. Techniques include speed humps, skinny streets, and curb bump-outs all of which have proven to be helpful in keeping traffic moving within lower speed limits, particularly on residential streets.
- + **Shoulder widening:** Shoulder widening at major intersections and in areas with curves provide large trucks, recreational vehicles, and school buses the turn radii they need without entering an oncoming traffic lane. Wider shoulders also provide drivers with better visual sight distance to see oncoming cross-traffic.

In addition to structural countermeasures, the Tribe indicated that a public awareness program, e.g. public information, articles in Smoke Signals (tribal newspaper) informing the public on traffic issues to enable them to better plan trips, was an important, cost-effective short-term measure.

The use of cost-effective measures first, e.g. signing, striping, lighting, and crosswalk beacons, as opposed to major improvements and/or costly construction countermeasures were identified by the Working Group as top priorities. ODOT indicated they would work with the Tribe to potentially permit the Tribe's installation of speed feedback signs at appropriate locations. Such signs need to be funded and maintained by the local jurisdiction and are permitted by ODOT to be within ODOT right-of-way. These have proven to be cost-effective countermeasures in reducing speeding.



Short-Term Strategy and Recommendations

During the short term (next 6 years) the strategy is to focus on implementing cost-effective countermeasure along Grand Ronde Rd. and at/near the intersections of Grand Ronde Rd. and OR 18 and OR 22 and then to reevaluate safety issues in the area after ODOT implements the OR 18 improvement from Ft. Hill to AR Ford Rd. as this improvement is expected to mitigate many of the safety issues along the highway and at the intersection with OR 22 at Valley Junction. Short-term recommendations include the following.

Grand Ronde Rd.

- + Install pedestrian activated warning beacons at all or selected crosswalks.
- + Install speed feedback signs (north end and south end of the segment between OR 18 and OR 22).
- + Install a warning beacon for logging activities north of OR 22 that can be activated during periods of timber harvesting.

OR 22/Grand Ronde Rd.

- + Install high visibility intersection ahead warning signs with flashing beacons east and west of the Grand Ronde Rd. intersection.
- + Widen OR 22 shoulders at Grand Ronde Rd. (SW corner) and relocate utility pole.
- + Relocate the “stop” sign closer to the stop bar on Grand Ronde Rd. (north bound lane).
- + Provide intersection street lighting at Grand Ronde Rd.
- + Install warning beacons for school buses and school bus turn-around signs east of the Grand Ronde Rd. intersection.

OR18/Grand Ronde Rd.

- + Install high visibility intersection ahead warning signs with flashing beacons consistent with similar applications further east along OR 18
- + Install street lighting at the intersection

