

Kivalina

Transportation Safety Plan



Prepared by:

Native Village of Kivalina

WHPacific

2015 - DRAFT

Funded by:



Federal Highway Administration

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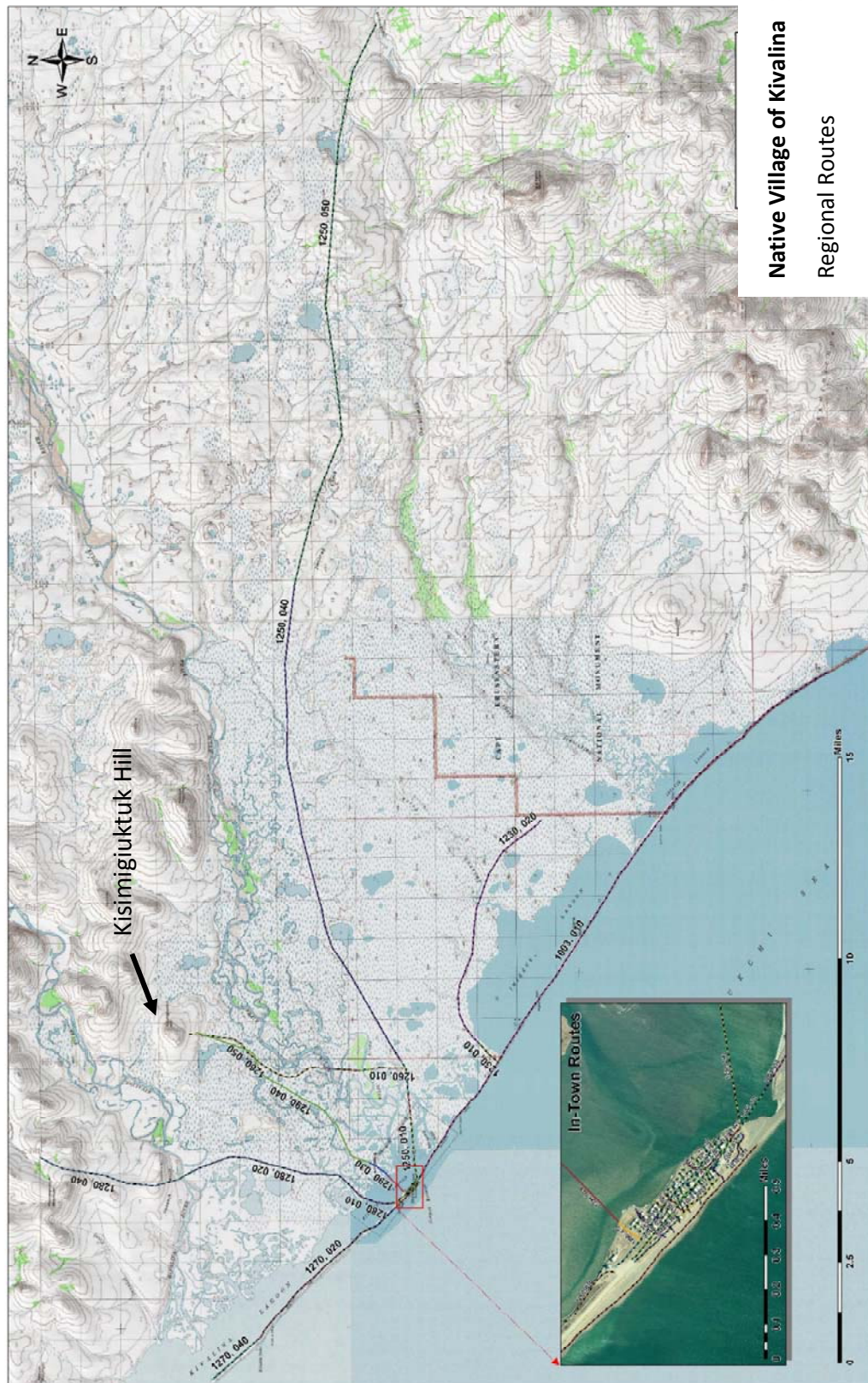
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Quyana to all the community members who supported work on Kivalina’s Transportation Safety Plan, and to the Federal Highways Administration for funding work on the Plan. Your contributions help to create a culture of transportation safety in Kivalina, preventing injury and saving lives.

FIGURE 1. KIVALINA COMMUNITY ROADS



FIGURE 2. KIVALINA REGIONAL ROUTES



I. Introduction

The Native Village of Kivalina (NVK) received a 2014 Tribal Transportation Program Safety Planning Grant from the Federal Highway Administration (FHWA) and contracted with WHPacific to assist them with completing a transportation safety plan. The plan has been developed in order to identify unsafe conditions associated with the community's transportation infrastructure, and establish a plan for protecting the life and safety of community members. NVK collected accident and safety data, distributed, collected and analyzed a transportation safety survey, collaborated with stakeholders, and wrote and revised the plan.

The plan provides background on the community, identifies existing transportation safety resources and conditions, and identifies recommended strategies to improve transportation safety in Kivalina. Although Kivalina anticipates a relocation in the long term, the transportation safety issues identified in this plan are urgent, current issues at the existing site that require urgent, near-term responses.

NVK is committed to providing safer travel options for community members, including vehicular, pedestrian, and bicycle transportation. Once complete, this plan will serve as an important resource for improving transportation safety on Tribal lands. The plan will identify emphasis areas and implementation strategies to improve transportation safety for NVK members.

While other agencies could be expected to lead some of the identified safety actions, NVK will be instrumental in leading the charge on other safety strategies. The Tribe should be monitoring progress on all of the strategies to ensure that the actions are implemented. Additionally, as the Transportation Safety Plan is a "living document," it is important that the Tribe reevaluate and update the document on a regular basis.

A. Background

Kivalina is located in the Northwest Arctic Borough at the tip of an 8-mile barrier reef located between the Chukchi Sea and Kivalina River. It lies 80 air miles northwest of Kotzebue. Kivalina is located in the Kotzebue Recording District. The average low temperature during January is -15 °F; the average high during July is 57 °F. Temperature extremes have been measured from -54 to 85 °F. Snowfall averages 57 inches, with 8.6 inches of precipitation per year. The Chukchi Sea is ice-free and open to boat traffic from mid-June to the first of November. The 2010 population for Kivalina was 374.



FIGURE 3. KIVALINA LOCATION MAP

Kivalina has long been a stopping-off place for seasonal travelers between Arctic coastal areas and Kotzebue Sound communities. It is the only village in the Northwest Arctic Borough region where people hunt the bowhead whale. At one time, the village was located at the north end of the Kivalina Lagoon. It

was reported as "Kivualinagmut" in 1847 by Lt. Zagoskin of the Russian Navy. Lt. G.M. Stoney of the U.S. Navy reported the village as "Kuveleek" in 1885. A post office was established in 1940. An airstrip was built in 1960, using metal mattings.

Kivalina incorporated as a city in 1969. During the 1970s, new houses, a new school, and an electrical system were constructed in the village. Due to severe erosion and wind-driven ice damage, relocation alternatives have been studied, and an evacuation road is in the design phase. The road would provide access off the island during times of flooding and would provide access to the new school site identified east of the village.

Kivalina is a traditional Inupiat village. Subsistence activities, including whaling, provide most food sources. Inupiaq dancing was reintroduced by a group of young people in September 2008. The sale or importation of alcohol is banned in the village.

The community is not accessible by road, and air transportation is the primary means of travel into and out of the community. Kivalina's airport has regular air taxi service to Kotzebue.

Many residents of Kivalina rely on subsistence and, as a result, travel on snow machines in winter to hunt. They also travel to neighboring villages to visit family and friends. There are shelter cabins equipped with a wood stove and firewood that can be used by travelers. The Northwest Arctic Borough provides maps that indicate trails, shelter locations and way points for travelers to use to check locations via GPS as shown in Figure 4. Northwest Arctic Borough Winter Trails and Shelter Cabins.¹



Erosion along Kivalina's shoreline

¹ "Kivalina." Department of Commerce, Community and Regional Affairs, Community and Regional Affairs. Web. 8 Oct. 2015. <<https://www.commerce.alaska.gov/dcra/DCRAExternal/community/Details/d0e03d80-1671-4b3e-ad86-f1e195e7467d>>.

FIGURE 4. NORTHWEST ARCTIC BOROUGH WINTER TRAILS AND SHELTER CABINS

Source: Northwest Arctic Borough, 2014.

Northern communities such as Kivalina enjoy extended daylight hours during the summer, but Alaskan winters are dark and lengthy. In Kivalina, light diminishes through the fall to a low of approximately 3.5 hours of daylight at the winter solstice. However, there is limited street lighting in Kivalina. This can create safety hazards in terms of visibility of pedestrians.

Kivalina's economy depends on subsistence practices. Bearded seal, walrus, bowhead whale, Dolly Varden trout, tomcods, blue cods, salmon, whitefish, and caribou are utilized. The school, city, Maniilaq Association, NANA Regional Corporation, tribal council, airlines, and local stores provide year-round jobs. The Red Dog Mine also offers some employment. Two residents hold commercial fishing permits. Native carvings and jewelry are produced from ivory and whalebone. The community is interested in developing an Arts and Crafts Center that could be readily moved to the new city site.

Water is drawn from the Wulik River via a 3-mile surface transmission line to a 700,000-gallon raw water tank and then to a 500,000-gallon tank, where it is treated when it is pumped. The water lasts the community only for a six-month period, and the washeteria is closed to the public when the last tank is down to 12 feet, and only the school uses the water, so it can last through May. Water is limited to 30 gallons a day for the public during this period. Water is hauled by residents from this tank, which can be difficult during winter, given that there are snow hills 20 to 30 feet high in the community.

Approximately 14% of residents have tanks which provide running water for the kitchen, but homes are not fully plumbed. There is one public washeteria with three showers available. The school and clinic have their own water and sewer systems. Residents haul their honeybuckets to the landfill disposal site, which has no barrier around it and is subject to visits from wild animals, such as bears and foxes. The seagulls and crows that forage for food at the landfill are considered a threat to incoming airplanes.

B. Mission

The mission of the Kivalina IRA Transportation Safety Plan is to provide safer conditions for motorists, bicyclists, and pedestrians traveling in the vicinity of Kivalina.

II. Existing Resources

A. Safety Partners

The following safety partners provided information and valuable assistance in the development of this plan:

- Kivalina IRA – Managed the project, coordinated with safety partners, distributed and collected survey data, held meetings, reviewed and provided input into the plan.
- City of Kivalina – Provided information about safety issues.
- Northwest Arctic Borough – Provided information on safety concerns and search and rescue capabilities.
- Kivalina School – Provided information on transportation safety near the school.
- Maniilaq Injury Prevention Program – Identified safety education and safety resources.
- Alaska State Troopers – Provided information about their regional responsibilities in regards to transportation safety.

B. Overview of Existing Efforts

The following efforts have contributed to improved safety in Kivalina.

Kivalina Long Range Transportation Plan – The Kivalina IRA regularly updates their Long Range Transportation Plan, which is funded by the Bureau of Indian Affairs. The last major update was in 2010. The plan includes background information on existing conditions in the community, includes Bureau of Indian Affairs road inventory data, and identifies community transportation priorities. Projects identified in that plan include:

- Design and build bridge Route 1002 (bridge to the mainland)
- Red Dog Port Road
- Evacuation/gravel source road
- Winter trail staking
- Dust control
- Ongoing maintenance
- Maintenance equipment

- Prioritize maintenance activities
- Update the LRTP every five years

Maniilaq Injury Prevention Program – The Maniilaq Injury Prevention Program (IPP) strives to reduce injuries in Kivalina and the region by providing safety education and resources. They provide safety equipment at reduced cost such as ATV/snowmachine helmets and goggles, bike helmets, SOS emergency kits, child life vests and float coats. They also produce educational videos and public service announcements regarding transportation safety. IPP staff also make presentations at area schools if requested by school staff. The IPP distributes life vests received through the State of Alaska Office of Boating Safety Program.

Alaska State Highway Safety Plan (SHSP) – The SHSP outlines a statewide strategy to improve roadway safety. The plan uses “five Es” of safety – engineering, education, enforcement, emergency medical services, and evaluation – to develop goals, objectives and emphasis areas. The three main emphasis areas are driver behavior, roadways, and special users. Driver behavior issues include impaired driving, young and older drivers, and occupant protection. Roadway issues include lane departures, intersections and animal-vehicle collisions. Special user issues focus on crashes involving pedestrians, motorcyclists, bicyclists and off-road vehicles.

The SHSP focuses on assessing historical trends in serious injuries, hospitalizations and fatalities and identifying strategies to minimize future incidents. Regarding driver behavior, the report identifies strategies such as strengthening enforcement programs, improving prosecution of driver violations, and educating the public about responsible driving. For roadway strategies, the plan recommends implementing education and awareness programs about roadway characteristics, pursuing engineering improvements to roads, improving emergency services, using data to enhance road safety and optimizing use of the Highway Safety Improvement Program (HSIP) to reduce crashes at specific sites. Special User strategies include implementing education and awareness practices, developing engineering solutions to bicycle, pedestrian and motorcyclist safety issues, evaluating programs to enhance special user safety and enforcement programs, and enforcing prohibitions on impaired driving by motorcyclists.

C. Emergency Response Resources

Kivalina emergency services include the following:

Municipal: Community members serve as Village Police Officer on an on-call basis. Staffing for individual incidents depends on residents’ availability. Fire response is provided on a volunteer basis.

State Troopers: The Kotzebue post of the Alaska State Troopers is staffed by nine troopers who can respond to public safety issues in Kivalina. The Troopers partner with Northwest Arctic Borough (NAB) Search and Rescue to perform search and rescue (SAR) operations. The Troopers have two fixed wing aircraft and two skiffs, and helicopters are available for charter to support SAR efforts. In the past, staffing for an Alaska State Troopers Village Public Safety Officer (VPSO) has been hampered by lack of available housing and/or applicants. A recent application may result in the position being filled.

Northwest Arctic Borough Public Services Department: The NAB Public Services Department plays a vital role in executing SAR operations throughout the Borough. In addition to snowmachine rescues, they also coordinate water rescues. Some of the ways the Department contribute to rescues include the following:

- Provides Village SAR volunteers with satellite radios.
- Distributes satellite emergency locator beacons (SPOTs) for travelers to check out.
- Purchases (limited) snowmachines for local SAR groups, along with other equipment (e.g., sleds, GPS units, VHF base stations and hand held units, etc.).
- Purchases expendable supplies for local SAR groups (e.g., first aid kits, thermal blankets, jerry jugs, gloves, thermoses, equipment parts, batteries, etc.).
- Coordinates closely with the Alaska State Troopers and local SAR teams during active SAR missions
- Coordinates with SAR Presidents within each of the communities to ensure SAR public education and outreach efforts are ongoing (e.g., monthly and as-needed Public Service Announcements regarding trail conditions, weather conditions, general safety tips, etc.).
- Maintains and restores trail markers on over 1,200 miles of existing winter trails connecting communities within the NAB.
- Maintains 13 public use emergency shelter cabins, including coordinating with local SAR groups to ensure they are stocked with wood at critical times during each season.

Kivalina Clinic: Maniilaq operates a clinic in Kivalina through the Community Health Aide/Practitioner (CHAP) Program. Medical specialists occasionally visit the clinic to provide services otherwise not available locally.

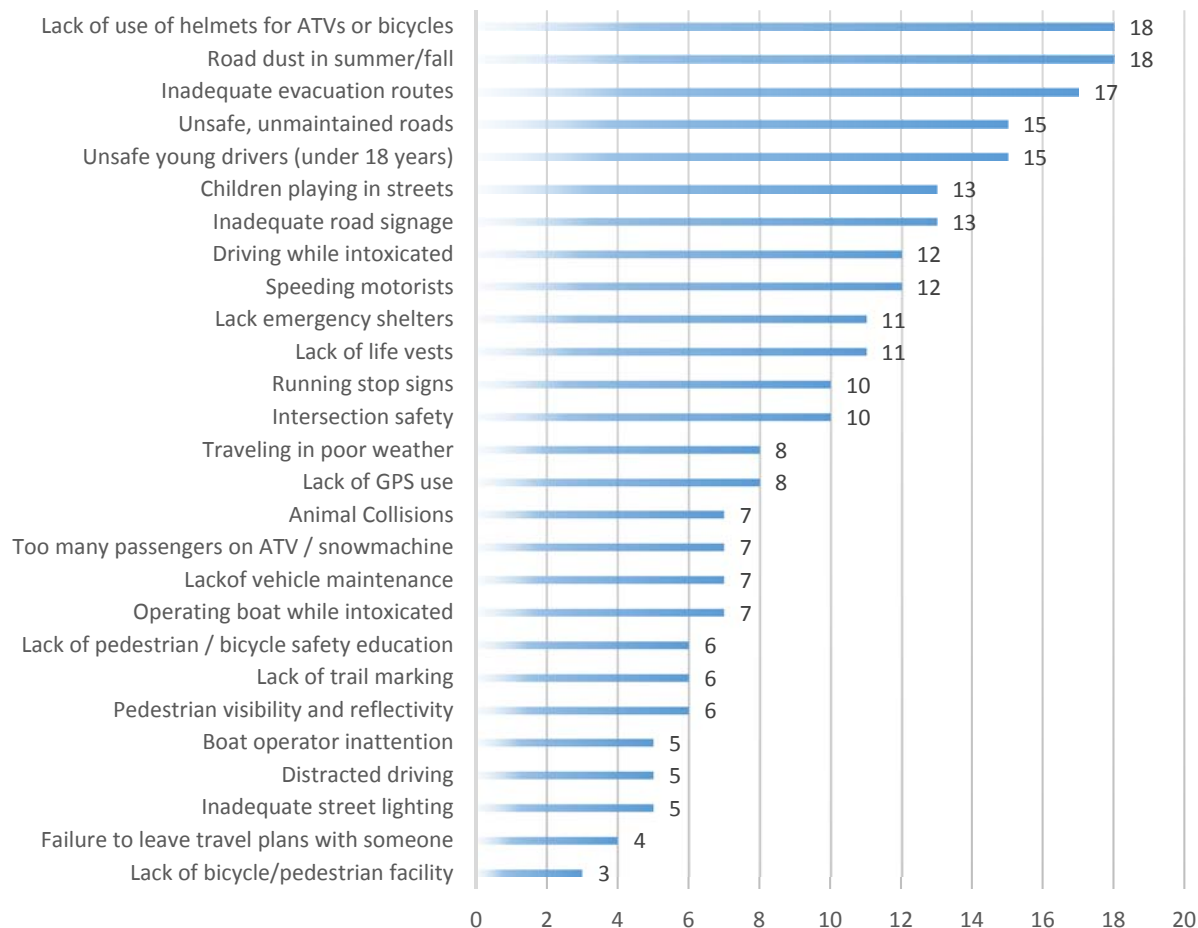
Maniilaq Health Center: The Maniilaq Health Center is a medical facility located in Kotzebue. The Health Center is the primary health care facility for the residents of the NAB; the nearest health care facility that offers comparable service is over 600 miles away in Anchorage. Maniilaq handles many of the trauma cases including crashes and rescues that are transported via Medevac from surrounding villages.

III. Documentation of Needs and Priorities

A. Community Priorities

Community priorities were assessed based on discussions with tribal staff, attendance at City Council meetings, interviews with community members, and a transportation safety survey administered in Spring 2015. The survey was distributed to selected locations in hard copy, by e-mail and available on SurveyMonkey, an on-line survey tool. The questionnaire asked respondents to check a box if they felt various issues were “serious concerns” in Kivalina. Table 1 shows the number of respondents who rated each issue as a moderate to high priority in the community.

TABLE III-1. TRANSPORTATION SAFETY SURVEY RESULTS



Other community feedback indicates residents are particularly concerned about the school relocation, specifically the safety of children being transported from Kivalina's town site to the Kisimigiuktuk Hill location, shown on Figure 5. In 2015, there were 130 students from pre-kindergarten through grade 12 attending the Kivalina McQueen School. Often, it is the elders, particularly women, who drop off and pick up children from school. Even if bus transport is made available, there will almost certainly be times when family must pick up or drop off a child because of extracurricular activities, illness, or other factors. The seven-mile drive to the new school site (14 miles round trip) could be difficult for younger and older residents since the school year coincides with the coldest times of year and some of the most inclement weather. Snow berms and erosion near the airport runway are also community concerns.

FIGURE 5. KISIMIGIUKTUK HILL SEVEN MILES EAST OF KIVALINA

B. Crash Data Overview

Reliable crash data is important because crash data can pinpoint safety issues at specific locations, identify repeated types of accidents or circumstances contributing to accidents, and support funding requests for transportation safety improvements, which often rely on crash data to demonstrate the need for a project.

However, complete crash data in rural Alaska can be difficult to obtain. Crashes that result in over \$2,000 in property damage or result in an injury must be reported to the DMV. Ideally, VPSOs or local police would report each crash that met these thresholds, and submit this data to the Division of Motor Vehicles (DMV). The DMV would then provide the crash data to DOT for inclusion in DOT's crash database. However, in many cases in rural Alaska, VPSOs or local police do not report crashes, particularly if the injuries are minor and property damage is minimal. Further, information for crashes that are reported may be incomplete. Data may include a street name where the accident occurred, but no further information that would pinpoint an exact location. It may be unclear which vehicle hit which vehicle, or whether those involved were wearing helmets. Improving reporting frequency and accuracy could help identify locations and driving practices that are safety hazards.

Besides lack of reporting, there are crash data management challenges. The DMV collects crash reporting forms and provides data to DOT, but DOT must manually enter the data as the DMV and DOT data systems are not readily compatible. A change on a state level appears to be needed to make data flow more easily between agencies. Many project decisions at the agency level are made based on data, so the better data available to agencies, the more likely it is that a safety issue can be addressed.

Improved reporting would be very valuable as a means of identifying safety issues in Kivalina and to support transportation safety funding requests.

DOT crash data from the last five years was requested for Kivalina, but no local incidents were identified. Based on interviews with residents, there are several locations that are a concern for accidents. These locations are shown on the figure below:

FIGURE 6. KIVALINA SAFETY CONCERN MAP



Trauma data from transportation related injuries occurring in Kivalina between 2001 and 2011 was obtained from the Alaska Trauma Data Registry. To preserve privacy, locations of these incidents were not provided. The registry indicates eight incidents, with only one incident in the last five years. Five incidents involved ATVs, two involved snowmachines, and one involved a bicycle. At least two injuries resulted from excessive speeds. Two additional incidents indicated the injured person had been thrown from the vehicle.

IV. Safety Action Plan and Implementation

A. Emphasis Areas, Goals and Strategies

The Kivalina IRA has identified the following emphasis areas in accordance with the plan's mission to provide safer conditions for motorists, bicycles and pedestrians traveling in the vicinity of Kivalina.

- ATV and snowmachine safety
- Roadway conditions
- Road dust
- Evacuation route/school road
- Alcohol impaired driving
- Unsafe young drivers
- Children in roadways
- Snow berms
- Airport erosion

The following section provides background on each emphasis area, outlines the Tribe's goals in improving conditions, and describes specific strategies in the areas of education, engineering, enforcement, and emergency management. Also identified are a lead agency, recommended timing, and potential safety partners. Each emphasis area includes a variety of projects, and so it may be that some strategies would be led by more than one lead agency. Because this transportation safety plan is the product of the Native Village of Kivalina, in order to address these safety issues, the tribe will need to advocate for these projects and coordinate with other agencies. Formation of a Kivalina Transportation Safety Steering Committee – to include the tribe, the City of Kivalina, the State of Alaska DOT, the DMV, Maniilaq Injury Prevention Program, Kivalina VPO on call, and the Northwest Arctic School District – would help to ensure that these projects are promoted, funded and completed.

ATV and Snowmachine Safety

Background: ATVs and snowmachines are a common form of transportation in Kivalina, but there are attendant risks with both means of travel. Community members identified ATV and snowmachine safety as a significant transportation safety concern in Kivalina.

Statewide data illustrates safety risks related to snowmachine use. A 1997 report by the State of Alaska Division of Public Health states that in Alaska fatalities by snowmachines are twice that of cars and that more than half of the deaths are alcohol related. 95% of the



ATV users in Kivalina

fatalities in the study were male with a median age of 28.²

Although ATVs are a primary mode of transportation in Kivalina and most remote Alaska communities, helmet use is very limited. A recent study by the International Journal of Circumpolar Health indicated that Native Alaskan children in ATV crashes are less likely to have been wearing helmets (24%) than non-Native Alaskan children (71%), and therefore have injuries that are more severe. The article concludes that use of helmets should be strongly promoted to prevent serious injuries and death.³ Almost ninety percent of transportation safety survey respondents indicated that lack of helmet use in Kivalina was a significant problem.

A 1995 study by the Alaska Native Tribal Health Consortium Indian Health Service Injury Prevention Fellowship program examined intervention strategies for increasing helmet use in the NAB. The study was performed in nine NAB villages. The results suggested that a combination of strategies was most effective:

- Offering helmets available at reduced cost at the local clinic;
- Providing educational/promotional materials; and
- Utilizing a local role model who consistently wore a helmet and advocated for helmet use at local meetings.

Use of these three strategies together provided an overall increase in helmet use in the community, and had the added benefit of an increase in local retail sales of helmets.⁴

Speeding was also a concern noted by the community. Educating motorists on speed limits and safe driving practices and reducing intersection hazards could help address the problem.

Goal: Prevent ATV and snow machine injuries by promoting use of helmets and safe driving practices.

Strategies:

Engineering:

- To reduce intersection hazards, identify locations of limited visibility and determine means of reducing the hazard.

Enforcement

- Ticket ATV and snowmachine drivers for speeding.
- Require that all users of ATVs and snowmachines use helmets, and ticket those who do not.

Education:

² AQR Coalition. Snowmachine Information Packet. <http://www.alaska.net/~jrc/snwminfo.html>. Retrieved August 6, 2014.

³ Snyder, C., Muensterer, O.J., Sacco, F. and Safford, S.D. (2014). Helmet Use among Alaskan children involved in off-road motorized vehicle crashes. *International Journal of Circumpolar Health, Abstract, 73*.

⁴ Spriggs, John. Alaska Native Tribal Health Consortium Indian Health Service Injury Prevention Fellowship Program. "Intervention Strategies to Increase Helmet Use in Alaska Villages." April 1, 1995. <http://www.anthc.org/chs/wp/injprev/upload/Evaluation%20of%20Interventions%20to%20Increase%20Helmet%20Use.pdf>. Accessed January 15, 2015.

- Work with Maniilaq Injury Prevention program and state officials to hold safety clinics for off road vehicle safety.
- Pursue a three-pronged campaign to increase helmet use:
 - Organize helmet educational/promotional campaign.
 - Offer helmets at low cost at the clinic.
 - Appoint several community members to serve as local role models by consistently wearing helmets and advocating for helmet use at local meetings.
- Distribute off-road vehicle safety brochures, emphasizing helmet use and speed limits, and including other safe driving tips.
- Provide off-road safety article for distribution in local utility bills.
- Announce safety tips in newsletters and on web sites (Kivalina IRA, Maniilaq, City of Kivalina, etc.)

Emergency Services:

- Encourage VPO to report all crash data – including detailed information on each incident – to DMV to help identify safety issues and support future transportation safety funding requests.
- Encourage state officials to mandate that state departments have compatible crash data software.

Lead: Kivalina IRA

Deadline/Timeline: 2015/2016

Potential Partners: State of Alaska DOT, City of Kivalina, Kivalina VPO, Northwest Arctic School District, Maniilaq Injury Prevention, Alaska Village Electric Cooperative (AVEC)

Roadway Conditions

Background: Residents are concerned about potholes, bumps and poor drainage on roads in Kivalina, causing wear and tear on vehicles and sometimes requiring drivers to deviate from the normal travelled way. Spring and fall thaw seasons and storms can exacerbate damage to community roads.

Equipment available locally for road maintenance is inadequate, and plans for eventual relocation have had a dampening effect on funding availability for local projects and equipment purchases in the short term. Residents are likely to occupy the current village location for twenty years or more, so interim solutions are needed to address current problems.

Residents are also concerned about exposure to sanitation waste on community roads. While not strictly a transportation safety issue, it is a health concern for users of Kivalina's road network. A new pilot program – "Home Based Sanitation Solution" – undertaken by Alaska Native Tribal Health Consortium (ANTHC) is intended to reduce the inconvenience and contamination risks of the current system. So far, ten units have been installed in Kivalina, with potential for more if the program is successful. The system includes potable water for washing draining into a sink, and a toilet that allows

separation of liquids and wastes. Liquids drain to a leach field while solids remain in a honeybucket, but a ventilation system dries out remaining moisture for safer transport of waste.⁵

Goal: Improve roadway conditions.

Strategies:

Engineering:

- Purchase better equipment to maintain local roads.
- Improve drainage on roads.
- Maintain roads to eliminate bumps and potholes.

Education:

- Promote driving at slower speeds to reduce rutting in damp weather and dust production in summer.

Lead: Kivalina IRA

Deadline/Timeline: 2016/2017

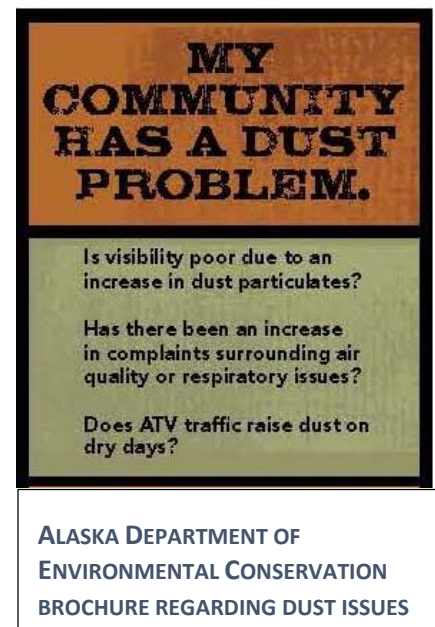
Potential Partners: State of Alaska DOT, DEC, City of Kivalina

Road Dust

Background: Many residents of Kivalina indicated concern with the condition of the roads. A common complaint is dust. Dust not only reduces visibility – it can be a health risk, particularly for children, seniors and people with respiratory or heart conditions. Dust also creates a safety hazard by reducing the driver's visibility. Dust also increases wear and tear on vehicles, which can lead to accidents.

One alternative is to apply a dust suppressant product to the roads. These products are not a permanent solution and will require further applications as the effectiveness of the product decreases with time. Paving is another solution, but an expensive one in a time of very limited roads funding, particular given plans for relocation.

Goal: Reduce dust.



⁵ Jensen, Scott. "New Sanitation System Tested in Arctic Village of Kivalina." *Alaska Dispatch News*. 7 Sept. 2015. Web. 5 Oct. 2015. <<http://www.adn.com/article/20150907/new-sanitation-system-tested-arctic-village-kivalina>>.

Strategies:

Engineering:

- Apply dust palliative on local roads.

Education:

- Work with Alaska Department of Environmental Conservation (DEC) to develop an effective dust prevention campaign.
- Prepare insert for utility bills about how citizens can reduce dust.
- Work with Maniilaq Injury Prevention to implement effective dust control education.

Lead: Kivalina IRA

Deadline/Timeline: 2015/2016

Potential Partners: State of Alaska DOT, DEC, Maniilaq Injury Prevention, City of Kivalina, Kivalina Electric Association

Unsafe Young Drivers

Background: Kivalina has approximately 174 residents under the age of 20, or 47% of the population. Outreach efforts suggest that operation of motor vehicles by children is a safety concern in Kivalina, presenting risks to the children, their passengers, other drivers, and pedestrians.

According to state statute, operation of any motor vehicle requires a license. At age 14 in Alaska, a child can apply for an instruction permit, with which a child can drive with a licensed driver at least 21 years old. At age 16, a child can obtain a provisional driver license. For a provisional license, the driver must observe the following restrictions, unless accompanied by a licensed driver over 21 or driving to, from, or related to the duties of a job:

- The driver may not carry passengers under the age of 21, except siblings;
- The driver may not operate a vehicle between 1:00 and 5:00 a.m.

Despite the restrictions on driving, many children who are of legal driving age in Kivalina are not licensed and have not had any formal instruction. Also, many children under legal driving age operate snowmachines and ATV's. This results in children operating motor vehicles in Kivalina without having had any training regarding safe driving practices.

“Research shows that the combination of youth and inexperience puts younger drivers at high risk. Their inexperience means they have less ability to spot hazards, and their youth means they are particularly likely to take risks. In this way, crash risk not only reduces over time with experience but also is higher for drivers who start driving at a younger age.

Below are some of the specific characteristics of young drivers that put them at high risk of crashes.

- Over-confidence – Research has found that young drivers who show overconfidence in self-assessment of their skills are more likely to crash in their first two years of driving than those who are insecure about their driving skills.
- Poor assessment of hazards – Young drivers show poorer attention, visual awareness, hazard recognition and avoidance, and are less able to judge appropriate speed for circumstances.
- Prevalent risk-taking – Young drivers are more likely to take many of the most serious risks, including speeding, overtaking blind, driving on drugs, and not wearing seat belts.

Young people also underestimate certain high-risk behaviours. For example, research has shown that young drivers are less likely than older drivers to rate speeding as high risk.”⁶

Comments from residents in Kivalina reinforce what the data suggests: young drivers can present safety risks to the community. Almost 80% percent of respondents to the questionnaire characterized young drivers as a serious concern. Aggressive pursuit of educational and enforcement strategies could help address the concerns.

Goal: Reduce crashes caused by inexperienced, untrained youth.

Strategies:

Education:

- Work to offer motor vehicle safety class at the Kivalina School. Class could focus on general safety in and around vehicles, and could be offered both to those who are of driving age and younger children, but would provide a base of driver/passenger/pedestrian motor safety skills.
- Make State of Alaska's Driver Manual available in the community for public use.

Enforcement:

- Work with VPO to ensure that those under age 18 have had, at a minimum, driver skills training before being permitted to operate a motorized vehicle in the village.

Lead: Maniilaq Injury Prevention, Kivalina School, Northwest Arctic School District

Deadline/Timeline: 2015/2016

Potential Partners: Kivalina VPO

⁶ Brake. “Young Drivers.” <http://www.brake.org.uk/lighter-later/15-facts-a-resources/facts/488-young-drivers-the-hard-facts>. Accessed January 15, 2015.

Evacuation Route/School Road

Background: While not an immediate concern, as outlined in the Community Priorities section, Kivalina residents are concerned about driver safety on the proposed evacuation route/road to the proposed site for the relocated school, Kisimigiuktuk Hill, particularly during the coldest winter months. While bus service would be available for students, it is likely that families would provide rides by ATV or snowmachine at times. During inclement weather, the long drive could be dangerous. In order to ensure safety, the community may need to develop means of tracking travelers' progress.

Goal: Ensure safety of drivers accessing the relocated school.

Strategies:

Education:

- Encourage drivers who plan to regularly opt out of bus service to use a "buddy system" – travel with another driving community member – for the drive to and from the relocated school.
- Encourage drivers to have basic safety equipment – such as a shovel, flares, and food – on their vehicle.
- Encourage drivers using the road at non-peak travel times to contact the school before departing and after arriving home.
- Create brochure for families of students outlining tips for safe travel on the school road.

Lead: Kivalina IRA, Kivalina School, Northwest Arctic School District

Deadline/Timeline: To be determined based on road construction.

Potential Partners: Kivalina VPO

Alcohol-Impaired Driving

Background: When alcohol-impaired drivers are in minor or single-vehicle accidents, the incidents frequently go unreported. As noted earlier, a 1997 report indicated that more than half of snowmachine-related fatalities in Alaska are related to alcohol use.⁷ Statewide, there were 222 fatalities from alcohol-impaired driving between 2003 and 2012.⁸ Although the local VPO does issue occasional citations for alcohol-impaired driving, community members in Kivalina indicated alcohol-impaired driving remains a concern that should be addressed.

⁷ Ibid at 1.

⁸ "Sobering Facts: Drunk Driving in Alaska." 1 Dec. 2014. Web. 29 Sept. 2015.
<http://www.cdc.gov/motorvehiclesafety/pdf/impaired_driving/drunk_driving_in_ak.pdf>.

Goal: Lower the risk of alcohol related crashes.

Strategies:

Engineering:

- Display posters prominently reminding motorists not to drive while intoxicated.

Enforcement:

- Increase citation of drivers operating under the influence.
- Enact stronger and more effective legislation, such as license suspension or mandatory ignition interlocks for first time offenders.

Education:

- Develop educational programs targeting specific audiences, such as elementary and middle school students, or the 18-to-34 age group.
- Create effective media campaigns in both visual and print media.
- Develop a campaign to have drivers take a pledge to drive sober.
- Enlist the help of the Maniilaq Alcohol/Substance Abuse Programs to develop targeted rehabilitation programs for DUI offenders.

Lead: Maniilaq Behavioral Health Program

Deadline/Timeline: 2015/2016

Potential Partners: VPO, Kivalina IRA, City of Kivalina, Northwest Arctic School District

Children in Roadways

Background: People on foot are among the most vulnerable users of the road. As pedestrians, children are at even greater risk of injury or death from traffic crashes due to their small size, inability to judge distances and speeds and lack of experience with traffic rules. Nearly one in four traffic deaths among children ages 14 and under are pedestrian deaths.⁹ Late detection of other road users is one of the basic driver failures responsible for collisions.

Aids to improve pedestrians and cyclist visibility have been used to avert potential collisions.¹⁰ Pedestrian visibility (reflectivity) and safety are closely related, as drivers often fail to see the pedestrian or cyclist until it is too late. Drivers and pedestrians share responsibility for avoiding these types of collisions. Approximately 22% of pedestrian/vehicle collisions occur when a pedestrian darts into the

⁹ "Walk This Way! Taking Steps for Pedestrian Safety." Centers for Disease Control and Prevention. Centers for Disease Control and Prevention, 7 Oct. 2014. Web. 1 Oct. 2015. <<http://www.cdc.gov/Features/PedestrianSafety/>>.

¹⁰ "Cochrane." Increasing Pedestrian and Cyclist Visibility to Prevent Deaths and Injuries. Web. 1 Oct. 2015. <http://www.cochrane.org/CD003438/INJ_increasing-pedestrian-and-cyclist-visibility-to-prevent-deaths-and-injuries>.

road, whereas 16% of such collisions are due to driver violations.¹¹ Reflective clothing, flashing lights, and other visibility aids can be used to try to prevent pedestrian/vehicle collisions.

Kivalina residents are concerned about the safety of children playing on local roads. There is no designated play area for children in Kivalina: the playground at Kivalina School was removed to make way for additional classroom space to be constructed in 2016. A dedicated alternative play area could redirect children to a safe location and discourage play on area roadways. A designated play area should include a basketball court to discourage basketball games in roadways. Space is very limited in the current location, but because playground equipment and fencing could be more portable than other types of development, a location that would be otherwise not usable may be workable as an interim playground location. In the longer term, designated play space for children should be a priority in a relocated Kivalina.



Speed bump on gravel road.

Both children and drivers bear responsibility for avoiding accidents. Educating children about wearing reflective clothing, walking off the road, and not playing in the roadway will help to alleviate the possibilities of pedestrian injury. Educating drivers about the need to obey speed limits and be aware of children can also help to maintain safety for Kivalina's residents. Signage and speed bumps may help decrease conflicts.

Goal: The goal of this emphasis area is to reduce and prevent pedestrian/vehicle conflicts by creating play areas for children away from the roads and educating all tribal members about safe pedestrian/vehicle interaction.

Strategies:

Engineering:

- The Tribe should pursue design and construction of a playground to provide a safe play area for children. Regardless if this is possible in the current location, it should be a priority to include in plans for a relocated Kivalina.
- Install "children at play" signs and to improve drivers' awareness and visibility of children playing in or near roads. Signs should be installed as an interim measure at locations where this is currently an issue, and also installed near the new play area.
- Install speed bumps in areas where there are many pedestrians or children playing. Speed bumps should be installed as an interim measure at locations where this is currently an issue, and also installed near the new play area.

Enforcement:

- Ticket drivers not obeying speed limits or otherwise driving in an unsafe manner near children.

Education:

- Develop and distribute brochures highlighting pedestrian and bicycle safety guidelines (e.g. walk opposing traffic, wear reflective gear at night, use crosswalks, etc.).

¹¹ Ibid.

Lead: Kivalina IRA

Deadline/Timeline: 2015/2016

Potential partners: City of Kivalina, VPO, Kivalina School, Health Clinic, Maniilaq Injury Prevention, Safe Routes to School program.

Snow Berms

Background: Residents indicate that snow accumulation – particularly near structures – can block lines of sight for snowmachine operators and produce berms that are difficult to navigate. Particularly in light of children on area roadways, impaired visibility and unpredictable surfaces can be dangerous. In addition, accumulated snow near structures can block windows and doors, making entry and exit difficult and preventing access in case of fire. Snow typically accumulates from north winds. Strategically placed snow fencing could reduce accumulation of snow in roadways or in berms impeding lines of sight for drivers.

Strategies:

Engineering:

- Identify appropriate location for snow fencing and install fencing as needed.

Education:

- Prepare seasonal insert for utility bills about careful driving where visibility is limited and berms are present.

Lead: Kivalina IRA

Deadline/Timeline: 2015/2016

Potential partners: Northwest Arctic Borough, City of Kivalina, Maniilaq Injury Prevention.

Airport Erosion

Background: Seasonal storms have caused considerable erosion near the exposed coastline at the north end of the runway. The erosion has worn away a trail used for subsistence and is impacting a road leading to the landfill. Erosion occurring during a storm in early October 2015 wore away a ten-foot section of land near the airport, leaving approximately 35 feet between the runway and the eroding coastline.¹² Continued erosion could force closure of the airport, which would dramatically impact residents, given the community's dependence on access by air. If a closure occurred, residents would be without a means of air evacuation in case of a medical or other emergency. Eventual relocation should

¹² "Erosion Takes Bite out of Beach by Kivalina Airport." The Arctic Sounder RSS. 2 Oct. 2015. Web. 8 Oct. 2015. <http://www.thearcticsounder.com/article/1540erosion_takes_bite_out_of_beach_by_kivalina>.

not delay improvements to the current runway to ensure a reliable means of air access to the community. Agencies should expedite funding to install countermeasures to preserve the existing infrastructure.

Strategies:

Engineering:

- Install shoreline protection along the runway to prevent further damage and preserve critical community infrastructure.

Lead: Kivalina IRA, City of Kivalina

Deadline/Timeline: 2015/2016

Potential partners: DOT&PF, Denali Commission.

B. Implementation

This Kivalina Transportation Safety Plan Draft is now ready for implementation. This plan should be disseminated in the community to potential safety partners and made available for all residents to view. The first step for Kivalina is to appoint a local transportation safety champion. That champion will contact each lead and potential partner to meet in regard to the appropriate emphasis area. The champion will ensure that there is the necessary buy-in and can map steps to effectively implement the transportation safety actions.

As work continues toward implementation of these safety projects, care should be taken to monitor progress. Even though primary responsibility for leading implementation lies with other entities for many of these actions, the Native Village of Kivalina can help ensure follow-through by periodic review of the status of each effort. This Transportation Safety Plan should be updated every five years to allow for analysis of new data and determine any new efforts that should be undertaken to improve transportation safety for Kivalina residents.