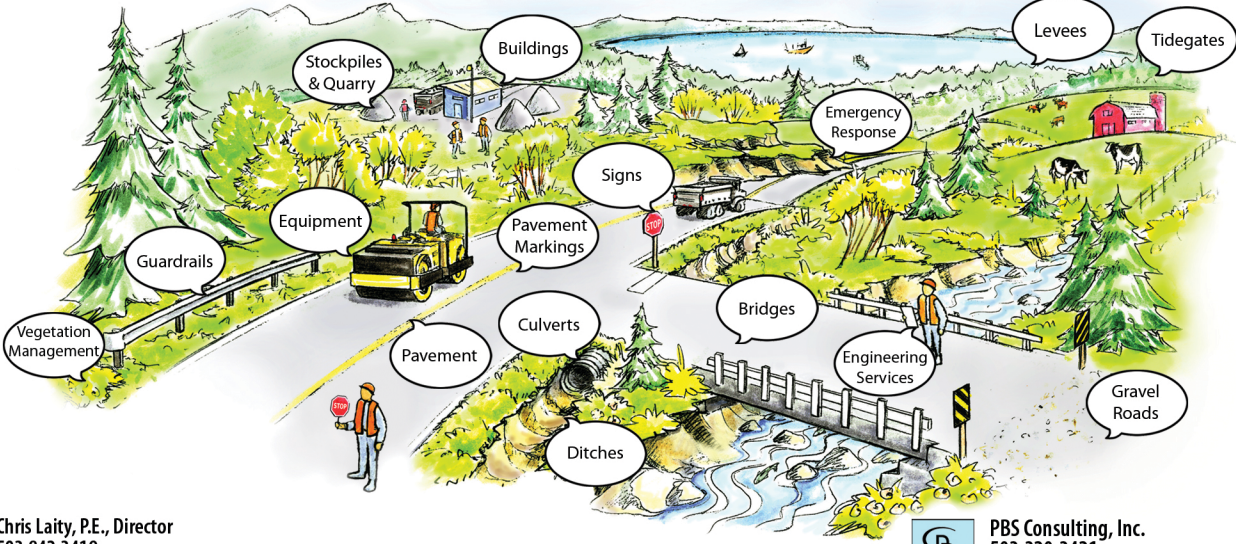




Tillamook County Road Asset Management Plan FY 2017

Your Tillamook County Road Dollars At Work
\$859 Million Road System Value in 2017



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Version	Change	Changed by	Reviewed by	Approved by	Date
V.1	Initial Draft	PBS			
V.2	Draft Final Report – edit Directors Message, risk strategy, expenditure titles, accomplishments, service risks and response, structures target, clarify graphics and tables	PBS	CL, JS		Nov. 16, 2017
	Final Report – incorporate project and formatting edits	PBS		CL	Nov. 29, 2017

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Public Works Road Department Message from the Director

The Tillamook County Road Department provides a range of road services critical to the businesses, citizens and many tourists traveling the County's 350+ miles of roads. Safety remains our biggest concern. Stepping in as Director, the employees, the Board, Advisory Committee members and citizens have provided valuable insight, expertise, and good counsel that support the mission of the Road Department, provide needed road services and meet the expectations of the County's citizens.

Our road asset management strategy remains a "Mix of Fixes" which means we maintain roads and bridges in good condition to keep them in good condition. We rebuild roads, bridges, and culverts that are in poor or failed condition, which is significantly more costly but is needed as critical infrastructure fails. Over the last year, the Road Department made substantial progress in the following areas:

- Rebuilding continues after the December 2015 storm when approximately \$8 million damage to the County's transportation network occurred. In 2017, the priority was to provide matching funds for federally assisted projects, 25% local match for FEMA projects, and 10% local match for Federal Highway projects.
- Awarded \$10 million for the Cape Meares Loop new alignment (the County is to provide 10.27% match)
- Designed the second access out of Neskowin and seeking funding for construction
- Participated in the State pilot project that identified cost effective emergency lifeline routes and prioritized multi-span bridges for seismic retrofit or replacement; and continued building reciprocal emergency response relationship with Umatilla County.
- Leveraged \$6.8 million in grants and other funding opportunities offered by state, federal and local watershed sources on 21 County road projects, including completing 2 bridge replacements, redesigning 6 bridges and repairing 3 bridges in 2017.
- Paved 3.6 miles on County economic development routes and in neighborhoods. Once paving was completed, we transferred a portion of 3rd St. to City of Tillamook's ownership, which continues to reduce the County's overall road inventory when it makes sense. We sold 13 underutilized pieces of equipment.

The State passed new transportation funding in July 2017. This, the bond and Transient Lodging Tax monies passed by residents in 2013 and 2014 help to address critical road needs. We stabilized pavement and bridge conditions in 2016 and 2017. However a decline in future condition is expected as road funding does not meet all needs and road revenues were set aside to match federally assisted projects.

Greater efficiency is needed in how we assign these limited County road resources. Geographic mapping tools can help us better visualize, analyze and assign resources. We are beginning to use Geographic Information System (GIS) tools so that the location, cost and performance of our work can be linked. We are considering more efficient equipment and methods for ditching to effectively drain water from the roadway. We will make a higher priority of bridge maintenance on critical non-NBI bridges, such as Yellow Fir Bridge.

We face a significant challenge over the next 7 to 10 years when fully half of the Road Department employees may retire. A succession plan is being established that documents expert knowledge and skills of our current hard working employees through a cross-training program and documentation of institutional knowledge. Our commitment is to a smooth transition as new management and employees enter the workplace, taking pride in serving the public as we manage the public's transportation investment.



Public Works Road Department 1. Asset Management Strategy & Financial Summary

1.1 Overview

Tillamook County Road Department's manages a road network value at \$859 million in 2017. The Department's asset management program is used to assess, prioritize and report road network performance. Road network investment needs and improvements are identified that cost-effectively achieve desired service level objectives, minimize critical road asset failures, and ensure the safety and long-term viability of the County road network. The Road Department Mission, Vision, and Values statement and Key Indicators and Performance Measurements help define the desired level of service. The risk management strategy used is called a "mix of fixes." This means that some roads and bridges have fallen into a state of disrepair which require major rehabilitation or complete replacement, even while preventive maintenance is our long term goal.

The Road Department uses risk-based decision making to set priorities and pursues opportunities to partner with key stakeholders and apply for grants that augment resources. Risk/prioritization occurs through Department-led workshops with the County Board of Commissioners, County Road Advisory and community input. The Road Department uses various tools to manage its assets including pavement condition assessments, the National Bridge Inspection Standards, culvert condition rating developed in concert with Oregon DOT, sign inspection and nighttime visibility assessments. Asset inventory, location, condition, activity cost information, and service requests are managed in the Integrated Road Information System (IRIS). This includes managing equipment and vehicles' utilization and performance in IRIS's Equipment Management System module.

Risk Management Strategy – Mix of Fixes

- *Import methods, technology and materials to assist with preventive maintenance and reduce deterioration*
- *Increase bridge maintenance*
- *Increase drainage maintenance*
- *Review methods to inventory culverts and assess their condition, assess and maintain levees, and perform building maintenance*
- *Cluster adjacent maintenance projects to improve efficiency*
- * Identify additional funding through partnership & grants*
- *Identify and separate needs from wants*
- *Continue to communicate critical failures with the Board and community*

In depth condition inspection and analysis occurs every other year on pavements and bridges. A Strategic Bridge Management Plan was developed in 2014 that guides County decisions that maintain, rehabilitate and replace the County's bridges. With the Army Corp of Engineers, the County inspects levees and revetments along County roads to identify operation and maintenance needs. The County must maintain levees to at least the minimally acceptable standard to remain eligible for federal rehabilitation assistance through the USACE Rehabilitation and Inspection Program. (PL 84-99). Work continues that assesses the condition of County road culverts, the third most valuable asset class. These tools are used to guide the long-term renewal and replacement strategy and annual budget for the County's assets and focus on the assets that pose the greatest risk. There is a desire to develop a 5-year capital improvement program for fiscal years 2019-2022 using these tools.

1.2 What does the County Road Department manage?

These infrastructure assets have a replacement value of \$859 million and represent significant community and government investment. Unit costs are updated each year to determine the cost of service and replacement value of the system. The Road Department manages 263 paved miles and 65 gravel miles of county roads for 25,653 (2015) county citizens. The Tillamook County road network is comprised of:

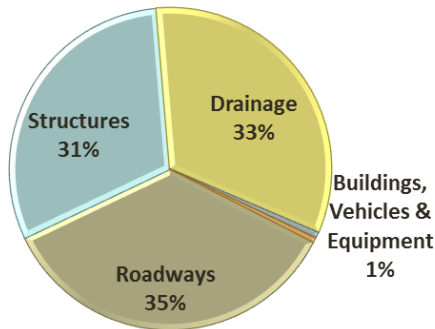
- Roadways
- Structures
- Drainage
- Buildings
- Vehicles & equipment

County Road Assets & Services

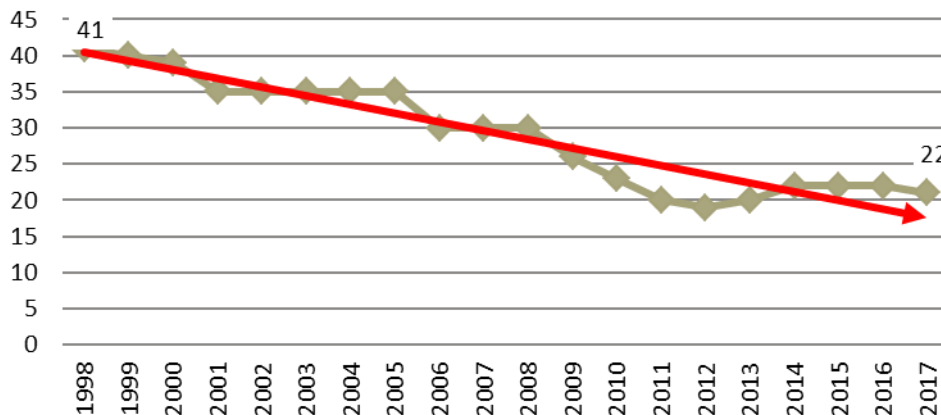
Assets
263 paved miles
65 miles gravel roads
102 bridges
3,200 culverts
5 levees
5,144 signs
397 miles pavement markings
10 miles guardrails
15 buildings

Services
Vegetation Management
Traffic Safety
Materials/Stock Piles
Service Request Mgmt.
Emergency Response
Engineering Services (permits & capital projects)
Fleet Management

Tillamook County Road Network Value
\$859 Million



Staffing has declined 46% over 20 years

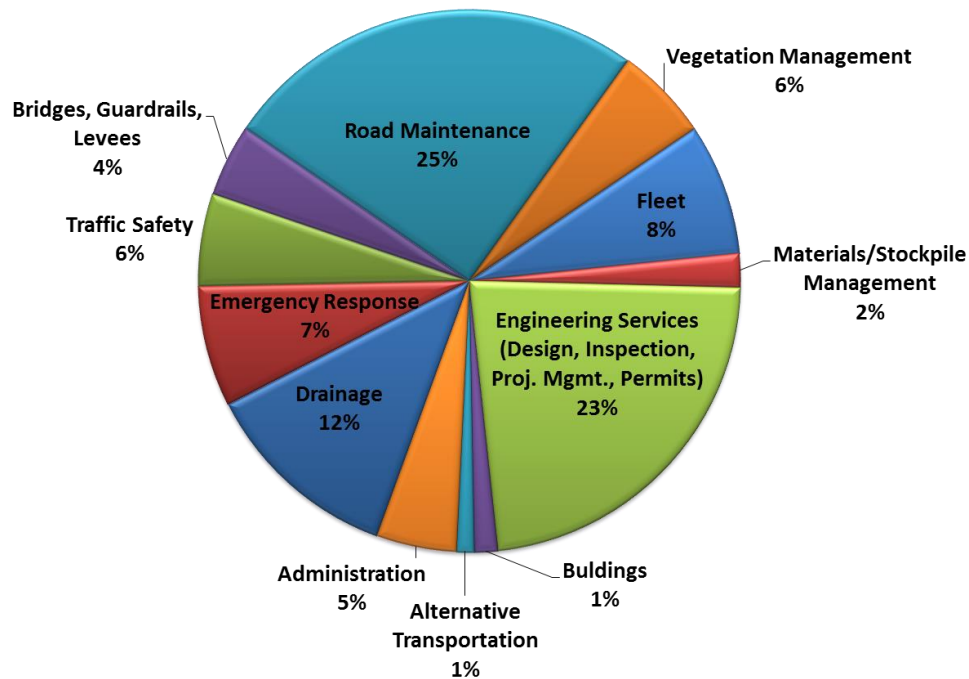


1.3 What did we accomplish this year?

In 2017 the Road Department continued to address the 2015 storm damage, and the safety and emergency response needs on economic development routes, and the neighborhoods countywide.

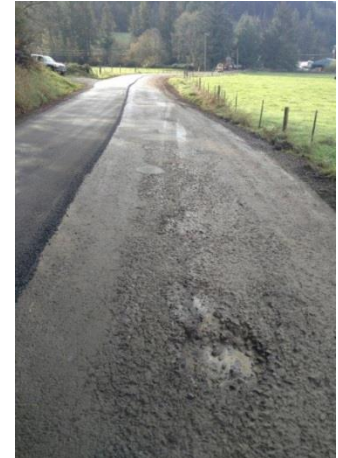
County road services include Emergency Response, Roadway and Traffic, Structures, Drainage, and support services (Equipment and Buildings). Resources are allocated to manage high risks given available funding and community priorities. Visual inspections verify asset performance. The confidence and source of information is reported annually to reflect the accuracy and completeness of information. The Department is committed to continuously improving the skills, tools and business processes that support road services.

FY 2017 Expenditures



Specific **achievements** include:

- Continued paving on economic development routes and in neighborhoods countywide with a focus on safety and emergency response. This included paving 3.6 miles on: Beulah Reed Road, James Road, Victoria Street, Tideland Road, Moss Creek Road, Tohl Road, 3rd Street, Olsen Road, South Prairie Road, Bayocean Road, 4th Street, Crab Road and Cape Kiwanda Drive.
- Continued Lommen Bridge reconstruction, which includes a base isolation system for seismic resiliency
- Initiated bridge designs for Trask South Fork, Cedar Creek, Holgate, Blankenship Road and Whalen Island bridges
- Design and permitting for Mapes culvert replacement with a bridge
- Completed 30% design and awarded \$10M grant funding for Cape Meares Loop replacement
- Resort Drive I and Resort Drive II design and construction
- Completed 95% design for Neskowin Alternate Route
- Completed conceptual design for Kilchis House
- Initiated design for East Creek , Hadley, and Old Wheeler Mohler roads
- Completed design for culvert replacements on Harbor View Drive and Twin Rocks
- Initiated culvert design on Bayocean Road MP 2
- Completed culvert to bridge designs on Sollie Smith Road
- Initiated culvert to bridge design on Miami Road MP 7.6 and MP 8.8
- Managed vegetation, mowed, and removed brush along County roads
- Continued emergency preparedness for managing Cascadia earthquake “Filling the Void of Leadership” and Neskowin emergency egress design
- Responded to 535 service requests
- Provided Engineering Department permit support
- Reviewed and approved 222 road approach and utility permits
- Reviewed 96 Department of Community Development permits
- Sold 13 underused pieces of equipment and vehicles
- Repaired siding and painted the Main Office building
- Inspected 5 levees and submitted draft Emergency Response Plan to Corp of Engineers for approval
- Reduced County paved roads by paving and then transferring ownership of 0.62 miles on 3rd Street to the City of Tillamook



Moss Creek Road – During and After Rehabilitation

The County continues to successfully obtain additional federal and state funds. In FY 2017, the County received:

- \$10M in Federal Land Access Program (FLAP) funds for Cape Meares Loop road reconstruction
- Over \$4M in Highway Bridge Program (HBR) funding for Cedar Creek Bridge, South Fork Trask River Bridge and Holgate Bridge replacements.

An additional \$6.8M was funded by ODOT & partners for County transportation projects in FY 2017.

2017 Federal, State and Local Partner Projects on County Roads*

Project	Purpose	Partner
Blankenship Road	Bridge Design and permitting	SSH & NNSWC
Cedar Creek	Bridge design	ODOT
Holgate	Bridge design	ODOT
Lommen Bridge	Bridge construction	ODOT
Trask S. Fork	Bridge design	ODOT
Whalen Island Park	Bridge design	ODOT
Wyss Bridge	Bridge construction	ODOT
Mapes Bridge	Culvert to bridge replacement design	TEP/OWEB
Sollie Smith Road	Culvert to bridge replacement design	FEMA
Harbor View Drive	Culvert replacement design	FEMA
Island & Harbor Culverts	Culvert design	FEMA
Bayocean Road MP 2	Culvert replacement design	FHWA
Miami River Road MP 7.6 and MP 8.8	Culvert to bridge replacement design	FHWA
Cape Meares Loop Slide	Road design	FHWA
Resort Drive I	Road design and construction	ODOT
Resort Drive II	Road design and construction	ODOT
Neskowin Alternate Route	Alternative route design	Community/State/TCPW
Kilchis House	Concept design	TCPW/CARE/College/City
East Creek Road	Road design	FEMA
Hadley Road	Road design	FEMA
Old Wheeler Mohler Road	Road design	FEMA

* Nestucca, Neskowin & Sandlake Watersheds Council; Oregon Dept. of Transportation; Tillamook Estuary Partnership; Oregon Watershed Enhancement Board; Federal Emergency Management Agency; Community Action Resource Enterprises

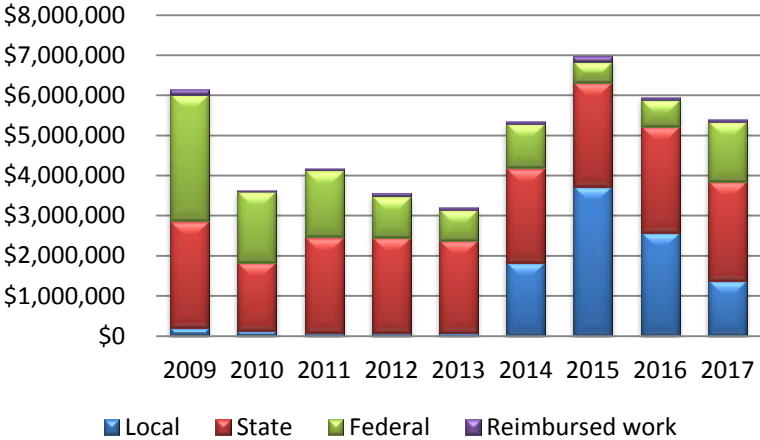
1.4 Financial Summary

Funding remains insufficient to meet road service needs over the next 10 years in spite of a new State Transportation Revenue package passed by the legislature in July 2017. The cashflow from the 10-year County General Obligation bond passed in 2013 varies widely year to year in compliance with federal regulations. Significantly fewer bond revenues are available over each of the next five years. This impacts the level of funding for road, culvert and bridge maintenance and improvements.

Projected revenues will decline

Revenue	2017 Actual	Projected				
		2018	2019	2020	2021	2022
GO Bond	\$1,493,906	\$1,073,851	\$2,100,000	\$2,100,000	\$2,100,000	\$600,000
Road Budget	\$4,169,858	\$2,771,851	\$2,555,843	\$2,593,928	\$2,857,365	\$2,857,365
Secure Rural School	\$67,782	\$60,000	\$0	\$0	\$0	\$0
New State Funding		\$244,949	\$541,253	\$622,179	\$713,918	\$819,450
Transient Lodging Tax	\$722,988	\$740,000	\$740,000	\$740,000	\$740,000	\$740,000
Total	\$6,454,534	\$4,890,651	\$5,937,096	\$6,056,107	\$6,411,283	\$5,016,815

New State Revenues were added in 2017



New State revenues were added in July 2017. Local revenues approved by voters in fall 2013 (Bond, Transient Lodging Tax, permits) are 26% of Road Funds in 2017.












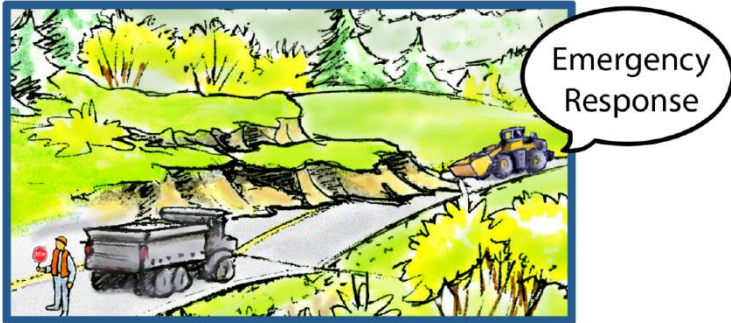
Public Works Road Department

2 Risk Trends

Risk trends have not changed since the November 2016 community workshop. The Road Department Director and managers reviewed County road asset and service information, risks & management strategies with the BOCC, the CRAC, County Department managers, employees, and citizens. Service Request information is updated for 2017.

Tillamook County Road Services & Assets - Risk, Performance & Legal Mandate								
Program	Subprogram	Risk Rating			Information Confidence Level	Trend	Comments	2017 Service Requests
		2008	2010	2016				
Emergency Management	Roads, Structures, Drainage, Traffic Safety, Department Employees	Extreme	Extreme	Extreme	N/A	↓	Storm response is hard to predict, impacts the budget and wreaks havoc on an already fragile drainage system	N/A; emergency requests investigated immediately
Admin. Services	Staffing for cost accounting, budgeting service request & work management, Director, shop supervisor, foremen, equipment operators, work zone flaggers)	Extreme	Extreme	Extreme	N/A	↓	Currently 22 (46% decline over 20 years). There are not enough staff to meet critical needs in the system. A succession plan is needed to ensure trained personnel are available as retirements occur.	N/A
Drainage	Culverts, ditches & shoulders	High	Extreme	Extreme	2-Low	↓	22% culvert condition known; catastrophic failures during storms; replaced several culverts; No ditching program; 93% require some maintenance & 31% in Poor or Very Poor condition	20%
Roads	Arterial & collector paved roads	Extreme	Extreme	High	5-Optimal	↔	Average network condition stabilized at Fair condition (PCI 55); Inadequate funds to achieve Good condition or prevent future decline; in 5 years with current funding condition will decline to 48PCI or Fair.	45%
Veg.Mgmt	Spraying & mowing roadsides	Extreme	Extreme	High	N/A	↓	Inadequate resources to maintain regular maintenance; not meeting customer expectations	5%
Structures	Bridges	High	High	High	5-Optimal	↔	Bridge condition stabilized; 2 bridges replaced, 6 in design for replacement and 3 bridges repaired in 2017. Funding is insufficient funds to maintain bridges at rate of Bridge Program. 13 bridges in Poor condition; 1/2 mile vegetation removal needed on levees	1%
Equipment	Fleet & Equipment	Extreme	Extreme	High	4-High	↓	54% Level A (Preventive Maintenance) performed; half of the fleet budget spent on repairs; Shop Foreman and crew in field	N/A

Tillamook County Road Services & Assets - Risk, Performance & Legal Mandate								
Program	Subprogram	Risk Rating			Information Confidence Level	Trend	Comments	2017 Service Requests
		2008	2010	2016				
Engineering	Engineering services	Medium	High	High	N/A		Engineering staff reduced in 2010; reduced ability to review residential & utility permits in timely manner; project and contract management primarily performed by Director	N/A
Facilities	Maintenance Yards	Low	High	High	2-Low		Perform critical maintenance and repair; inspect buildings quarterly for safety; pay utilities; clean up yard. Buildings exceed useful life.	N/A
Roads	Gravel roads-county maintained	High	High	Medium	2-Low		Reactive gravel road maintenance; inadequate staff to provide regular maintenance	16%
Structures	Guardrails	Medium	Medium	Medium	3-Moderate		No guardrail program; reactive replacement only. 2007 inventory & condition assessment; 43% in Poor condition	0%
Traffic Safety	Signs-Other	Medium	Medium	Medium	3-Moderate		60% signs in Good condition; nighttime visibility of signs assessed by crews and signs replaced on an ongoing basis	see Signs
Structures	Levees	TBD	Medium	Medium	3-Moderate		2016 condition assessed; general assessment as Minimally Adequate; 1/2 mile of vegetation removal needed; Complete Emergency Assess Plan	0%
Materials Mgmt.	Quarries	High	High	Medium	4-High		DOGAMI permit modified and County in compliance	N/A
Traffic Safety	Pavement markings	High	High	Medium	5-Optimal		Re-painted annually; Marion County contract	0%
Traffic Safety	Signs-Regulatory (stop signs)	High	Extreme	Medium	3-Moderate		100% stop signs in Good condition	8%



3.1 Emergency Response

Performance Measure:

Service Requests response.

Emergency Response Management Strategy

Prepare for and respond to weather events and hazards to ensure a safe county road network. Work in partnership with federal, state and county emergency responders. Ensure the traveling public's safety on County roads as the Road Department's highest priority.

Service Level Target

Investigate and quickly respond to weather events and hazards. Eliminate critical bridges and culverts; and inspect bridges and levees before and after weather events.

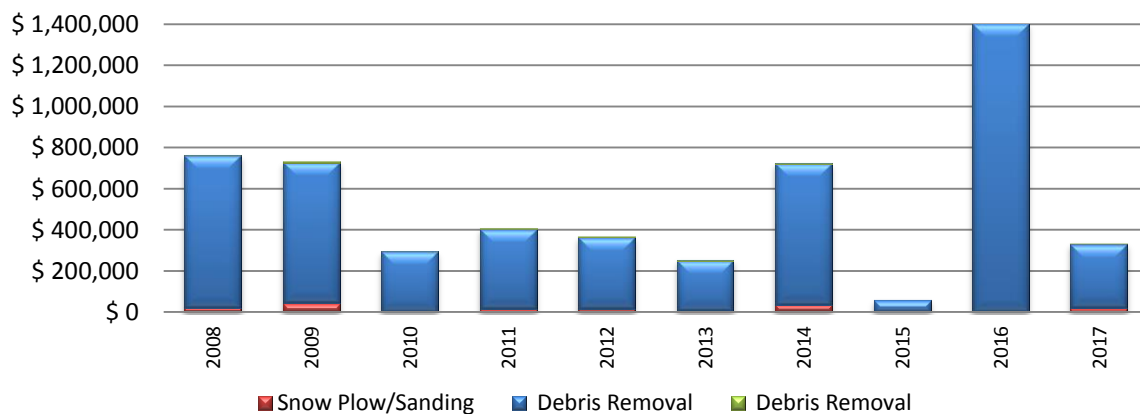
Current Service Level

Investigate 100% of emergency service requests. Reduce hazards as a high priority. Inspect critical bridges, culverts and levees before and after weather events.

Current State

Emergency Response expenditures are hard to predict. There were no significant storms in 2017. 7% of Road revenues went to storm response in 2017, significantly less than 2016.

Emergency Response costs were significantly lower in 2017 due to fewer and less severe storms



Emergency response is rated an Extreme risk given the frequency and severity of weather events, and seismic threats.

Safety projects for the County continue as a high priority. The Road Department was awarded a \$10M Federal Land Access Program (FLAP) grant for the new Cape Meares Loop alignment with tentative construction in 2020. The environmental assessment work is proceeding. The second Neskowin emergency access route design is 95% complete; however there is no construction money identified at this time. The Department advanced its earthquake/tsunami preparedness. This relies on building a reciprocal relationship with the Sister Community Partnership and Umatilla County Public Works in Eastern Oregon. In 2017, the Road Department provided emergency supplies and a storage shed for Umatilla County's use during a Tillamook County emergency.

The County participated in the State/Tillamook seismic bridge seismic and lifeline route evaluation. ODOT's life line routes and County bridge locations were reviewed. Alternative routes on County and other roads that may be more cost effective to seismically retrofit or replace were identified. The County's share on three routes is \$7.9 M:

- Meda Loop Road Bypass
- Long Prairie Road to Hwy 6 Bypass
- Wilson River Loop N-S

Work also continues to address the \$8M damage from the December 2015 storm. FEMA payments are now helping address 8 permanent bridge and culvert replacements. However these are only partially funded with federal emergency dollars and require local match which has a significant impact on the Road Department budget and staff. The County also received a \$500,000 reimbursable grant from the State Infrastructure Finance Authority (IFA) that compensates the County for 25% of FEMA approved costs. Recovery and repairs are ongoing as funding allows. Timing for completion of the state and federal process is unknown.

Emergency Response Risks

- 1 Wet climate/storm damage and natural disasters reduce asset life, increase life cycle costs and divert planned maintenance and renewal funds to reactive damage repairs
- 2 Roads inundated by plugged or deteriorated culverts

Risk Response

- 1 Develop and regularly review appropriate emergency response capability
 - 2 Respond to storms
 - 3 Respond to landslides and 911 callouts
 - 4 Participate in statewide emergency preparedness initiatives for the Cascadia earthquake "Filling the Void of Leadership"
 - 5 Design Neskowin emergency egress route
 - 6 Target equipment & vehicles (e.g., snow plows) for safety, maintenance and repair
 - 7 Participate in State pilot project to identify County bridge seismic priorities and lifeline routes.
 - 8 Build reciprocal Sister Community relationship with Umatilla County for emergency response & resilience.
-



3.2 Staffing

Performance Measure:

Administrative costs as a percent of total expenditures.

Employee Staffing Levels & Retirements

Staffing levels at the Road Department are rated an Extreme risk. Over 20 years, there has been a 46% decline in the Road Department staffing, from 41 to 22 employees in 2017. The Road Department's has obtained grant funds from local, state and federal partners, which increases the workload on engineering and administrative staff as the number of projects increases. Administrative costs are 5% of total budget when 8% is typical.

There is decreased ability to perform preventative maintenance on Road Department equipment, or keep pace with the growing inventory of County bridge maintenance and repair. There is only a reactive ditching program due to inadequate staffing levels. Drainage of the roadway is rated an extreme risk.

The Road Department's recognition for its safety-conscious work environment has resulted in low Worker's Compensation claims and rates. However, the limits of planned and unplanned staff absences affect the ability to assign crews safely which impacts overall Road Department productivity.

Fully half of the Road Department employees may retire over the next 7 to 10 years. Staffing levels, turnover and impending retirements challenge the future knowledge, skills and abilities of the Department to maintain and repair existing assets. There is no succession plan that targets mission critical roles and tasks, maps out career development and cross trains employees and managers to manage existing road network knowledge, management practices and skills.

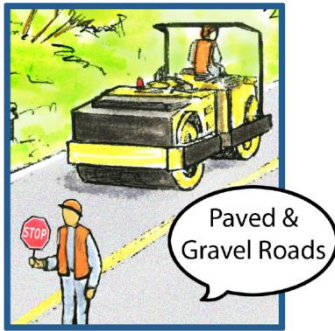
Risks

- 1 There are not enough staff to meet critical needs
- 2 The Department is losing the ability to know about system condition as retirements occur
- 3 The Shop Foreman and crew are assigned to field work making equipment maintenance difficult
- 4 The Director acts as Public Works Director, Solid Waste Administrator & County engineer which is not comparable to adjoining counties' management structure

Risk Response

- 1 Document institutional knowledge
- 2 Provide planning tools to increase efficiency
- 3 Determine needs vs. desires to transform reactive to proactive work and to improve efficiency
- 4 Implement formal and informal cross training program
- 5 Migrate system data from spreadsheets to graphical data to assist with knowledge base and reduce reactive work

3.3 Roadways– Pavement Condition



Performance Measure:

Percent of pavement in Fair & Good condition

Pavement Management Strategy

Ensure roads are safe to travel on throughout the County. Reduce expenses by maintaining roads in Good and Fair condition. Long term, continue to improve the County road system’s average Pavement

Condition Index (PCI). This slows deterioration long term. Rehabilitate the roads so that we can do more preventive maintenance. This extends the road life and reduces the lifecycle cost of paved roads.

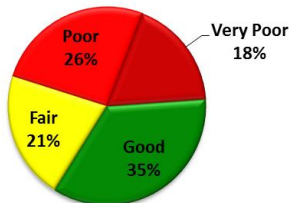
The focus for use of road revenues is: provide small patches Countywide to hold the system together (2014), focus expenditures on high speed, high volume roads and those that provide economic value to the community (2015), and focus on economic development routes & move into the neighborhoods Countywide for safety and emergency response (2016, 2017). Inspect all roads every other year and respond to service requests, as resources allow. Where it makes sense, reduce the road inventory through jurisdictional transfer. Improve pavement workmanship and pavement equipment. Partner with other Counties for traffic marking services and share equipment when practicable.

Service Level Target

County paved roads are considered a High risk. Working with the Board of County Commissioners and the Road Advisory Committee, the pavement service level that is appropriate for our community is reviewed every other year. The target is to maintain roads in Good condition (80 Pavement Condition Index or PCI). \$68.4M is needed to bring pavements to Good condition. The County has \$6.1M over the next 5 years to manage pavement roads. The average pavement condition will decline from Fair to Poor condition by 2021.

Pavement Condition will decline given current revenues¹

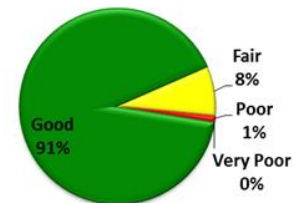
Pavement Condition in 2016



**Current Funding \$6.1M
Pavement Condition in 2021**



**Address needs - \$68.5M
Pavement Condition in 2021**

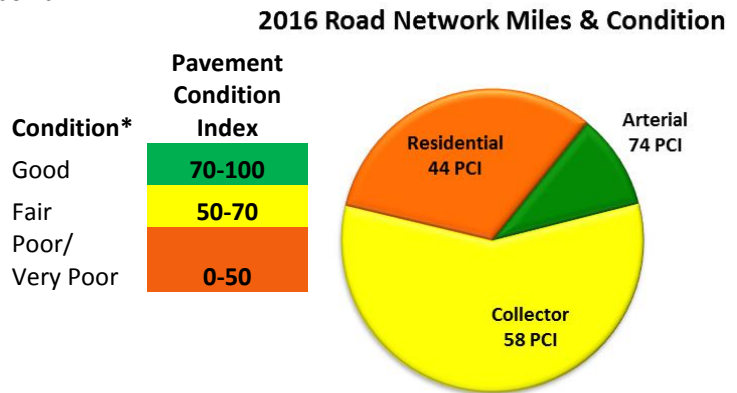


¹ Source: *Pavement Management Program Budget Options Report*, Capitol Asset & Pavement Services Oct. 2016

Current Service Level

Roadways are the County’s most valuable asset with a replacement value of \$301M.

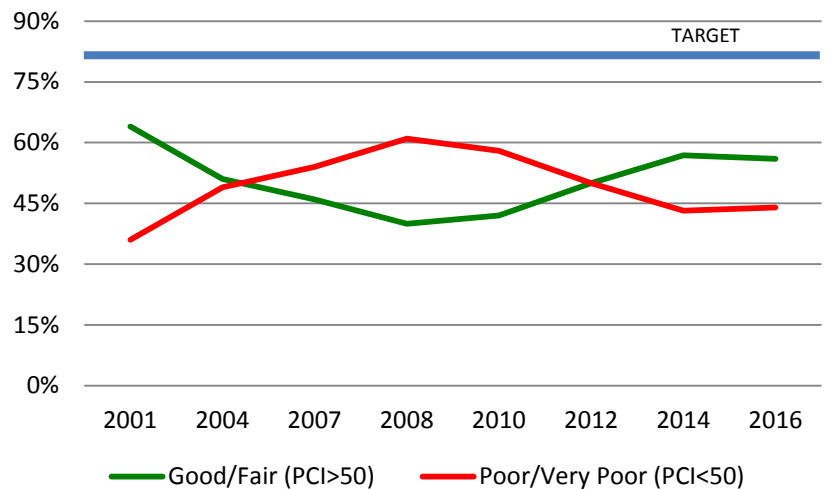
In 2016 the average pavement condition was Fair (55 PCI). Arterial roads (10% of the system) are in Good condition. Collector roads (55% of the system) are in Fair condition. Residential roads (35% of the system) are in Poor condition.



*PCI is average per functional road classification

Pavement condition has been stabilized in Fair condition (55 PCI). Funding is not sufficient to maintain this condition or to meet target performance (80 PCI).

Pavement condition has been stabilized 2001-2016



In 2017 the County’s transportation budget was used to pave, patch and maintain County roads. 3.6 miles of County roads were paved. The ownership of a portion of 3rd Street was transferred to the City of Tillamook once it was paved. This reduces the County road inventory by 0.62 miles. Regulatory, stop and school signs were replaced in 2017. Road crews were trained to monitor sign reflectivity; signs are replaced as reflectivity fails. Pavement markings are re-painted each year.

3.6 road miles were paved Countywide	
Beulah Reed Road	James Road
Victoria Street	Tideland Road
Moss Creek Road	Tohl Road
3 rd Street	Olsen Road
South Prairie Road	Bayocean Road
Crab	Cape Kiwanda Drive
4 th Street	

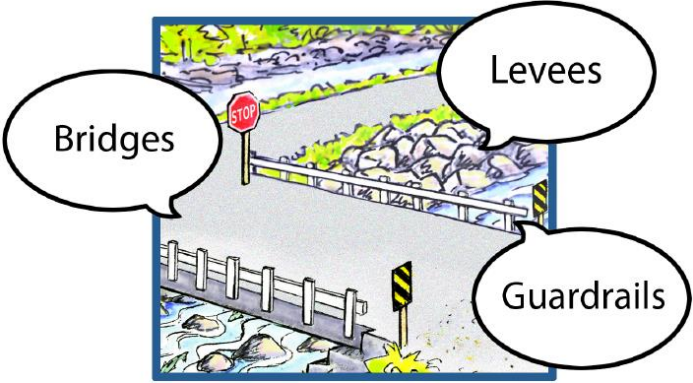
Risks for Roadways

- 1 Insufficient funding for resurfacing allows water to enter the pavement resulting in pavement failures and avoidable and expensive reconstruction
- 2 Poor historical construction standards for many pavements mean that when they fail reconstruction becomes very expensive
- 3 Lack of timely maintenance
- 4 Wet climate/storm damage reduces asset life, increases life cycle costs and diverts planned maintenance and renewal funds to reactive storm damage repairs
- 5 Poor drainage
- 6 Insufficient construction inspection
- 7 Increased traffic loads
- 8 Vegetation impact

Risk Response

- 1 Mix of Fixes: Rehabilitate roads so that preventive maintenance can be performed on roads in Good and Fair condition
- 2 Focus on economic development and move into the neighborhoods Countywide for safety and emergency response.
- 3 Rate condition every other year and respond to service requests
- 4 Reduce the road inventory through jurisdictional transfer where possible
- 5 Improve road drainage
- 6 Improve workmanship and equipment
- 7 Partner with other Counties for traffic marking services and share equipment if possible
- 8 Maintain regulatory signs (stop & warning) in Good condition
- 9 Train road crews and monitor warning, street, and mile post sign reflectivity and replace as needed
- 10 Repaint pavement markings each year

3.4 Structures



Performance Measure:
Percent of bridges in Fair & Good condition

Structures Management Strategy

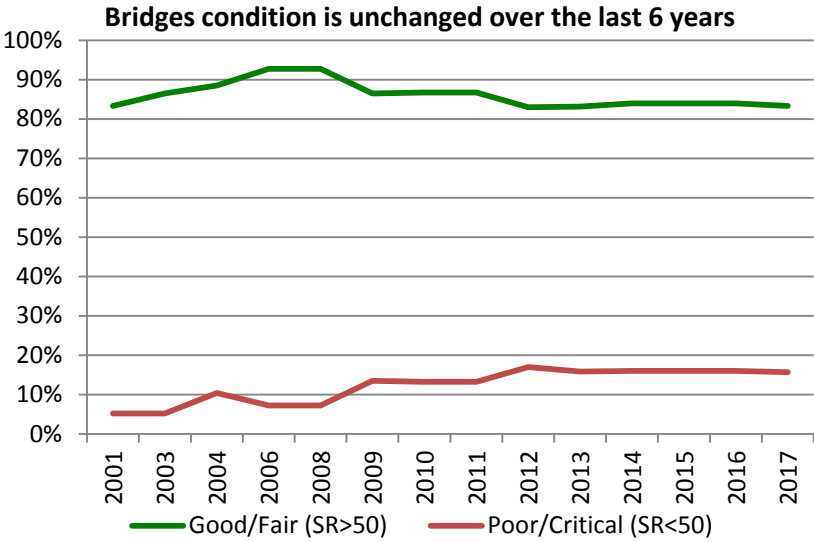
A Mix of Fixes. Maintain bridges in good condition by performing preservation and cyclic maintenance; seek funding partners to replace bridges with Sufficiency Rating less than 50%; inspect bridges every other year; perform levee inspections before and after storms and maintain revetment vegetation; repair and replace guardrails as a part of ongoing road projects and crash insurance claims.

Service Level Target

Develop a capital improvement plan to bring County bridges to current National Bridge Inventory (NBI) standards, levees to Army Corp of Engineers (ACE) standards, and guardrails to acceptable standards.

Current State

The majority of the 102 County bridges are in Good or Fair condition; however more bridges have fallen into Fair condition. There are 17% of County bridges in Poor or Very Poor condition in 2017.

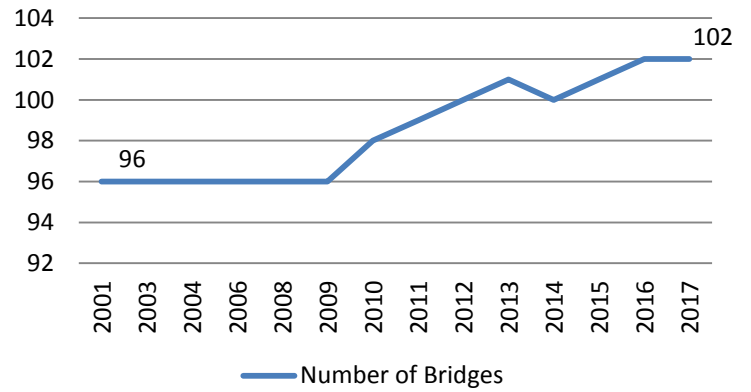


Since 2009, the bridge inventory has increased 6%; no bridges were added to the inventory in 2017. Bridges replaced undersized culverts in 2015 and 2016 ensuring safe fish passage with partners' funding assistance.



Sifford Bridge replaced a culvert in 2016

Bridges have replaced undersized culverts



Bridges are being designed to replace culverts on Sollie Smith Road, and Miami River Road MP 7.6 and MP 8.8, which will add to the bridge inventory in future years.

The replacement of Wyss Bridge was completed in FY 2017. Lommen Bridge replacement will be completed in November 2017 (FY 2018). Six bridges are being redesigned for replacement, and three bridges were repaired. East Beaver Creek Bridge is currently closed due to landslide with plans to remove it from the inventory and salvage its material.

In spite of the good progress toward meeting bridge needs, there is not enough staff or budget to perform all County bridge maintenance and repair on the non-National Bridge Inventory (NBI). This has reached a critical level of need.

Two bridge replacements in FY 2017 & FY 2018
Lommen Bridge
Wyss Bridge
Six bridges are being designed for replacement
Cedar Creek Bridge
S. Fork Trask River Bridge (MP 13)
Holgate Bridge
Whalen Island Bridge
Blankenship Road Bridge
Curl Bridge (engineering approved for design in 2020)
Three bridges were repaired
Curl Bridge
Atkinson Bridge
Tony Creek Bridge



Wyss Bridge reconstruction



Lommen Bridge - Dynamic isolation bearings minimize damage during earthquakes

The County's 5 levees are critical to managing flooding from frequent and intense weather events.

The County's five levees are in Minimally Acceptable condition



Levees are inspected by the Army Corp of Engineers (ACE) with the County's participation every 2 years. The Road Department also inspects levees before and after major storms. Levees are in Minimally Acceptable (Fair) condition. One-half mile of vegetation management was identified in 2016; no levee maintenance had occurred in the last two years, according to the 2016 inspection reports. A draft Emergency Action Plan was submitted to the ACE in FY 2017.

There is insufficient staff to inspect and replace County road guardrails. Almost half of the County's 10 miles of guardrail were assessed in Poor/Very Poor condition in 2007. Guardrails are replaced after crashes and as insurance reimbursement is collected, or as a part of bridge projects.

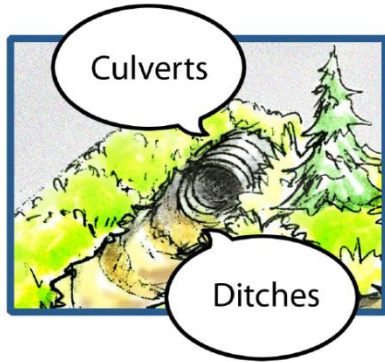
Structures Risks

- 1 Inability to keep pace with funding the *Strategic Bridge Plan* recommendations
- 2 Future bridge condition will deteriorate given available funds
- 3 Failures during natural disaster events may lead to restricted use of bridges and detours or community isolation
- 4 Restrictions on load/dimensions of use
- 5 Levee failure due to erosion, embankment failure which may cause flooding
- 6 Guardrail failure caused by poor design, landslide, vehicle impact, and storm damage

Risk Response

- 1 Develop a CIP linked to funding that implements the *Strategic Bridge Plan*
 - 2 Implement bridge, levee and guardrail standards
 - 3 Pursue federal and state money for bridges in Poor condition
 - 4 Prioritize bridge maintenance and repair on non-NBI bridges
 - 5 Inspect and post weight limits
 - 6 Manage life line routes
 - 7 Inspect levees, repair within budget capabilities
 - 8 Ensure levee Emergency Action Plans are accepted by ACE
 - 9 Adopt an O&M levee ownership manual
 - 10 Inspect levees before and after storm events
 - 11 Develop funding partnerships, and seek disaster relief funding
 - 12 Repair guardrails after crashes and try to collect insurance reimbursement
-

3.5 Drainage - Culverts



Performance Measure:
Percent of culverts in Poor or Critical condition

Drainage Management Strategy

As paving lists are developed, inspect and replace culverts prior to paving. Continue to seek funding partners to replace culverts with fish passage facilities in all watersheds of the County. Replace culverts that are a high risk to the safety of the community.

Manage surface storm water and flooding by maintaining vegetated ditches that serve as drainage facilities, maintain culverts in the condition necessary to handle their design capacity, and where culverts carry streams, maintain them in a condition to provide fish passage by performing

- culvert and catch basin cleaning
- culvert replacement as funding partners are identified
- ditching
- erosion control using best management practices with regard to steep slopes, drainage ways and permitted activities.

Service Level Target

Drainage management strategic objectives are to:

- provide and maintain adequate road drainage in order to prevent water damage to the roadway structure,
- protect the rights of adjoining property, and
- provide fish passage where mandated and as funding partners are identified.

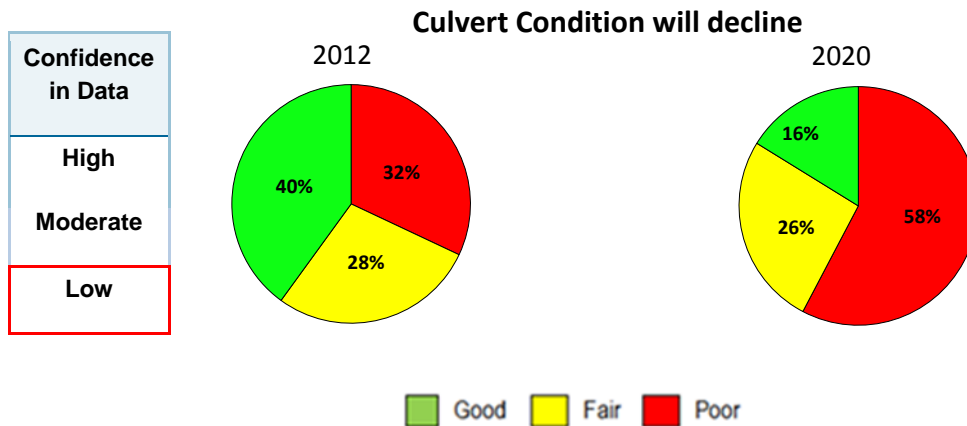
Current Service Level

In 2017, the County replaced 1,585 lineal feet of culverts in Poor condition, double the amount done in 2016. However, this represents 1% of the inventory. Ditching occurs on a reactive basis. 2,381 hours of ditching was performed in FY 2017, more than double the hours of ditching performed in 2016.

Current State

Drainage on county roads is critical given the wet environment and increasing frequency and severity of weather events. Drainage on county roads is rated an Extreme risk. One-third of the estimated 3,200 culverts are in Poor condition and 30% of ditches are in Poor condition. The December 2015 storm wreaked havoc on an already fragile drainage system. Twenty percent of 2017 service requests related to drainage of the roadway. The County is not able to adequately maintain and replace the 3,200 culverts or maintain the 195 miles of ditches. A partial (22%) culvert inventory and condition assessment in 2016 indicates that there are more culverts, the replacement cost is significantly greater, and culvert condition is worse than earlier estimates. The decline of TCPW employees has resulted in the elimination of a comprehensive ditching program for county roads. Ditches will be inventoried and their condition inspected in 2018 as a part of the pavement inspection contract.

It is estimated that by 2020 two-thirds of all culverts will be in poor condition.



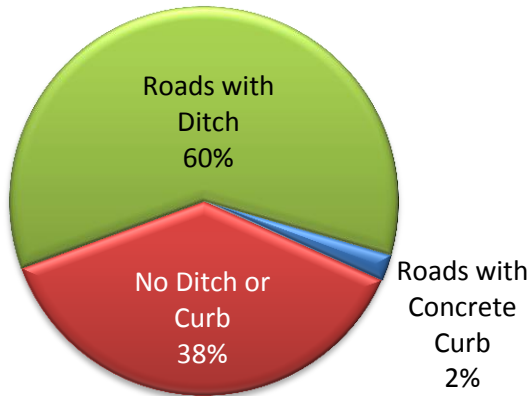
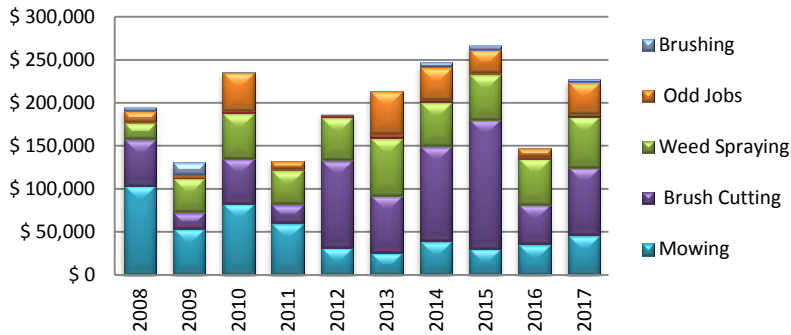
In 2017 culverts were replaced as needed along roads that were repaved, as culverts failed, and as funding partnerships were found. Twenty culverts were inspected on Sand Lake Road in 2017. Culverts are being designed for replacement on Harborview Drive, Washington and Grayling Roads, Island and Harbor Roads, and Bayocean Road MP 2, or were replaced by Kilchis Road (Mapes Creek) Bridge design .



20 Sandlake Road culverts were inspected in 2017

More brush cutting and mowing took place in 2017, however needs are not being met. There are too few employees to meet all needs. 5% of all complaints are about brush and mowing needs. Jail crews do some brushing and mowing; this is paid from the Road budget.

2017 Vegetation Management expenditures are up 54%



The County still lacks staff to have an active ditch cleaning program and continues to repair ditches in a reactive mode.

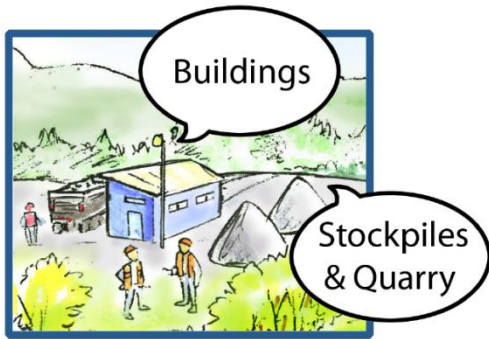


Drainage Risks

- 1 Outdated inventory & condition assessment
- 2 Lack of mapped culverts
- 3 Roads inundated by plugged or deteriorated culverts
- 4 Inappropriately sized outfalls, beavers, undersized culverts, stormwater and salt water
- 5 Inadequate staffing to manage vegetation
- 6 Changing environmental regulations
- 7 Ecological impacts
- 8 Failure due to age
- 9 Poor construction techniques
- 10 Heavy vehicle loads
- 11 Inadequate funding to address critical culvert replacement
- 12 No active ditching program

Risk Response

- 1 Replace culverts prior to paving
- 2 Seek additional funding and partner with other agencies on high priority fish passage culvert replacements
- 3 Inspect additional portions of culvert inventory each year
- 4 Re-inventory & inspect condition of ditches in 2018 as a part of the pavement inspection contract
- 5 Perform vegetation mowing and brush cutting as funding allows
- 6 Identify equipment that improves ditching efficiency
- 7 Report to Board on program costs & needs



3.6 Buildings

Building Performance Measure:
Percent of buildings in Poor or Critical condition

Building Management Strategy

Maintain and inspect Road Department facilities to ensure they function safely and efficiently, maximize the life of the structures and reduce the risk of building failure. Provide preventative, repair and upgrade work required for the upkeep and improvement of buildings and their components. Report on the number, quality and location of TCPW buildings that support employees and the storage of materials and equipment used to deliver County road services.

Target Service Level To be developed.

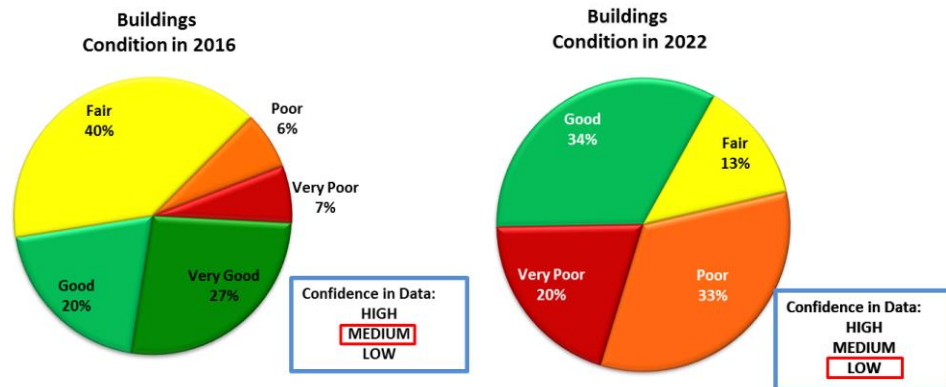
Current Service Level

In spite of some repairs, the investment in some buildings is being lost. The Main Office siding and windows were replaced and the building painted in 2017. Buildings are inspected quarterly for safety code violations.

Building condition will decline by 2022

Current State

Road Department buildings and quarries are a Moderate risk.



There are 15 buildings. Two buildings (13%) are in Poor condition. By 2022, an estimated 50% will be in Poor condition.



The Oregon Department of Geology and Mineral Industries (DOGAMI) identified permit criteria related to quarry development in 2016. The permit was modified in 2017. A survey map now delineates the annual boundary where quarrying occurs. Field markings ensure that areas outside of the permit boundary are not disturbed. The County is now in compliance.



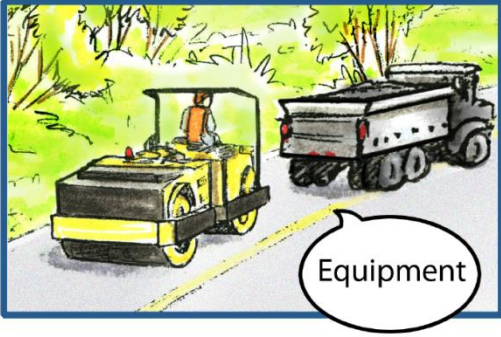
Quarry development at Clear Creek and Nehalem

Building and Quarry Risks

- 1 Buildings functionality is inadequate
- 2 Many buildings are in poor condition
- 3 Inadequate crushed rock

Risk Response

- 1 Address critical facility repair needs identified in the 2012 inspection
- 2 Conduct annual building inspection for OSHA health and safety code compliance
- 3 Communicate the need for additional resources to address overall Road Department facility needs
- 4 Maintain quarries and provide high quality and efficiently organized quarry materials for County road jobs
- 5 Maintain DOGAMI Permit criteria



3.7 Vehicles & Equipment

Performance Measure:

Percent of vehicles with less than 50% useful life remaining

Vehicles and Equipment Management Strategy

Ensure availability and reliability of vehicles and equipment for road crews by providing timely maintenance and repairs. Replace critical equipment and vehicles to manage fleet at lowest lifecycle cost as funds are available.

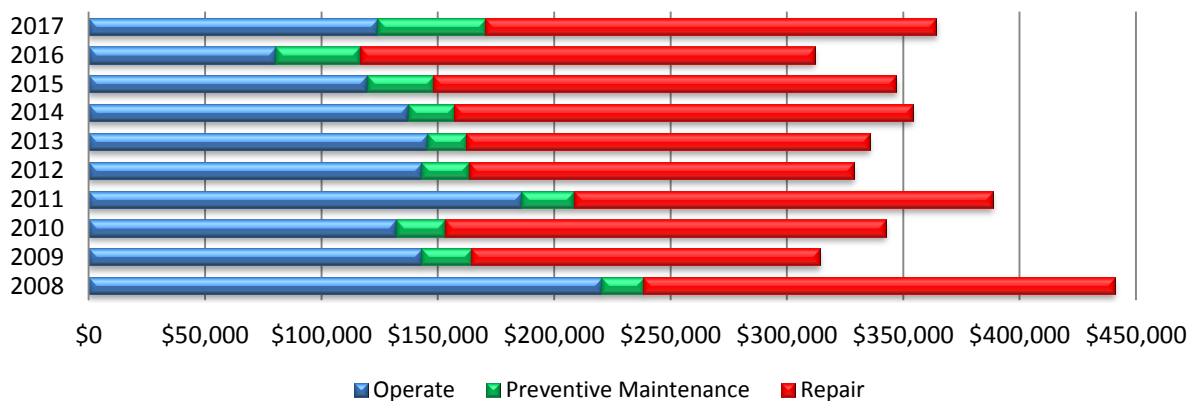
Target Service Level

Vehicles have 50% or greater remaining useful life. Perform preventive maintenance (Level A & B) on 100% of the fleet.

Current Service Level

Equipment management is a Moderate risk. The Road Department staffing levels are inadequate; the Shop Foreman and crew are assigned to field work during the paving season. In Fiscal 2017, 54% percent of the County fleet received Level A preventive maintenance. Half (52%) of all Shop expenses are for vehicle repair.

Ten-Year Equipment Costs 2008-2017
Half was spent on repairs in 2017



The Shop Foreman manages equipment purchasing strategically. Equipment purchases and replacements target surplus equipment sales by other government agencies, take advantage of additional discounts on purchases made on certain days, and dispose of equipment that has long-term maintenance needs. These tactics of buying used vehicles and targeting equipment purchases that increase work efficiency and effectiveness while reducing the number of high maintenance vehicles keep equipment management costs low.



Thirteen pieces of worn out equipment and vehicles were sold at auction in 2017

Risks

- 1 54% of the County fleet received Level A preventive maintenance. There is an inadequate staffing level; the Shop Foreman and crew are primarily assigned to field work in the summer
- 2 Nearly 75% exceed the County's adopted useful life for vehicles.
- 3 52% of all Shop expenses are for vehicle repair
- 4 Some vehicle parts are not available and must be made in house
- 5 Equipment reliability and safety is an increasing concern
- 6 Equipment may not be appropriate for all job requirements

Risk Response

- 1 Continue tracking time and hours of performance & maintenance cost per vehicle
 - 2 Target critical pieces of equipment for replacement
 - 3 Procure used vehicles and equipment that increases work efficiency and effectiveness
 - 4 Auction vehicles not in use or with high maintenance costs
 - 5 Report to the Board on need
-

4. Status of Management Practices & Improvement Plan

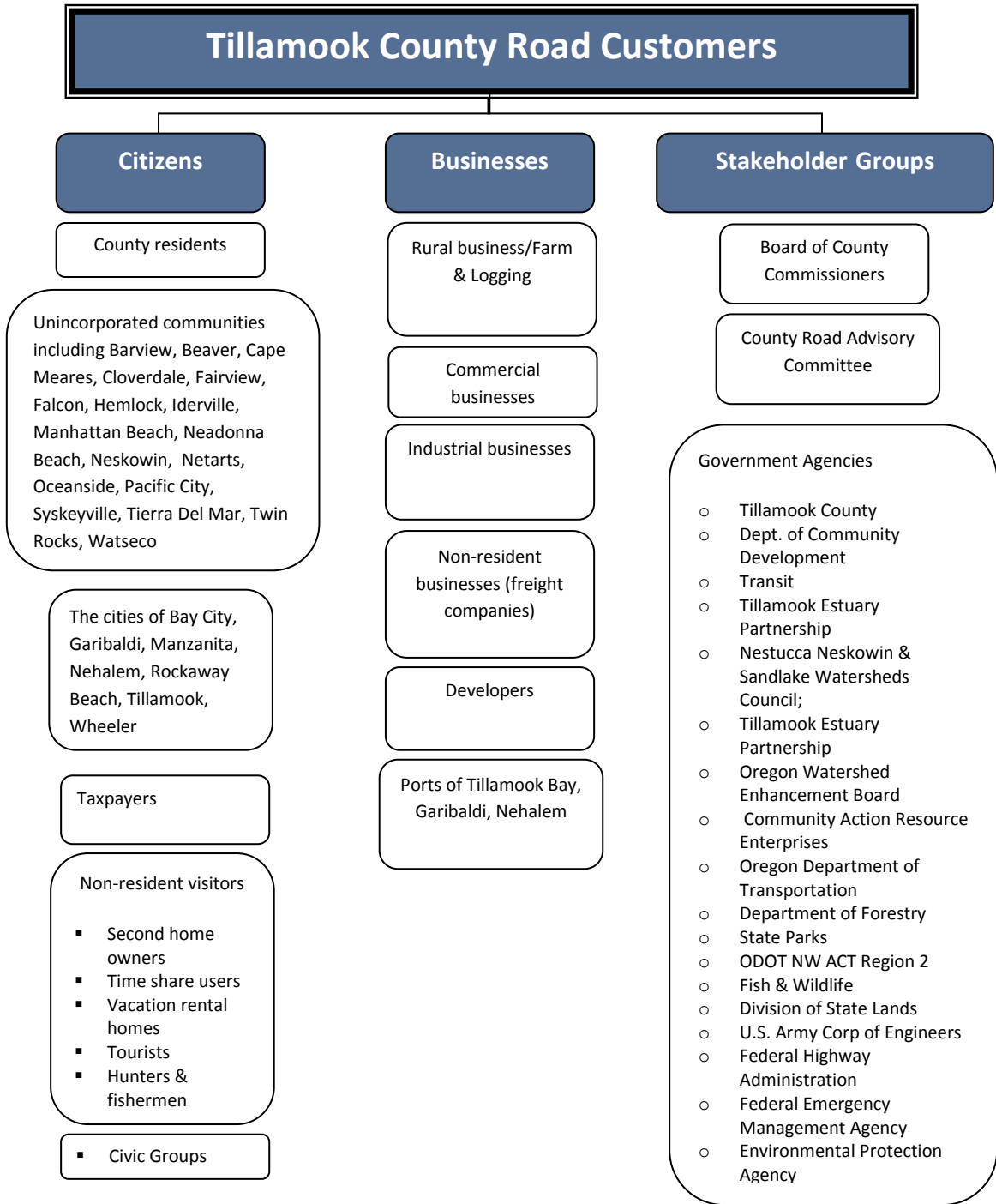
Practice Area	Desired Outcome
<p>1. Long Term Strategic Plan</p> <p>The County has a draft Transportation System Plan (1999) however there is no County-wide strategic plan for all services. This risks that transportation services may not be supported by other competing County services. Support development of Countywide Strategic Plan that includes transportation services.</p>	<p>Board & community clearly define County transportation service level goals and objectives in context of all County services following engagement of service level tradeoffs and impacts.</p>
<p>2. Long Term Financial Plan</p> <p>The County does not have a long term financial plan that achieves County transportation service level targets. A long range financial plan is needed that links service level targets to current services and reports performance.</p>	<p>Adequate long term funding to achieve strategic objectives.</p>
<p>3. Annual Budget</p> <p>Transportation annual budgets are primarily developed based on available revenue, not based on achieving strategic objectives. Develop an annual budget linked to a 5 to 10-year view of transportation asset operation and maintenance, renewal, replacement and expansion.</p>	<p>Link annual budget process, transportation asset register and long term County-wide financial planning.</p>
<p>4. Annual Report</p> <p>The risks of failing transportation assets have been described in the annual County budget process via the Asset Plan since 2009. The County Treasurer audits the annual budget which meets State statutory requirements; however it does not link to a long term financial plan. Develop an Asset Plan that addresses 5 to 10-year service level requirements for road network assets.</p>	<p>Long term scenarios identify future performance and cost risk impacts for transportation services as part of the annual budgets discussions.</p>

Practice Area	Desired Outcome
<p>5. Asset Management Policy</p> <p>An asset management policy was adopted by the Board in 2009 and reviewed by the County Board of Commissioners in 2016 when Board membership changed.</p> <p>Review, revise and adopt the policy at the Board level, or as Board members change.</p>	<p>Board acts as steward of County road network based on principles of lifecycle asset management and sustainable long range financial planning with annual, transparent and accountable community engagement.</p>
<p>6. Risk Management Strategy</p> <p>The Department has a management strategy that documents asset management practices linked to an adopted asset management policy. Cost-benefit analysis is performed for pavements (even years), bridges (2014) and prioritizes culvert renewal and replacement projects.</p> <p>Link strategy, service plans and long term financial planning.</p>	<p>Risk management strategy drives asset management planning and service delivery using cost-benefit analysis to achieve strategic long term plan.</p>
<p>7. Service Levels and Costs</p> <p>Recent additional transportation funding – new State funding (2017), bond levy and transient tax (2013) – conveys a sense that County transportation “problems” are solved. Continue to communicate future impacts of various funding scenarios on future asset condition. Tie service levels to managing risks, costs and performance.</p> <p>Conduct community survey to more clearly understand desired level of transportation services.</p>	<p>The Department, Board and the community are engaged as changes to service levels, priorities and costs from budget decisions are considered.</p>

Practice Area	Desired Outcome
<p>8. Asset Management Practices</p> <p>The source of data collection, asset maintenance and inspection standards are documented in the Asset Management report. Staffing levels limit the ability to perform timely maintenance (e.g., ditching, bridge, equipment, ditching, culvert and levee maintenance). The Department has outstanding engagement with the Board, County Road Advisory Committee and community. The budget is audited annually. Asset Management report documents service levels changes, including the risks, costs and performance road network assets. FEMA audits Department cost accounting as part of federal funding support.</p> <p>Implement a ditching program. Purchase equipment that increases ditching efficiency. Resolve the actual mileage of paved and gravel roads, and assess ditch condition as a part of the pavement inspection contract in 2018. Address deferred levee maintenance identified in ACE inspection reports. Adopt "levee owner's manual" that identifies levee O&M and customize it for the features specific to County levees as described in ASC inspection reports. Develop a 3-5 year list of rehab and replacement projects (CIP).</p>	<p>Asset management governance structure and accountabilities are clear and verified.</p>
<p>9. Data and Systems</p> <p>The Integrated Road Information System (IRIS) is funded, supported and training provided by the Association of Oregon Counties. Asset registers, Cost Accounting System (CAS), equipment management modules are used by the County. Annual Asset Plan compares road network performance compared to State performance measures for pavement and bridges (over 66% of asset value). Asset hierarchy exists for all assets and is correlated to road hierarchy and AM strategy. Work orders are paper-based and not generated by IRIS; although after the fact changes in inventory are made in IRIS's asset register. Unit rates are reviewed annually for assets' Current Replacement Cost calculations based on CAS and capital project cost tracking. There is no GIS.</p> <p>Investigate adding GIS; discuss with AOC and Marion County. Compare levels of service with adjoining counties. Ensure unit costs are updated annually for each asset and activity. Meet with Treasurer to ensure there is a tie between the transportation asset register and annual CAFR.</p>	<p>County has ties between financial, asset register and data management. Process and roles and responsibilities are tracked in the Asset Plan. Training occurs on regular basis.</p>

Practice Area	Desired Outcome
<p>10. Skills and Knowledge</p> <p>Asset data management responsibilities for inventory and condition assessment and frequencies are documented in the Asset Management Plan. Staffing levels, turnover and impending retirements challenge the future knowledge, skills and abilities of the Department to maintain existing asset management practices.</p> <p>Develop a succession plan. Target mission critical roles and responsibilities. Increase cross training for skills and knowledge, including IRIS data management. Improve work order and cost accounting employee training to improve data accuracy.</p>	<p>There is good knowledge, skills and ability to track and manage assets.</p>
<p>11. Process for Continuous Improvement against AM Framework</p> <p>Department leadership has changed. Update the assessment of Road Department maturity of asset management practices in 2018 including policy goals and objectives; asset management practices; planning, programming and project delivery; data management; information systems; transparency and outreach; results; and workforce capacity and development. Report results in FY 2018 AMP. Include 3-year work plan that improves core Asset Management maturity. Once an improvement plan is in place, consider producing Asset Management Plan and supporting PowerPoint and brochure every other year.</p>	<p>Continuous improvement for Department financial and asset management capacity.</p>

Appendix A – Road Department Stakeholders



Appendix B Road Needs & Assets in Poor or Critical Condition

Table B-1 Summary of Pavement Needs²

	2017	2018	2019	2020	2021	Total
PCI with treatment	79	79	81	84	84	--
PCI no treatment	54	51	48	45	42	--
Budget Needs Total	\$38,395,557	\$8,556,142	\$7,526,640	\$10,844,338	\$3,140,339	\$68,463,016
Rehabilitation Portion	\$37,051,040	\$8,556,122	\$7,516,826	\$10,692,436	\$3,035,974	\$66,852,398
Preventative Maintenance Portion	\$1,344,516	\$19	\$9,813	\$151,901	\$104,364	\$1,610,613

Table B-2 Summary of Bridge Needs³

Bridge Work	Cost
Preservation Maintenance	\$1,860,000
Cyclic Maintenance	335,000
Rehabilitation	250,000
Replacement	33,400,000
Total	\$35,845,000

² Source: *Pavement Management Program Budget Options Report*, Capitol Asset & Pavement Services October 2016

³ Source: *Strategic Bridge Program Plan*, Obec, May 2014 (updated Nov 2014)

Table B-3 Order of Precedence for Bridge Replacement over 10 Years⁴

ORDER OF PRECEDENCE	BRIDGE NAME	SR	NBI YES/NO	EST. OF TOTAL COST	COUNTY SHARE OF COST
1	Yellow Fir	49.50	No	\$510K	\$510K
2	Moss Creek	36.30	No	\$330K	\$330K
3	Miami River Road	53.60	No	\$500K	\$500K
4	Fagan Creek	48.50	No	\$460K	\$460K
5	Freeman Slough	46.80	No	\$500K	\$500K
6	Kilchis River	52.80	Yes	\$2.4 Million	\$250K
7	Dougherty Slough	45.70	Yes	\$1.5 Million	\$160K
8	Foley Creek	62.80	Yes	\$1.6 Million	\$170K
9	Learned Road	46.10	Yes	\$2.2 Million	\$230K
10	Three Rivers	18.40	Yes	\$630K	\$70K
11	Hall Slough	58.50	Yes	\$2.3 Million	\$240K
12	Tony Creek	52.50	No	\$330K	\$330K
13	Barber Road	59.10	No	\$440K	\$440K
14	Miami River	40	Yes	\$3.2 Million	\$330K
			TOTAL	\$16.9 Million	\$4.5 Million

⁴ Source: *Strategic Bridge Program Plan*, Obec, May 2014 (updated Nov 2014)

Table B-4 Bridges in Poor and Very Poor Condition as of June 2017

Bridge Name	Sufficiency Rating	Last Inspection Date	Status
LOMMEN	12.5	6/5/2017	Replaced in FY 2018
CEDAR CREEK	13.6	10/7/2016	In design
WHALEN ISLAND	16.8	6/21/2017	In design
HOLGATE	16.8	6/22/2017	In design
BIG TROUT	20.9	6/19/2017	
PRINCE	29.4	6/6/2017	
ATKINSON	32.6	6/22/2017	Repaired
MAKINSTER	34.9	6/20/2017	
FAGAN	34.9	6/21/2017	
MOSS CREEK	36.3	6/20/2017	
KEESLING	37	6/8/2017	
TONY CREEK	42.3	6/22/2017	Repaired
LAGLER (aka BARBER)	42.4	6/21/2017	
WALDRON	45.4	6/20/2017	
HUSHBECK	46.1	6/19/2017	
YELLOW FIR	47.2	6/21/2017	
CURL	49.5	6/20/2017	Repaired in 2017 & engineering approved for design in 2020

Source: Integrated Road Information System; 170907 email from Jeanette Steinbach, Administration Specialist

Table B-5 Failing Culverts in 2017⁵

Known Failing Culverts	Estimated Cost	Status
Hobsonville Road	\$150,000	
Miami River Road MP 7.6 - Dry creek	\$800,000	FHWA project
Miami River Road MP 8.8 - Crystal Creek	\$800,000	FHWA project
Bay Ocean Road MP 2 - Dick Creek	\$500,000	FHWA project
Trask River Road (fish passage)	\$500,000	
Sandlake Road-Jewel Creek	\$700,000	Potential funding
Sandlake Road – Reneke Creek	\$500,000	Potential funding
Cape Lookout Road	\$100,000	
Miami River Road	\$300,000	
North Fork Road (fish passage)	\$500,000	Potential funding
Total	\$4,850,000	

*This is a small sample of the estimated 960 culverts in Poor condition.

⁵ Source: Integrated Road Information System, *Drainage Asset Management Plan*, 2012. Confirmed & updated by Jeanette Steinbach, Road Department Administrative Specialist 171020 email.

Table B-6 Equipment in Poor Condition⁶

Vehicle No.	Year	Vehicle Type	Why Failing	Replacement Cost
548	1968	Small paver	Too small/no available parts/misc. problems	\$ 175,000
603	1988	Grader	1988 Engine problems/parts/high hours 13,000	\$ 150,000
166	1986	1 ton pick up	Parts/high miles/too small/old dump beds	\$ 40,000
167	1987	1 ton pick up	Parts/high miles/too small/old dump beds	\$ 40,000
168	1988	1 ton pick up	Parts/high miles/too small/old dump beds	\$ 40,000
147	1981	Lowboy truck	At max for haul capacity/parts/reliability	\$ 75,000
123	1991	Dump truck	Engine, suspension, dump bed parts, high miles	\$150,000
TOTAL				\$670,000

Table B-7 Tide Gates in Poor Condition⁷

Tidegates in Poor Condition

ROAD NAME	ROAD #	MP	SIZE	CONDITION
Burton Fraser	748	0.465	12"	Very Poor
Burton Fraser	748	1.495	36"	Very Poor

⁶ Source: Integrated Road Information System; Chris Loffelmacher, Shop Foreman 171116

⁷ Source: Tillamook County Road Drainage and Culvert Asset Management Plan, 2012.

Appendix C – Data Management Frequency, Standards & Responsibility

Table C-1 Data Management

Asset Class	Inventory?	Documented Condition?	Documented inspection process?	Inspection schedule?	If yes, frequency?
Roads	Yes IRIS-SS and MTC Street Saver Program ⁸	Yes	Yes	Yes	Every 2 years
Bridges	Yes PONTIS & IRIS	Yes	Yes	Yes	Every 2 years
Traffic Signs -reflectivity	Yes IRIS-RI	Partial IRIS-RI	Yes	Yes	Ongoing nighttime inspection
Traffic Signs -maintenance	-	Yes IRIS-RI	Yes Report	No	As resources allow
Guardrail	Yes IRIS-RI	Yes	Yes	No ⁹	-
Culverts	Yes (partial) IRIS-RI ¹⁰	Yes (2006)	No	No	-
Ditches	Yes IRIS-RI (2008) No ¹¹	Yes N/A	Yes N/A	No N/A	As resources allow; update planned in 2018 N/A
Pavement Markings					
Levees	Yes IRIS-RI (2009)	Yes	No	Yes	Every other year and before and after storms
Maintenance Yards	No	No	No	No	-
Vehicles & Equipment	Yes IRIS-EM	Per preventive maintenance	Yes ¹²	Yes	Continuous

⁸ Pavement Management Program Budget Options Report, Capitol Asset Pavement Services, October 2016. The Metropolitan Transportation Commission (MTC) Streetsaver Pavement Management Program (PMP) .

⁹ Guardrail condition is based on an inspection completed in spring 2007.

¹⁰ Drainage Asset Management Plan 2012; and additional 20% of inventory inspected in 2016; 20 culverts on Sandlake Road were inspected in 2017.

¹¹ Pavement markings are repainted by contractor (Marion County) one time a year with oil-based paint. An Excel spreadsheet notes the materials used, length of line and type to calculate materials.

¹² The Equipment Management module in IRIS tracks preventive maintenance performed by vehicle.

Asset Class	Inventory?	Documented Condition?	Documented inspection process?	Inspection schedule?	If yes, frequency?
Quarry sites	No	Yes ¹³	No	No	No
Vegetation Mgmt.	-	No	Yes	Yes ¹⁴	Annually

¹³ Cost Proposal for Mining Plan Consultation Clear Creek Quarry and Nehalem Quarry Tillamook County, Oregon, September 2015.

¹⁴ Vegetation management is performed routinely and spray reports comply with regulations.

Table C-2 Condition Assessment Method

Asset Type	Inspection Method	Source of Management Standard	Condition - Technical Scale & Qualitative Categories		Frequency	Performed by
Road – Paved	Visual inspection	Metropolitan Transportation Commission (MTC) Method	0-100	Good 70-100 Fair 50-69 Poor 25-49, Very Poor <25	Every other year	Contract Inspection
Road – Unpaved	Complaint-driven	N/A	N/A	N/A	Per complaint	Foremen
Bridges	Visual inspection	National Bridge Inspection Standards (NBIS)	0-100	Good >80 Fair 51 - 80 Poor 30-50 Critical <30	Every other year	Contract inspection
Guardrail	Visual inspection	Oregon Standardized Drawings	1-5	Very Good 1 Good 2 Fair 3 Poor 4 Very Poor 5	No established cycle	TBD
Levees	Visual inspection	US Army Corp of Engineers (USACE) and Tillamook County Road Department	A, MA, U	Acceptable, Minimally Acceptable, Unacceptable	Annually	Engineering Staff
Signs, Delineators & Posts	Visual inspection	Manual on Uniform traffic Control Devices (MUTCD)	1-4	Very Good 1, Good 2, Fair 3, Poor 4, Very Poor 5	Ongoing nighttime visibility ratings	TBD
Culvert	Visual	The U.S. Federal Highway Administration and Oregon Department of Transportation	1-5	Very Good 1, Good 2, Fair 3, Poor 4, Very Poor 5	TBD	TBD
Ditches	Visual	Industry Standard	1-5	Very Good 1, Good 2, Fair 3, Poor 4, Very Poor 5	TBD	Contract inspection, as resources allow

Asset Type	Inspection Method	Source of Management Standard	Condition - Technical Scale & Qualitative Categories		Frequency	Performed by
Vegetation Management	N/A	Industry Standard	N/A	N/A	Annually	Vegetation Management Technician
Equipment	Hours or Miles of Service	IRIS Equipment policies	Per Vehicle	Per Vehicle	Ongoing	Shop Supervisor
Maintenance Yards	Visual	OSHA, fire Mechanical/Electrical/Structural	TBD	TBD	Annually TBD	Foremen

Table C-3 Data Maintenance Responsibilities

Asset /Activity	Source of Data	Lead Staff Contact
Service Requests	- IRIS	Office
Road		
- Pavement inspection	- Street Saver/contract services	Director
- Road inventory	- Street Saver/IRIS	Engineering/Office
- Local gravel condition	- Service requests	Foremen
Structures		
- Bridges inventory, inspection & post weight limits	- Contract services /PONTIS/IRIS	Engineering & Signs
- Guardrails inspection & inventory management	- IRIS	Engineering
- Levees inventory & inspection management	- Inspection reports	Engineering
Drainage		
- Culvert inventory & condition assessment	- IRIS	Engineering/Office
- Ditches inventory & condition assessment	- Contract Management	Engineering/Office Engineering
Traffic Safety		
- Signs	- IRIS	Office
- Signs-delineators	- IRIS	Office
- Posts	- IRIS	Office
- Painted pavement markings	- Contract & spreadsheet	Office
Vegetation Management		
- Mowing by lane, percent miles cleared of debris	- N/A**	Foremen/Office
- Herbicide by acres sprayed	- IRIS	Foremen/ Office
Emergency Management		
- Storm response hours	- IRIS – CAS	Foremen/Office
- Hours spent plowing and sanding	- IRIS – CAS	Foremen/Office
- Slides response	- IRIS - CAS	Foremen/Office
- Culverts	- TBD	
Support Services/ Facilities		
- Equipment management	- IRIS	Shop Foreman
- Facilities management	- Excel	Contract/Admin. Speclst.
- Materials Management	- IRIS	Office
- Cost accounting/Budget development	- IRIS	Office

Appendix D Asset Management Policy (Board Order 09-054)

BOOK 111 PAGE 396 ✓
COUNTY COURT JOURNAL

THE BOARD OF COUNTY COMMISSIONERS
FOR THE COUNTY OF TILLAMOOK IN THE STATE OF OREGON

In the Matter of a Tillamook) ORDER
County Public Works Asset)
Management Policy) #09-054

FILED
JUL 11 2009
TASSI O'NEIL
COUNTY CLERK

This matter came on to be heard this 1st day of July 2009, at a regular meeting of the Board of Commissioners, at the request of Liane Welch, Tillamook County Public Works Director.

Being fully apprized of the records and files therein, the Board of Commissioners finds as follows:

1. Tillamook County's road network is the county government's most valuable physical asset. In 2008, the replacement value of the 374 miles of county roads was estimated at \$304 million. The County transportation network has been under funded for years and the condition of county roads is declining.
2. The Tillamook County Board of Commissioners, concerned about the declining condition of county roads and bridges, authorized the Road Department to document the condition and value of County road assets, and identify the risks that must be managed in the County. This approach, known as asset management, helps target available road dollars so that the greatest risks are managed for the least cost.
3. The purpose of the Asset Management policy is to set guidelines for implementing consistent asset management processes throughout Tillamook County Public Works Department.
4. The Road Advisory Committee at their May 5, 2009 meeting accepted the Asset Management report.

NOW THEREFORE, IT IS HEREBY ORDERED THAT:

5. The Tillamook County Asset Management Policy, Exhibit A attached and incorporated here by reference, be and hereby is adopted.
6. This order is to become effective immediately.

DATED THIS 1st DAY OF July 2009.

BOARD OF COUNTY COMMISSIONERS
FOR TILLAMOOK COUNTY, OREGON

	Aye	Nay	Abstain/Absent
<u>Tim Josi</u> Tim Josi, Chair	✓		1
<u>Mark Lebhart</u> Mark Lebhart, Vice-Chair	✓		1
<u>Charles J. Hurliman</u> Charles J. Hurliman, Commissioner	✓		1

ATTEST: Tassi O'Neil
County Clerk

APPROVED AS TO FORM:

By Susan D. Beaufort
Special Deputy

William K. Gargent
William K. Gargent, County Counsel



EXHIBIT A

TILLAMOOK COUNTY PUBLIC WORKS

ASSET MANAGEMENT POLICY

1.0 Purpose To set guidelines for implementing consistent asset management processes throughout Tillamook County Public Works Department.

2.0 Objective To ensure adequate provision is made for the long-term replacement of major road assets as financial resources allow by:

- Ensuring that County services and infrastructure are provided in a sustainable manner, with the appropriate levels of service to residents, visitors and the environment.
- Safeguarding County road assets including physical assets and employees by implementing appropriate asset management strategies and appropriate financial resources for those assets.
- Creating an environment where all Public Works employees take an integral part in overall management of County road assets by creating and sustaining an asset management awareness throughout the County transportation system.
- Meeting legislative requirements for asset management and financial reporting.
- Ensuring resources and operational capabilities are identified and responsibility for asset management is allocated.
- Demonstrating transparent and responsible asset management processes that align with demonstrated best practice.

3.0 Scope This policy applies to all County public works activities.

4.0 Policy **4.1 Background**

4.1.1 The County Commission is committed to implementing a systematic asset management methodology in order to apply appropriate asset management best practices across all road management areas of the County. This includes ensuring that assets are planned, created, operated, maintained, renewed and disposed of in accordance with Commission priorities for service delivery.

4.1.2 The County owns and uses approximately \$304 million road assets to support its core business of delivering road service to the community.

4.1.3 Asset management practices impact directly on the core business of the county and appropriate asset management is required to achieve our strategic service delivery objectives.

4.1.4 Asset management relates directly to the Tillamook County

Transportation Strategic Plan goals and strategies:

- Protect the function, operation and safety of existing and planned roadways
- Consider land use impacts on existing or planned transportation facilities
- Coordinate with other jurisdictions to assure adequate connections to streets and transportation systems between incorporated and unincorporated areas
- The roadway network is not restricted to jurisdictional boundaries.
- Roadway maintenance and improvement are to be coordinated in cooperation with other jurisdictions.
- Road function, access and “level of service standards” are to be implemented through regulation.

4.1.5 A strategic approach to asset management will ensure that the County Commission delivers the highest appropriate level of service through its assets. This will provide positive impact on:

- Members of the public and staff;
- The ability of the County to deliver the expected level of service and infrastructure based on available resources;
- The political environment in which County Commission operates; and
- The legal liabilities of the County.

4.2 Principles

4.2.1 A consistent Asset Management Strategy must exist for implementing systematic asset management and appropriate asset management best-practice throughout the County’s road department.

4.2.2 All relevant legislative requirements together with political, social and economic environments are to be taken into account in asset management.

4.2.3 Asset management principles will be integrated within existing planning and operational processes.

4.2.4 An inspection regime will be used as part of asset management to ensure agreed service levels are maintained and to identify asset renewal priorities, as funding allows.

- 4.2.5 Asset renewal plans will be prioritized and implemented progressively based on agreed service levels and the effectiveness of the current assets to provide that level of service.
- 4.2.6 Systematic and cyclic reviews will be applied to all asset classes and are to ensure that the assets are managed, valued and depreciated in accordance with appropriate best practice and applicable standards.
- 4.2.7 Future life cycle costs will be reported and considered in all decisions relating to new services and assets and upgrading of existing services and assets.
- 4.2.8 Future service levels will be determined in consultation with the community.

5.0 Standard Government Accounting Standards Board (GASB) Statement 34

6.0 Related Documents Tillamook County Road Asset Management Plan and Road Risk Management Plan.

Responsibility **County Commissioners** are responsible for adopting the policy and ensuring that sufficient resources are applied to manage the assets. The **Public Works Director** has overall responsibility for developing an asset management strategy, plans and procedures and reporting on the status and effectiveness of asset management within the County road network.

Review Date This policy has a life of 4 years. It will be reviewed in June 2013.