



2010 Pavement Condition Report

Accomplishments for 2010

The Tigard Public Works Department is responsible for the maintenance of 148 miles of paved streets. The maintenance strategy for each street varies depending on the use and character of that street.

Pavement projects completed in 2010 are summarized in the following table.

Project	Pavement Overlays	Slurry Seals
Length Completed	4.5 miles	12.5 miles
Funding Source	Street maintenance fee, American Recovery and Reinvestment Act (ARRA) Grant, and Community Development Block Grant	Street maintenance fee
Cost	\$1.64 million	\$330,000
Cost Per Mile	\$360,000	\$26,000
Street Type	Arterial, collector, commercial	Residential

A map, (Attachment A), and detailed list, (Attachment B), of the 2010 pavement projects are included in this report.

2010 was a very good year for Tigard's roadways. The average PCI of Tigard's city streets increased from 68.1 at the end of 2009 to 68.7 at the end of 2010. This was better than our projected PCI of 67.9. This improvement was primarily the result of three factors:

- 1) The American Recovery and Reinvestment Act (ARRA) provided \$1.1 million for pavement overlays in Tigard.
- 2) Successful completion of a large City-funded slurry seal project in southern and northwestern Tigard.
- 3) A competitive bidding climate, likely due to the poor economy, resulted in favorable pricing for the City's paving projects.

The Pavement Condition Index (PCI)

Pavement condition is measured by a Pavement Condition Index (PCI), with zero being the poorest condition and 100 being the best condition. PCI factors include pavement condition, pavement distress, structural strength, and rideability.

Previous Council Action and the Street Maintenance Fee

Pavement maintenance is funded through the City's street maintenance fee and various grants, if available. The street maintenance fee is a monthly user fee dedicated to the maintenance of existing roadways in Tigard. The fee was recommended by a citizen task force and established by Ordinance No. 03-10 in November 2003.

Since the fee was originally adopted, construction costs increased significantly, largely due to increases in the cost of asphalt, which is a petroleum product. The Council re-visited the street maintenance fee in 2009 and determined the fee was not generating enough revenue to realistically address the City's \$8.5 million road maintenance needs. In January 2010, the Council adopted:

- **Ordinance No. 10-01** which amended the Tigard Municipal Code (TMC). The ordinance directs that beginning July 1, 2010 the street maintenance fee will be increased in three phases, with subsequent phase-ins taking effect April 1, 2011 and January 1, 2012. The ordinance also directs that the fee be adjusted for inflation.
- **Resolution No. 10-01** which established a long-term average PCI goal of 70 to 75 and also established an interim goal to “hold the line” by maintaining an average PCI of 67.

A long-term average PCI of 75 would allow the City to get the most out of street maintenance revenues by strategically paving streets before the underlying road structure is compromised. When an overall PCI gets below 75, street maintenance life cycle costs begin to increase, because streets are in poorer condition and need some level of reconstruction before they can be paved. When Resolution 10-01 passed, the Council recognized that funding would not be adequate to get to a PCI of 75. The Council sought to prevent a decline in the PCI below 67. Beyond this point, streets require more extensive reconstruction prior to paving; this results in substantially higher street maintenance costs.

- **Resolution No. 10-02** which adjusted the street maintenance fee in the City's Master Fees and Charges Schedule.

Current street maintenance fees, as they appear in the City's 2010-2011 Master Fees and Charges Schedule, are as follows:

Effective Dates	Before 7/1/10	7/1/10 – 4/1/11	4/1/11 – 1/1/12	After 1/1/12
Residential (per house or unit)	\$2.18	\$3.01	\$4.13	\$5.25**
Commercial and Industrial (per required parking space)	\$0.78	\$0.92	\$1.06	\$1.19**

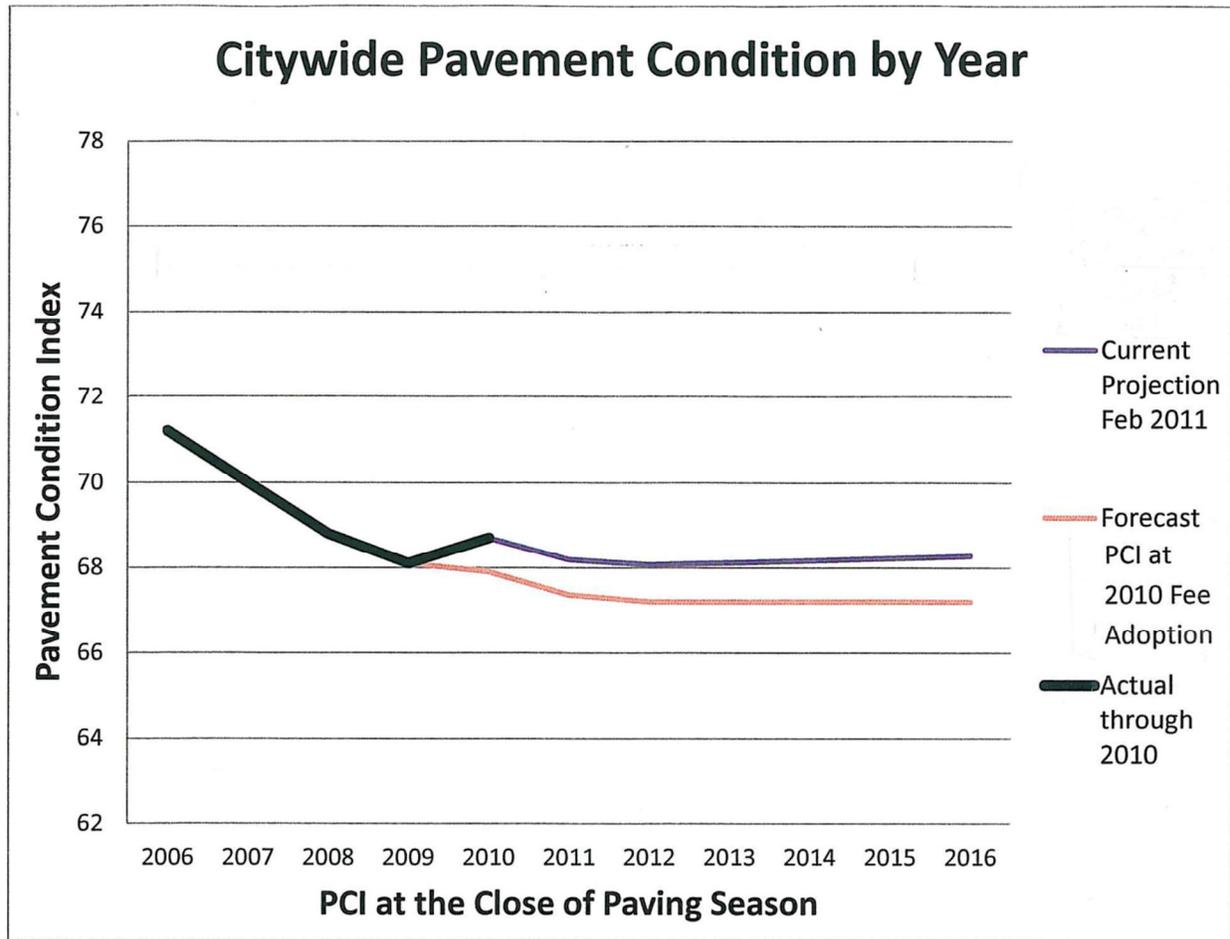
** Note: Fee amounts in later phases are to be adjusted for inflation based on the methodology adopted in Ordinance 10-01. An inflationary adjustment (not shown here) is included in the 2011-2012 Master Fees and Charges Schedule that was considered by the Council at its June 14, 2011 meeting.

Outlook for 2011 and Beyond

2011 is expected to be a more typical paving year, since there will be no ARRA funding. As the economy picks up, paving prices are likely to increase. Until January 2012, when the street maintenance fee will be fully phased-in, the revenue generated will not be sufficient to maintain the existing PCI of 68.7. The PCI of Tigard's city streets is expected to decrease from 68.7 to 68.2 at

the end of the 2011 paving season. There are still many roadways in poor condition that are not slated for repair.

The following chart depicts the actual and projected citywide Pavement Condition Index through 2016.



Long-term projections indicate the street maintenance fee, when fully phased-in, will allow the City to “hold the line” and maintain the average PCI at or above 67, as directed in Resolution No. 10-01. This is contingent upon asphalt prices remaining within the range of the fee’s inflationary adjustment.

It is anticipated that \$1.1 million in street maintenance fee revenue collected in fiscal year 2010-11 will be available for paving projects in the summer of 2011. Approximately \$300,000 is required to fund 10 miles of slurry seal applications. The remaining \$800,000 will be used to fund pavement overlays. We anticipate overlays on about two miles of streets in the summer of 2011.

A map, (Attachment C), and detailed list, (Attachment D), of the proposed 2011 pavement projects are included in this report. These attachments represent staff’s “best guess” for paving projects in the summer of 2011. Changes in asphalt prices and the construction bidding climate may have a significant impact on the amount of work the City will be able to fund. Streets may need to be

deleted from the pavement overlay list in order to keep the project within budget. On the other hand, streets could be added to the pavement overlay list if bids are lower than expected.

Finance Director’s Findings

The Finance Director has reviewed this report and future pavement maintenance funding requirements as identified in the Pavement Management Program (PMP). Data has not changed significantly from what the Council considered in 2010.

Actual revenue collections through the first eleven months of the fiscal year were analyzed and, after twelve months are collected, they will be sufficient to meet the annual funding level set from the street maintenance plan and the FY 2011-2012 Adopted Budget. Completion of the street maintenance fee phase-in, along with an inflationary adjustment(s), is expected to generate sufficient revenue to fund the PMP in the coming years. The 2011-2016 CIP PMP approved budget is as follows:

Fiscal Year	2012	2013	2014	2015	2016
PMP	\$1,115,400	1,390,400	1,690,400	1,690,400	1,690,400

Additionally, the split between customer types was analyzed to determine if costs were equitably split when compared to revenues collected. The allocation of the costs of the five-year plan is set in TMC 15.20.050 and is summarized as follows:

Road Type	Percentage of Residential Allocation	Percentage of Non-Residential Allocation
Arterial	62%	38%
Local Commercial/Industrial	0%	100%
Collector	50%	50%
Neighborhood/Local	100%	0%

It is important to realize the fee is based on a five-year plan and that there will be variance from one year to the next where one customer group may subsidize another in any given year; the important thing is that the program costs reflect the revenues collected by customer type over the five-year period. If they do not, the TMC instructs the Finance Director to make recommendations based on this review. The following table summarizes my findings:

Customer Class	Total PMP Expense Related to Street Maintenance Fee	Percentage of Total Expense per the TMC	Percentage of Revenue Collection	Share of Expenses Based on Revenue Collected	Variance
Residential	\$558,000	68%	62%	\$507,692	\$50,308
Non-Residential	\$260,000	32%	38%	\$310,308	(\$50,308)
Total	\$818,000			\$818,000	

Tigard incurred \$818,000 in FY 2011 in the PMP expenses related to the street maintenance fee. Based on the types of roads, (arterial, collector, etc.), that received pavement maintenance through

the PMP, \$558,000 (68 percent) of the PMP expenses should have been born by residential customers and \$260,000 (32 percent) of the PMP expenses should have been born by non-residential customers.

The actual revenues collected in the first 11 months have a slightly different split. Sixty-two percent of the revenues came from the residential sector and 38 percent of the revenues came from the non-residential sector. Based on the size of the PMP and the way revenues were collected, a more equitable split would have been for \$507,692 to come from the residential sector and for \$310,308 to come from the non-residential sector. During the last year, the non-residential sector subsidized the residential sector by \$50,308, or six percent of the total PMP. A six-percent variance, in the first year of a five-year plan, is relatively small and does not merit a recommendation to adjust the street maintenance fee at this time.

Pavement Maintenance Background

Residential Streets with Low Traffic Volumes

Residential streets with low traffic volumes tend to deteriorate due to weathering. As years of rain, sun, and freeze-thaw cycles wear the pavement from the top down, the sticky asphalt binder that holds the pavement together deteriorates. In a **slurry seal** application, a liquid mixture of asphalt emulsion and sand is applied to the roadway. The mixture hardens as it cools and counters the effects of weathering by restoring the asphalt binder near the pavement's surface.

Slurry seal applications cost about one-tenth as much as pavement overlays and are the most cost-effective way to extend the life of residential streets. The application is applied when a street is still in relatively good condition in order to maintain that condition for several more years. Slurry seal applications don't make streets look like new, but they do prevent further deterioration. Some streets have deteriorated to a condition that is too poor to slurry seal; these streets require pavement overlays and will be addressed as funding allows.

The City's slurry seal strategy is to work on an eight-year cycle by Neighborhood Network area, slurry sealing all of the streets in that area which have fair to good pavement condition and low traffic volumes. Slurry seal projects require extensive public notification because sections of the street are closed for several hours at a time. Consolidating slurry seal streets by Neighborhood Network area improves the efficiency of both the notification process and the slurry seal application.

In order to keep up with pavement deterioration on low volume residential streets, it is necessary to slurry seal about 11 miles of roadway each year.

Streets with High Traffic Volumes and Streets Used by Heavy Vehicles

Streets with high traffic volumes and streets used by heavy vehicles are also affected by weather, but tend to deteriorate more due to the volume and weight of vehicles using the street. Deterioration on these streets most commonly takes the form of cracking from the repeated loading of thousands of vehicles, especially heavy vehicles, each day. A **pavement overlay** consists of spreading a new layer (typically 2 inches thick) of asphaltic concrete pavement on top of the existing street pavement. This covers minor cracking and provides additional structure which extends the life of the roadway.

Overlays are typically constructed when a street is in fair condition. Once a street deteriorates to poor condition, cracking has developed to a level where it compromises the structure of the pavement and its ability to withstand future loading. At this point large-scale reconstruction is

necessary to remove and replace the cracked pavement and establish an adequate base. Such reconstruction often costs five times more than a pavement overlay.

The City's current pavement overlay strategy focuses on keeping arterials, collectors, and other key connection routes in good condition. When funding rises to a level adequate to protect our investment and keep these through streets in fair or better condition, the City will then be able to address some of the non-through streets with poor pavement condition that need more extensive repair work.

In order to keep up with pavement deterioration on streets with high traffic volumes, significant heavy vehicle use, or poor pavement condition, it is necessary to overlay about 3.5 miles of roadway each year.

Attachment A

2010 Paving Projects

-  Slurry Seal
-  Pavement Overlay
-  ARRA Pavement Overlay



DATA SOURCES:
City of Tigard
Metro
Washington County

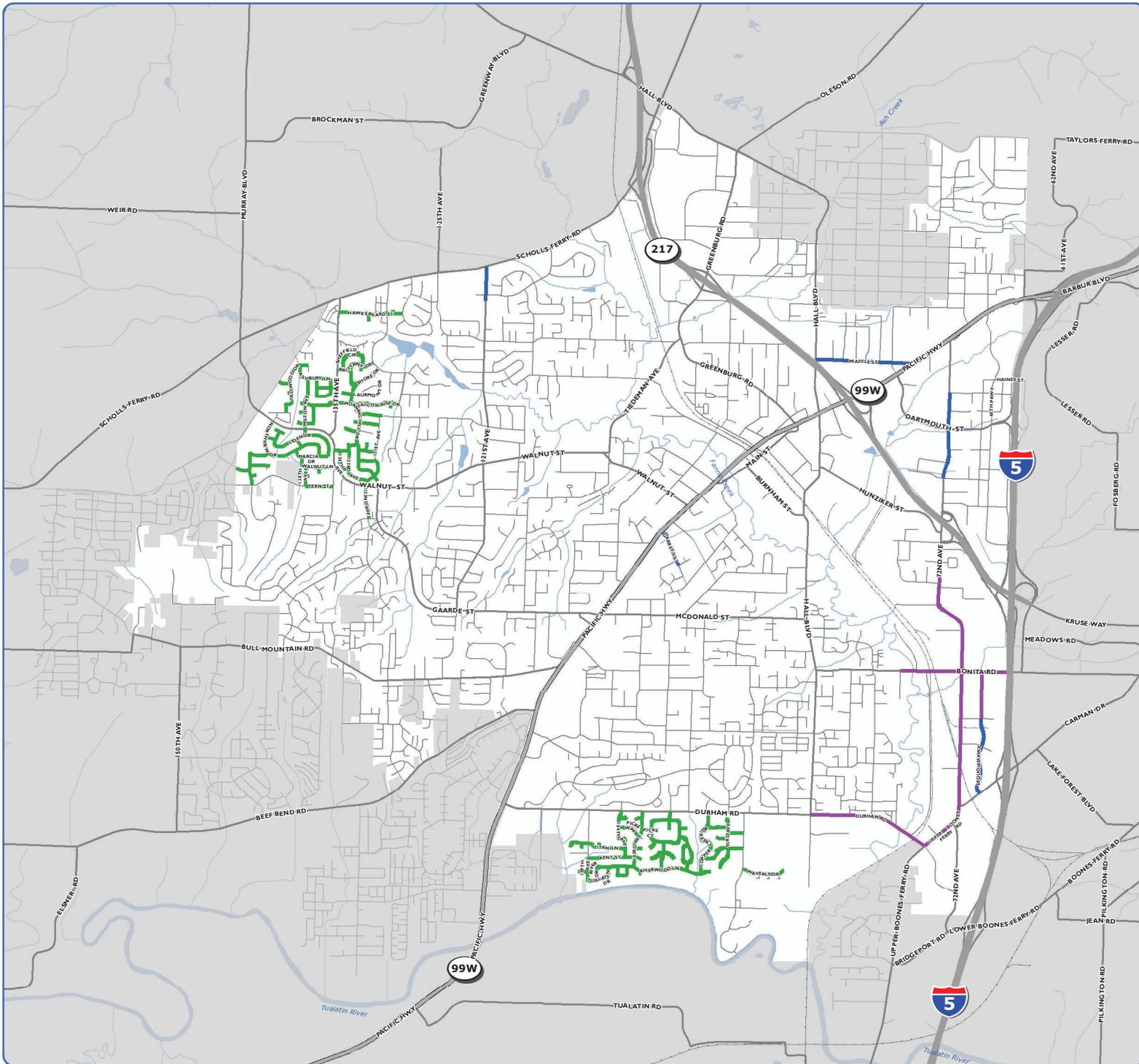
DISCLAIMER:
This map was derived from several databases. The City cannot accept responsibility for any errors. Therefore, there are no warranties for this product. However, any notification of errors is appreciated.

TIGARD MAPS



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THE LOCATION OF THIS PROJECT IS APPROXIMATE



Attachment B

Paving Projects Completed in 2010 - Pavement Overlays

2010 Overlay Street	From	To	Funding Source
72 nd Avenue	Beveland St	Baylor St	Street Maintenance Fee
72 nd Avenue	Upper Boones Ferry Rd	Fir St (Just South of 217)	American Recovery and Reinvestment Act (ARRA)
121 st Avenue	Springwood Drive	Scholls Ferry Rd	Street Maintenance Fee
Bonita Rd	76 th Ave	I-5 Overpass	American Recovery and Reinvestment Act (ARRA)
Durham Rd	Hall Blvd	Upper Boones Ferry Rd	American Recovery and Reinvestment Act (ARRA)
Garrett St	Pacific Hwy 99W	Ash Ave	Street Maintenance Fee and Community Development Block Grant
Pfaffle St	84 th Ave	Pacific Hwy 99W	Street Maintenance Fee
Sequoia Pkwy	Upper Boones Ferry Rd	Cardinal Ln	Street Maintenance Fee
Sequoia Pkwy	Cardinal Ln	Bonita Rd	American Recovery and Reinvestment Act (ARRA)
Upper Boones Ferry Rd	Durham Rd	72 nd Ave (Northern Intersection)	American Recovery and Reinvestment Act (ARRA)

Paving Projects Completed in 2010 – Slurry Seal Applications

2010 Slurry Sealed Street	From	To
<u>Picks Landing Area (Area # 9)</u>		
93rd Ave	Martha St	End of Street
93rd Ave	Millen Dr	Julia Pl
103rd Ave	Durham Rd	Riverwood Ln
104th Ave	Durham Rd	Kent St
107th Ct	Titan Ln	End of Street
108th Ave	Tualatin Dr	Kent St
109th Pl	Chateau Ln	End of Street
Bonanza Wy	Riverwood Ln	Riverwood Ln
Chateau Ln	108th Ave	End of Street
Cook Ct	Serena Wy	End of Street
Copper Creek Dr	Riverwood Ln	End of Street
Greenland Dr	Riverwood Ln	Serena Wy
Grimson Ct	Serena Wy	End of Street
Julia Pl	93rd Ave	End of Street

2010 Slurry Sealed Street	From	To
Kent Ct	103rd Ave	End of Street
Kent Ct	Greenland Dr	End of Street
Kent Pl	Greenland Dr	End of Street
Kent St	103rd Ave	108th Ave
Keri Ct	104th Ave	End of Street
Martha St	92nd Ave	Copper Creek Dr
Meadowood Wy	Woodcrest Ave	Woodcrest Ave
Millen Dr	92nd Ave	Copper Creek Dr
Picks Ct	Serena Ct	End of Street
Picks Ct	Serena Wy	103rd Ave
Picks Wy	104th Ave	End of Street
River Dr	Tualatin Dr	Tualatin Dr
Riverwood Ln	Tualatin Dr	End of Street
Riverwood Pl	Riverwood Ln	End of Street
Serena Ct	Durham Rd	Serena Wy
Serena Wy	Serena Ct	Serena Ct
Sylvan Ct	Serena Wy	End of Street
Titan Ln	104th Ave	108th Ave
Tualatin Dr	108th Ave	Riverwood Ln
Waverly Dr	92nd Ave	End of Street
Woodcrest Ave	Riverwood Ln	Serena Wy
<u>135th/Walnut/ Morning Hill (Area # 1)</u>		
131rd Pl	Hawksbeard St	End of Street
132nd Ave	Walnut St	Rockingham Dr
132nd Ct	Benish St	End of Street
133rd Ave	131st Ave	End of Street
133rd Ave	Sheffield Cir	End of Street
133rd Pl	Brittany Dr	End of Street
134th Ave	133rd Ave	Benish St
134th Pl	Sheffield Cir	End of Street
134th Terr	Shore Dr	Brittany Dr
136th Ct	Walnut Ln	End of Street
138th Ave	Walnut Ln	Fern St
139th Ave	138th Ave	Marcia Dr
140th Terr	Northview Dr	Liden Dr
Ashbury Ln	Feiring Ln	Tallwood Dr
Benish St	Walnut St	133rd Ave
Benish St	Morning Hill Dr	131st Ave
Bouneff St	Morning Hill Dr	131st Ave
Brittany Dr	135th Ave	Winterlake Dr

2010 Slurry Sealed Street	From	To
Cehalem Ct	End of Street	End of Street
Chimney Ridge Ct	Morning Hill Dr	End of Street
Chimney Ridge St	Morning Hill Dr	131st Ave
Crane Ct	Tallwood Dr	End of Street
Crist Ct	Wilton Ave	End of Street
Eschmen Wy	Winterlake Dr	Hawksbeard St
Falcon Rise Dr	Morning Hill Dr	128th Ave
Feiring Ln	135th Ave	Swendon Lp
Fern St	135th Ave	138th Ave
Hawksbeard St	135th Ave	Summerlake Dr
Horizon Blvd	Ascension Dr	City Limits
Huntington Ave	Hawksbeard St	End of Street
Katherine St	131st Ave	Morning Hill Dr
Laurmont Ct	Shore Dr	End of Street
Laurmont Dr	Shore Dr	End of Street
Liden Dr	Marcia Dr	Cehalem Ct
Marcia Dr	Northview Dr	Liden Dr
Morning Hill Ct	Morning Hill Dr	End of Street
Morning Hill Dr	131st Ave	End of Street
Northview Dr	Walnut St	Marcia Dr
Rosy Ct	138th Ave	End of Street
Scottsbridge Dr	Morning Hill Dr	End of Street
Sheffield Cir	Brittany Dr	Brittany Dr
Shore Dr	Morning Hill Dr	Winterlake Dr
Springbrook Ln	Tallwood Dr	Barrows Rd
Stardust Ln	Liden Dr	Northview Dr
Swendon Lp	Feiring Ln	Feiring Ln
Tallwood Dr	Ashbury Ln	Bluestem Ct
Tamera Ln	Laurmont Dr	Laurmont Dr
Toland St	133rd Ave	Morning Hill Dr
Walnut Ln	End of Street	139th Ave
Westbury Terr	Wilton Ave	Morning Hill Dr
Wilton Ave	Liden Dr	Ashbury Ln

Attachment D

Paving Projects Planned for 2011 - Pavement Overlays

Estimates indicate the City will have approximately \$800,000 to spend on pavement overlays in the 2011 paving season. We anticipate these revenues will be adequate to fund the overlays listed in Table 1. However, the actual cost of these overlays will be affected by the price of asphalt and the construction bidding climate. It is possible some streets will be deleted from the pavement overlay list in order to keep the project within budget. On the other hand, the streets in Table 2 could be added to the pavement overlay list if bids are lower than expected.

Table 1

2011 Overlay Street	From	To
North Dakota St	95th Ave	Greenburg Rd
98th Ave	Scott Ct	Greenburg Rd
Commercial St	Main St	Hall Blvd
Kable St	103rd Ave	100th Ave
Hoodview St	200' N of Kable St	Kable St
79 th Ave	Ashford Ln	Hansen Ln
Dartmouth St	69th Ave (End Concrete)	68th Pkwy
68th Pkwy	Dartmouth St	Haines St
Haines St	68th Pkwy	I-5 Bridge
66 th Ave.	Franklin St.	End near Dartmouth St.

Table 2

2011 Possible Overlay Street	From	To
McDonald St	104th Ave	97th Ave
97th Ave	Murdock St	McDonald St
O'Mara St	McDonald St	Frewing St
Scoffins St	Ash Ave	Hall Blvd
Park St	Watkins Ave	Pacific Hwy 99W
74 th Ave	Durham Rd	Bonita Rd

Paving Projects Planned for 2011 – Slurry Seal Applications

Estimates indicate the City will spend approximately \$300,000 on slurry seal applications in Neighborhood Network Area 3 (northern central Tigard) and Area 13 (west Tigard, on the northern side of Bull Mountain).

2011 Slurry Seal Street	From	To
<u>North Central Tigard (Area #3)</u>		
90 th Ave	Greenburg Rd	North Dakota St
91st Ave	Greenburg Rd	92nd Ave
91 st Ct	North Dakota St	End of Street
91st Ave	Greenburg Rd	92nd Ave

92nd Ave	Greenburg Rd	End of Street
93rd Ave	North Dakota St	End of Cul-De-Sac
94th Ave	Greenburg Rd	End of Street
94 th Ave	North Dakota St	End of Cul-De-Sac
95 th Ave	Greenburg Rd	200' North of North Dakota St
95 th Ave	Greenburg Rd	Commercial St
98th Ave	Commercial St	Scott Ct
106 th Pl	Walnut St	Tiedeman Ave
109th Ave	North Dakota St	Geneva St
110 th Pl	North Dakota St	Torland St
112th Ave	North Dakota St	Torland St
Brookside Ave	Johnson St	Walnut St
Clydesdale Ct	106 th Pl	End of Street
Clydesdale Pl	106 th Pl	End of Street
Commercial St	95 th Ave	98 th Ave
Cornell Pl	Tigard St	End of Cul-De-Sac
Gallo Ave	Tigard St	End of Street
Johnson St	Pacific Hwy 99W	End of Street
Johnson St	106 th Pl	End of Street
Lincoln Ave	Greenburg Rd	Commercial St
London Ct	98Th Ave	145' east of 98th Ave
Meadow St	Tiedman Ave	End of Street
North Dakota St	90Th Ave	95th Ave
Scott Ct	98Th Ave	End of Street
Tangela Ct	92nd Ave	End of Street
Tangela Ct	95th Ave	End of Street
Torland St	112TH Ave	110TH Pl
Twin Park Pl	Tigard St	End of Cul-De-Sac
Bull Mountain (Area #13)		
128 th Pl	Gaarde St	End of Street
129th Ave	Morningstar Dr	Gaarde St
130 Pl	Morningstar Dr	End of Street
132nd Ave	Greenfield Dr	Rockingham Dr
133rd Ave	Bull Mtn Rd	Mountain Ridge Ct
134th Ave	Mountain Ridge Ct	133rd Ave
135th Ave	Hillshire Dr	Lauren Ln
136th Ave	Westridge Terr	End of Street
Alpine View Ct	Benchview Terr	End of Street
Alpine View	Benchview Terr	134th Ave
Alpine View	133rd Ave	130' east of 133rd Ave
Angus Pl	Bull Mtn Rd	End of Street

Ascension Dr	Mistletoe Dr	Fern St
Boxelder St	Essex Dr	Hillshire Dr
Brim Pl	Benchview Terr	End of Street
Broadmoor Pl	End	End of Street
Edgefield Terr	Woodshire Ln	End of Street
Essex Dr	Mistletoe Dr	Lauren Ln
Essex Dr	Hillshire Dr	Mistletoe Dr
Fern St	City Limits	100' east of Ascension Dr
Fernridge Terr	Morningstar Dr	End of Street
Greenfield Dr	Benchview Terr	End of Street
Hillshire Dr	135 th Ave	End of Street
Jenna Ct	Essex Dr	End of Street
Lauren Ln	Essex Dr	135th Ave
Leah Terr	Alpine View	End of Street
Michelle Ct	Essex Dr	End of Street
Mint Pl	Boxelder St	End of Street
Mistletoe Dr	Powerline near Nahcotta Dr	Alpine View Dr
Morningstar Dr	Woodshire Ln	End of Street
Mountain Ridge Ct	End	End of Street
Oxalis Terr	Ascension Dr	175' north of Ascension Dr
Racely Pl	Leah Terr	End of Street
Ridgefield Ln	Greenfield Dr	west end of street
Rockingham Dr	132ND Ave	End of Street
Tamaway Ln	Essex Dr	136th Ave
Tanoak Ct	Brim Pl	End of Street
Tracy Pl	Hillshire Dr	End of Street
Wagoner Pl	Mistletoe Dr	End of Street
Wellington Pl	Rockingham Dr	End of Street
Westridge Terr	Essex Dr	135th Ave
White Cedar Pl	Benchview Terr	End of Street
Whitehall Ln	135 th Ave	Broadmoor Pl
Wilmington Ln	Ridgefield Ln	110' east of 131st Terr
Woodshire Ln	Edgefield Terr	Fernridge Terr