



HOW IT AFFECTS YOU

Find out if your street is on the list and what you need to do to be prepared for slurry seal. **Page 4 & 5**

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CAPITAL PROJECTS



CARING FOR YOUR INFRASTRUCTURE TO KEEP KIRKLAND HEALTHY, SAFE AND VIBRANT



George Minassian, Kirkland's streets engineer, inspects North Rose Hill's Northeast 102nd Place, near 132nd Avenue Northeast to ensure it is in good enough condition for street sealing. This summer, the City of Kirkland will seal nearly 11.3 lane-miles of neighborhood roads in North Rose Hill and Kingsgate.

THE STREET SAVER

The City of Kirkland is protecting 11.3 lane-miles of residential roads this year in Kingsgate and Rose Hill with a layer of slurry seal

North Rose Hill's Northeast 102nd Place doesn't seem like it's in dire need of maintenance. The neighborhood road that connects 128th and 132nd avenues northeast has no potholes, no sections of alligator cracks.

But, says George Minassian, Kirkland's streets engineer, this street is at a tipping point.

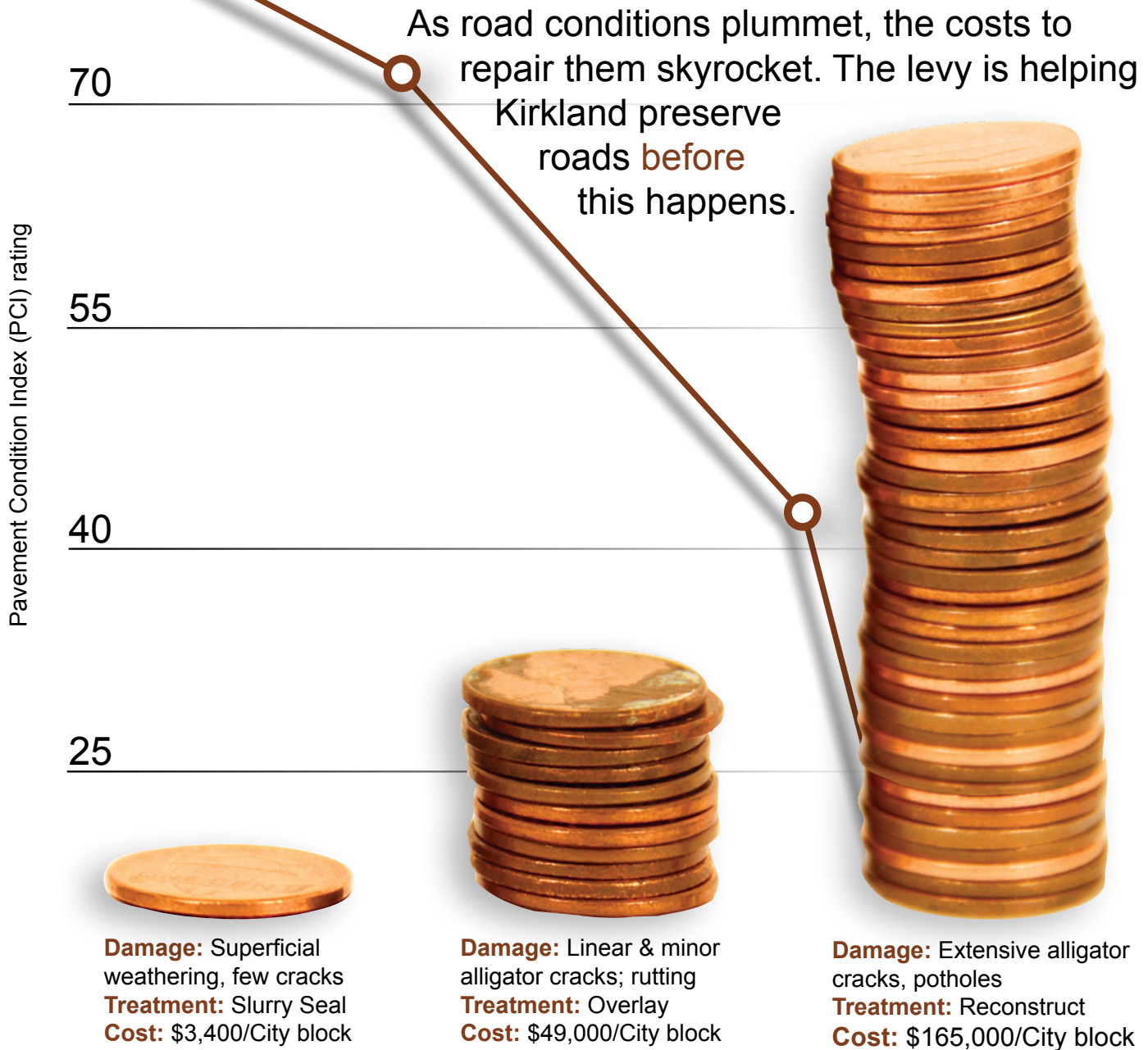
"Just at the crest of the hill," he says, "I noticed a few small cracks in the pavement for the first time last fall. The color of the street is light gray.

TO LEARN MORE

■ Contact George Minassian, streets engineer, 587-3829; gminassian@kirklandwa.gov

■ Or Christian Knight, outreach: 587-3831; cknight@kirklandwa.gov

THE PRICE OF DELAY



That means it has started oxidizing.”

As it continues to oxidize, Minassian explains, the asphalt—the pavement’s glue—will become more brittle with time. Pits will form in it, then cracks. From there, the road will deteriorate quickly. And that, Minassian says, is what makes Northeast 102nd Place

an ideal candidate for slurry seal.

This summer, the street preservation program that Minassian manages will slurry seal this street and sections of more than 40 others—some in better shape, some in worse—in Kingsgate and Rose Hill.

The substance the street preservation program will

What Kirkland residents said about slurry seal

City staff asked focus group participants in November 2013 for their thoughts on slurry seal. Here's what they said:

“Best ever. Awesome. Love it. They came, they did it. It's terrific. If someone is going to fix my street, this is awesome. I love this!”
—Mark, *Bridle Trails*
Received slurry seal in 2012

“They brush it with a brush truck a half-dozen times. It took several months to clean up that aggregate. Now it's smoothed out. It's been nine months. It's still rough.”
—Grant, *Kingsgate*
Received slurry seal in 2012

“I thought it would be like oil. A dusty, dirty, country road. That's what I was envisioning. And then of course it hardened and appeared to be like asphalt.”
—Frank, *North Rose Hill*
Received slurry seal in 2012

“I remember reading that a couple weeks after they were done they would come back and clean stuff up. There was some stuff on the road and loose areas. But I thought it was fine.”
—Lynda, *Finn Hill*
Received slurry seal in 2013

“My kids bike up and down the road. It's not as comfortable now.”
—Mary Ann, *Bridle Trails*
Received slurry seal in 2012

“I thought it would be a pain ... because of parking—having to park a block away. It was just inconvenient. After I saw it, though, it was worth it.”
—Diane, *Bridle Trails*
Received slurry seal in 2012

use to preserve these roads is called ‘slurry seal,’ a basic mixture of water, emulsified liquid asphalt—a non-toxic, oil-like substance—and tiny pieces of gravel, which Minassian calls “aggregates” or “fines.” When it dries, the slurry seal provides a quarter-inch layer of pavement that acts like sunscreen for these minimally trafficked roads—sealing out weather and moisture—and, as a result, extending the functional lives of the roads by five to 10 years. Slurry seal also replenishes years of aggregate-loss in the pavement beneath it.

And it does all this at an estimated cost of \$3,400 per city block.

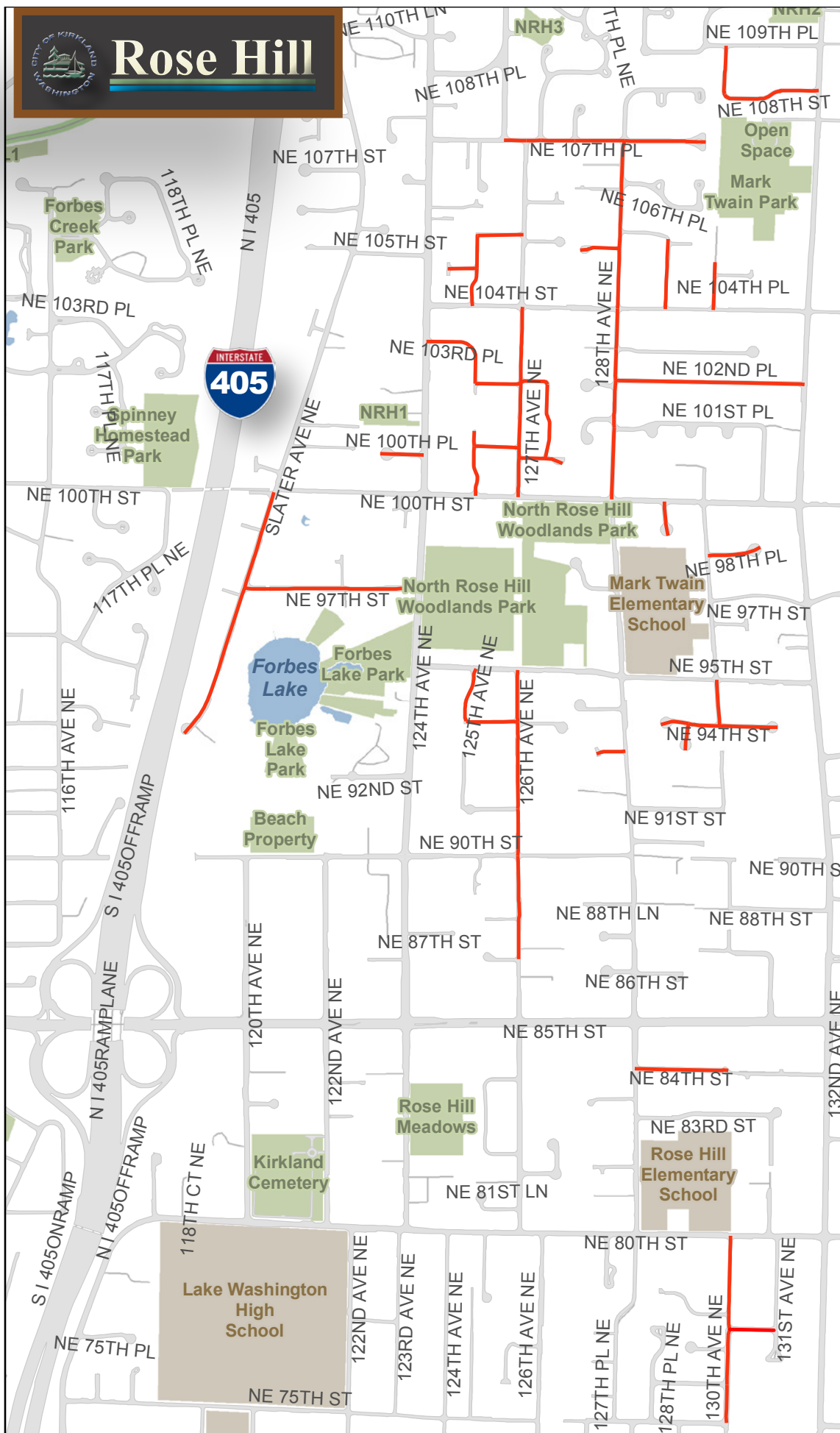
“Slurry seal isn't structural. It is only a preservation method.”

—George Minassian, Ph.D., P.E.
Kirkland's streets engineer

The 2012 levy

Residents doubled Kirkland's capacity to preserve their neighborhood roads in 2012 when they approved the Streets Levy. Since then, Kirkland has used slurry seal to extend the functional lives of more than 126 lane-miles of neighborhood roads.

Without the levy, roads like Northeast 102nd Place might never receive slurry seal. And without slurry seal, traffic and weather would continue to hammer its asphalt until chunks of pavement began breaking loose and webs of alligator cracks morphed into archipelagos of potholes that would undermine the road's basic structure. At that point, the only comprehensive, long-term solution available to those residential roads would be reconstruction. And reconstruction is prohibitively expensive, costing on average \$165,000 per block. These high costs are what have made reconstruction a once-in-a-decade solution in Kirkland.



ON THIS MAP

A Kirkland contractor will slurry seal the street sections highlighted in orange on this map in early August. The contractor will also slurry seal streets in Kingsgate (see map on Page 8). Residents will receive street-by-street schedules one to two weeks before application.

ALTERNATIVE FORMATS

People with disabilities may request materials in alternate formats. Kirkland's policy is to fully comply with Title VI of the Civil Rights Act by prohibiting discrimination against any person on the basis of race, color, national origin or sex in the provision of benefits and services resulting from its programs and activities. Any person who believes his/her Title VI protection has been violated, may file a complaint with the City. To request an alternate format, file a complaint or for questions about Kirkland's Title VI Program, contact the Title VI Coordinator at 425.587.3831 (TTY Relay: 711) or titlevicoordinator@kirklandwa.gov.

WHAT TO EXPECT WHEN WE'RE PROTECTING

The slurry seal guide that reassuringly answers the questions of residents, from the preparation stage through application and follow-up.

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1.) PREPARE THE SITE

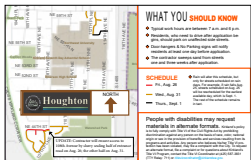
One to three months before application

City crews repair small areas of damaged pavement and ask residents to prune their vegetation—especially low-growing vegetation—to create 14 feet of vertical clearance above the right-of-way so work crews can apply slurry seal up to the curb. If residents do not or cannot trim vegetation that obstructs the public right-of-way, work crews will. Crews also sweep pavement.



2.) PREPARE RESIDENTS

One to two weeks before application



Residents receive street-by-street slurry seal schedules on a postcard. Crews finalize street preparation. Roads remain open.

3.) NOTIFY RESIDENTS

At least one day before application

Work crews remind residents of slurry seal date with a door hanger at least one day before applying slurry seal. Residents remove all personal items—including cars—from the road and prevent water from flowing from their properties into the street.



4.) SEAL THE ROADS

Day of application

Work crews close the street and apply slurry seal. Road closures begin as early as 8 a.m. and end as late as 6 p.m. Some closures begin later in the morning. After application, slurry seal is brown and sticky. To prevent damage, residents do not drive, bike, walk, or allow their pets on the street until the slurry seal has cured and the City has re-opened the street.



5.) ADAPTING TO THE NEW SURFACE

Up to one year after application

The new surface is rougher and sheds some of the larger aggregate, creating gravel deposits on top of the new slurry seal. The contractor's crews sweep the streets twice—approximately one week after application and then again three weeks after application. As time progresses, traffic smooths the surface by dislodging the larger aggregate and pushing smaller aggregate into the underlying pavement. Sweepings and rain also help.

The constraints

Like any solution, however, slurry seal comes with a few catches: “Slurry seal isn’t structural,” Minassian says. “It is only a preservation method.”

This means it’s not suitable for Kirkland’s more-trafficked roads, such as 132nd Avenue Northeast, which

accommodates more than 9,000 vehicles every day in North Rose Hill. For those arterials, Kirkland uses a process called “overlay.”

\$165 K

The estimated costs per City block for reconstructing a road from the subgrade to the surface.

The overlay process replaces two to three inches of the street surface with an entirely new surface, at an estimated cost of \$49,000 per block—less than one-third of the costs for total reconstruction, but 14 times more expensive than slurry seal.

Slurry seal’s role as a preservation method also means it’s not suitable for roads that have too many cracks. Those roads are generally beyond slurry seal’s capacity to protect them.

“Within a few weeks, the cracks that are in the road will reflect through the slurry seal as well,” Minassian says. “And moisture will continue to infiltrate it.”

Unless, of course, Kirkland’s street maintenance crews patch the cracks before sealing the road. Patching requires workers to tear out the damaged pavement and rebuild that section of the road.

“Too many patches is expensive,” Minassian explains. “Eventually, it becomes more cost-effective and more effective in general to just overlay it.”



A toddler pushes his bike up Northeast 61st Street in the Bridle Trails neighborhood, shortly after Kirkland treated it in 2012 with slurry seal.

Minassian’s challenge is to treat the road before it reaches that point of no return. Of course, Kirkland has more than 450 lane-miles of neighborhood and collector roads.

The selection process

To identify which roads are nearing that tipping point, Minassian relies on three data sources—two of them are human-generated. The third is computer-generated.

Every four years, a team of pavement specialists walks along randomly selected sections of every road in Kirkland,

counting the number and types of distresses in the surface—rutting, raveling, swelling, slippage cracking, transverse cracking, and, yes, alligator cracking.

“Some distresses are more problematic than others,” Minassian says.

70

The Pavement Condition Index score generally required for Slurry Seal to effectively preserve residential and collector streets.

Each of these distresses reduces the street’s condition, which is reflected in a score on the Pavement Condition Index, a nationally used system for measuring road conditions. A 100 on the Pavement Condition Index means the street is in perfect condition. A zero means the road has no functioning surface and requires total reconstruction. For slurry seal

to be effective, the street should generally score near or above 70, Minassian says. The Pavement Condition Index score of Northeast 102nd Place, for example, is 83, Minassian says—better by 10 points than the average score for all of Kirkland’s 450 lane miles of residential and collector roads.

Minassian enters these scores into the City’s pavement monitoring software, which uses variables, such as time and projected traffic-load to forecast how the Pavement Condition Index scores of every road in Kirkland will decline with time. The software, then, uses these forecasts to recommend a treatment plan for each road. On Northeast 102nd Place, for example, the software recommended slurry seal in 2019. To save taxpayers’ money, however, Minassian included a half-dozen street sections that the software recommended for 2020.

“So if I know I have to come back in a few years to slurry seal it, I might as well do it now and save money in the process.”

These treatment plans are based largely on the streets’ Pavement Condition Index scores, which are in turn based on surveys of randomly selected sections of each street. The December 2015 survey of Northeast 102nd Place was 130 feet long, a tenth of the street’s total length.

“Some streets will deteriorate faster than the curves predict,” Minassian continues. “And some will deteriorate slower. That’s why we have to go out there and walk these roads.” ◀

Sealed roads smooth out with time, traffic & sweepings

One week later ...



Street: 91st Court Northeast
Sealed: Aug. 30, 2016
Photo: Sept. 8, 2016

Seven months later ...



Street: 91st Court Northeast
Sealed: Aug. 30, 2016
Photo: April 3, 2017

One year later ...



Street: Northeast 131st Place
Sealed: Aug. 3, 2015
Photo: Sept. 8, 2016



City of Kirkland
Street Preservation, CIP
123 Fifth Avenue
Kirkland, WA 98033-6189

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WE'RE SAVING THE STREETS

The City of Kirkland is extending the lives of your neighborhood roads this summer. This document will help you understand how it works, how the City chose your street and how you can help.

