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Ad Hoc Residential Street Committee

Committee Update
Presentation to City Council

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Chairman

March 29, 2016

Streets are expensive to fix and maintain

- We have detailed data on streets and under-street utilities
- Replacement Cost in 2016 dollars, dollars in millions:

Category	Milage	Surface Cost	ADA Sidewalk	Curb/Gutter	Utilities	Total Cost
PCI < 55	565 mi	$565	$87	$543	$665	$1,860
PCI >=55	249 mi	$251	$39	$244	$196	$730
Totals	814 mi	$816	$126	$787	$860	$2,590
% Totals		32%	5%	30%	33%	100%

- Annual cost for 60 year replacement (total cost) = $43 million

Streets require a perpetual maintenance and rebuild cycle

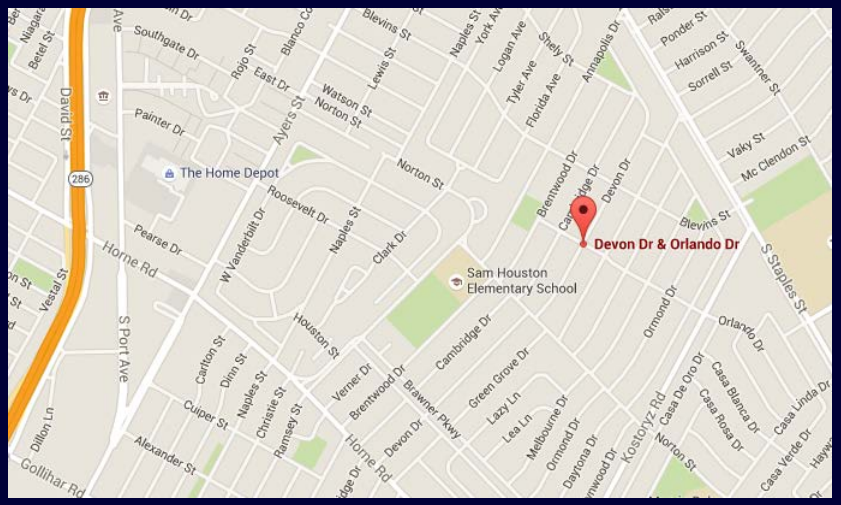
Limited funding always requires prioritization of spending

- Maintenance of good roads
- Damaging conditions which flatten tires and impact wheel alignment and cause driver anxiety
- Dangerous conditions which cause driver anxiety
- Total reconstruction candidate roads
- Low ride quality areas
- Widening or other strategic improvements such as Utility Department Priorities or MPO bike plan
- Problem areas within Project Units, subject to work plan, most likely subsidence, surface scab rashes, or persistent large pot holes

Fixing street conditions that cause driver anxiety is key to satisfaction

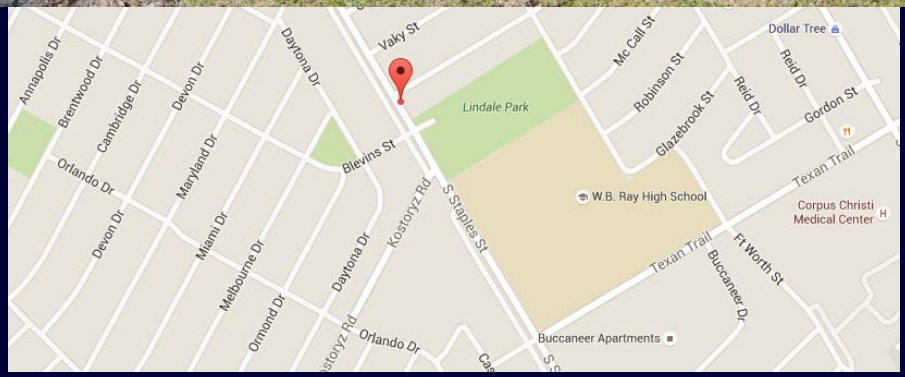
Damaging Condition example – Jarring Dip

- Orlando St looking west across Devon
- Jarring dip at interface of cement and asphalt
- Jarring Dip potential for car damage
- Driver anxiety



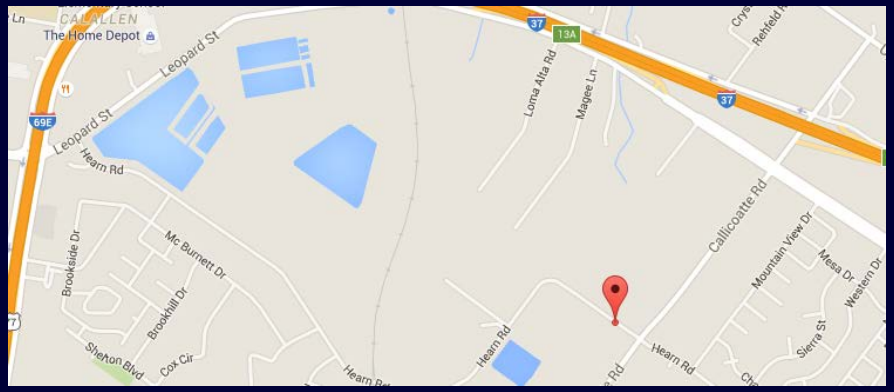
Damaging Condition example – Big Hole

- North-East corner McClendon at Staples
- Hole at turn edge
- Big hole potential for car damage
- Driver anxiety



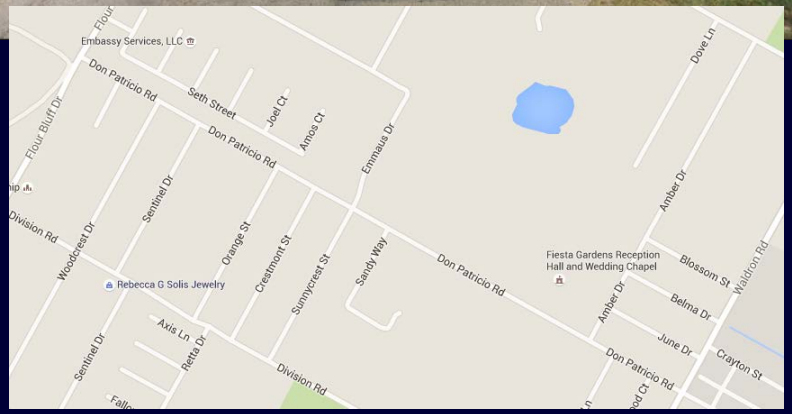
Dangerous Condition example – Right Lane Sag

- Hearn Road looking East at Callicoatte Road, Calallen
- Car pulls to right
- Driver sensation of going into ditch
- Drivers cross double yellow to drive at speed
- Lane sag causes driver anxiety



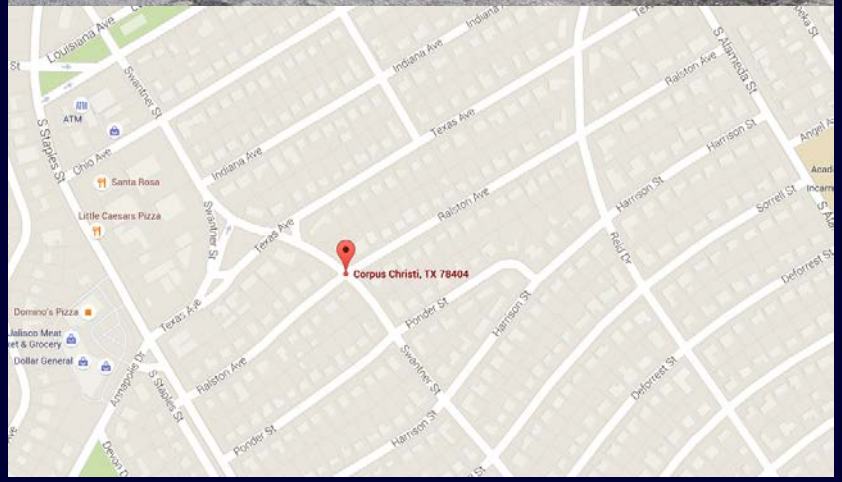
Dangerous Condition example – Narrow road – rebuilding required

- Don Patricio Road, Flour Bluff
- Narrow road
- No shoulder
- Poor surface conditions
- Oncoming traffic causes driver anxiety



Failed Street Example – Rebuilding required

- Ralston Ave. near Swatner
- Substantial rubblization of road surface
- Curb, gutter, sidewalks non-functional
- Ride is terrible
- Street has failed



Base Case discussion – LOCAL STREETS ONLY

- Scenario finalization subject to discussion
- Base case scenario
  - SPMP Seal Coats - local — $ 7 million / yr (already funded)
  - SPMP Overlays - local — $ 0
  - Targeted Area Remediation — $ 12 million / yr, new funding
  - Reworking failed streets — $ 2.5 million / yr , new funding
  - Reconstructing failed streets — $ 2.5 million / yr , new funding
- Base Case is $17 million in new spending
- Uses actual data for streets and under street utilities
- Uses standard costs as estimate for street processes

Seal Coat Plan – Base Case Residential Streets

Seal Coat Table	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 29	Year 30
Inflation	100%	102%	104%	106%	108%	110%	113%	115%	117%	120%	174%	178%
Budgeted Seal Coat	7,000,000	7,140,000	7,282,800	7,428,456	7,577,025	7,728,566	7,883,137	8,040,800	8,201,616	8,365,648	12,187,169	12,430,913
$ Seal > 55 Streets	44,569,959	45,461,358	46,370,585	47,297,997	48,243,957	49,208,836	50,193,012	51,196,873	52,220,810	53,265,226	77,597,377	79,149,324
% Street Serviced / Yr	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Annual Milage Streets Serviced	39.1	39.1	39.1	39.1	39.1	39.1	39.1	39.1	39.1	39.1	39.1	39.1
Cumul % Street Serviced	16%	31%	47%	63%	79%	94%	110%	126%	141%	157%	455%	471%
Cumul Milage Streets Serviced	39.1	78.22	117.32	156.43	195.54	[illegible]	273.76	312.86	351.97	391.08	1,134.13	1,173.24

- $7 million annual budget, paid from existing SPMP funds
- Would take $44.6 million to do in one year
- Streets with PCI >= 55
- Some TAR spending supports street fix prior to seal coat
- Less than 7 year cycle to seal coat 100% of streets > 55 PCI
- Shift SPMP seal coats to local streets because seal coats produce low quality ride on arterials and collector streets

Overlay Plan – Base Case Residential Streets

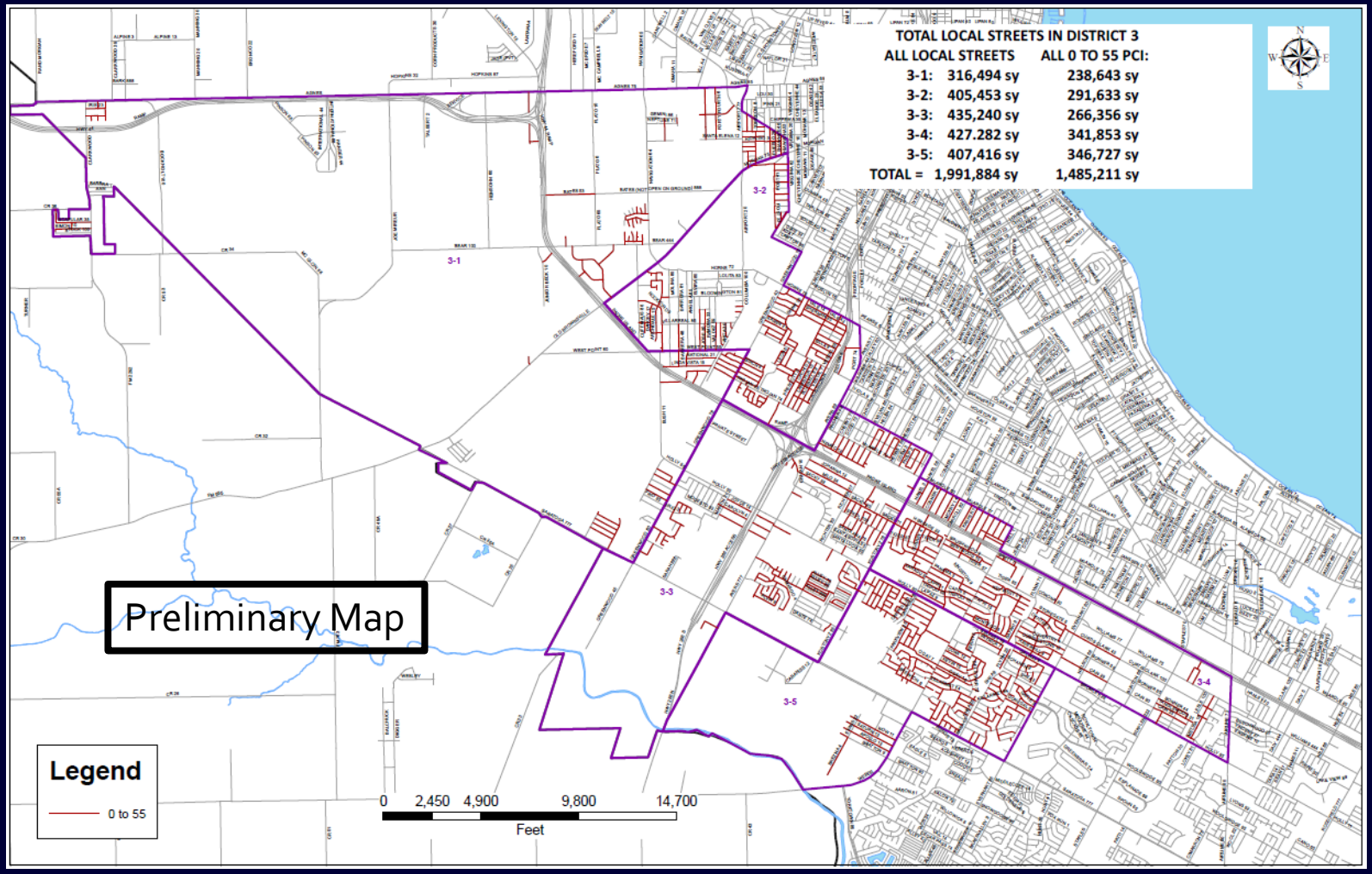
- Recommend that SPMP overlays focus on arterials and collectors and not be applied to residential streets
- Overlays are relatively expensive but result in a high ride quality
- Most people spend more time and drive at higher speeds on arterial and collector streets
- Residential Street / local overlays funded through Rework category of Base Case

The Targeted Area Reclamation ("TAR")

- Define Project Unit areas of the City with the goal of providing intensive maintenance to streets in an organized manner
- Reclamation treatments include:
  - Area wear-layer treatment
  - Area full depth repair
  - Fix dangerous conditions (e.g. jarring discontinuities)
  - Lane-level-up of right lane sag
  - Crack seal / structural pot hole fix
  - Signage, striping
- Treatments and locations are determined by looking at actual street conditions
- Funding amount determines the frequency, with the target of 100% neighborhood service on a 5 year cycle with about $2.4 million per year for each district.

Existing streets require action: proactive vs. passive

The Targeted Area Reclamation – District 3 – Project Unit



Targeted Area Reclamation Plan

Targeted Area Restoration Table	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 29	Year 30
Inflation	100%	102%	104%	106%	108%	110%	113%	115%	117%	120%	174%	178%
Budgeted TAR	12,000,000	12,240,000	12,484,800	12,734,496	12,989,186	13,248,970	13,513,949	13,784,228	14,059,913	14,341,111	20,892,290	21,310,136
$ TAR < 55 + % > 55 PCI	61,400,467	62,628,477	63,881,046	65,158,667	66,461,840	67,791,077	69,146,899	70,529,837	71,940,434	73,379,242	106,899,700	109,037,694
% Street Serviced / Yr	20%	20%	20%	20%	[illegible]	20%	20%	20%	20%	20%	20%	20%
Cumul % Street Serviced	20%	39%	59%	78%	98%	117%	137%	156%	176%	195%	567%	586%
Milage Equivalent Renewed	13.5	13.5	13.5	13.5	[illegible]	13.5	13.5	13.5	13.5	13.5	13.5	13.5

- $12 million annual budget
- Budget is equivalent to 10% of area surface rework
- Would take $61.4 million to do in one year
- Streets 100% with PCI < 55 and 50% with PCI > 55
- Approximate 5 year cycle to service 100% of streets within category

Promise is to service 100% of the neighborhoods every five years

The Rework plan for failed streets

- Testing is conducted to assess the amount and quality of base materials and sub-grade condition
- Existing street is milled with about 80% material re-use
- Materials may be stabilized with concrete or polymer additives
- Wear layer surface is applied
- Curb, gutter, flatwork, ADA
- Under street utilities repaired/replaced
- Street is functionally new
- Cost is less than full depth reconstruction

No rework has occurred in a long time.
City Crews used to do.

Texan Trail between
Reid and Staples

Beautiful road
Rework August 2011

The Reconstruct plan for failed streets

- Testing confirms that rework is not possible
- Safety measures or reconfiguration, e.g. widening street
- Existing street material removed
- Full depth reconstruction with new materials
- Curb, gutter, flatwork, ADA improvements
- Under street utilities repaired or replaced
- Expensive, but must occur as a last resort

Residential streets have not had a reconstruction program in a long time.

Rework and Reconstruct Plan

Rework Table												
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 29	Year 30
Inflation	100%	102%	104%	106%	108%	110%	113%	115%	117%	120%	174%	178%
Budgeted Rework	2,500,000	2,550,000	2,601,000	2,653,020	2,706,080	2,760,202	2,815,406	2,871,714	2,929,148	2,987,731	4,352,561	4,439,612
$ Rework All Streets	819,182,681	835,566,334	852,277,661	869,323,214	886,709,679	904,443,872	922,532,750	940,983,405	959,803,073	978,999,134	1,426,216,876	1,454,741,214
% Street Serviced / Yr	0.3051822%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Annual Milage Streets Serviced	1.24168	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Cumul % Street Serviced	[illegible]	1%	1%	1%	2%	2%	2%	2%	3%	3%	9%	9%
Cumul Milage Streets Serviced	1.2	2.48	3.73	4.97	6.21	7.45	8.69	9.93	11.18	12.42	36.01	37.25
Associated Util Spend	[illegible]	1,340,071	1,366,872	1,394,209	1,422,094	1,450,535	1,479,546	1,509,137	1,539,320	1,570,106	2,287,348	2,333,095

Reconstruct Table												
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 29	Year 30
Inflation	100%	102%	104%	106%	108%	110%	113%	115%	117%	120%	174%	178%
Budgeted Reconstruct	2,500,000	2,550,000	2,601,000	2,653,020	2,706,080	2,760,202	2,815,406	2,871,714	2,929,148	2,987,731	4,352,561	4,439,612
$ Reconstruct All Streets	909,861,377	928,058,604	946,619,777	965,552,172	984,863,216	1,004,560,480	1,024,651,689	1,045,144,723	1,066,047,618	1,087,368,57[illegible]	1,584,090,682	1,615,772,495
% Street Serviced / Yr	0.2747671%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Annual Milage Streets Serviced	1.1179	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Cumul % Street Serviced	[illegible]	1%	1%	1%	1%	2%	2%	2%	2%	3%	8%	8%
Cumul Milage Streets Serviced	1.1	2.24	3.35	4.47	5.59	6.71	7.83	8.94	10.06	11.18	32.42	33.54
Associated Util Spend	1,182,[illegible]	1,206,516.27	1,230,646.60	1,255,259.53	1,280,364.72	1,305,972.02	1,332,091.46	1,358,733.29	1,385,907.95	1,413,626.11	2,059,386.31	2,100,574.04

- $5 million annual budget
- Universe is all streets since replacement cycle is so long
- Relatively small funding accelerated by bond or lump funding

Key is Total Street Health
Base Case Scenario

Rebuild Table	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 29	Year 30
Annual TAR Milage Equivalent	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
Annual Milage Rework / Recon	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Annaul Milage Rebuild	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8
Cumul Milage Streets Serviced	15.8	31.7	47.5	63.3	[illegible]	95.0	110.8	126.6	142.5	[illegible]	459.1	[illegible]
% Street Rebuilt	2%	4%	6%	8%	10%	12%	14%	16%	18%	19%	56%	58%
Total Rebuild Spend	17,000,000	17,340,000	17,686,800	18,040,536	18,401,347	18,769,374	19,144,761	19,527,656	19,918,209	20,316,574	29,597,412	30,189,360
Associated Util Spend	2,496,654	2,546,587	2,597,519	2,649,469	2,702,458	2,756,507	2,811,638	2,867,870	2,925,228	2,983,732	4,346,735	4,433,669
Storm Water	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Total Cost Rebuild	20,496,654	20,886,587	21,284,319	21,690,005	22,103,805	22,525,881	22,956,399	23,395,527	23,843,437	24,300,306	34,944,146	35,623,029

- $17 million annual budget of new, annual funding
- Equivalent of 10% street surface rebuild over 5 years, 79 miles
- Equivalent of 19% street surface rebuild over 10 years, 158 miles
- Equivalent of a 58% street surface rebuild over 30 years, 475 miles
- Regular service to all neighborhoods on a five year cycle
- Utility contribution is about $3.6 million per year

Big picture thoughts about Base Case Scenario

- We must converge intensive maintenance and reconstruction as the only hope to keep this affordable

- Recommendation is to complete the first five-year TAR cycle then review and reprioritize. Timeframe dovetails with completion of Harbor Bridge

- TAR process addressed road surface rehabilitation with minimal rework of curb, gutter, and underground utilities
- Did not model in growth of streets or City because these would be new facilities without near term impact

Alternative of Total Rebuild in a traditional manner

Rebuild Table	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 29	Year 30
Annual TAR Milage Equivalent	-	-	-	-	-	-	-	-	-	-	-	-
Annual Milage Rework / Recon	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Annaul Milage Rebuild	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Cumul Milage Streets Serviced	8.0	16.0	24.1	32.1	[illegible]	48.1	56.2	64.2	72.2	[illegible]	232.7	[illegible]
% Street Rebuilt	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	29%	30%
Total Rebuild Spend	17,000,000	17,340,000	17,686,800	18,040,536	18,401,347	18,769,374	19,144,761	19,527,656	19,918,209	20,316,574	29,597,412	30,189,360
Associated Util Spend	8,488,623	8,658,395	8,831,563	9,008,194	9,188,358	9,372,125	9,559,568	9,750,759	9,945,774	10,144,690	14,778,897	15,074,475
Storm Water	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Total Cost Rebuild	26,488,623	26,998,395	27,518,363	28,048,730	28,589,705	29,141,499	29,704,329	30,278,416	30,863,984	31,461,263	45,376,309	46,263,835

- $17 million annual budget of new, annual funding
- Equivalent of 5% street surface rebuild over 5 years, 40 miles
- Equivalent of 10% street surface rebuild over 10 years, 80 miles
- Equivalent of a 30% street surface rebuild over 30 years, 241 miles
- Utility contribution is about $9.5 million per year

Issues with Total Rebuild approach

- Much less of the street surfaces is reclaimed / rebuilt

Totals	Year 5 mileage	Year 10 mileage	Year 30 mileage
Using TAR approach	79 mi	158 mi	475 mi
Using Total Rebuild approach	40 mi	80 mi	241 mi

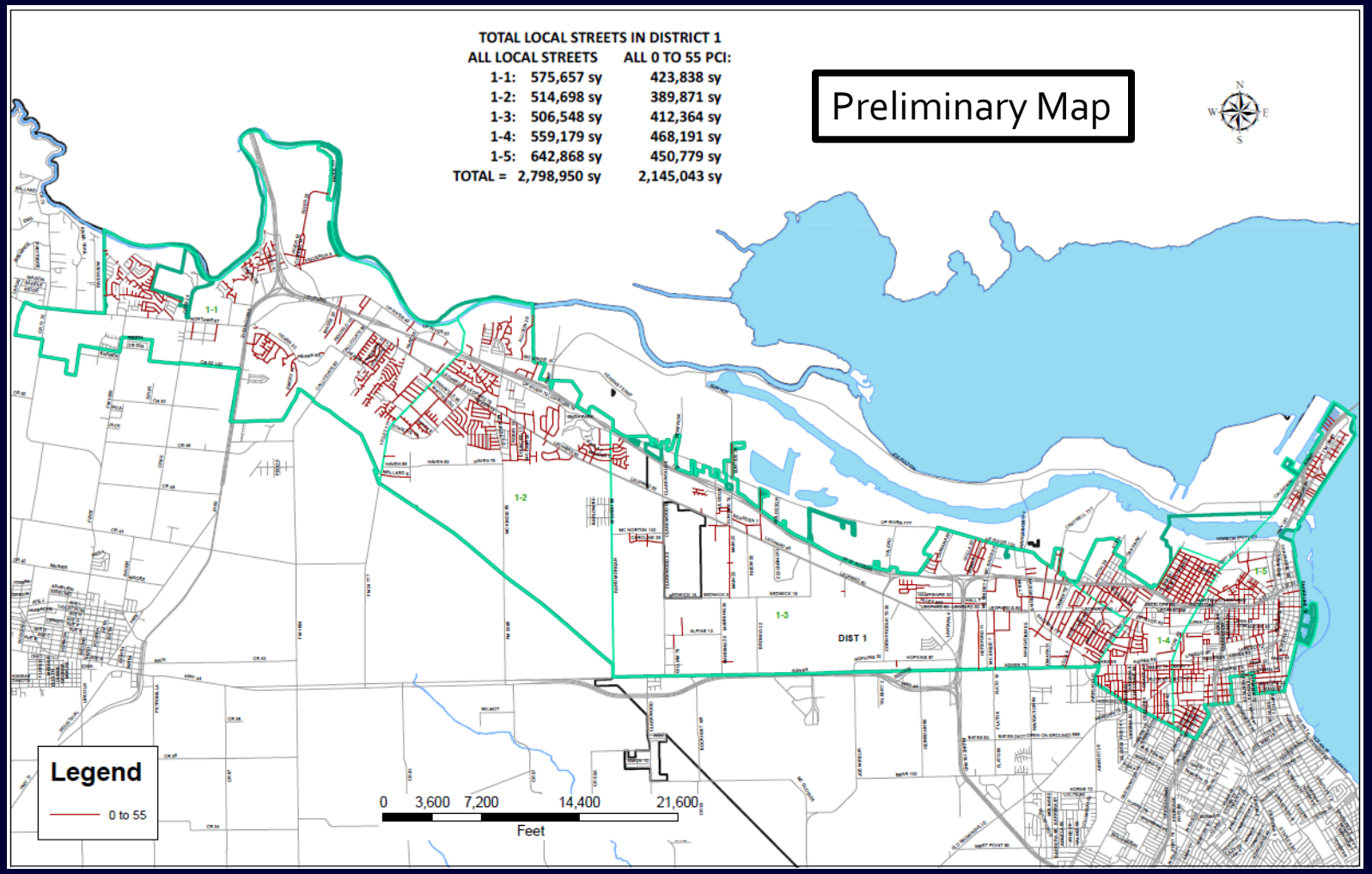
- Utility contribution goes from $3.6 to $9.5 per year or else new streets cover old utilities
- Much of the City receives only reactive maintenance because there is no funding for proactive work

Street Committee Final Report is being developed

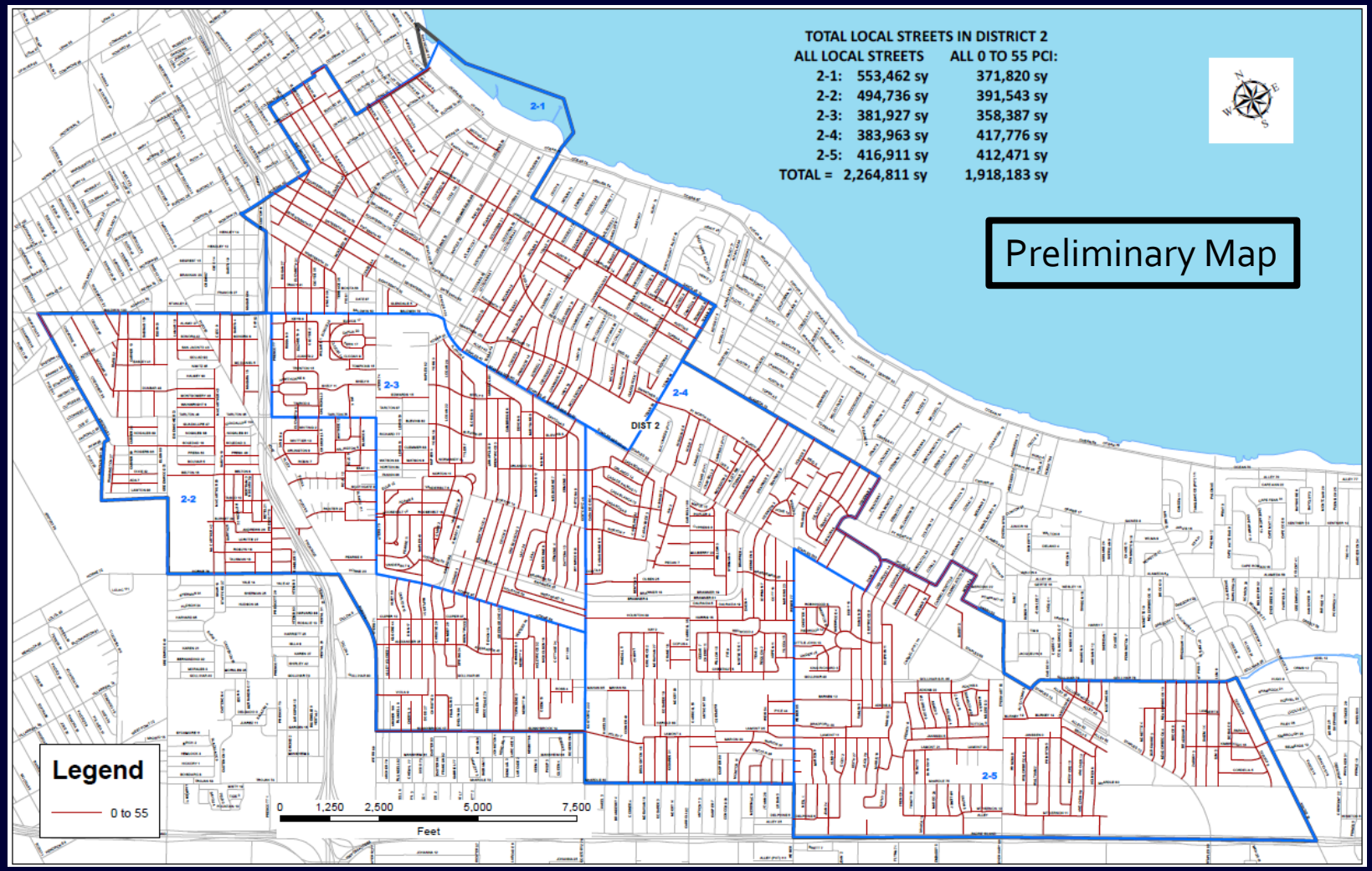
- Range of spending scenarios
- Contracting and purchasing
- Street standards
- Construction management issues
- Funding discussion will be general
- Stormwater is too complex for Street Committee review
  - Funding requirement is enormous
  - Too many inter-dependencies with any fix requires holistic approach
  - Will require complex facilities construction or improvement

Appendix Slides to Follow

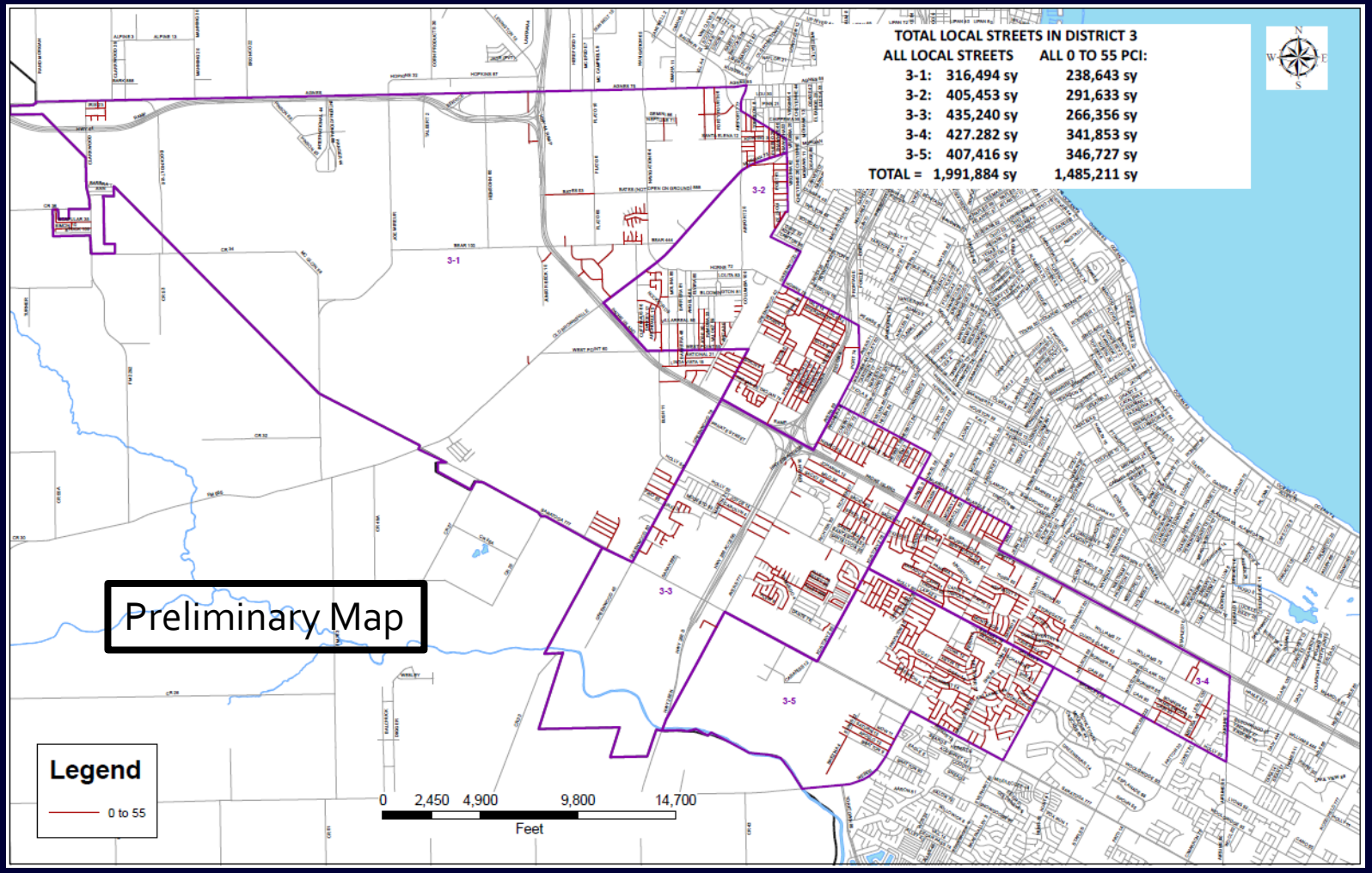
The Targeted Area Reclamation – District 1 – Project Unit



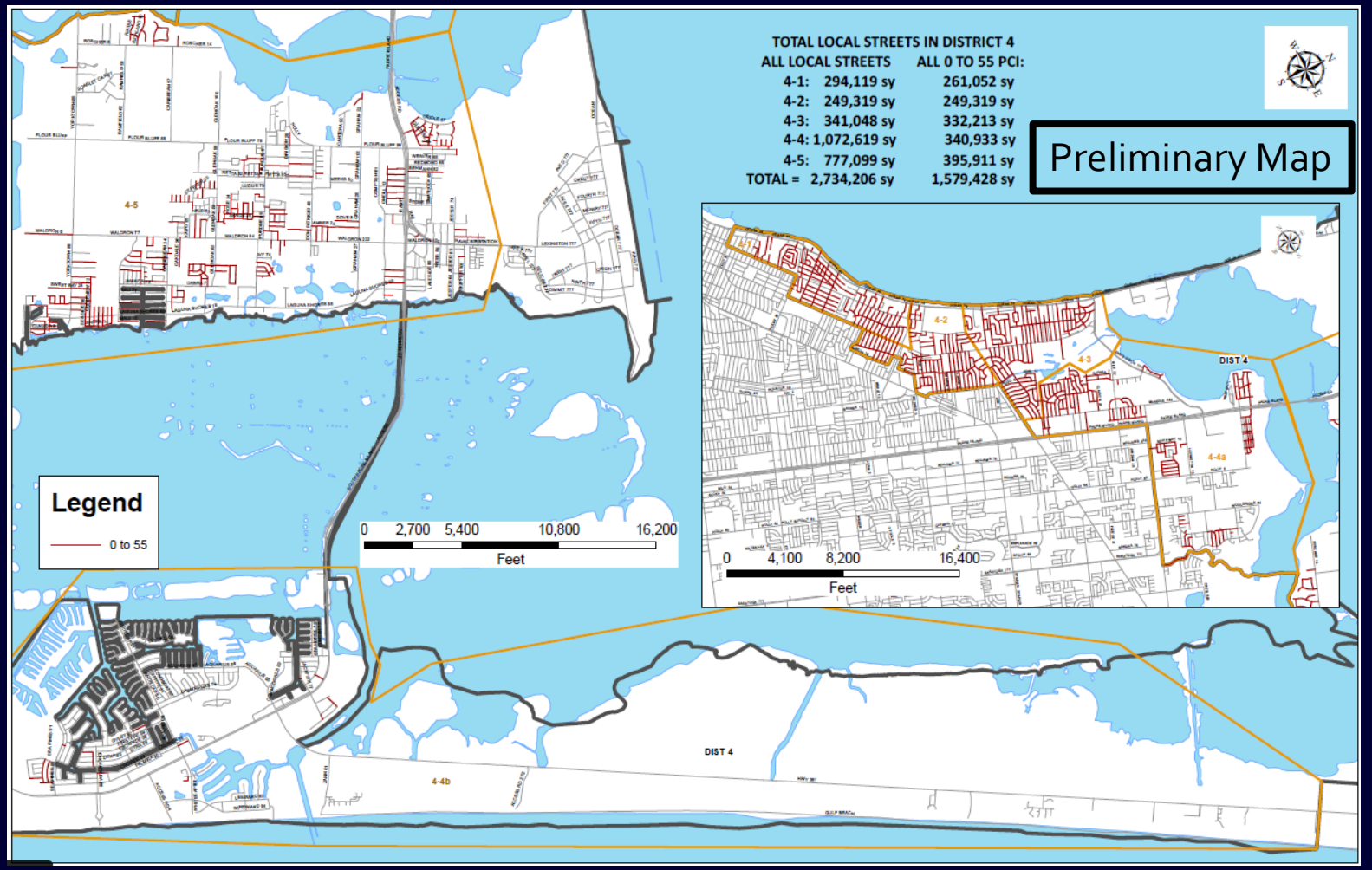
The Targeted Area Reclamation – District 2 – Project Unit



The Targeted Area Reclamation – District 3 – Project Unit



The Targeted Area Reclamation – District 4 – Project Unit



The Targeted Area Reclamation – District 5 – Project Unit