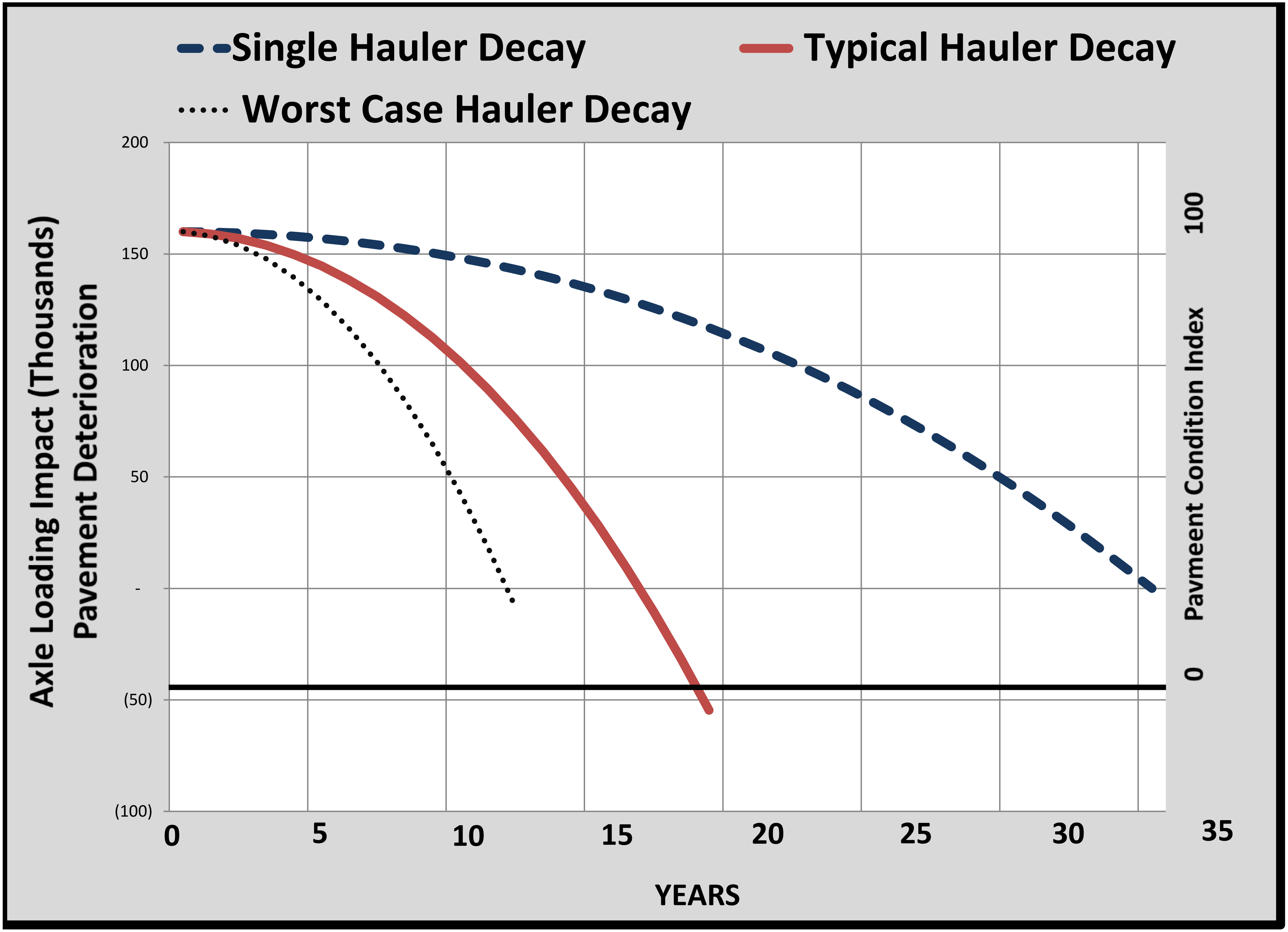

Single Hauler Decay
Typical Hauler Decay
Worst Case Hauler Decay
Axle Loading Impact (Thousands)
Pavement Deterioration
200
150
100
50
-
(50)
(100)
0
5
10
15
20
25
30
35
YEARS
Pavmeent Condition Index
100
0

ESAL impact Curve Data

Year	Worst Case Hauler Decay	Typical Hauler Decay	Single Hauler Decay	Total ESAL life of Road	10-hauler Impact (ESALs used)	5-hauler Impact (ESALs used)	1-hauler Impact (ESALs used)	Year
0	160,000	160,000	160,000	160,000	-	-	-	0
1	157,997	159,001	159,799		2,003	999	201	1
2	**153,952**	156,983	159,394	**Crack Seal**	**6,048**	3,017	606	2
3	147,823	**153,926**	158,779	**Slurry Seal**	12,177	**6,074**	1,221	3
4	**139,568**	149,808	**157,952**	**Overlay**	**20,432**	10,192	**2,048**	4
5	129,146	144,609	156,907		30,854	15,391	3,093	5
6	116,513	**138,307**	155,641		43,487	**21,693**	4,359	6
7	**101,624**	130,880	154,149		**58,376**	29,120	5,851	7
8	84,434	122,305	**152,426**		75,566	37,695	**7,574**	8
9	**64,899**	**112,560**	150,468		**95,101**	**47,440**	9,532	9
10	42,969	101,621	148,270		117,031	58,379	11,730	10
11	18,599	89,464	145,827		141,401	70,536	14,173	11
12	**(8,262)**	**76,065**	**143,135**		**168,262**	**83,935**	**16,865**	12
13		61,399	140,188		197,662	98,601	19,812	13
14		45,441	136,981		229,654	114,559	23,019	14
15		28,164	133,510		264,288	131,836	26,490	15
16		**9,543**	**129,768**		301,617	**150,457**	**30,232**	16
17		-10,450	125,751		341,696	170,450	34,249	17
18		-31,841	121,452		384,579	191,841	38,548	18
19		-54,659	116,868		430,322	**214,659**	43,132	19
20			**111,990**		478,983	238,933	**48,010**	20
21			106,814		530,620	264,691	53,186	21
22			101,334		585,292	**291,964**	58,666	22
23			95,544		643,060	320,781	64,456	23
24			**89,437**		703,987	**351,173**	**70,563**	24
25			83,007		768,135	383,172	76,993	25
26			76,248		835,568	416,810	83,752	26
27			**69,153**		906,353	452,120	**90,847**	27
28			61,716		980,556	**489,135**	98,284	28
29			53,929		#####	527,890	106,071	29
30		0	45,785		#####	568,418	114,215	30
31			**37,278**		#####	**610,757**	**122,722**	31
32			28,400		#####	654,941	131,600	32
33			19,143		#####	701,007	140,857	33
34			9,501		#####	748,994	150,499	34
35			**-**		#####	798,940	**160,535**	35

LCCA Impact - 2024

Present Worth Calculation: PW Factor = $1/(1 + i)^n$ i = inflation rate (discount)

i = 3.0% n = year in which maintenance occurs

Actual Discount Rate calculated by Conrad Lamb was 2.91%

Life = 35 years

Current Date:
11-Jan-11

Surface	Width (ft)	Length (ft)	Area (Sq Yds)
Asphalt	12	5,617,920	7,490,560
			0

Deterioration with District/Zone Haulers (3 trucks per week / 35 years)

Event	Year	Unit Cost	Units	Qty	Extended Price	PW factor	Present Worth
Crack Seal	4	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.88849	$ 4,658,685.88
Slurry Seal	8	$ 2.60	Sq Yds	7,490,560	$ 19,475,456.00	0.78941	$ 15,374,104.81
Crack Seal	12	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.70138	$ 3,677,609.65
Slurry Seal	16	$ 2.60	Sq Yds	7,490,560	$ 19,475,456.00	0.62317	$ 12,136,460.31
Mill & Overlay	20	$ 8.00	Sq Yds	7,490,560	$ 59,924,480.00	0.55368	$ 33,178,731.
Staff Time	20	$ 1,198,490.00	Lump Sum	1	$ 1,198,490.00	0.55368	$ 663,574.
Crack Seal	24	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.49193	$ 2,579,401.42
Slurry Seal	27	$ 2.60	Sq Yds	7,490,560	$ 19,475,456.00	0.45019	$ 8,767,637.15
Crack Seal	31	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.39999	$ 2,097,289.40
Mill & Overlay	35	$ 8.00	Sq Yds	7,490,560	$ 59,924,480.00	0.35538	$ 21,296,165.31
2% Patching	35	$ 125.00	Sq Yds	149,811	$ 18,726,400.00	0.35538	$ 6,655,051.66
Staff Time	35	$ 1,573,018.00	Lump Sum	1	$ 1,573,018.00	0.35538	$ 559,024.48
					$ 220,746,804.00		$ 111,643,736.58

Based on $60 per ton

Accelrated Deterioration with 5 haulers (15 trucks per week / 16.5 years)

Event	Year	Unit Cost	Units	Qty	Extended Price	PW factor	Present Worth
Crack Seal	3	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.91514	$ 4,798,446.46
Slurry Seal	6	$ 2.60	Sq Yds	7,490,560	$ 19,475,456.00	0.83748	$ 16,310,387.79
Crack Seal	9	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.76642	$ 4,018,623.36
Slurry Seal	12	$ 2.60	Sq Yds	7,490,560	$ 19,475,456.00	0.70138	$ 13,659,693.00
Mill & Overlay	16	$ 8.00	Sq Yds	7,490,560	$ 59,924,480.00	0.62317	$ 37,342,954.7
Staff Time	16	$ 1,198,490.00	Lump Sum	1	$ 1,198,490.00	0.62317	$ 746,859.3
Crack Seal	19	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.57029	$ 2,990,233.19
Slurry Seal	22	$ 2.60	Sq Yds	7,490,560	$ 19,475,456.00	0.52189	$ 10,164,094.44
Crack Seal	24	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.49193	$ 2,579,401.42
Mill & Overlay	28	$ 8.00	Sq Yds	7,490,560	$ 59,924,480.00	0.43708	$ 26,191,597.15
3% Patching	28	$ 125.00	Sq Yds	224,717	$ 28,089,600.00	0.43708	$ 12,277,311.17
Staff Time	28	$ 1,760,282.00	Lump Sum	1	$ 1,760,282.00	0.43708	$ 769,378.34
Crack Seal	31	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.39999	$ 2,097,289.40
Slurry Seal	34	$ 2.60	Sq Yds	7,490,560	$ 19,475,456.00	0.36604	$ 7,128,891.34
					$ 255,016,116.00		$ 141,075,161.18

Based on $60 per ton

Accelrated Deterioration with 10 haulers (30 trucks per week / 11.67 years)

Event	Year	Unit Cost	Units	Qty	Extended Price	PW factor	Present Worth
Crack Seal	2	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.94260	$ 4,942,399.85
Slurry Seal	4	$ 2.60	Sq Yds	7,490,560	$ 19,475,456.00	0.88849	$ 17,303,690.41
Crack Seal	7	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.81309	$ 4,263,357.53
Slurry Seal	9	$ 2.60	Sq Yds	7,490,560	$ 19,475,456.00	0.76642	$ 14,926,315.35
Mill & Overlay	12	$ 8.00	Sq Yds	7,490,560	$ 59,924,480.00	0.70138	$ 42,029,824.
Staff Time	12	$ 1,198,490.00	Lump Sum	1	$ 1,198,490.00	0.70138	$ 840,596.
Crack Seal	14	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.66112	$ 3,466,499.81
Slurry Seal	16	$ 2.60	Sq Yds	7,490,560	$ 19,475,456.00	0.62317	$ 12,136,460.31
Crack Seal	19	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.57029	$ 2,990,233.19
Mill & Overlay	23	$ 8.00	Sq Yds	7,490,560	$ 59,924,480.00	0.50669	$ 30,363,239.54
3% Patching	23	$ 125.00	Sq Yds	224,717	$ 28,089,600.00	0.50669	$ 14,232,768.54
Staff Time	23	$ 1,760,282.00	Lump Sum	1	$ 1,760,282.00	0.50669	$ 891,920.36
Crack Seal	25	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.47761	$ 2,504,273.22
Slurry Seal	27	$ 2.60	Sq Yds	7,490,560	$ 19,475,456.00	0.45019	$ 8,767,637.15
Crack Seal	29	$ 0.70	Sq Yds	7,490,560	$ 5,243,392.00	0.42435	$ 2,225,014.32
Mill & Overlay	32	$ 8.00	Sq Yds	7,490,560	$ 59,924,480.00	0.38834	$ 23,270,894.84
3% Patching	32	$ 125.00	Sq Yds	224,717	$ 28,089,600.00	0.38834	$ 10,908,231.95
Staff Time	32	$ 1,760,282.00	Lump Sum	1	$ 1,760,282.00	0.38834	$ 683,582.69
					$ 350,033,870.00		$ 196,746,940.43

Based on $60 per ton

PAVEMENT MAINTENANCE COST COMPARISON	Present Worth Annual Maintenance Cost	Increase Maintenance Cost (35 years)
Proposed District/Zone System (3 trucks per week)	**$ 3,189,821.05**	**LOW**
Current System (up to 15 trucks per week)	**$ 4,149,269.45**	**$ 29,431,424.60**
Worst Cast (up to 30 trucks per week)	**$ 6,148,341.89**	**$ 85,103,203.86**

Increased Annual Cost of Current Collections = $ 840,897.85