Pennsylvania Department of Transportation

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NATIONAL PAVEMENT PRESERVATION CONFERENCE
nppc23
IMPACTS AND BENEFITS FROM PAVEMENT PRESERVATION

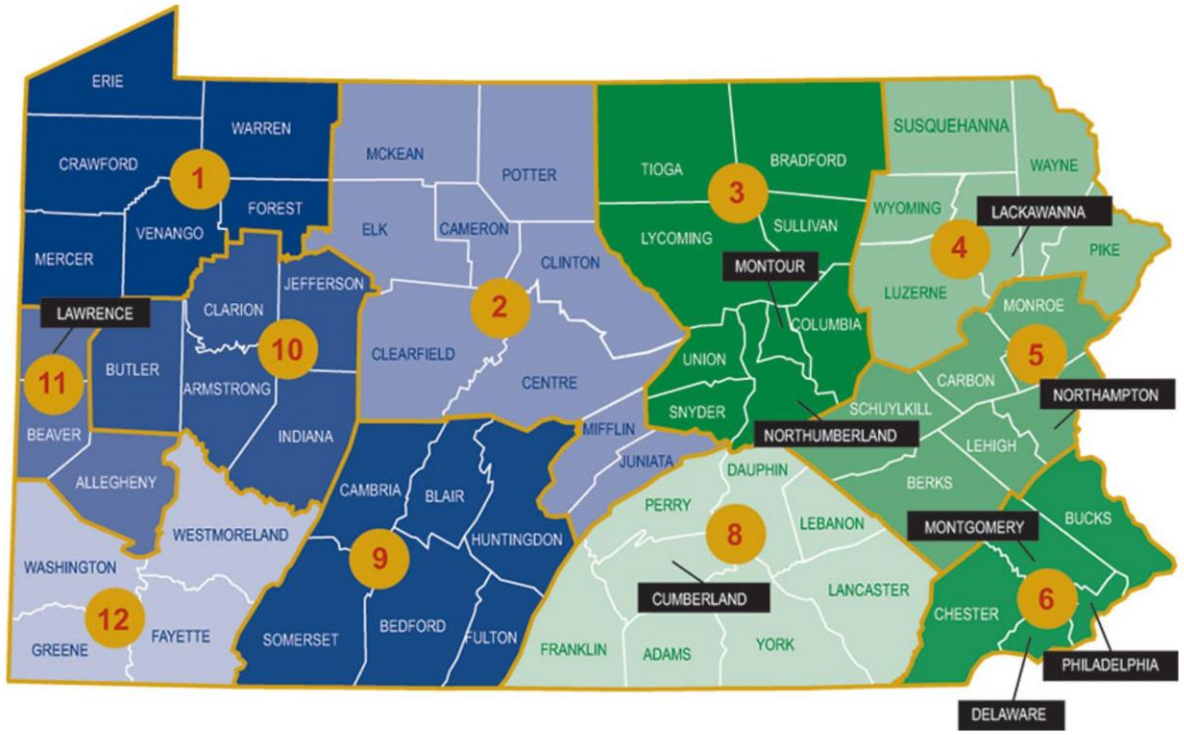
ncpp
National Center for Pavement Preservation
MICHIGAN STATE UNIVERSITY

AASHTO TSP2 PAVEMENT PRESERVATION

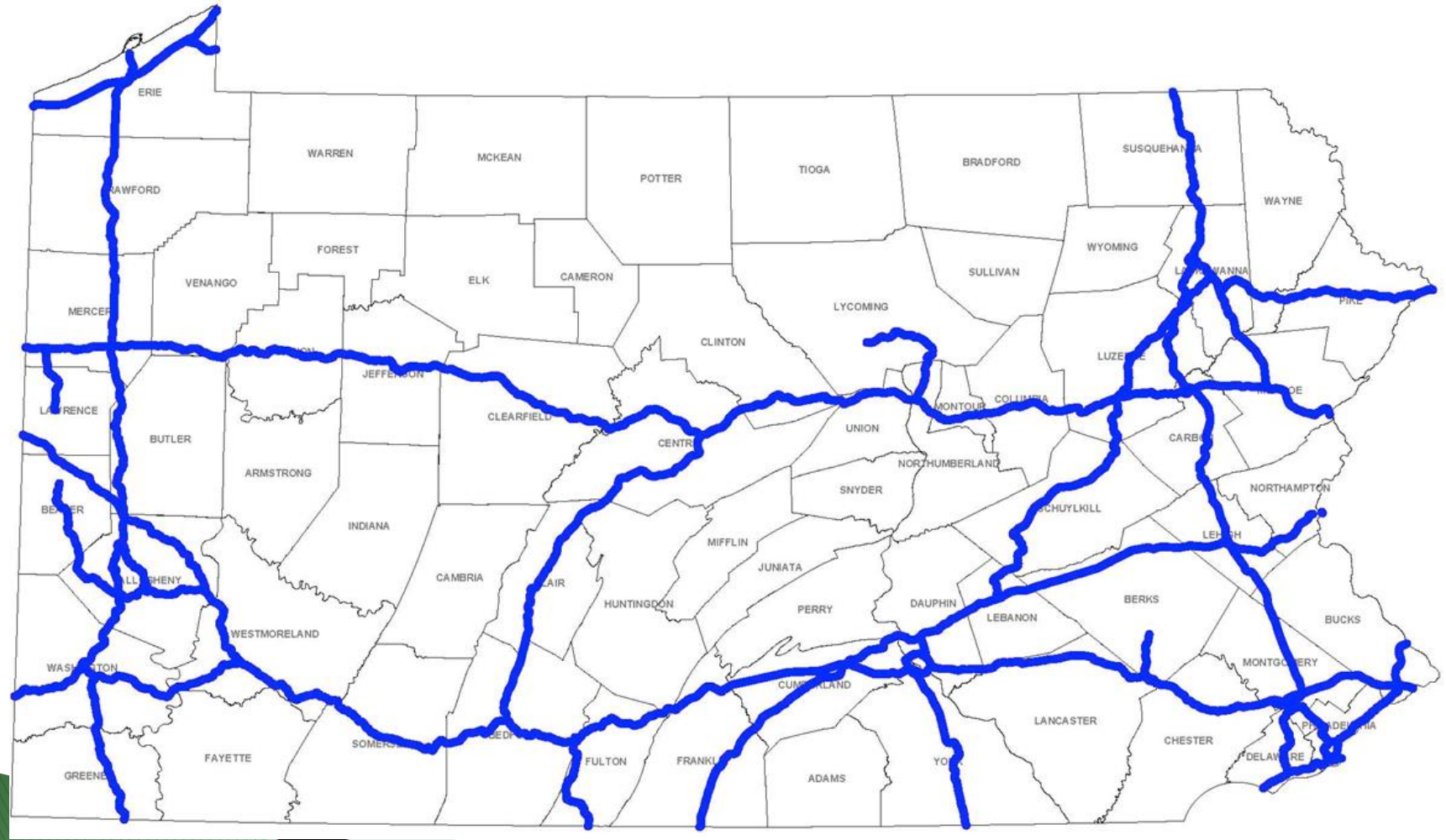
ROCKY MOUNTAIN WEST PAVEMENT PRESERVATION PARTNERSHIP
SOUTHEAST PAVEMENT PRESERVATION PARTNERSHIP
MIDWESTERN PAVEMENT PRESERVATION PARTNERSHIP
NORTHEAST PAVEMENT PRESERVATION PARTNERSHIP

Pennsylvania

- Over 120,000 miles of public roadways
- PennDOT responsible for ~40,000 miles of roads (5th for state-maintained miles)
- 25,000+ Bridges
- $2.4B+ Program
- Decentralized 11 Engineering Districts

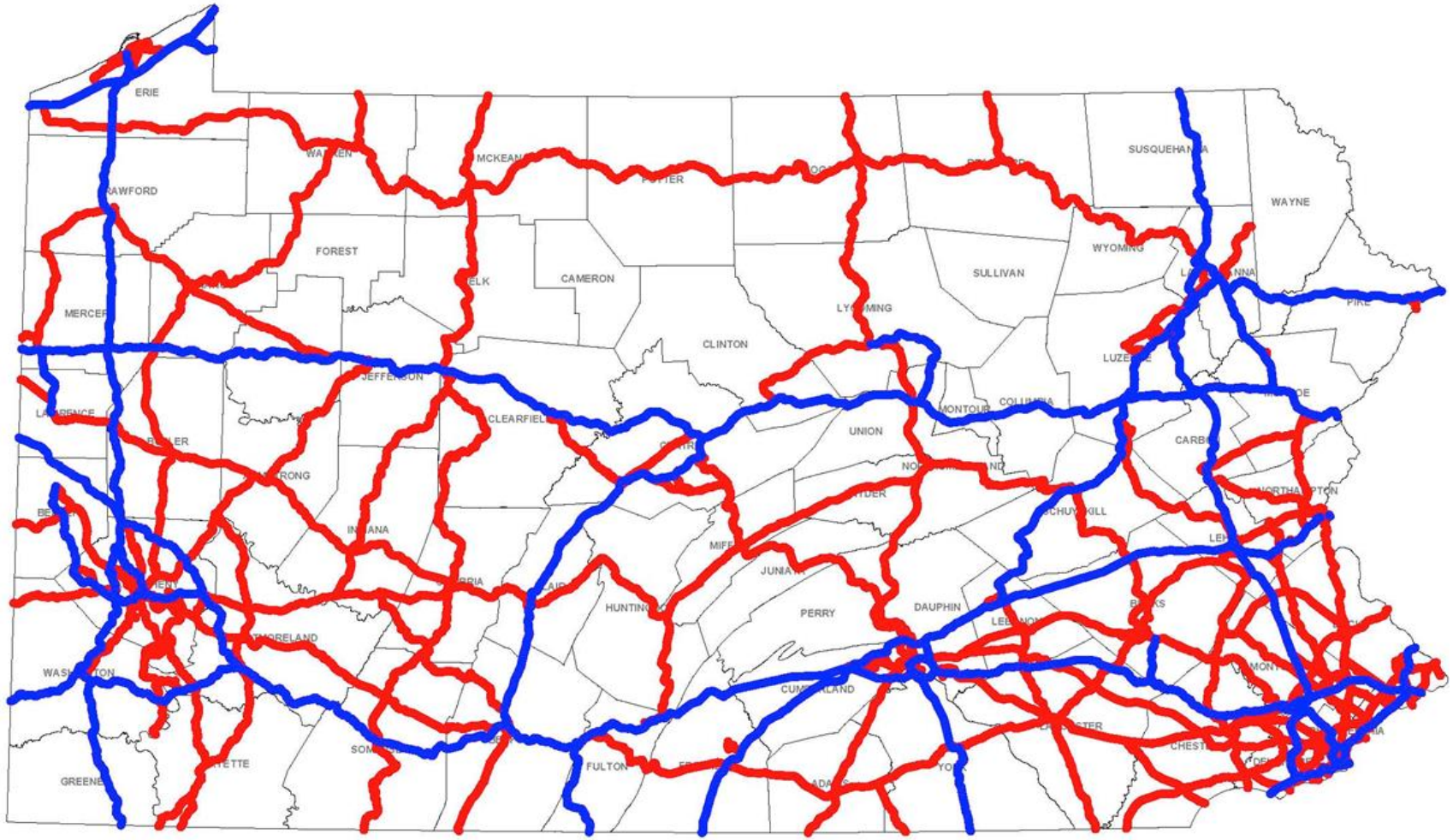


PennDOT's Roadway System
BPN 1 – Interstate System

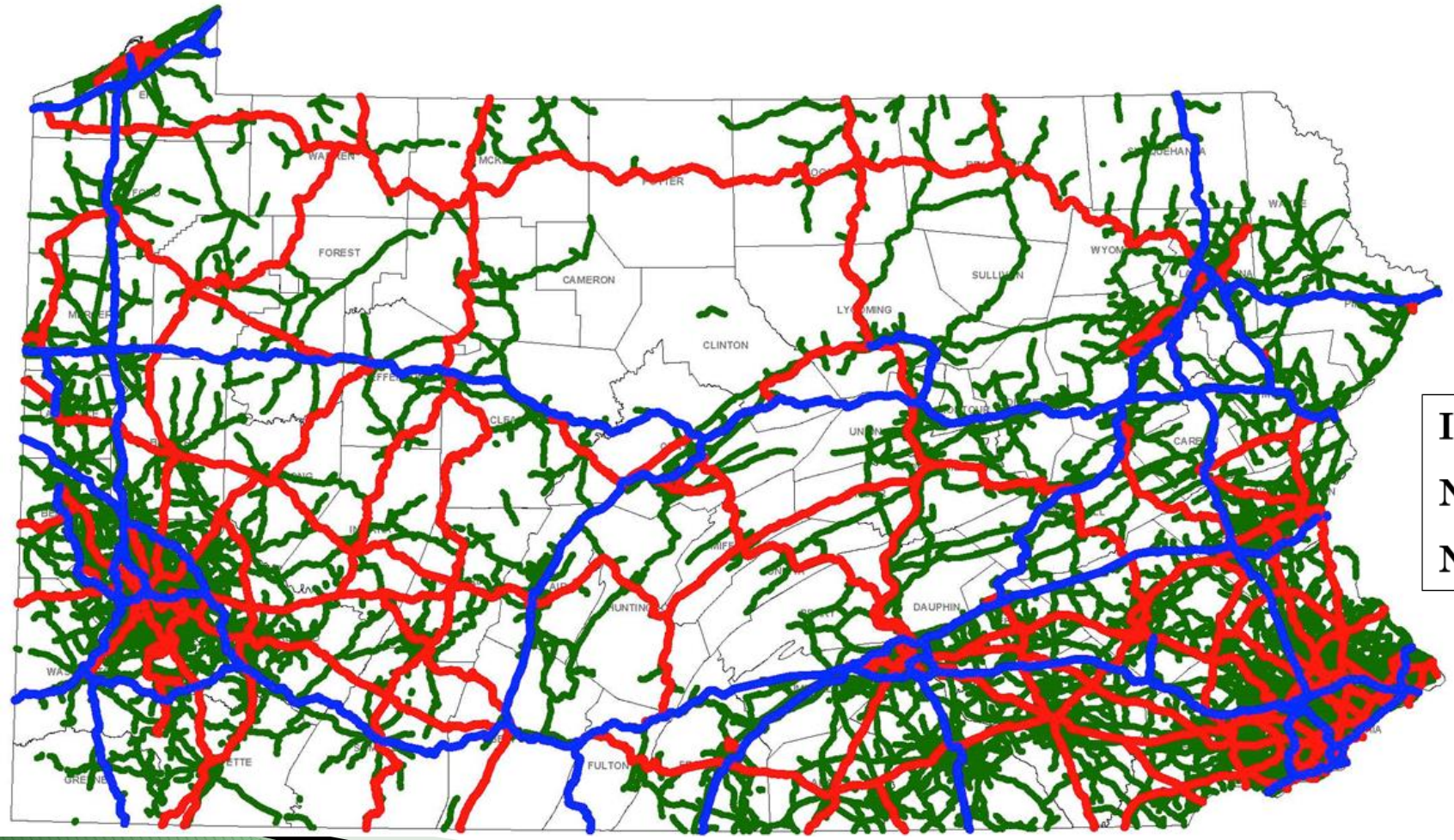


Interstate ——

PennDOT's Roadway System
BPN 2 – National Highway System



PennDOT's Roadway System
BPN 3 – Non-NHS ADT >2,000

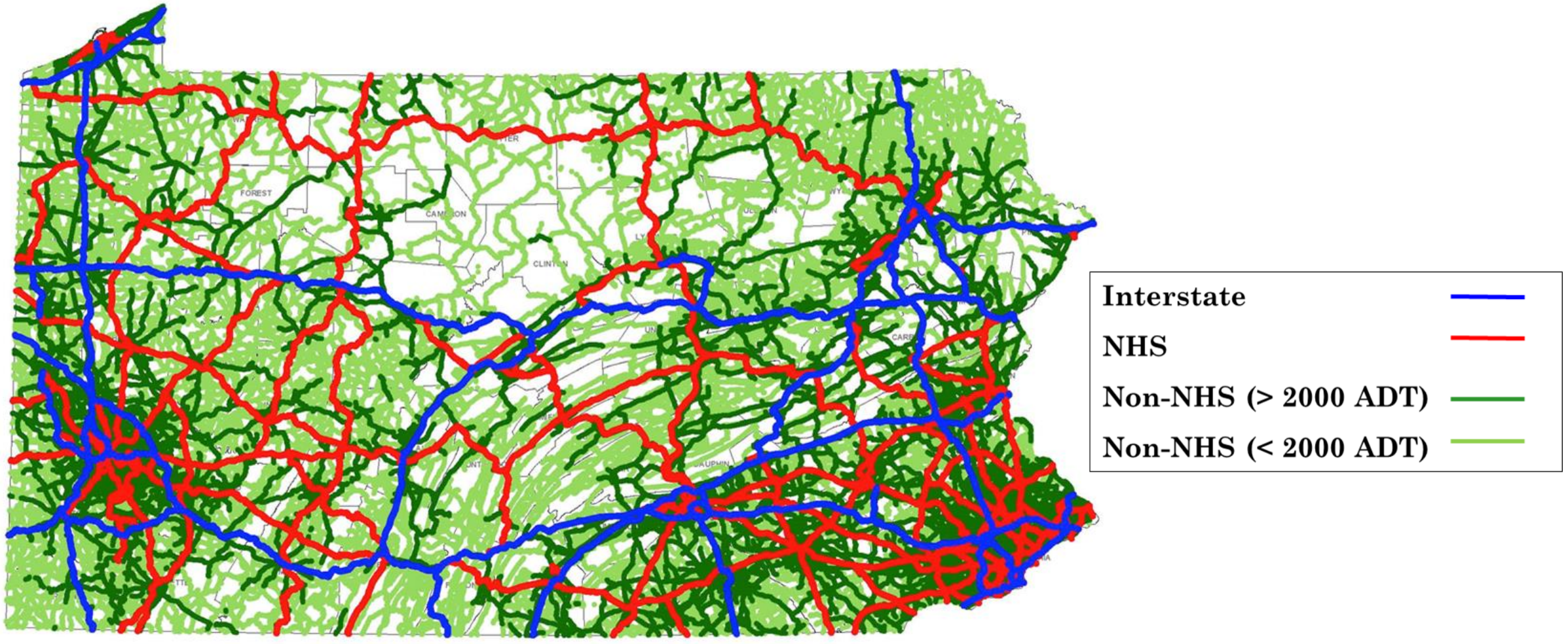


Interstate

NHS

Non-NHS (> 2000 ADT)

PennDOT's Roadway System
BPN 4 – Non-NHS ADT <2,000



Preservation Special Provisions & Specifications

- Hot-In-Place Recycling (HIPR)
- Asphalt Rubber Gap-Graded (AR-GG)
- Crumb Rubber Modified Asphalt Binder Dense-Graded (CRMAB)
- Cold Recycling
- High RAP

- Thin (Hot) Mix Asphalt Overlay (TMAO) – 6.3mm
- Microsurfacing
- Crack Sealing
- Seal Coats
- Resurfacing
- Ultra-thin Bonded Wearing Course

- Hot Pour Mastic

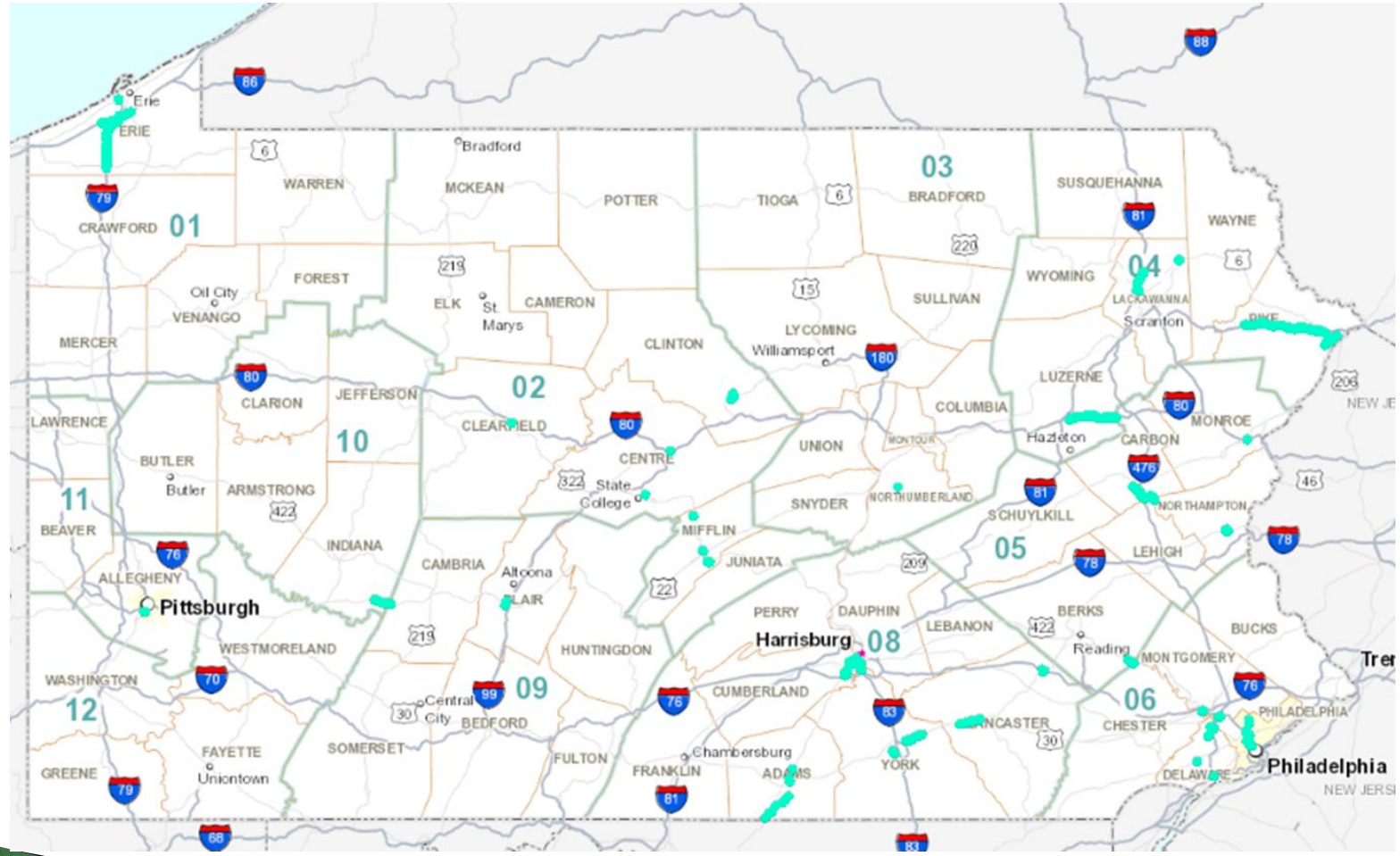
Ultra-Thin Bonded Wearing Course

- UTBWC will seal the pavement, reducing oxidation and weathering of the surface
- Pennsylvania places UTBWC on top of concrete as a protective layer and is particularly used on concrete with ASR
- In Pennsylvania, the expected service life of UTBWC is 8 to 10 years

UTBWC Types

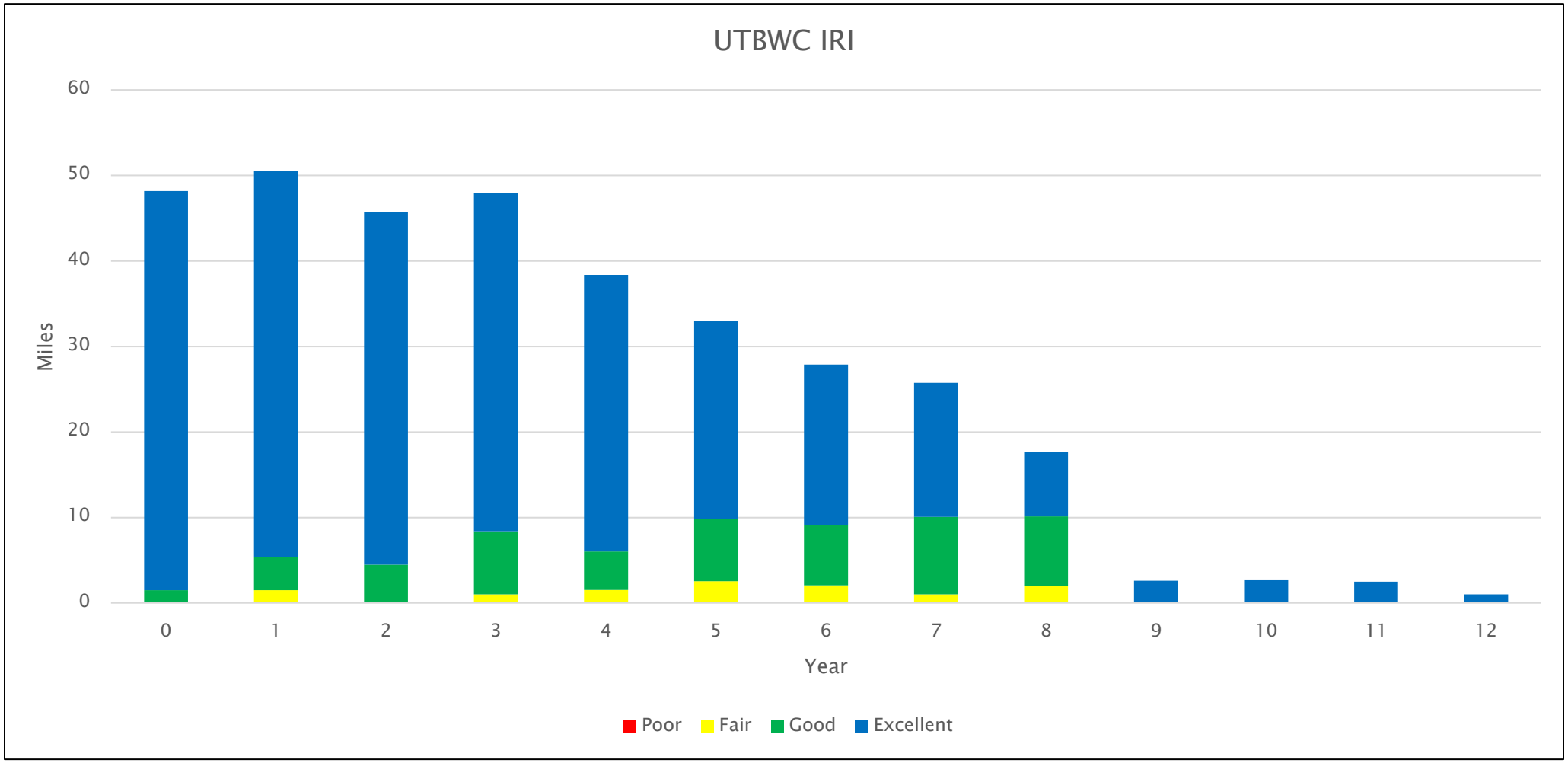
- UTBWC Type A
  - 6.3 mm nominal maximum aggregate size mix
  - Considered to be the lightest duty mix
  - Fine surface texture, excellent for urban and suburban application
- UTBWC Type B
  - 9.5 mm nominal maximum aggregate size mix
  - Durable to handle moderate to heavy traffic and truck traffic on highways with moderate speeds
- UTBWC Type C
  - 12.5 mm nominal maximum aggregate size mix
  - Most heavy-duty mix, can be used for any application, regardless of traffic levels
  - Recommended for high speed, high traffic applications, and for applications with moderate rutting

UTBWC PennDOT

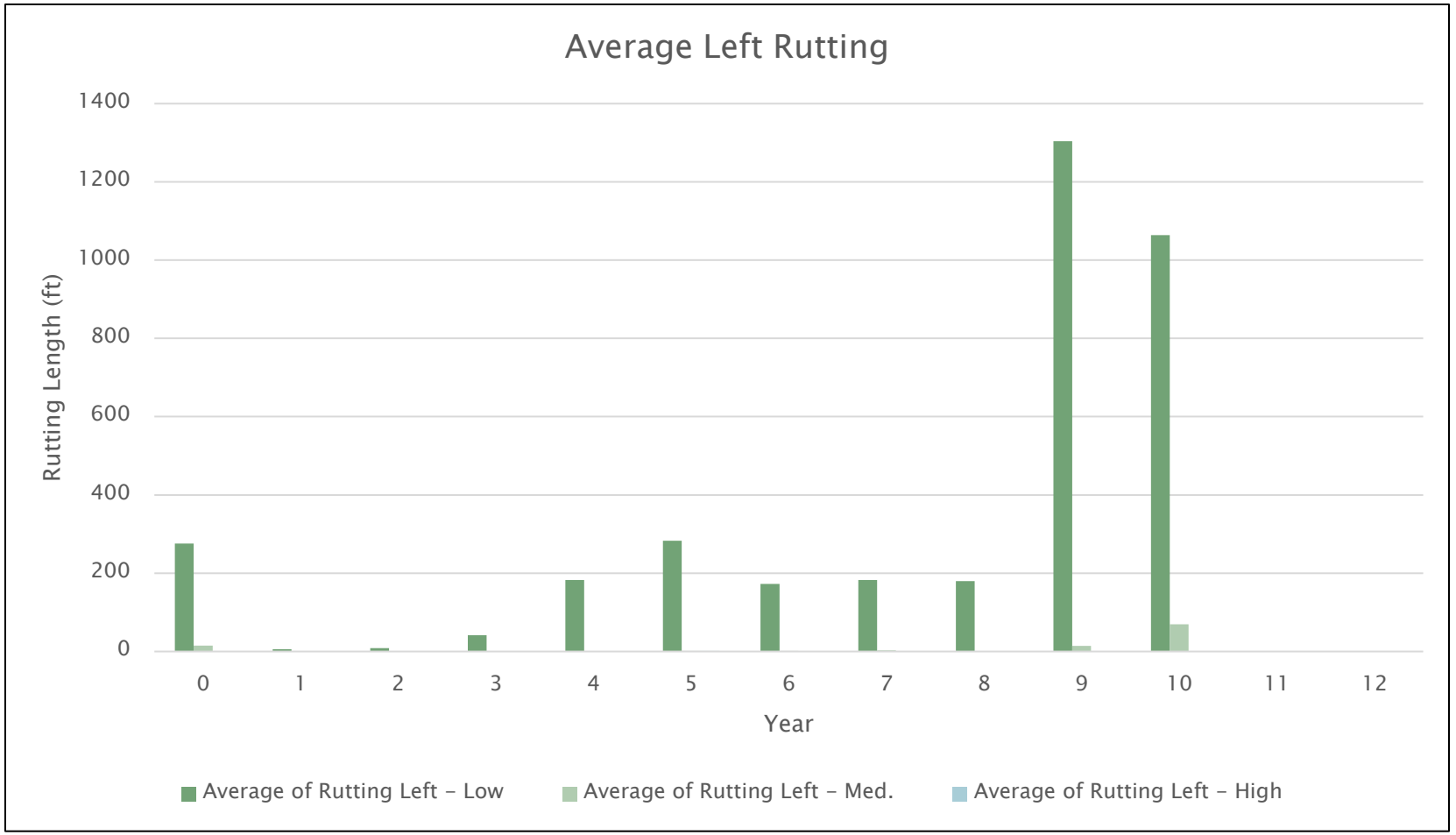


Total	50.63 miles
UTBWC	33.15 miles
UTBWC Type A	0.26 miles
UTBWC Type B	14.73 miles
UTBWC Type C	2.49 miles

UTBWC Performance

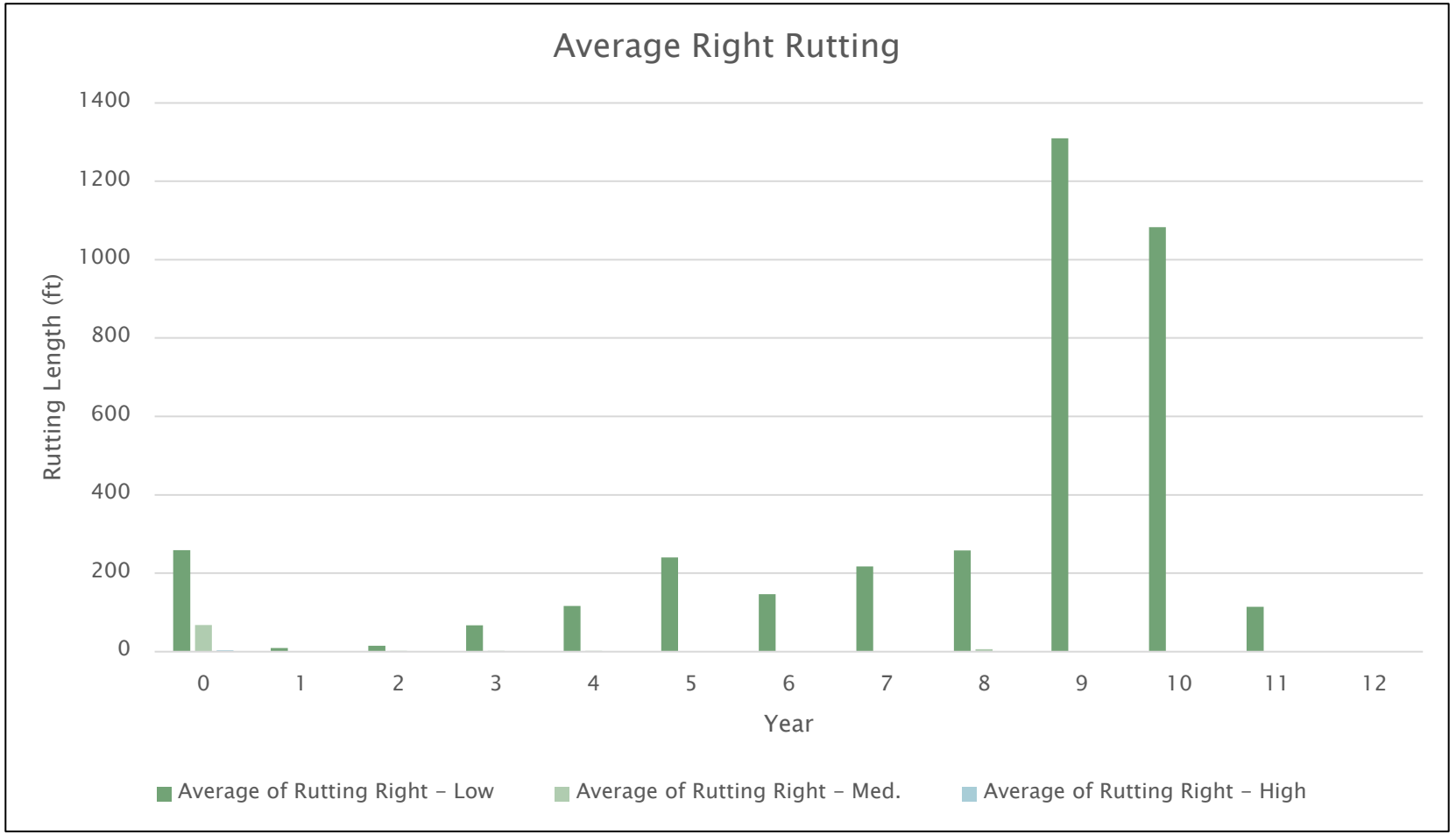


UTBWC Performance



- Rutting Severity
  - Low: Avg. Rut Depth ≥0.25in and <0.5in
  - Medium: Avg. Rut Depth ≥0.5in and <1.0in
  - High: Avg. Rut Depth ≥1.0in

UTBWC Performance



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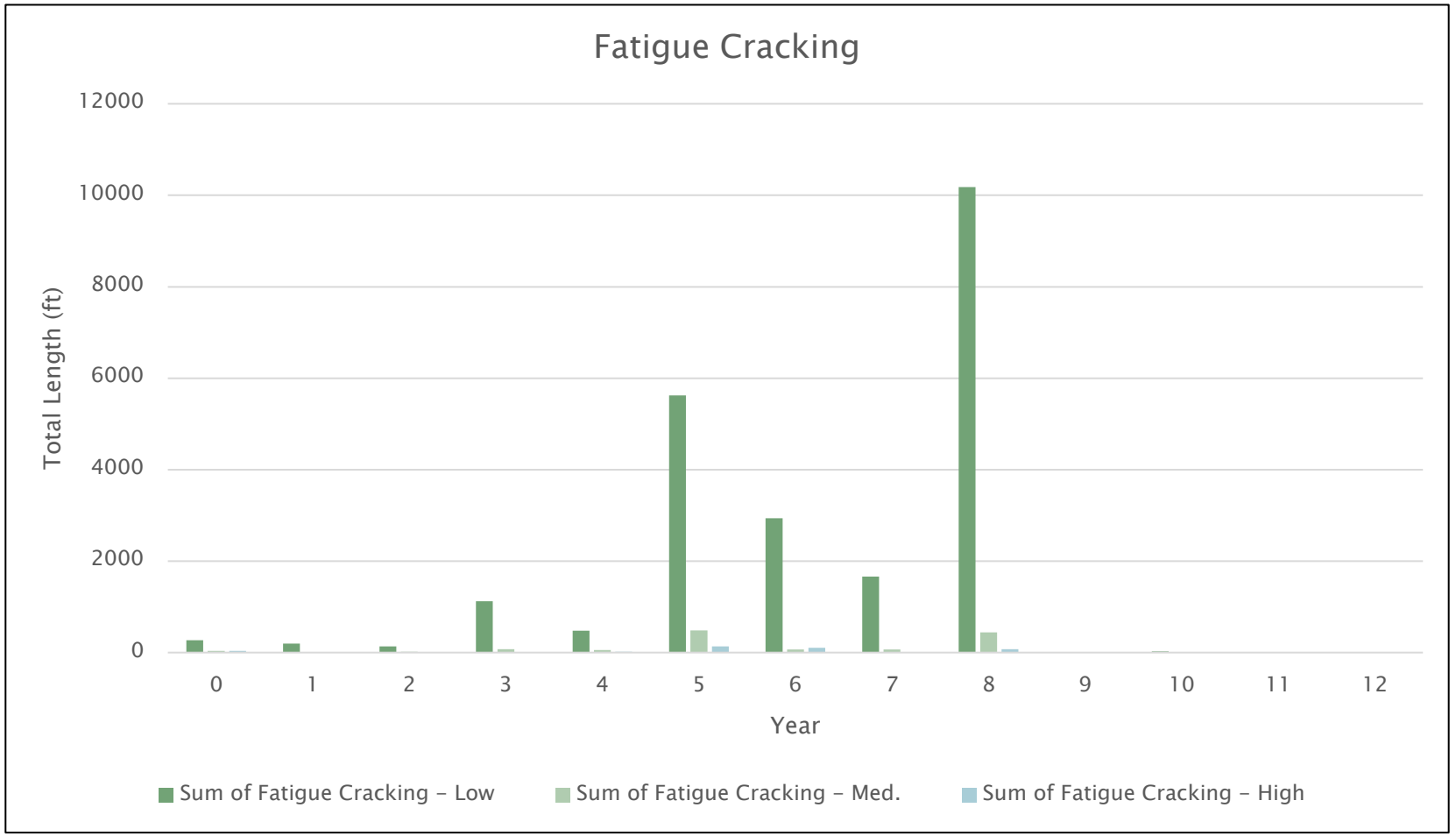
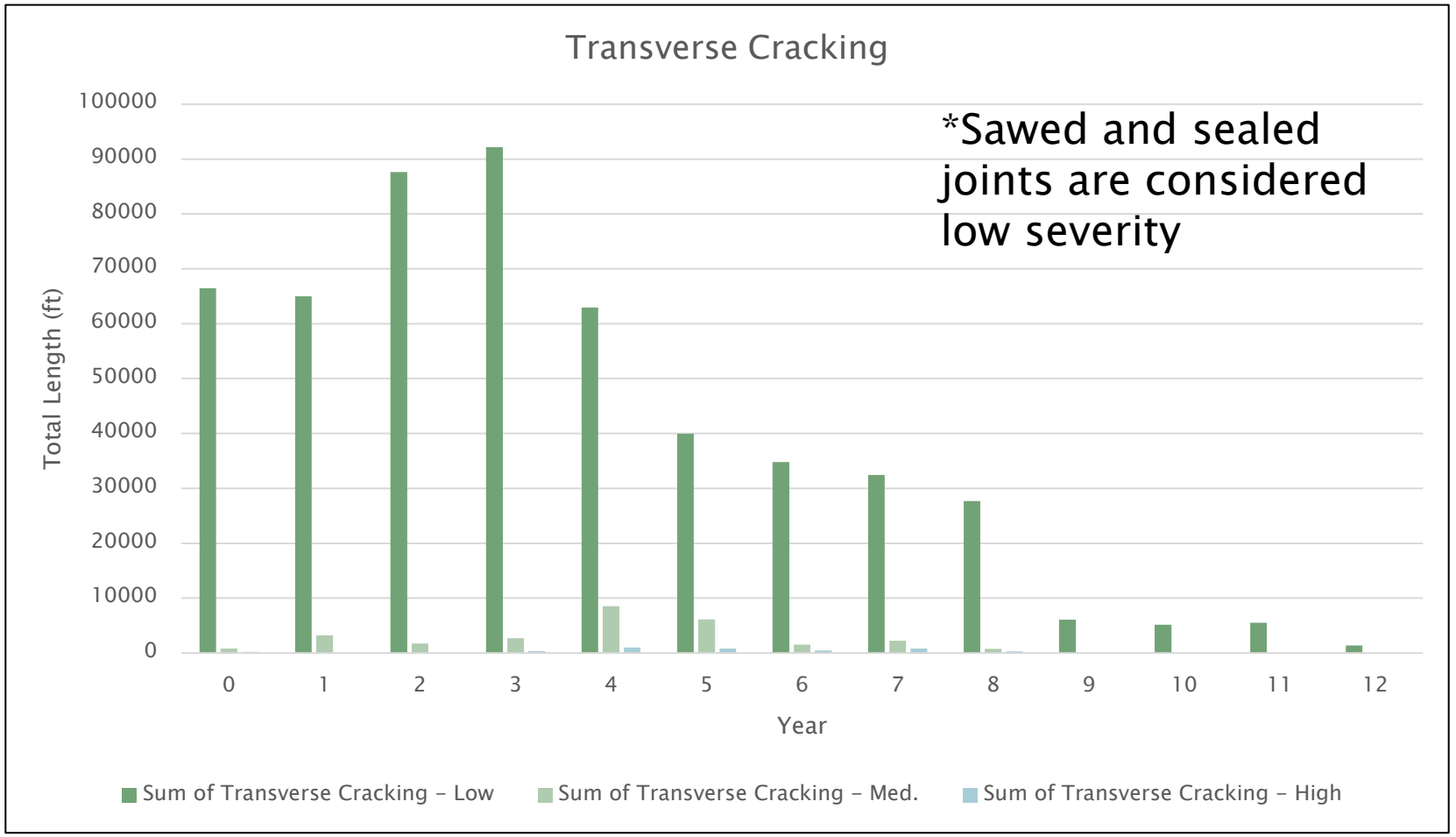


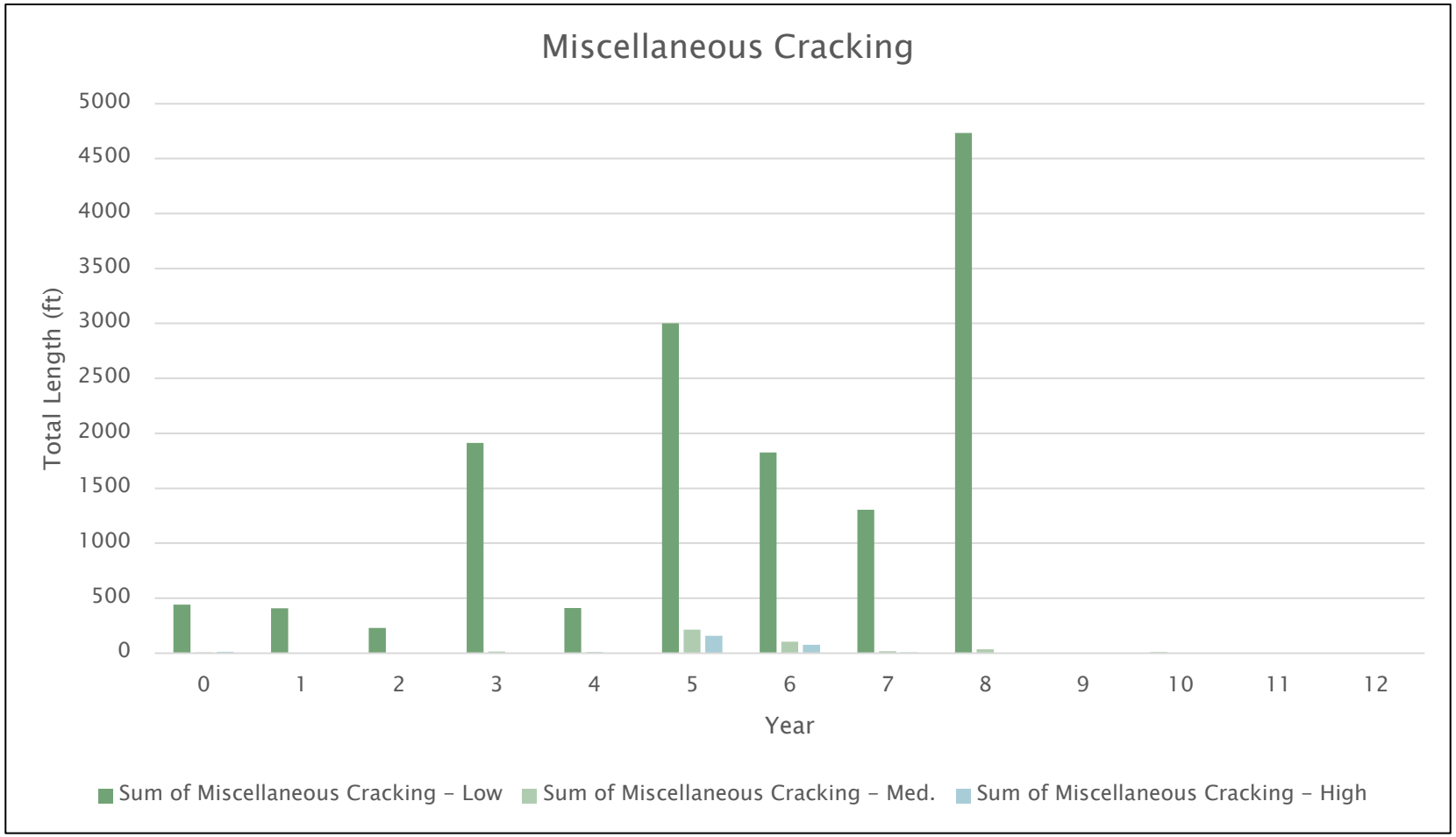
- Fatigue Cracking Severity
  - Low: Avg Crack Width ≤hairline
  - Medium: Avg. Crack Width >hairline and ≤0.25 in
  - High: Avg. Crack Width >0.25 in

UTBWC Performance



- Transverse Cracking Severity
  - Low: Avg. Crack Width >hairline and ≤0.25in
  - Medium: Avg. Crack Width >0.25in and ≤0.5in
  - High: Avg Crack Width >0.5in

UTBWC Performance



- Miscellaneous Cracking Severity
  - Low: Avg. Crack Width >hairline and ≤0.25in
  - Medium: Avg Crack Width >0.25in and ≤0.5in
  - High: Avg Crack Width >0.5in

Conclusion

- Advantages
  - Minimal change in pavement elevation
  - Can reduce water spray from traffic on wet pavement
  - Helps to seal existing pavement better than tradition mix because of the use of the spray paver
- Disadvantages
  - Limited set of distresses can be corrected UTBWC
  - Coarse surface textures reduce the yield of marking paint
- Performance
  - Based on the data, we are getting the expected life from this treatment
  - A great tool to have in the toolbox

Thank you!