The September 2013 Flood: What We Saw, and What It Might Mean

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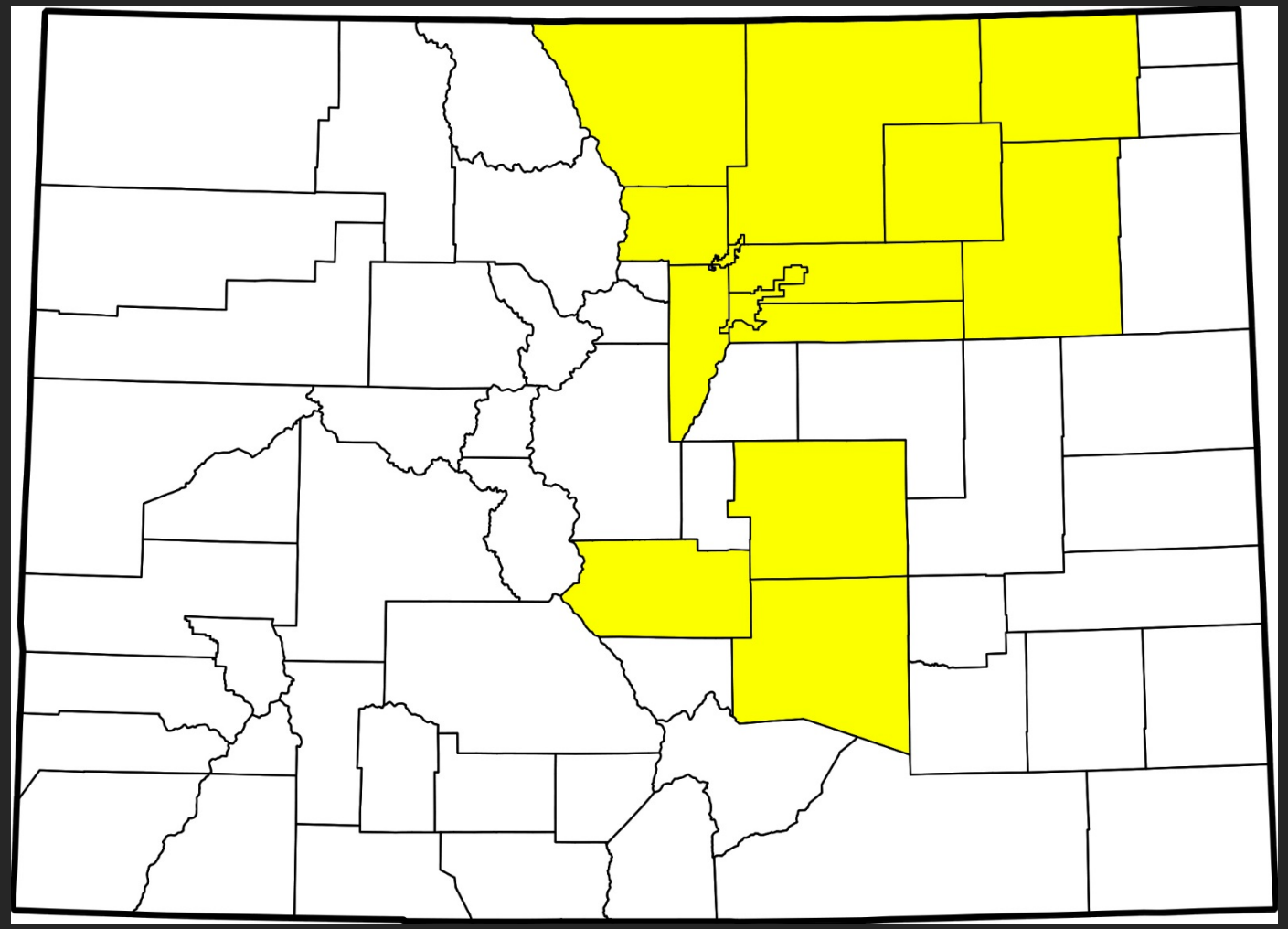

A 10-day sustained rainfall event in most South Platte River sub-watersheds in September 2013

Yearly average precipitations: 14 to 19 inches

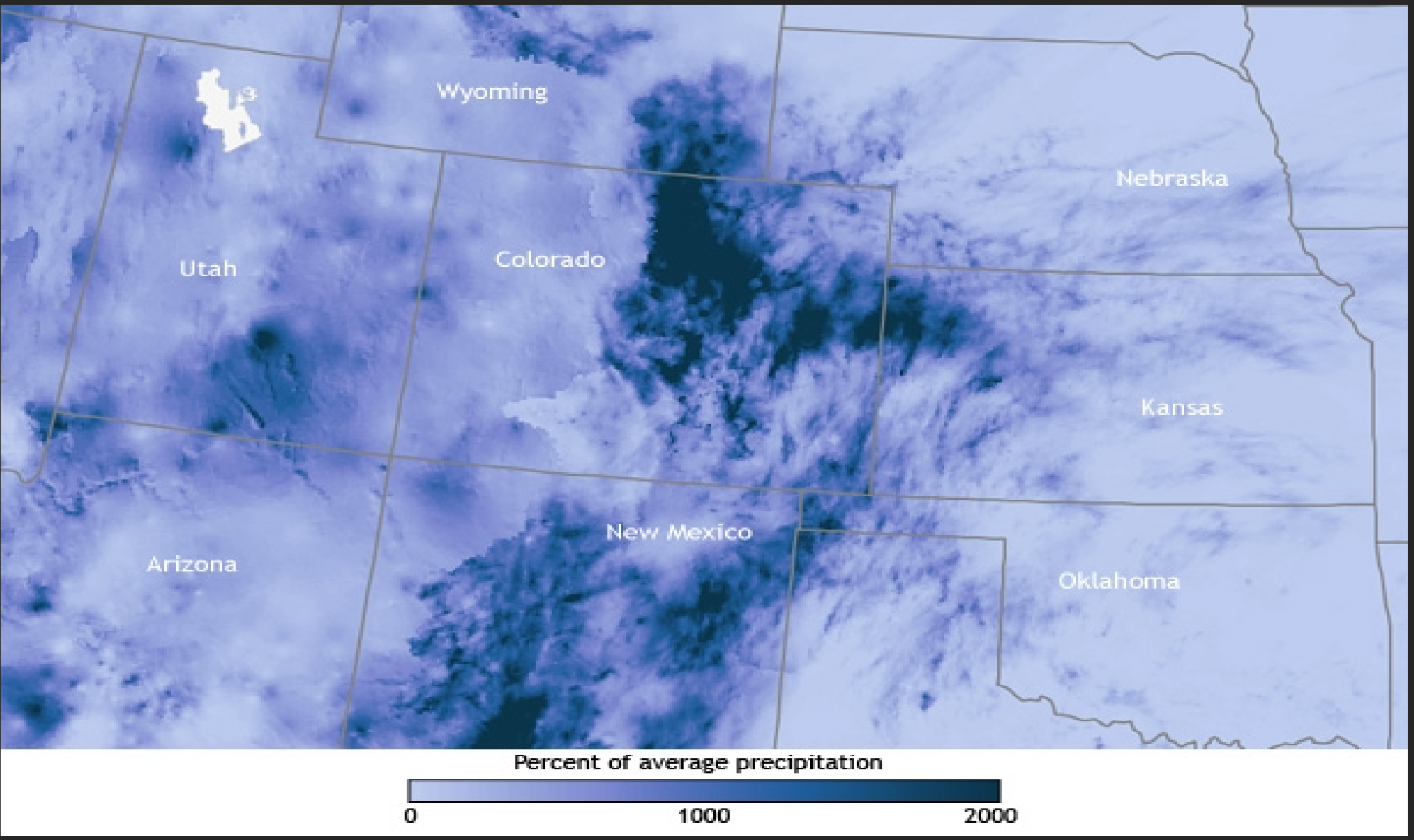

Image Credit: NOAA Climate Data

River Flows Ranged from 25 yr Recurrence up to ~500 yr Recurrence

Flood Recovery Scope and Impacts

- $535 million estimated damage to facilities
- 486 Miles of state highway closed
- 200+ Bridges and culverts damaged
- 120,000 cubic feet of debris removed

Types of Damage Seen During the Event

Roadway Overtopping and Saturated Embankments

Washed Out Bridge Approaches on Highway Bridges

(Smaller Bridges are Undermined)

Debris (Natural and Otherwise)

Railroads, Utilities, and Trails

Headcuts in Fields and Front Yards

Pressurized Bridge Flows and Increased Resultant Scour

Failure of Irrigation Diversions

Ditches Run Full, Including Abandoned Ones

Canyon Road Systems Heavily Damaged

Side Slope Failures and Rockslides

Mass Sediment Transport

Community Access is Compromised

5 (Very) Initial Conclusions Drawn From This Event

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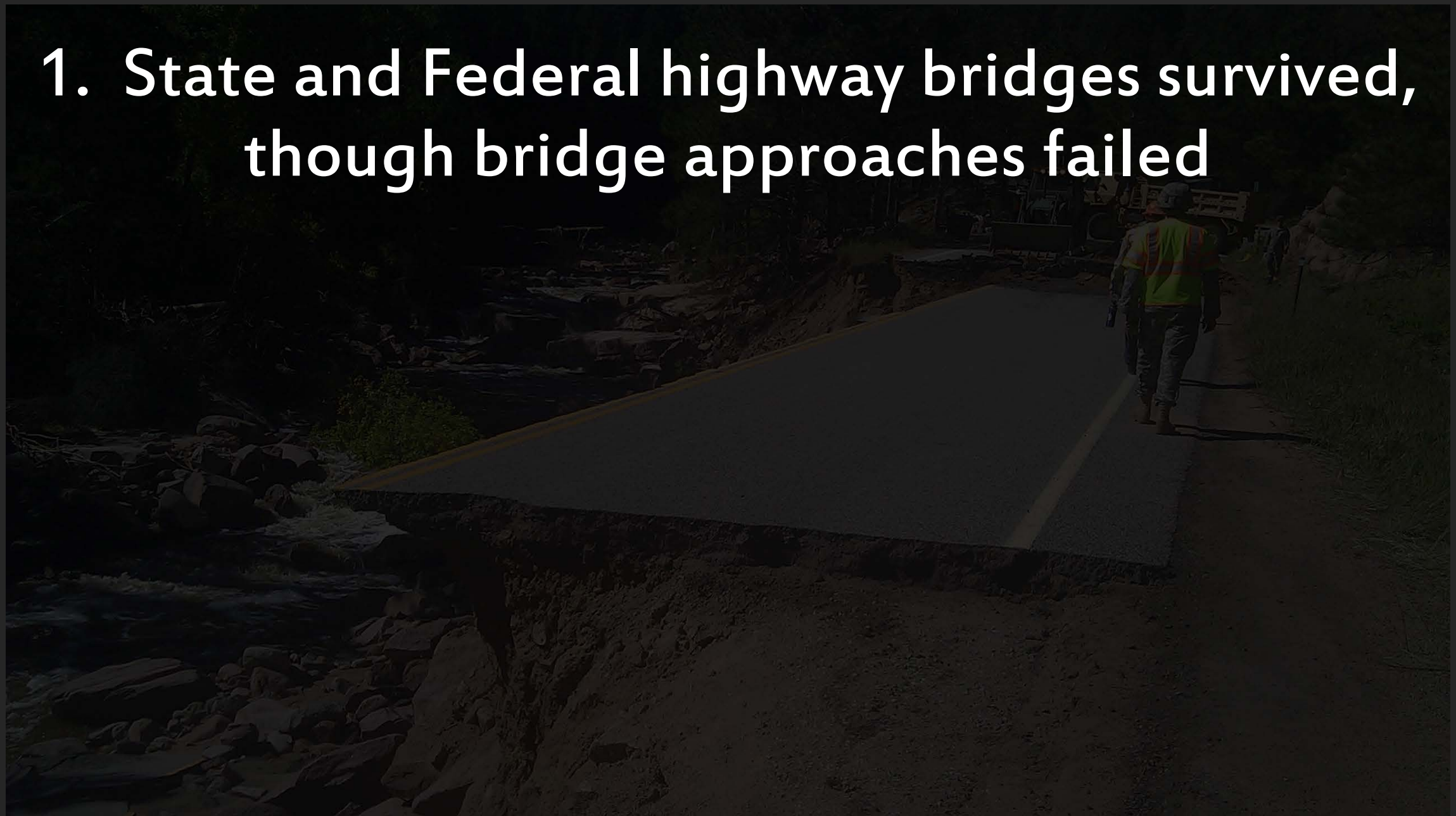

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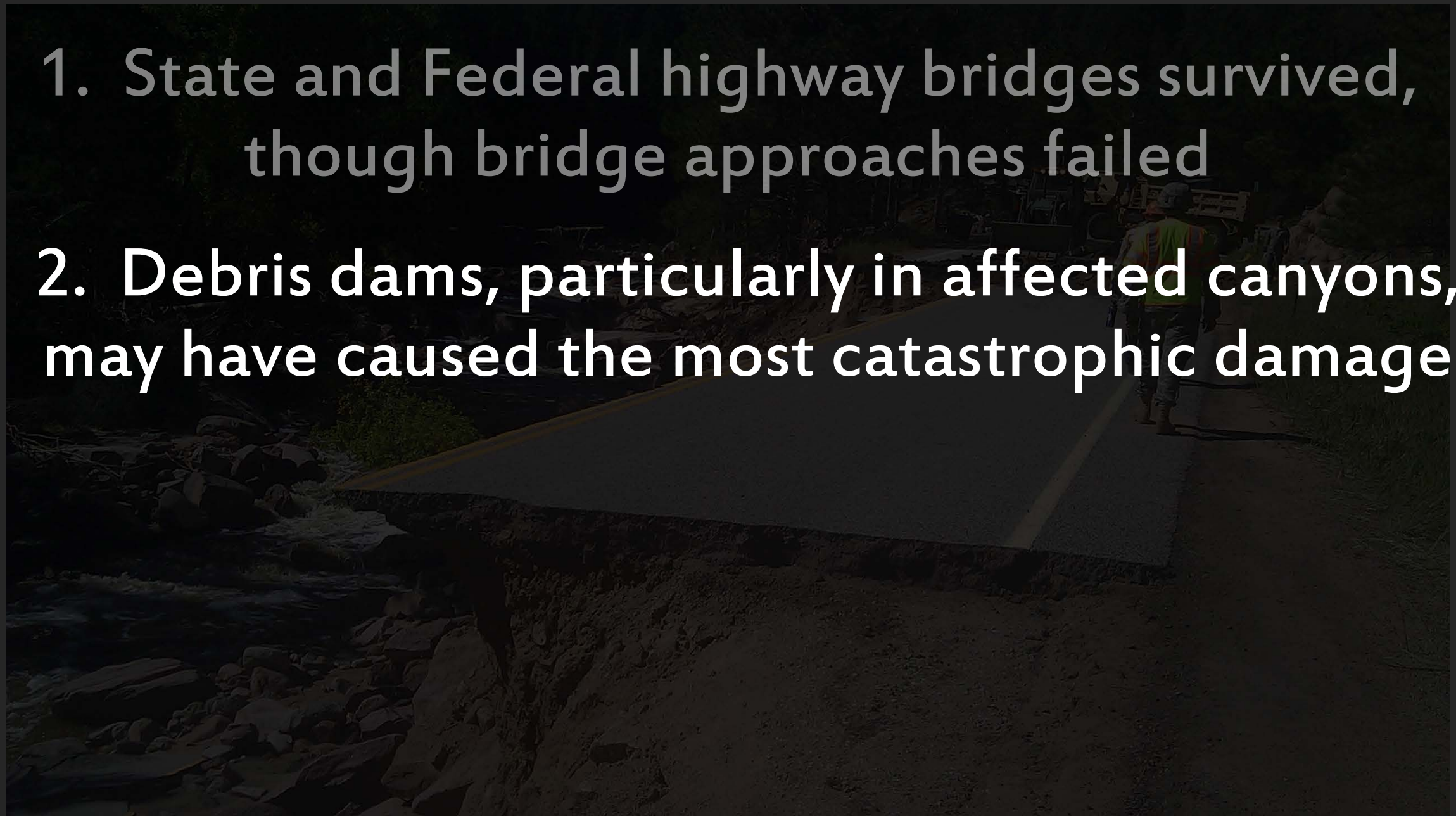

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2. Debris dams, particularly in affected canyons, may have caused the most catastrophic damage

3. The nature of this slow-moving storm resulted in fewer fatalities. It did result in more physical damage due to saturation of roadway embankments and hill slopes

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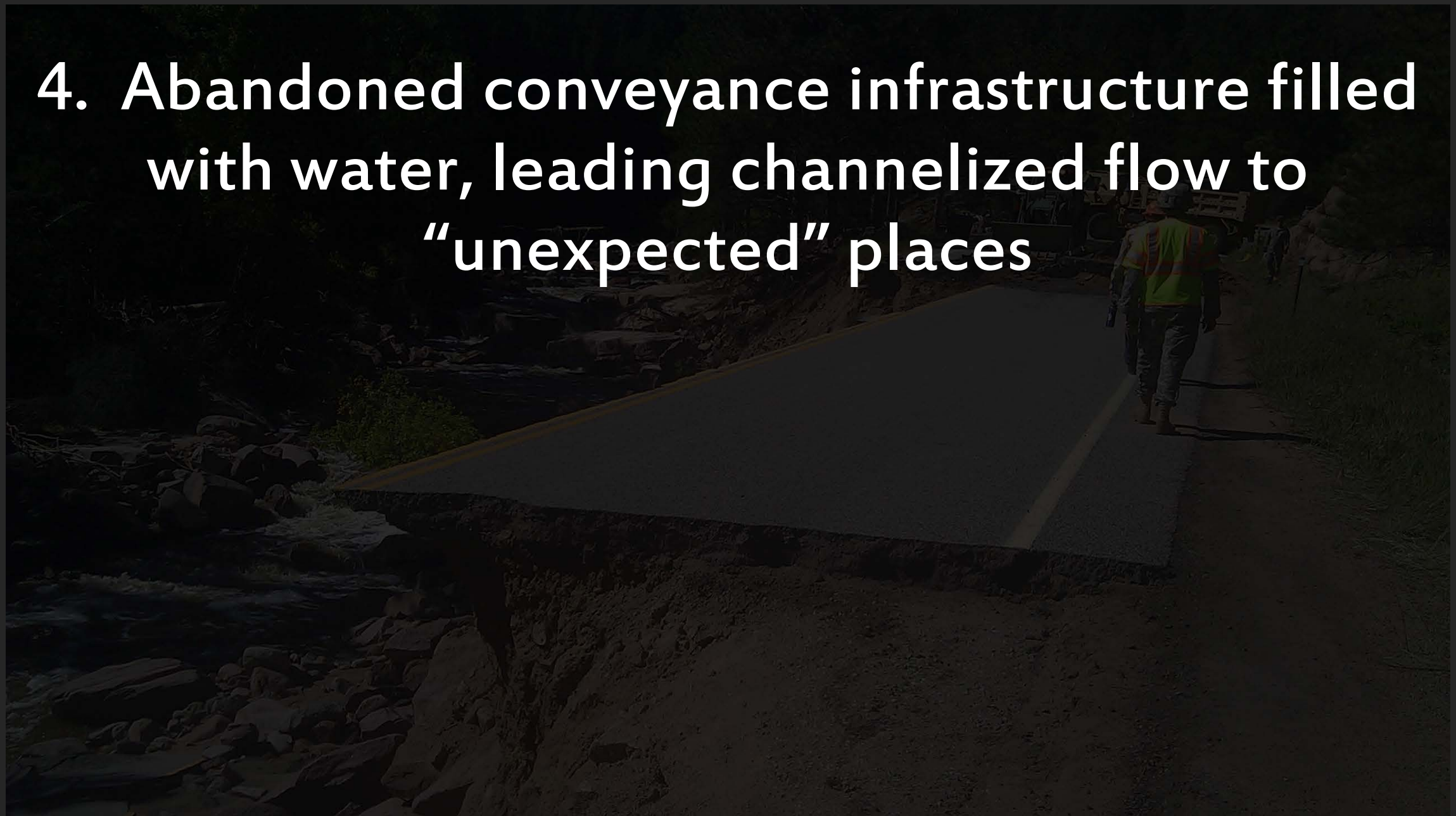

4. Abandoned conveyance infrastructure filled with water, leading channelized flow to “unexpected” places

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5. Peak flows throughout multiple watersheds ranged between 25 and ~500 yr recurrence events

When Your Job Becomes Triage: How To Prepare?

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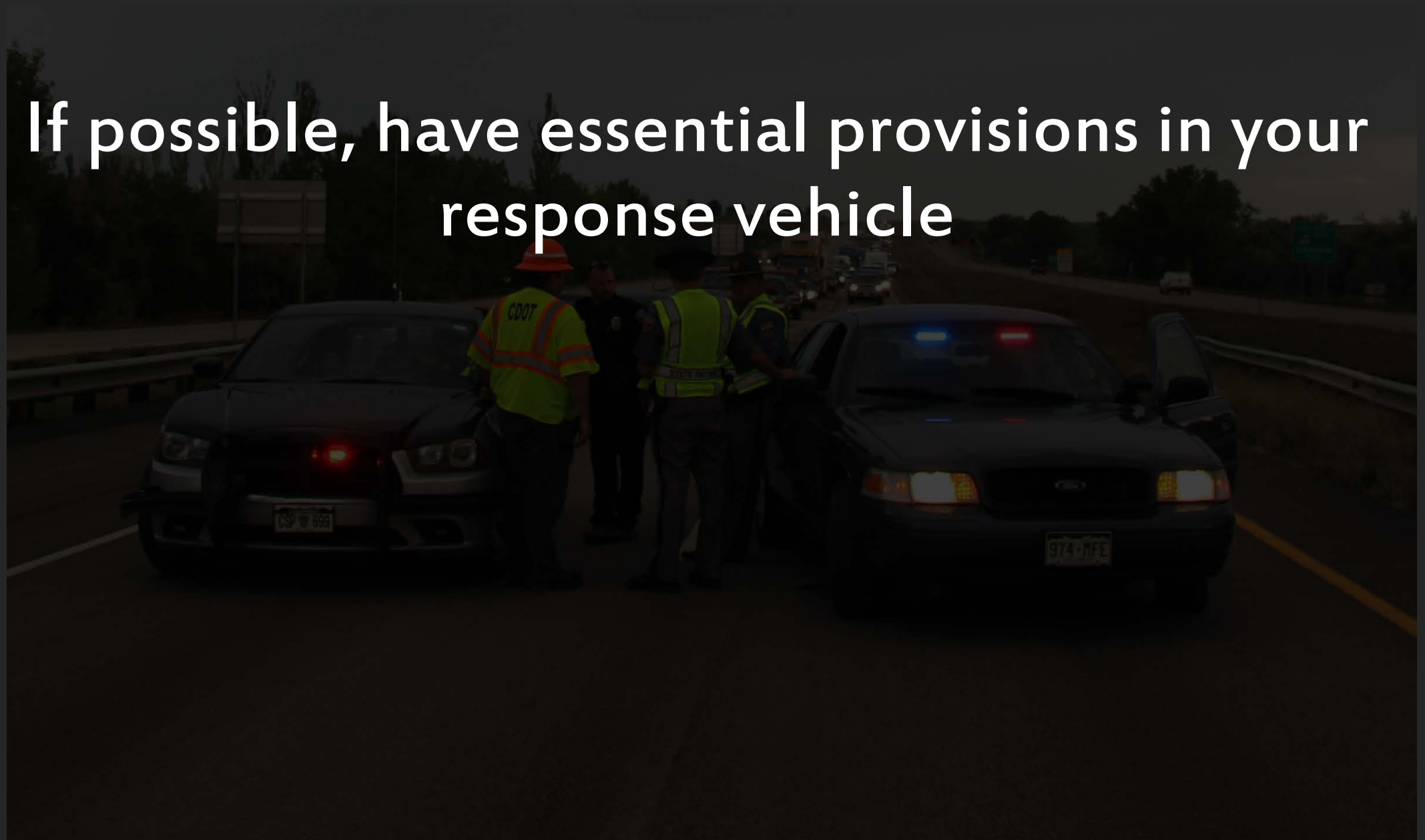

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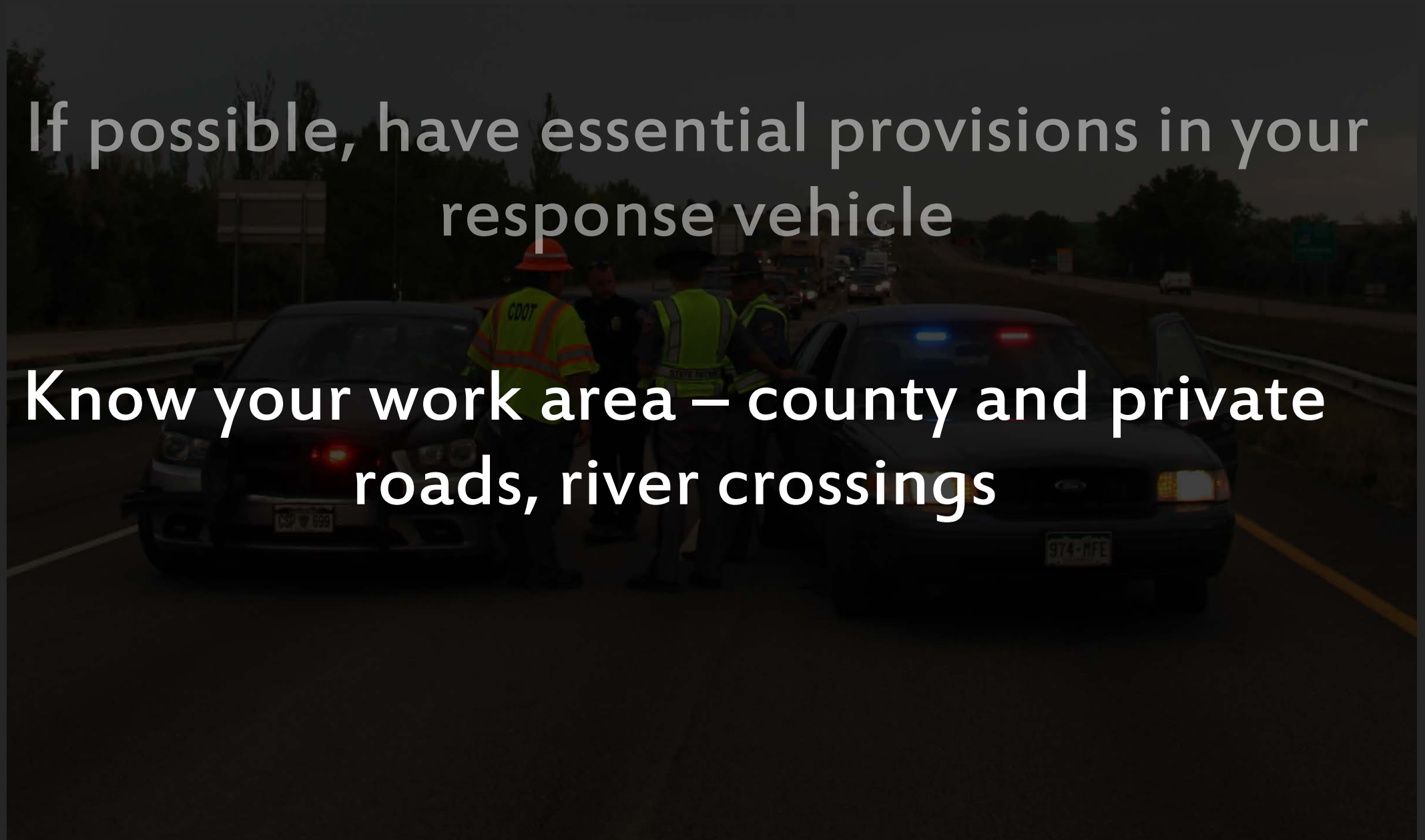

If possible, have essential provisions in your response vehicle

Know your work area – county and private roads, river crossings

When Your Job Becomes Triage: How To Prepare?

GIS enabled camera for photos/video, or "relabel" these items ASAP after the disaster

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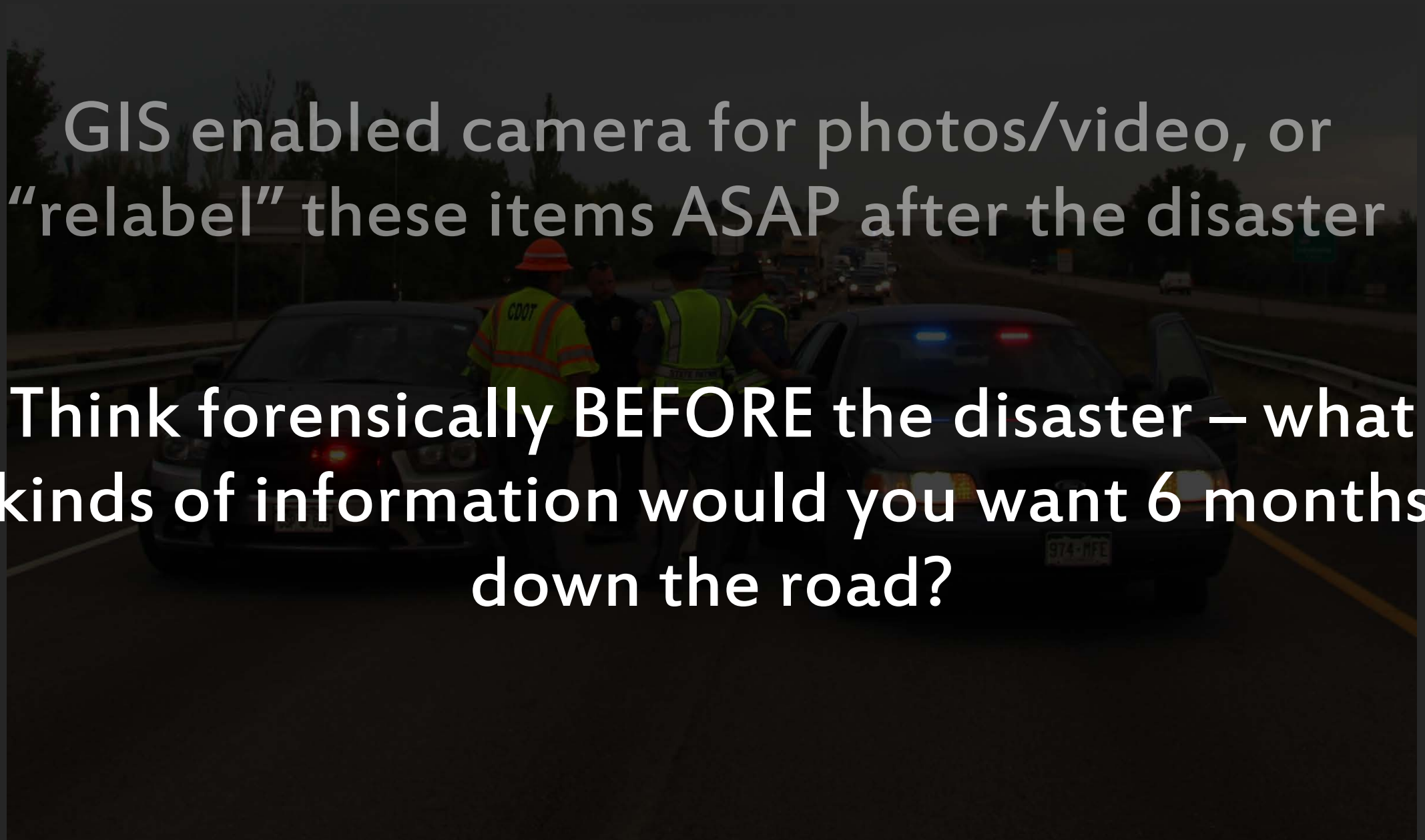

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Think forensically BEFORE the disaster – what kinds of information would you want 6 months down the road?

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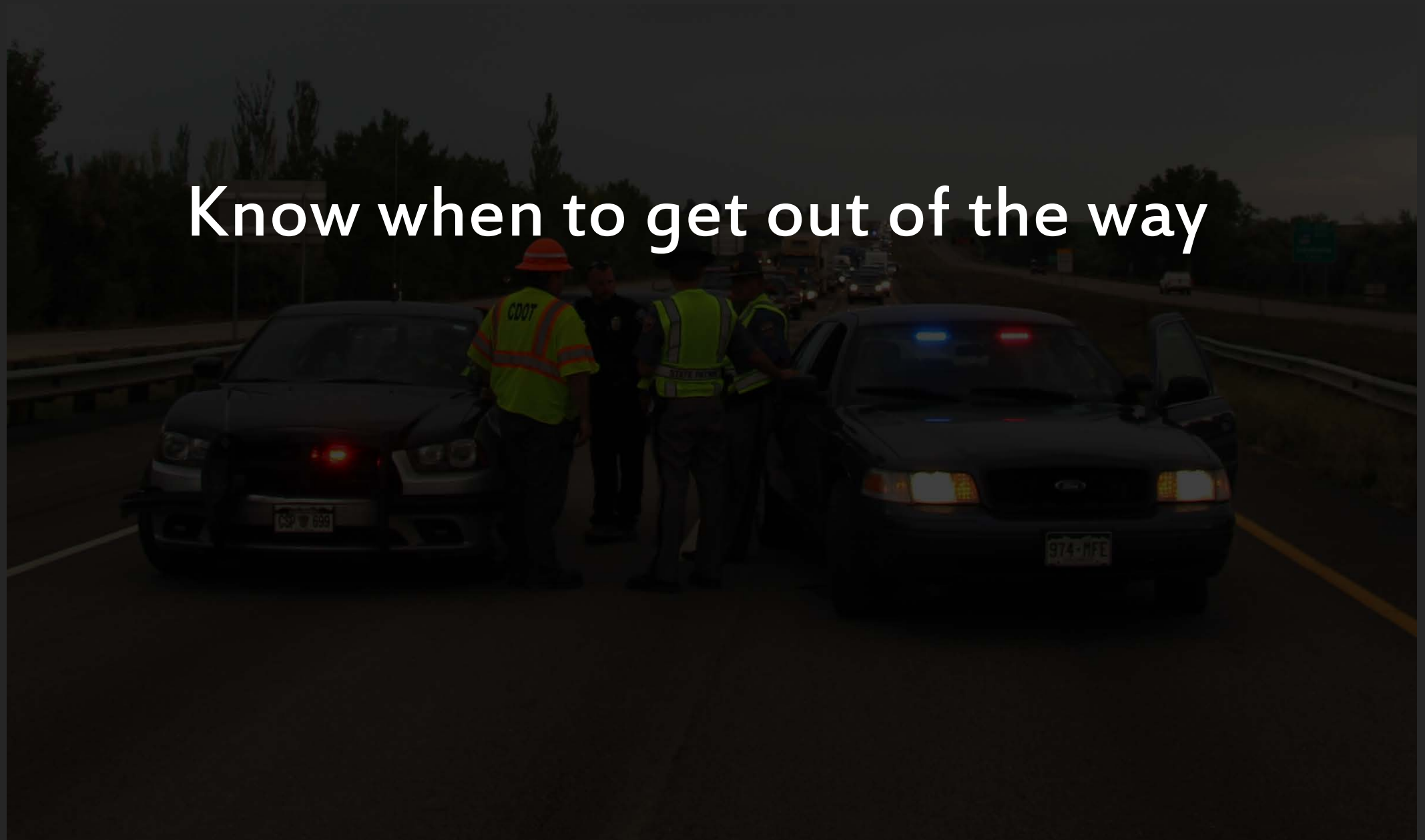

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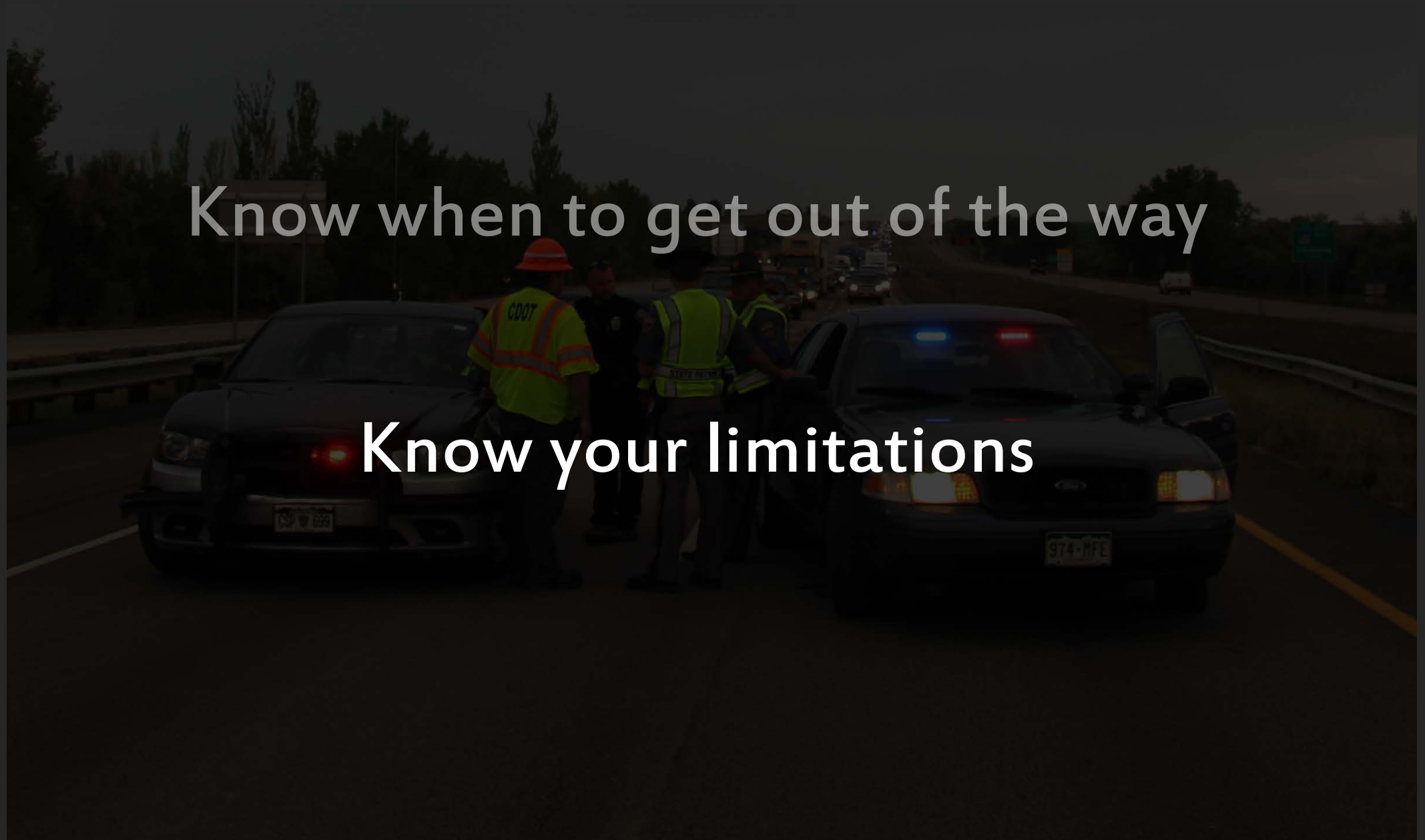

Know when to get out of the way

Know your limitations

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