Case Study:

Gasoline Tanker Roll-Over
Initial Response Actions and Restoration

NH Route 101, Epping, NH

NHDES

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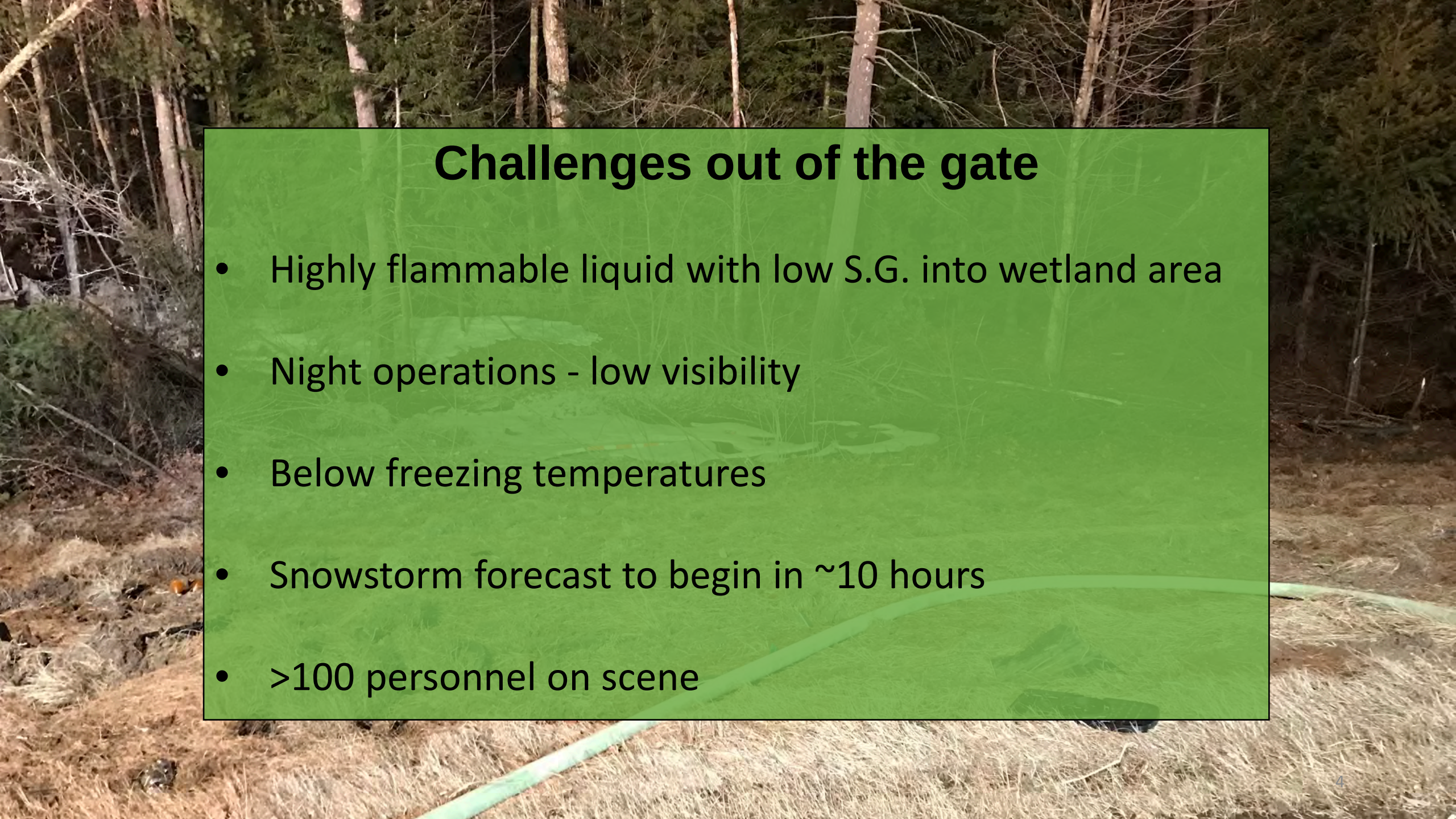
Spill Response & Complaint Investigation Section

December 16, 2019

Notification from NH State Police received 8:20pm

- “Gasoline gushing out like an open fire hydrant”
- 11,000-gallon capacity
- Multiple Fire Departments on scene
- Emergency Response Contractor dispatched
- Spill into wet wooded area



Challenges out of the gate

- Highly flammable liquid with low S.G. into wetland area
- Night operations - low visibility
- Below freezing temperatures
- Snowstorm forecast to begin in ~10 hours
- >100 personnel on scene

Objectives determined with Incident Command

- Scene safety – PREVENT FIRE
- Remove truck from crash scene
- Assess tanker and pump out remaining gasoline
- Remove tanker from crash scene
- Assess impacts and potential migration
- Recover pooled gasoline
- Stabilize scene and clear road before snow storm

Tanker Recovery and Assessment

- Significant damage to front headwall of tanker
- Piping and valve gallery intact
- Did not tap into tanker due to flammability – opened hatches front to back
- Interior baffles compromised
- Recovered ~4,500 gallons of virgin gasoline from rear compartment
  - Estimated ~6,500 gallons released to the ground

Spill Assessment

- Communication with IC for entry into “hot zone”
- Generally flat wooded area filled with hummocks and dips containing exposed groundwater
- Gasoline migrating through hummocks and held up by high water table
- Stream located ~200’ north and ~350’ east of the release area
- 15+ gallons of AFFF concentrate applied to crash site
  - Some class B foam

Gasoline Recovery and Scene Stabilization

- Contractor recovered ~2,300 gallons of pooled gasoline from the ground into tanker
  - Estimated ~4,200 gallons remain on the ground

- Containment boom placed in two 1’-deep interceptor trenches on the east and west sides of the release
  - Hand-dug with non-sparking tools

- Roadway cleared at ~5:00am on December 17

Ongoing Stabilization and Recovery Work

- SAFETY – Side of Roadway, Gasoline vapors
- Contractor continued pumping pooled gasoline from source area and surrounding area
- Determined the extent of impacts and migration path of gasoline
- Absorbent pads and boom deployed in exposed pools of gasoline
- Large interceptor trench excavated east of the release area, down-gradient of impacts

Coordination Meeting and Planned Work

- Responsible Party (Hauler), Insurance Rep, Consultant, Response Contractor, Local FD, Local DPW, NH DOT, NH DES
- Input from NH DOT for roadwork and restoration requirements
- NH DES: Env-OR 600 requires clean-up meeting SRS and AGQS
- Input from Response Contractor regarding work practices
- Input from Consultant regarding remediation strategy

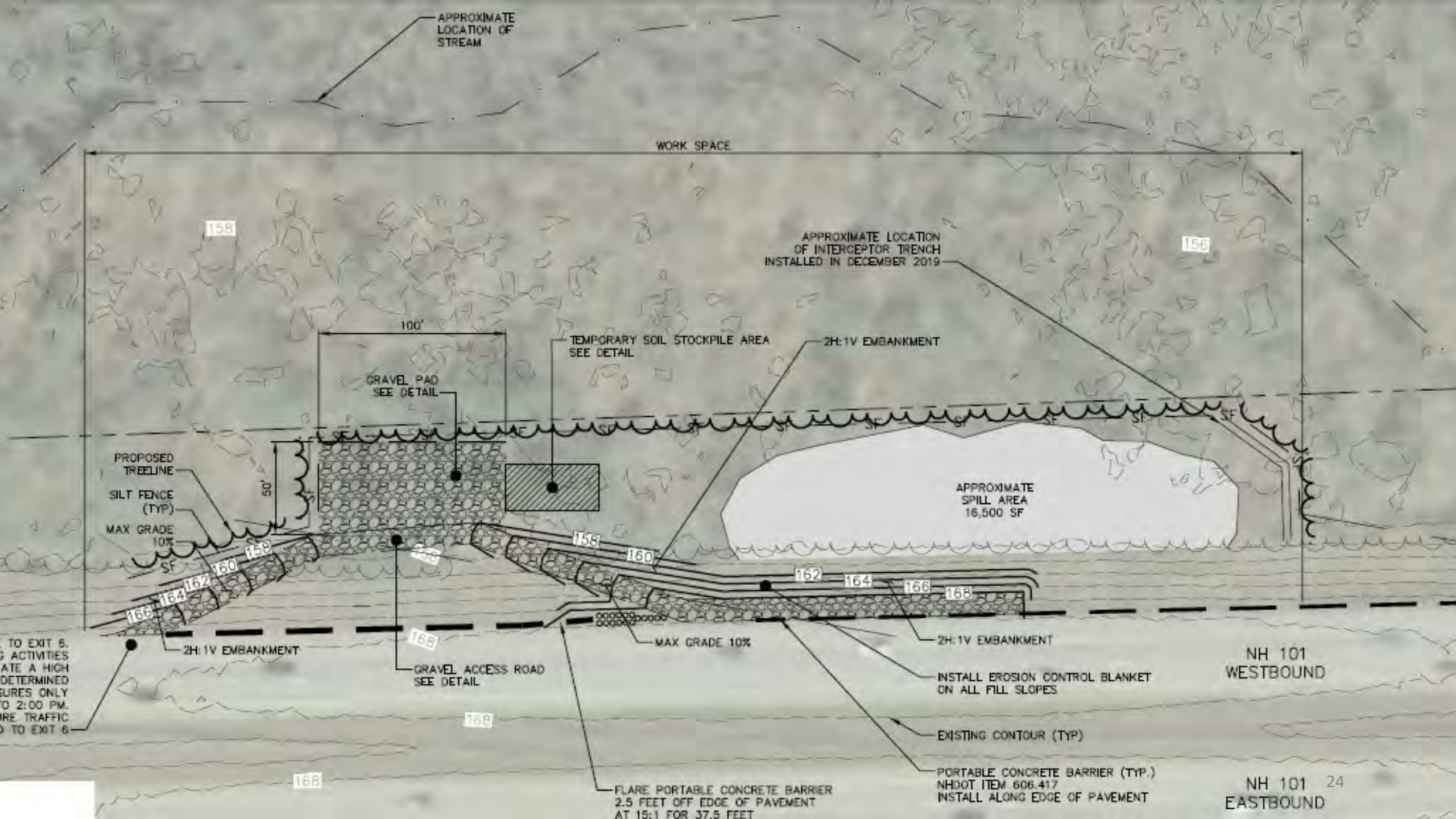
Remediation Challenges

- Hand work required until flammability hazard is removed
  - Local FD Fire Watch at scene on standby
- Access to site – clear trees and build ramps down to work pad next to spill
- High water table presents disposal challenge
  - Dewater stockpile prior to load-out
- Wetland area requires delineation for appropriate restoration
  - Emergency Authorization – NH DES Wetlands Bureau

Remedial Action, Road Safety, and Restoration Plans

- Remedial Action Plan in accordance with NH DES Env-OR 600
  - Outlines remediation/excavation plan and endpoint sampling strategy
  - Remedial Action Plan Completion Report to be submitted at completion
- Wetlands Delineation and Restoration Plan required by NH DES
- Road Safety Plan in accordance with US DOT rules
  - Jersey barriers, crash arrestors, and warning signage
- Excavation Permit required by NH DOT
  - Entry/exit ramp and work pad construction procedure/specs


CAT


APPROXIMATE LOCATION OF STREAM
WORK SPACE
158
156
APPROXIMATE LOCATION OF INTERCEPTOR TRENCH INSTALLED IN DECEMBER 2019
100'
TEMPORARY SOIL STOCKPILE AREA SEE DETAIL
2H:1V EMBANKMENT
GRAVEL PAD SEE DETAIL
PROPOSED TREELINE
SILT FENCE (TYP)
MAX GRADE 10%
50'
SF
APPROXIMATE SPILL AREA 16,500 SF
158
160
162
164
166
168
2H:1V EMBANKMENT
GRAVEL ACCESS ROAD SEE DETAIL
MAX GRADE 10%
2H:1V EMBANKMENT
INSTALL EROSION CONTROL BLANKET ON ALL FILL SLOPES
NH 101 WESTBOUND
EXISTING CONTOUR (TYP)
PORTABLE CONCRETE BARRIER (TYP.) NHDOT ITEM 606.417 INSTALL ALONG EDGE OF PAVEMENT
FLARE PORTABLE CONCRETE BARRIER 2.5 FEET OFF EDGE OF PAVEMENT AT 15:1 FOR 37.5 FEET
NH 101 EASTBOUND
TO EXIT 6.
ACTIVITIES
ATE A HIGH
DETERMINED
SURES ONLY
TO 2:00 PM.
RE TRAFFIC
TO EXIT 6


CAT
Audley


KOBELCO


AUDLEY

Results of Excavation

- Excavated and disposed of 3,373 tons of impacted soil
  - Not including trees, stumps, and absorbents

- Recovered ~6,900 gallons of gasoline and gas/water mix

- Collected 19 post-excavation soil samples
  -Excavation mostly affective, low-level SRS violations in a couple locations along roadway embankment (excavation limited by roadway)

Groundwater and Surface Water Monitoring Results

- GW monitoring:
  -Low-level AGQS violations for select VOC's in source area wells
  -PFAS detected in source area wells and at down-gradient wells (<AGQS)

- SW monitoring:
  -3 repeatable sample locations in nearby unnamed stream
  -No petroleum detections
  -PFAS concentrations detected at down-gradient location

- Two rounds of groundwater sampling show similar results (June & July 2020)

Future Investigation and Remediation

- At completion of Initial Response Action phase, the project is passed to the NH DES Petroleum Remediation Section for management
- Additional groundwater and surface water monitoring requested
- Additional groundwater investigation required
- SRS violations in roadway embankment to be addressed

Special Thanks

First Responders

JP Noonan

St. Germain

Clean Harbors Environmental Services

Questions?

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