



I&W Brine Well Update

Radioactive & Hazardous Materials Committee

August 2, 2016

I&W



Monitoring/Early Warning System

Comprised of instrumentation to monitor cavern roof stability

- tilt meters
- pressure transducers
- temperature gauges

When an instrument detects a change in cavern conditions, the change is categorized as an “event”

Significant or multiple simultaneous events generate automated notifications to local emergency response and OCD

Microseismic Monitoring System

Four off-site stations to monitor and triangulate locations of fracturing in the subsurface

Surface filtering device been added to screen out human generated noise and improve system accuracy

4,430 “false” signals detected in past 6 months

- traffic
- train

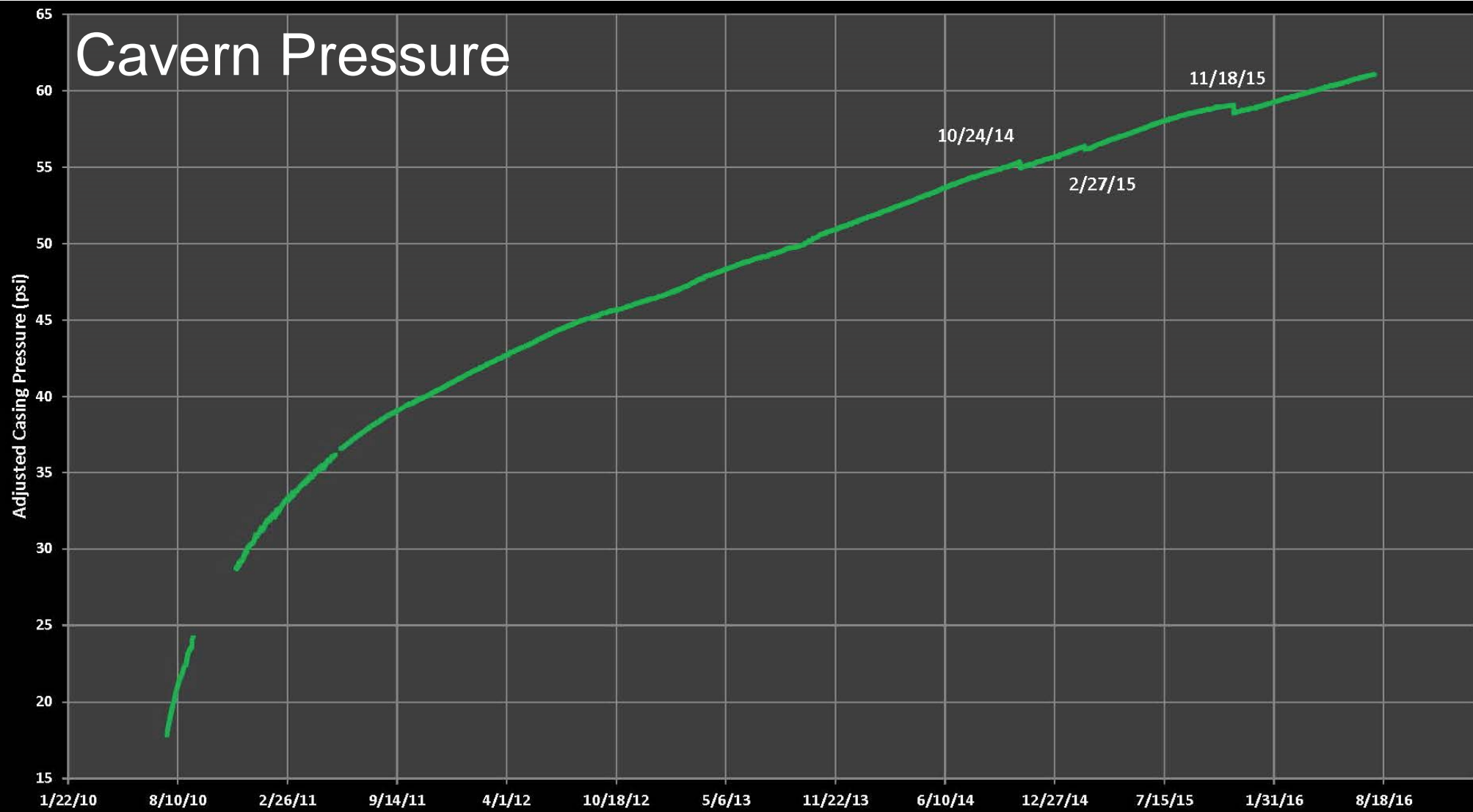
Cavern Stability

2014 Feasibility Study indicated cavern failure would likely occur between 2023 and 2038

A refinement of those calculations in late-2014 indicated failure could occur as early as 2021

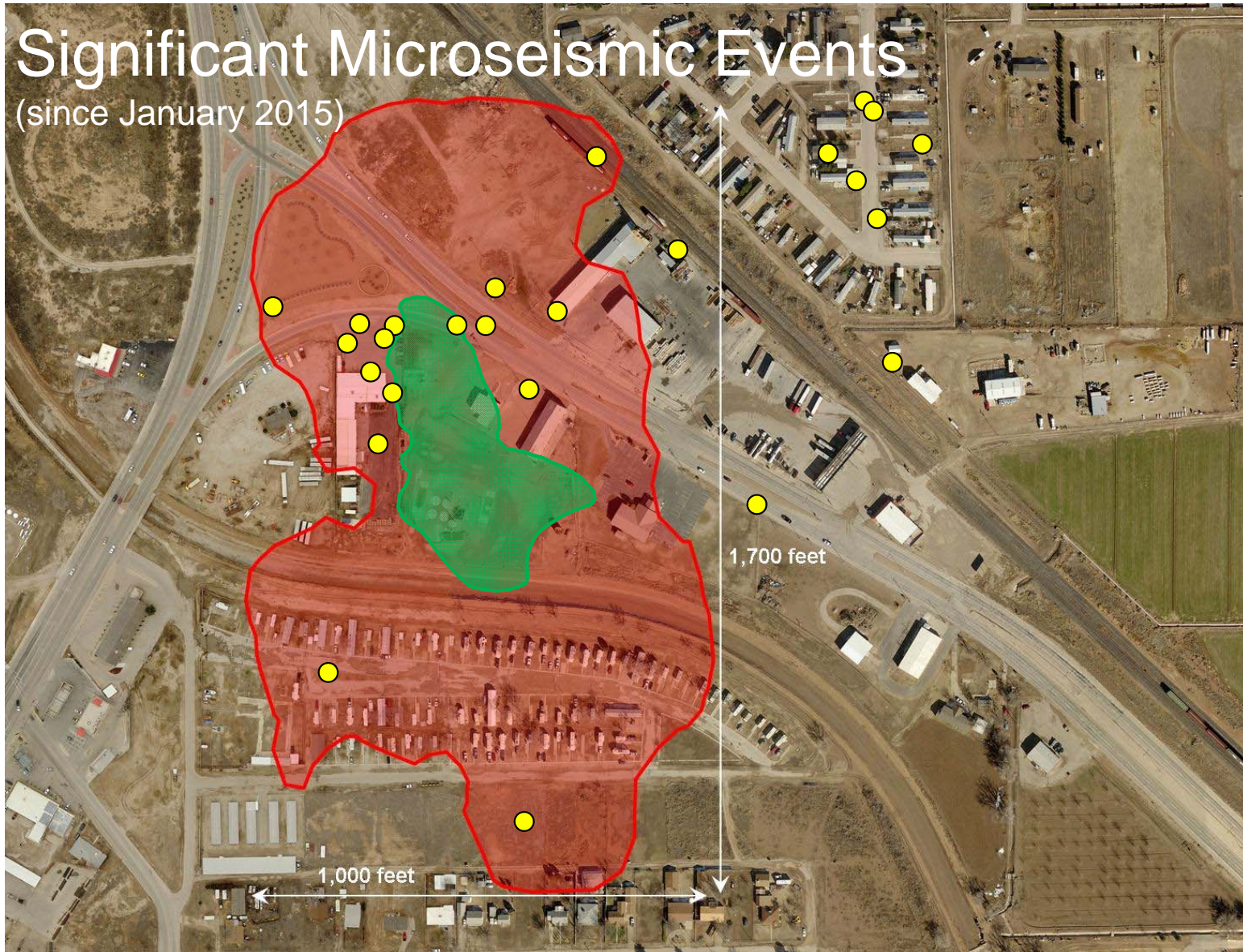
Cavern pressure changes and microseismic data continue to show the probability of cavern collapse is increasing

Cavern Pressure



Significant Microseismic Events

(since January 2015)



Cavern Stability

Working hypothesis that pressurized brine is penetrating into adjacent salt and rock formations, mainly in the northern end of the cavern

This results in cavern pressure drops and the release of seismic energy as fractures are formed

This is indicative of instability

The activity is episodic (periods of higher and lower frequency)