



I-11 Boulder City Bypass

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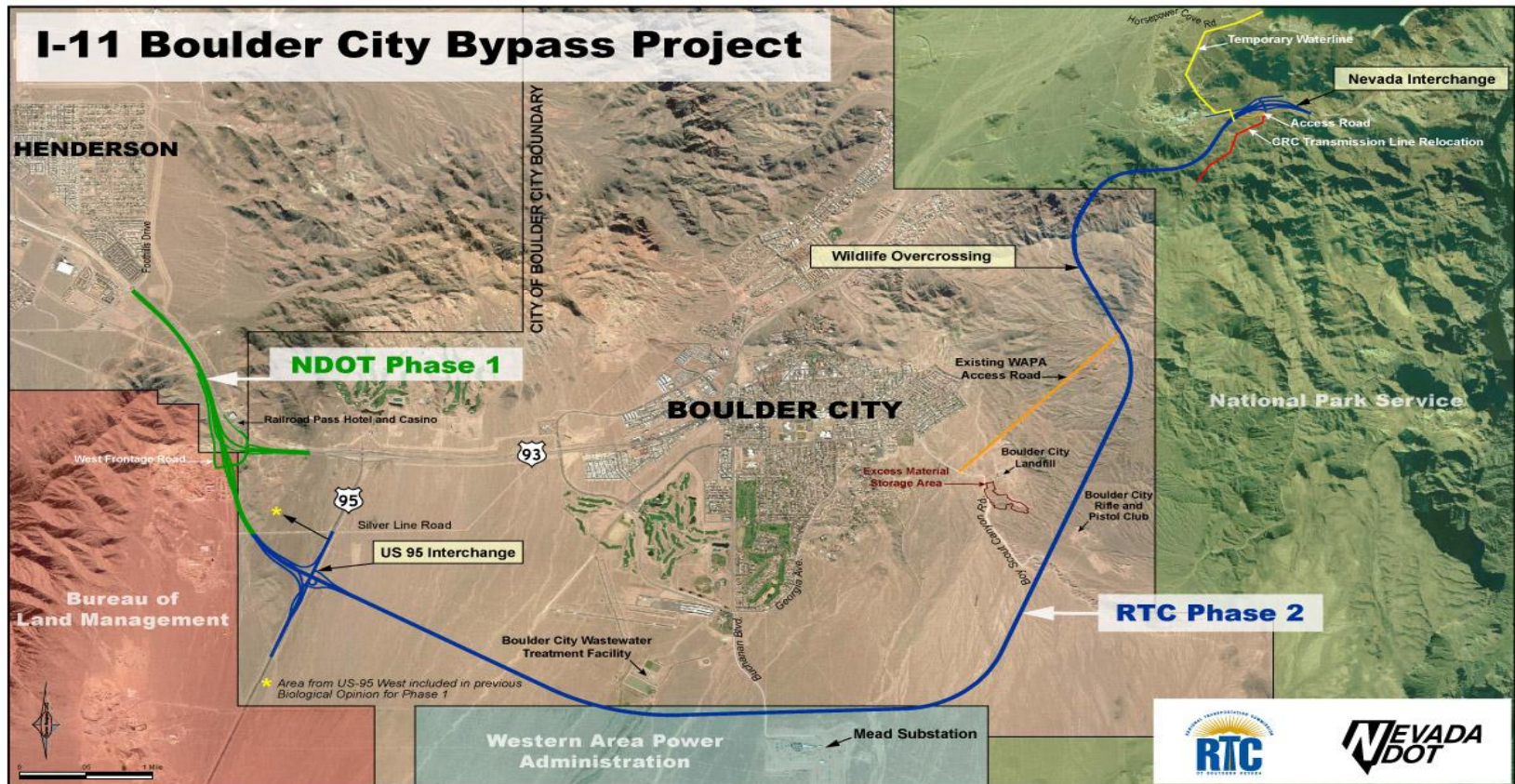
NDOT Environmental Services Manager



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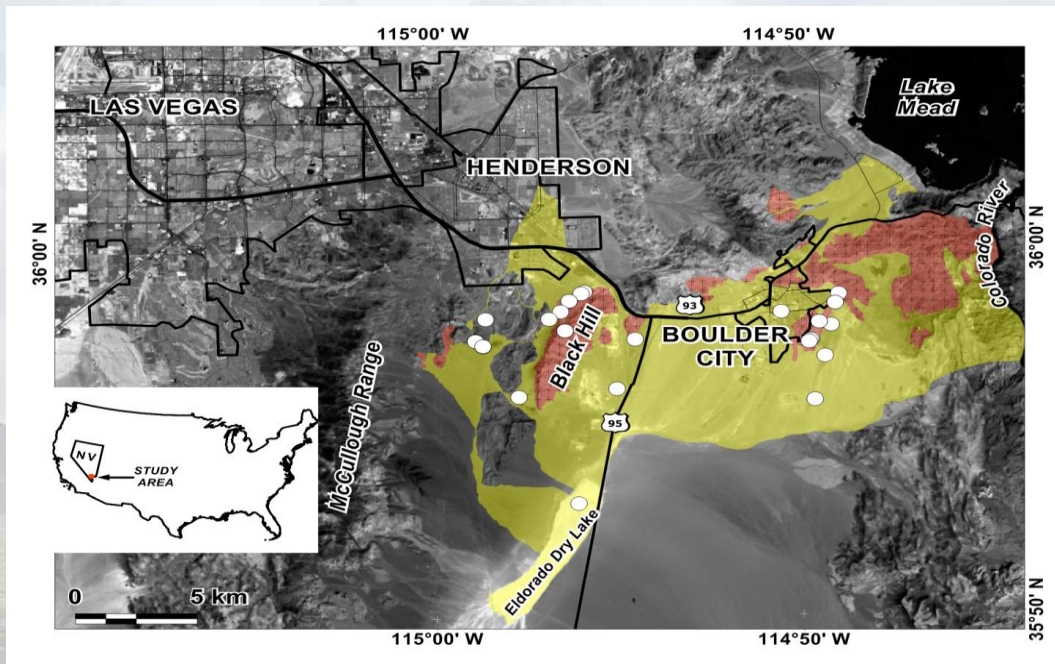


All information presented is preliminary subject to revision.



UNLV Study

- 2013 study identified the presence of NOA at various locations in and around Boulder City.



Potential naturally occurring asbestos rock outcrops (red) and potential NOA bearing soils (yellow). White circles are sample locations (taken from Buck et al. 2013: Figure 2).



Boulder City Bypass NOA Team

- Initial NOA Team (FHWA, RTCSN and NDOT)
- Augmented Team with assistance from the Volpe Center* and consulting environmental engineers and scientists
- Volpe Center assembled Expert Panel

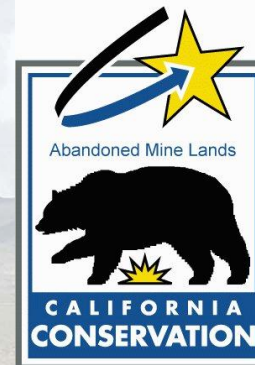
* U.S. Department of Transportation Center of Expertise



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Boulder City Bypass NOA Team





Site Characterization

- Environmental engineering firms tested soil and rock samples along the alignment
 - 611 samples were collected from depths ranging from the surface to 200' below ground in large rock cut areas
- Samples were tested to determine if NOA was present
 - If so, where it occurs and at what concentrations



Site Characterization





Site Characterization

NOA sampling results

- 597 samples test below 1%
 - 406 were non detect
 - 154 had concentrations of less than 0.25%
 - 37 had concentrations between 0.25% and 1%
- 14 samples test above 1%
 - 13 between 1% and 2%
 - 1 at 6.38%
- Overall: Comparatively higher concentrations of NOA are located in foothills and mountainous areas east of Boulder City

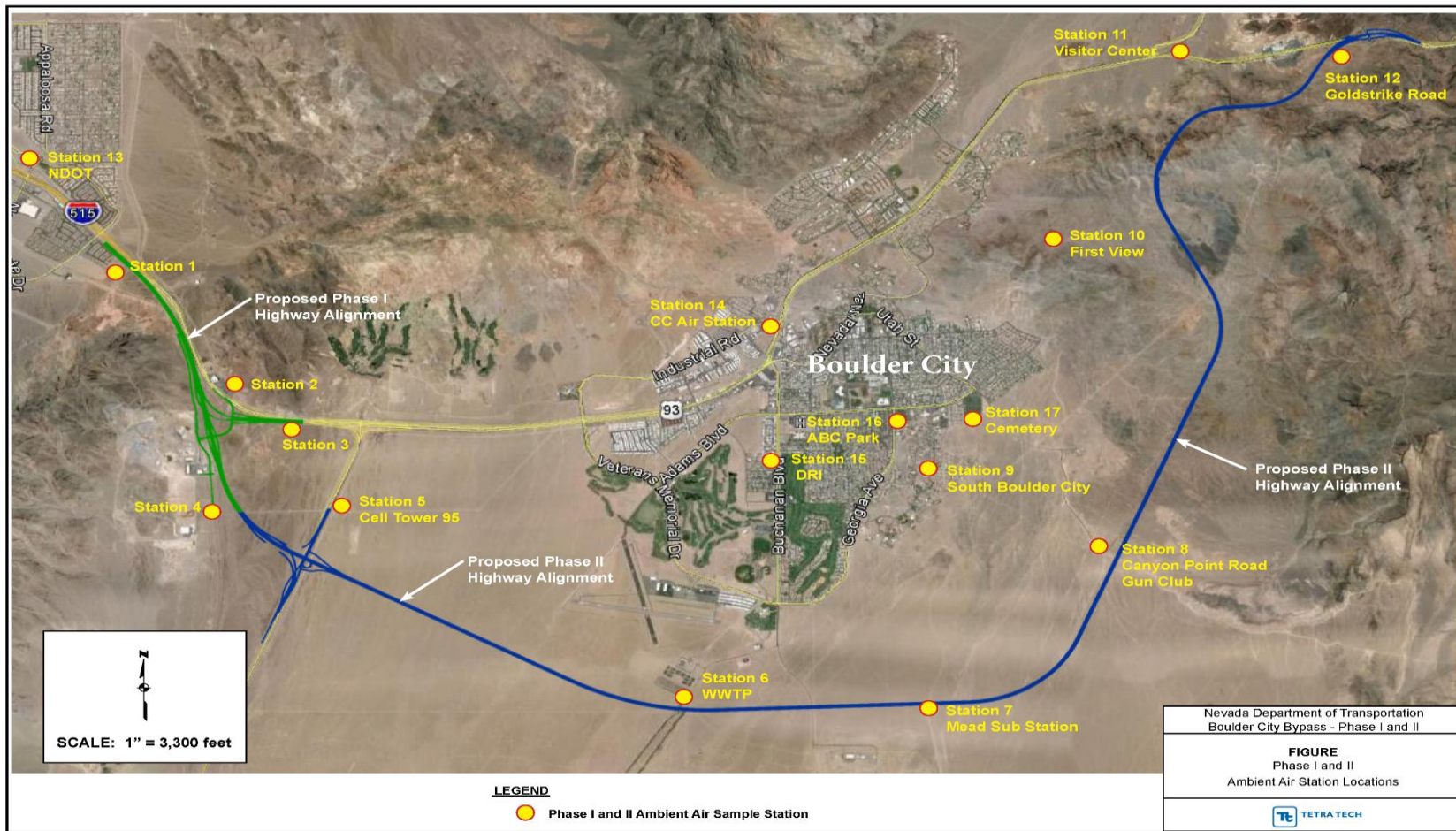


Ambient Air Characterization

- Established 17 monitoring stations (5 locations in Phase I and 12 in Phase II general area) to determine possible presence and concentrations of NOA in the air
- Monitoring station locations included residential and public-use areas outside highway project boundaries

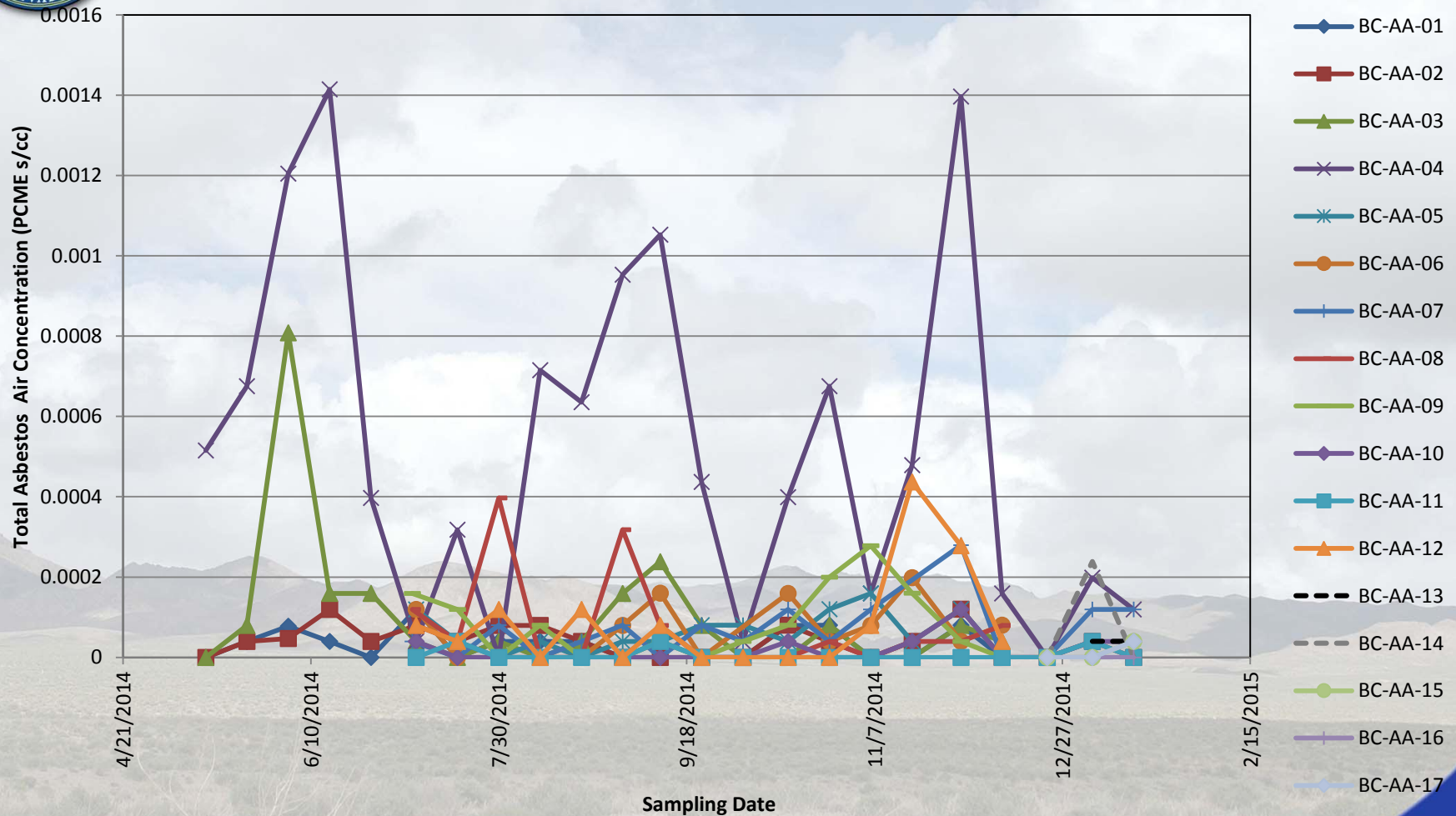


Ambient Air Characterization





Ambient Air Results



Source: Based on raw data provided by Tetra Tech, current as of 1/15/15



NOA Regulations and Mitigation Measures

- No regulations for NOA at Federal, State or Local levels
- Agencies referenced
 - Caltrans (California DOT)
 - California Air Resource Board (CARB)
- Mitigation measure outcome
 - Modeled mitigation measures after California regulations (CARB) and best practices





NOA Mitigation Measures

- Thoroughly wet work areas and unpaved road surfaces using water trucks, hoses, spray systems or sprinklers
- Reduce vehicle driving speeds in the work area to limit dust generation
- Reduce rock drilling and excavating speeds
- Excavate and blast during periods of calm or low wind speeds



NOA Mitigation Measures

- Avoid overloading trucks to prevent “spill out”
- Clean equipment and vehicles to prevent tracking soil out of the project work area
- Limit NOA concentration to less than 0.25 percent for surfacing material (topsoil, landscaping, etc.)



Questions?



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