

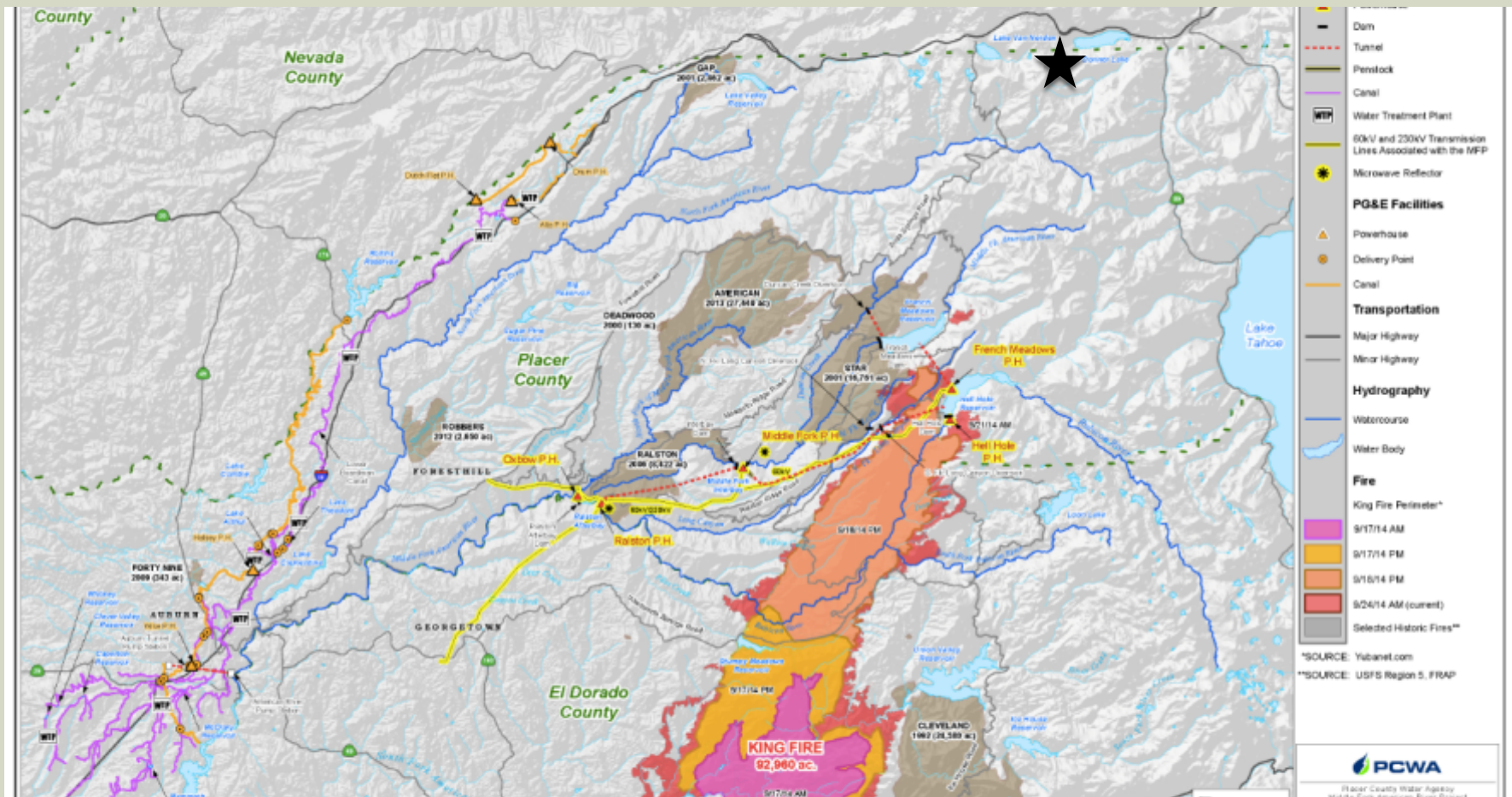
**HOW DOES CARBON-
BASED ASH AFFECT THE
PH OF THE WATER IN
THE VAN NORDEN
MEADOW?**

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BACKGROUND

- The King fire that began on September 13th, 2014 produced an ash fallout that spread throughout the Van Norden meadow.
- Van Norden Meadow is north of the location of the King Fire.
- pH of stream water in Van Norden Meadow (pre-fire) = 7
- Area of water in Van Norden Meadow = 106,942.8768 kL

MAP OF KING FIRE



HYPOTHESIS

Our group hypothesized that increasing concentrations of carbon-based ash would result in lower pH values (higher acidity).

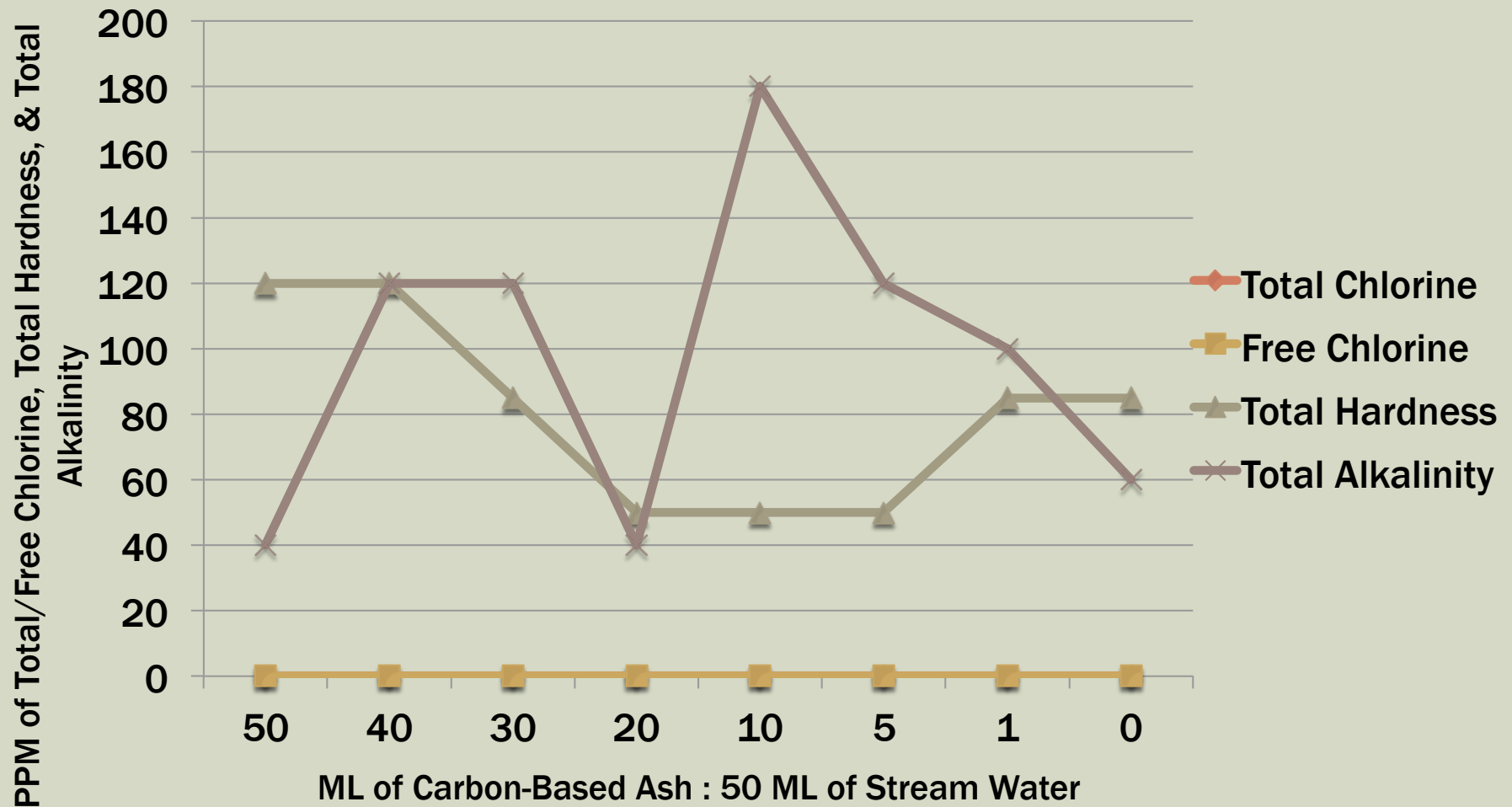
PROCEDURE

1. Prepare 8 vials
2. Crush up carbon-based ash into fine powder.
3. Mix crushed ash and water into separate vials in 1:1, 4:5, 3:5, 2:5, 1:5, 1:10, 1:100, and 0:1 ratios.
4. Stir solution.
5. Check and record pH, total chlorine, free chlorine, total hardness, total alkalinity of each solution.

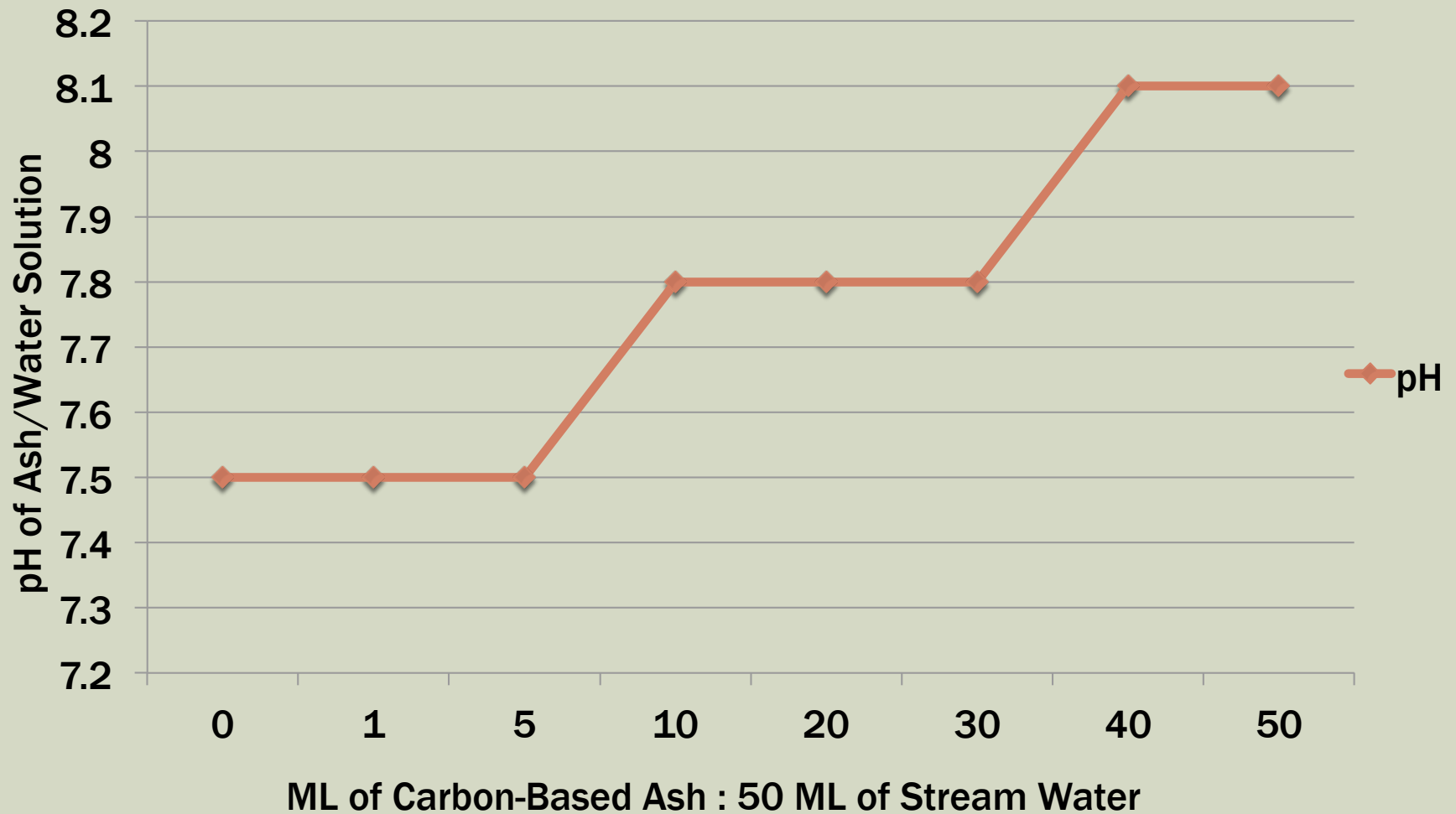
MATERIALS

- 8 vials
- Carbon-based ash
- Van Norden Meadow water
- pH, total/free chlorine, total hardness, total alkalinity measuring strips.
- Pipet

PPM OF TOTAL/FREE CHLORINE, TOTAL HARDNESS, & TOTAL ALKALINITY VS. ML OF CARBON-BASED ASH:50 ML OF STREAM WATER



PH OF ASH/WATER SOLUTION VS. ML OF CARBON-BASED ASH:50 ML OF STREAM WATER



CONCLUSION

- Given the data collected from our experiment, we can conclude that carbon-based ash causes pH levels to increase (water becomes more basic).
- The data shows that our initial hypothesis was incorrect. While we expected the pH levels to decrease, the opposite occurred. Instead, the pH levels increased.
- Comparison of Mass of Ash Fall experiment to Ours
 - Area of water in Van Norden Meadow = 106,942,876,856.244 mL
 - 1,305,000 mL of ash – 957,000 grams of ash fell in meadow, according to Mass of Ash Fall experiment
 - mL of carbon-based ash : mL of water = 1 : 71,295.25
 - The amount of ash fall from the King Fire has no effect on the pH of the water in the Van Norden Meadow

FUTURE RESEARCH

- More accurate pH probe
- More thorough crushing and mixing of ash so that it is more soluble in the water → more accurate measurements
- More thorough cleaning of vials/test materials
- More time in order to experiment with greater care