Oscar Babin

Table 1

Buffer range (m)	Area (m^2)	Area Fraction (A_f)
0-100	**92,529,314.16** (I got 92,529,314.01)	.15
100-200	85,467,256.01	.13
200-300	77,710,492.82	.12
300-400	70,050,485.78	.11
400-500	62,305,334.54	.10
500+	244,400,000	.39
Entire Area	632,462,883.16	**1.00**

Question 1. Around 12% of the 500 raindrops would fall between 200 and 300 meters from a stream, meaning 60 drops.
Question 2. If these are randomly distributed, I would assume that this number would be equal to the area fraction for the 400 to 500m buffer zone, so about 10% of the 56, so 5.6 sites, but I would round this to 6 sites.
Question 3. If these are randomly distributed, that would mean about 15% percent of the 89, so 13.35, or about 14 sites in the 0-100m buffer zone.

Table 2

Buffer range (m)	Proj point count (PP)	End scraper count (ES)
0-100	11	12
100-200	14	15
200-300	8	11
300-400	4	7
400-500	4	6
500+	15	38
Entire	56	89

Question 4. You could use the near tool from the proximity part of the analysis tools. You could input the sites and select the streams as the near feature. This would create a new field in the sites attribute table that will list the distance from the nearest stream. From this, you could classify the streams in the way from the tables above, and get counts of each category.

Table 3

Buffer range (m)	Observed Frequency PP	Expected Frequency $A_f * PP_{tot}$
0-100	11	8.40
100-200	14	7.28
200-300	8	6.72
300-400	4	6.16
400-500	4	5.60
500+	15	21.84
Entire	56	56

Table 4

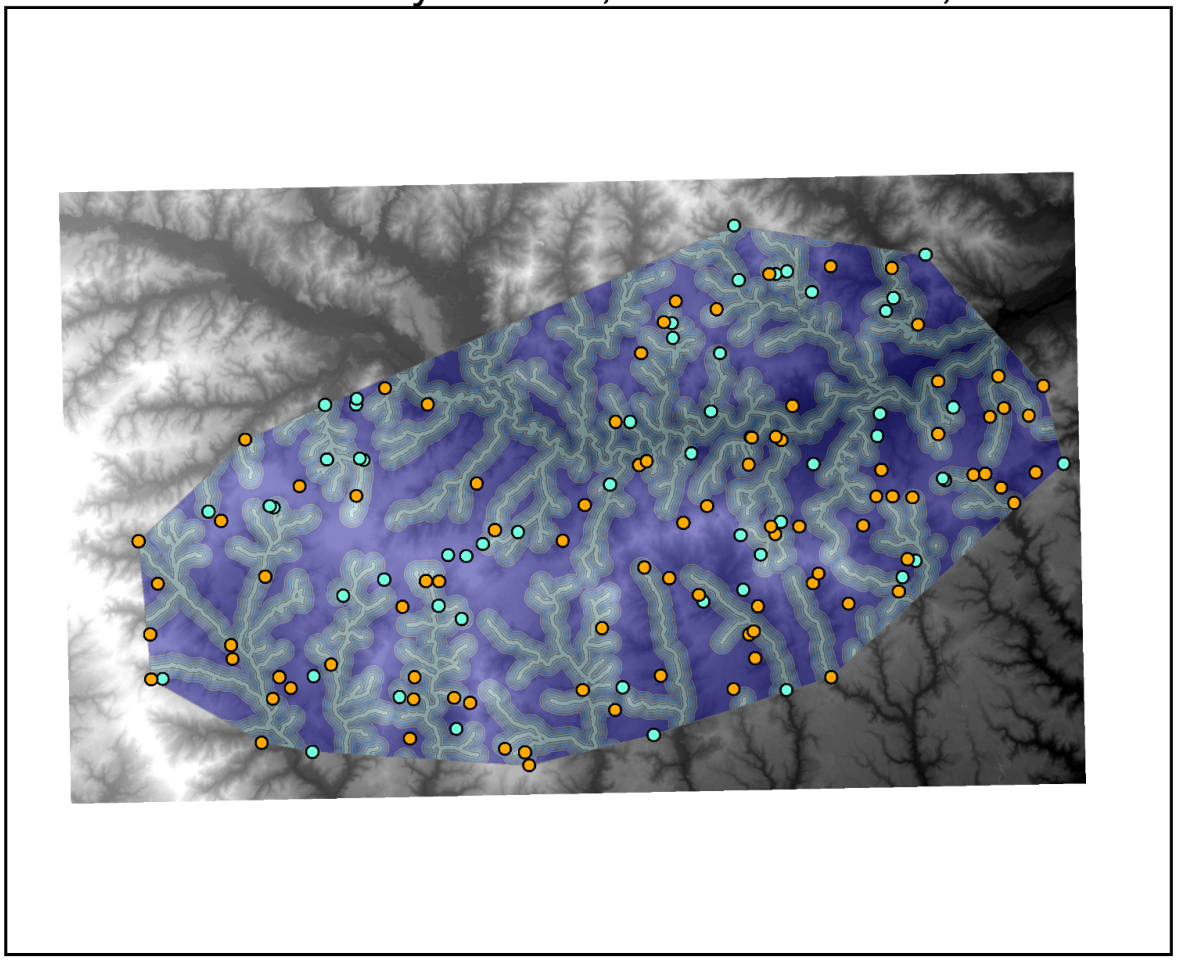
Buffer range (m)	Observed Frequency ES	Expected Frequency $A_f * ES_{tot}$
0-100	12	13.35
100-200	15	11.57
200-300	11	10.68
300-400	7	9.79
400-500	6	8.90
500+	38	34.71
Entire	89	89

Table 5

	Projectile Point	End Scraper
Chi-Square Value	10.608	3.215
p-value	0.0597	0.6669

Question 5. Early humans might choose to live near streams because of the human need for water, whether it is drinking, bathing, washing, or cooking. Streams also provide habitats for animals like fish and land animals that also need to drink, and early humans probably preferred to live near where they could find food like fish or other animals.
Question 6. Humans could also choose to live further from streams because there is too much activity near streams, or whether there could have been predators to humans present. Another reason could be that humans evolved to be able to save water in some form of storage and thus be able to live further from water sources, and maybe closer to safer places to live, or other places that have more benefits.
Question 7. Both of the p-values I got were above .05, meaning that the results are more random than statistically significant, although one value was close to .05, being .0597 for the projectile points. I think this means in general that early humans did not really have a preference to live closer or not to water.

Settlements Sites of Prehistoric Humans in Fayetteville, North Carolina, USA



Legend

- End Scraper Sites
- Projection Point Sites

Distance to Streams (meters)

- 0-100
- 101 - 200
- 201 - 300
- 301 - 400
- 401 - 500
- 501 - 600

Elevation (meters)

- High : 619
- Low : 95

0 5 10 20 Kilometers

N

Map Created by: Oscar Babin
Date: 09/27/2023
Projection: Transverse_Mercator