**Lab 4: ENVI Intro and Classification with Landsat**

35 points possible

*A PDF of this report must be uploaded to Gradescope by 10 am on Tuesday, February 22, 2022 (see submission instructions on Brightspace, and check Brightspace for due date updates).*

NAME:

1. (a) What is the pixel scale (resolution) of this image? (1 pt)

(b) What is the approximate average width of the Colorado River in the image, in meters? (1 pt)

2. RGB Color Stretches

(a) Paste your true color Landsat 3/2/1 RGB composite image below. (1 pt)

(b) How did you create a true color image? (1 pt)

(c) What color is most of the bedrock in this stretch? (1 pt)

(d) Paste your false color Landsat 3/2/1 RGB composite image below. (1 pt)

(e) Explain why you chose the stretch that you did - what were you trying to emphasize or show? (2 pts)

3. False color band combinations

(a) Paste your false color Landsat 4/3/2 RGB composite image below. (1 pt)

(b) Paste your false color Landsat 5/4/3 RGB composite image below. (1 pt)

(c) What three colors does vegetation correspond to in the 5/4/3 and 4/3/2 images? (2 pts)

(d) Where are these color classes located in the image? (2 pts)

(e) Based on the plot that shows some common types of vegetation along with the Landsat 7 bands, what type of vegetation do you think these areas are dominated by? (2 pts)

4. Masking

1. What is the approximate range of values in band 5 over the river? (1 pt)
2. Paste your stretched image emphasizing the river below (1 pt)
3. Is the river the only part of the scene that is dark? If not, what do these areas correspond to? (1 pts)
4. Paste your water mask image below (1 pt)

5. Band math

1. Based on the spectral plots, what band ratio should you use to identify green vegetation and why? (2 pts)
2. Why did I add a 1.0 to the equation “b1\*1.0 / b2” that you entered in the band math dialogue (hint: what kind of numbers are the arrays composed of)? What would have happened if I didn’t? (1 pts)
3. Paste your vegetation ratio image below (1 pt)
4. Did you successfully map vegetation? What does the strength of the parameter correspond to? (2 pts)
5. What are the ranges of values of this parameter that correspond to relatively dense vegetation (this is a little subjective)? (2 pts)
6. Paste your vegetation mask image below (1 pt)

6. Rocks!

1. Create your favorite rock stretch band combination image and paste it below. (1 pt)
2. Why did you choose this combination? What kind of variability do you see in the scene? (3 pts)
3. Paste your masked rock image below (1 pt)
4. Did the mask help you stretch the image more accurately? (1 pts)