

Todd Hawes
EPA Geographic Strategies Group
Mail Drop C539-04
Research Triangle Park,
North Carolina 27711

December 8, 2008

Dear Todd Hawes,

Attached are photographs from my recent trip to Hercules Glades Wilderness Area in Missouri. The purpose was to provide your office documentation on the night sky above this Federal Class 1 Area. These pictures were taken from the South side of Upper Pilot Knob on 11/26/08 around 7:35pm. These pictures were taken with a Canon 5D Digital Camera with an EF28mm f/1.8 USM lens and an electronic shutter timer.

Picture1 (IMG6905) – Looking Southward, with Jupiter and Venus setting in the bottom right corner. Exposure was 9 seconds, ISO 400 and f/2.5. The city of Branson is just out of view to the right. Although the image looks dark, to the eyes - many stars near the horizon are washed out.

Picture 2 (IMG6906) – Same view as Picture 1 with longer exposure time (20 Seconds) and ISO 800. The longer exposure identifies Light Pollution and where it is originating. Although to the eye, the orange does not appear high into the sky, the camera is able to pick it up. Orange represents a sodium base light source.

Pictures 3 – 15 (IMG6908-IMG6922). The camera was rotated in a counter-clockwise direction using the same settings as Picture 2. You will notice less Light Polluted skies to the East and North, followed by the light dome from what I believe is Springfield (40 miles away) and finally Branson (10 miles away).

Using a Sky Quality Meter, the best readings taken were around 21.09 (395.75 ($\mu\text{cd}/\text{m}^2$)). This is about 1.58 times an average darkness of 250 ($\mu\text{cd}/\text{m}^2$). If the skies had no Light Pollution, I would expect to see stars down to the horizon and no orange discoloration.

I can make the RAW pictures available to your group as adjusting the color levels may provide you with additional analysis.

Sincerely,



Robert Wagner
rwagner@eruces.com



Above: Picture 1

Below: Picture 2





Above: Picture 3

Below: Picture 4





Above: Picture 5

Below: Picture 6





Above: Picture 7

Below: Picture 8





Above: Picture 9

Below: Picture 10





Above: Picture 11

Below: Picture 12





Above: Picture 13

Below: Picture 14





Above: Picture 15