

# The New Age of Sea Turtle Permit Compliance Monitoring:

Using Laser Sighted GPS to Enhance Coastal Lighting Evaluations

Joseph Scarola, EAI, Jensen Beach, FL

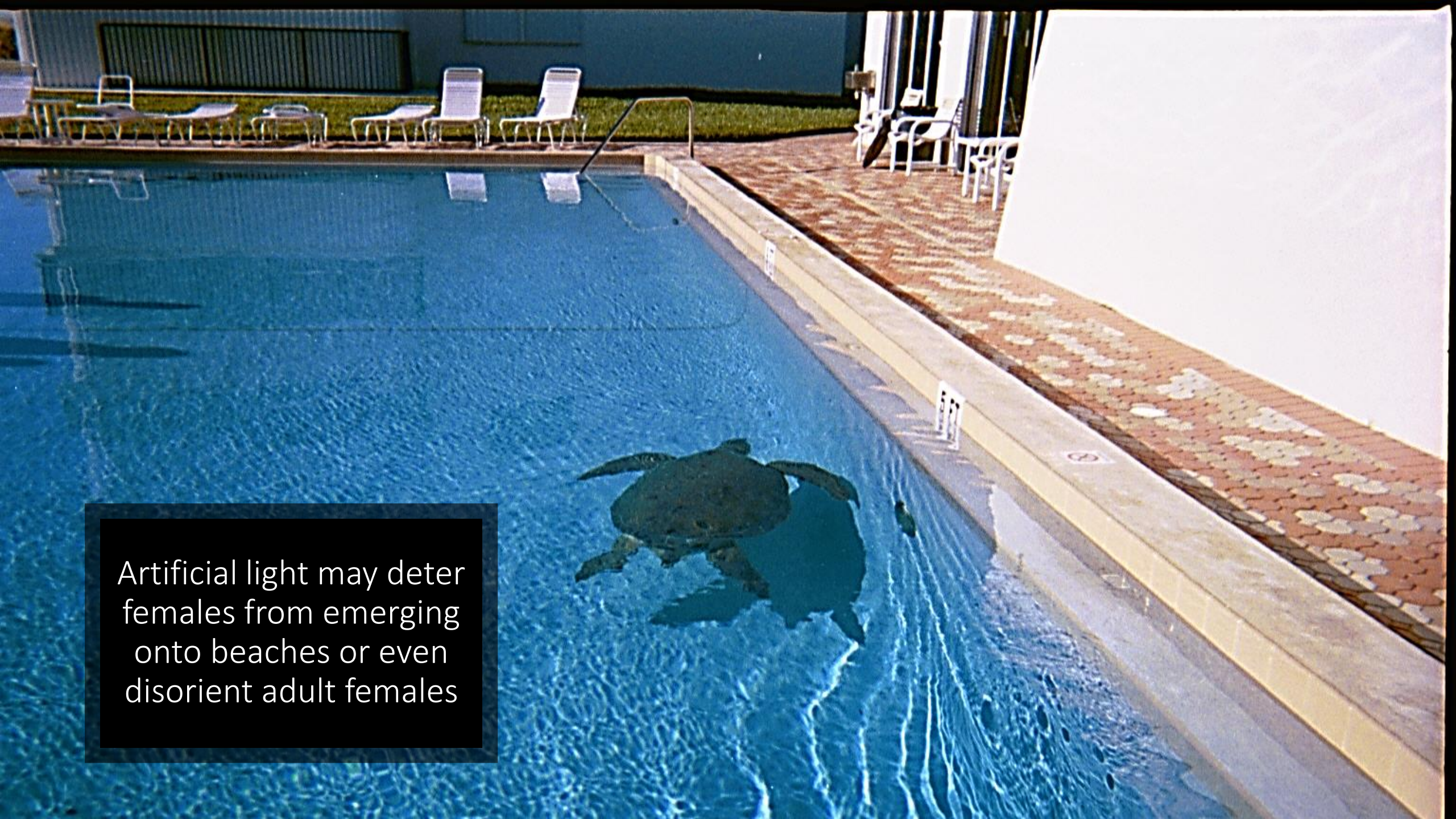




Sea turtles nest at night



Artificial light may deter females from emerging onto beaches or even disorient adult females



Artificial light may deter females from emerging onto beaches or even disorient adult females



Hatchlings emerge at night

Rely on visual cues to find the ocean



# Disorientations on Hutchinson Island (2016)

- 14 adult female disorientations
- 88 nests where hatchlings were disorientated



# Minimizing Impacts to Sea Turtles

“Keep it low”



“Keep it long”



“Keep it shielded”



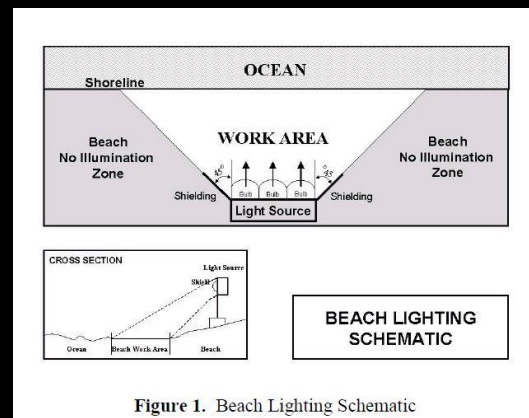


# DEP Permit Conditions for Beach Nourishment Projects

General Condition 22.b.v

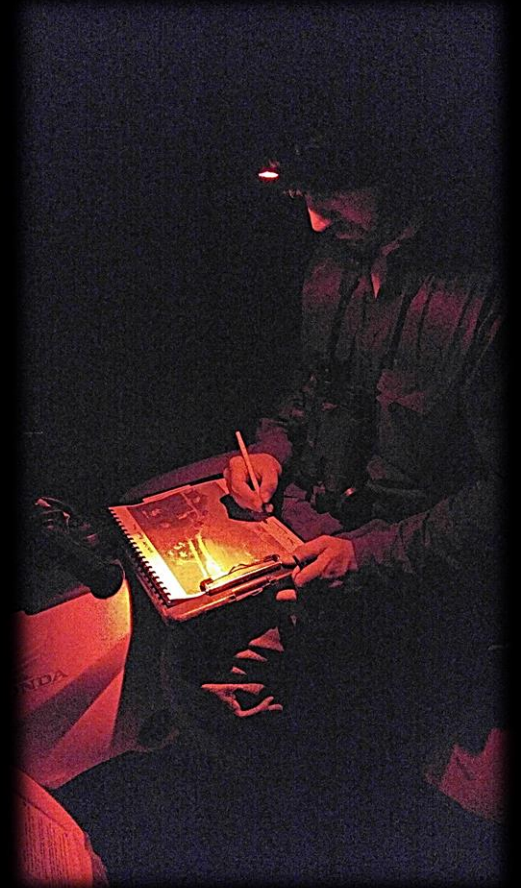
The lighting survey shall follow standard techniques

- include number and type of visible lights
- location of lights
- photo documentation



# Challenges

- Identifying the exact location of a light source without entering private property
- Providing property owners/managers accurate information about their lighting violation
- Providing cost effective solutions to correct the problem



EAI began using lasers in 2016



# Laser-Sighted GPS Systems Enhance Lighting Evaluations

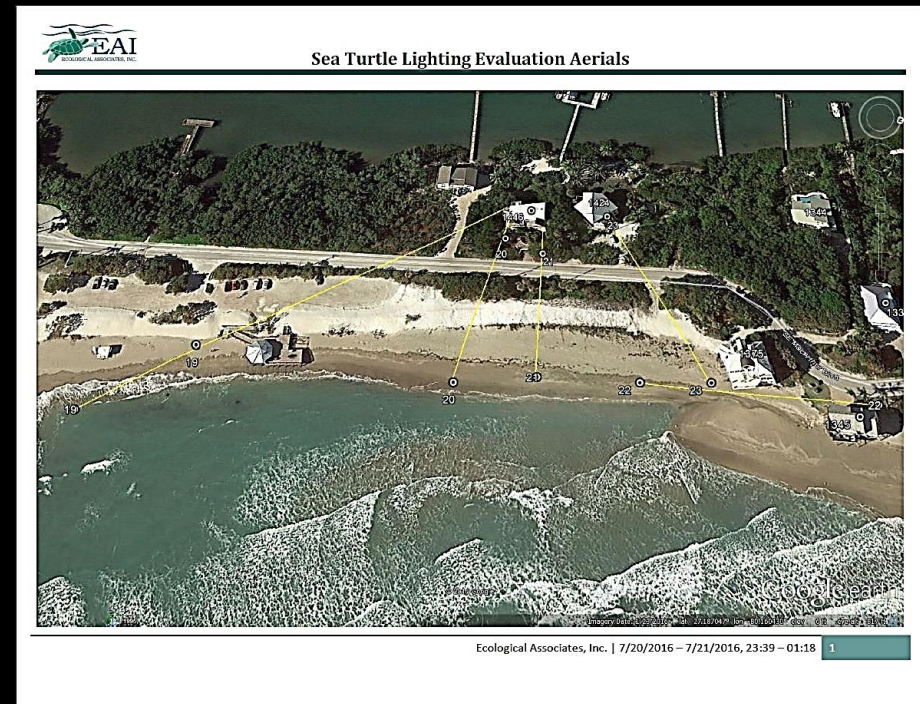


Trimble Geo 7X



Nighttime Lighting Evaluation

# Final Reports and Aerial Images





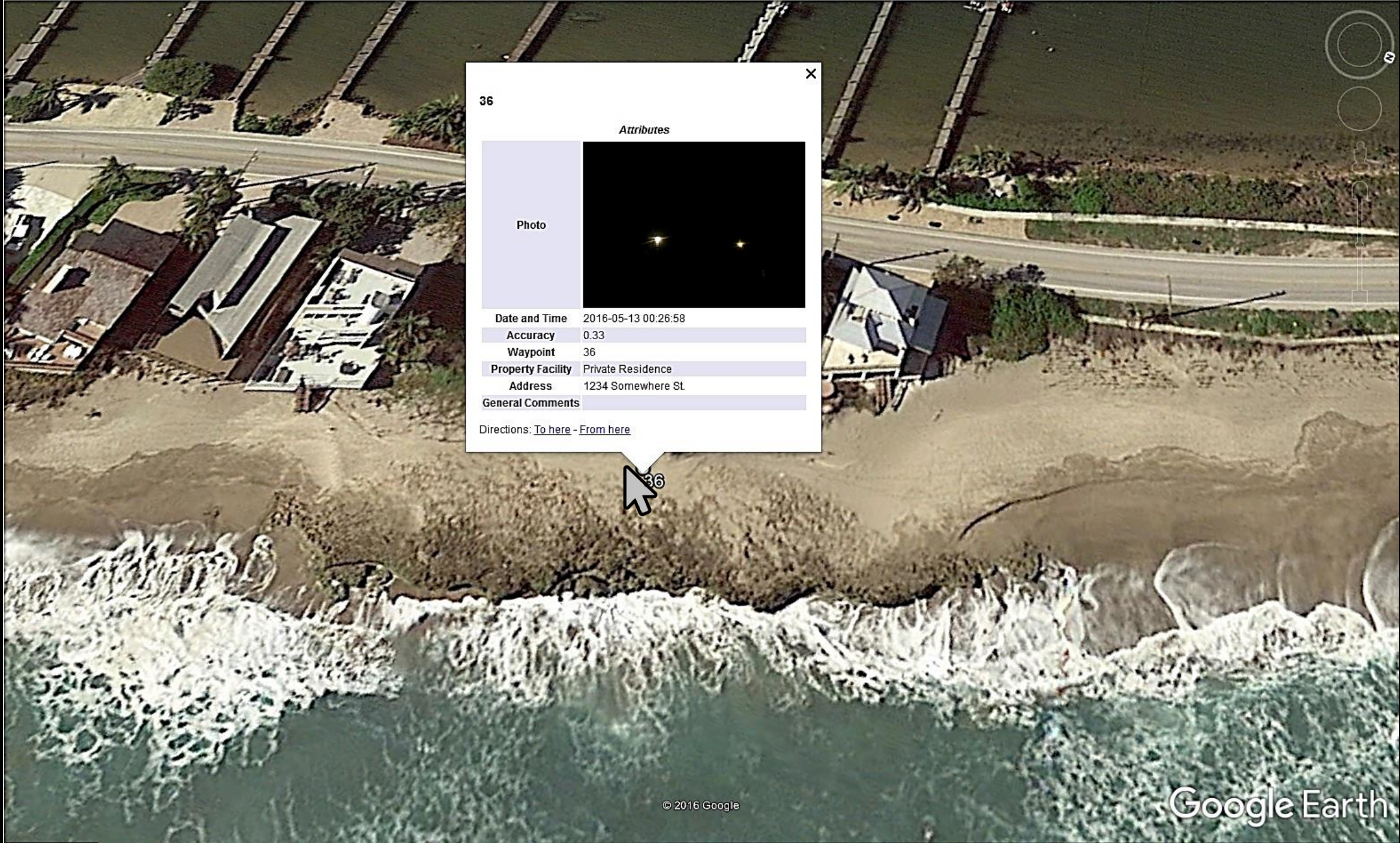
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Google Earth

Tour Guide

1995

Imagery Date: 1/23/2016 lat 27.195802° lon -80.163579° elev 0 ft eye alt 395 ft



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**Attributes**

Photo 

**Date and Time** 2016-05-13 00:26:58

**Accuracy** 0.33

**Waypoint** 36

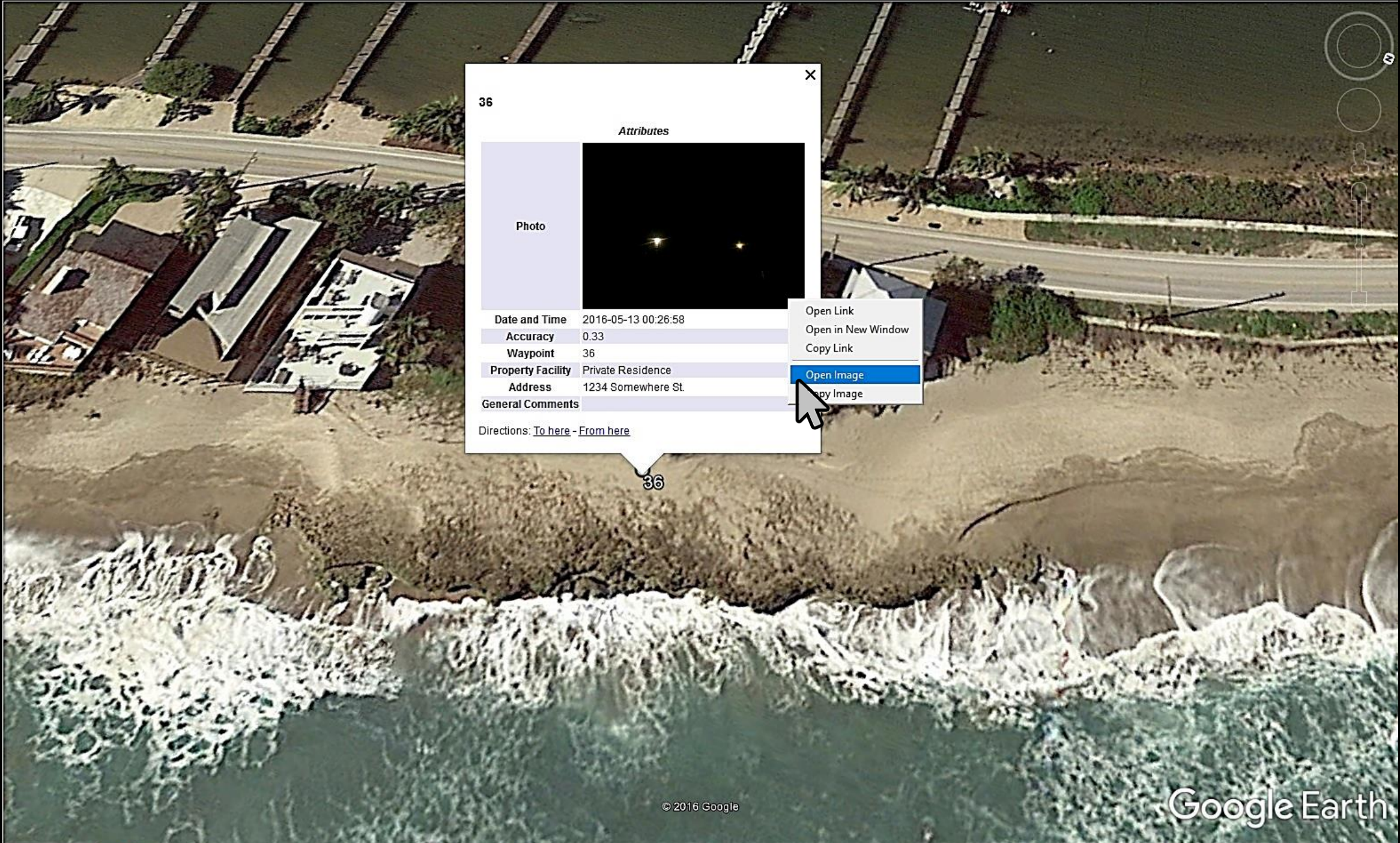
**Property Facility** Private Residence

**Address** 1234 Somewhere St.

**General Comments**

Directions: [To here](#) - [From here](#)





36

Attributes

Photo



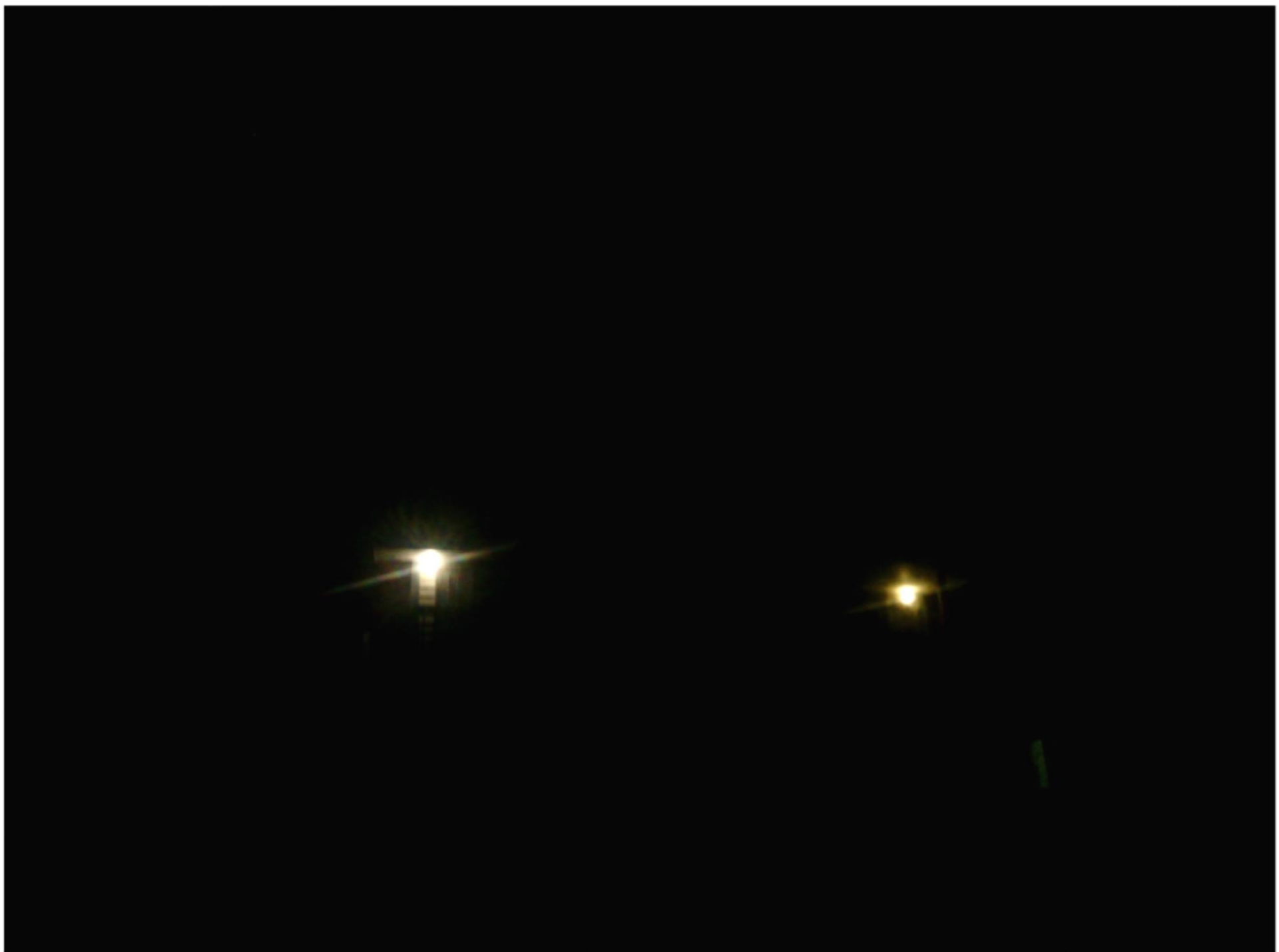
Date and Time	2016-05-13 00:26:58
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- Open Link
- Open in New Window
- Copy Link
- Open Image**
- Copy Image

Directions: [To here](#) - [From here](#)

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# Solutions to Lighting Issues

- Shielding the light
- Repositioning the light
- Replacing the lighting fixture
- Turn off or eliminate light source



# Conclusions

These new methods to Lighting Evaluation surveys have:

- Streamlined the process for conducting lighting evaluations
- Provided more advanced and accurate reports
- Resolve lighting issues in timely matter

**Ultimate Goal:** minimize impacts to sea turtles from artificial lighting

Questions?

