



C O A S T A L S C I E N C E & E N G I N E E R I N G
PO BOX 8056 COLUMBIA SC 29202 • TEL 803-799-8949 • FAX 803-799-9481 • EMAIL cse@coastalscience.com

May 07, 2012

Mary Hope Green
USACE Charleston District
69A Hagood Ave
Charleston SC 29403-5107

RE: P/N 2010-1041-2IG Isle of Palms Shoal Management Project Post-Project Sediment
Compaction Results

Dear Mary Hope:

As part of the permit (P/N 2010-1041-2IG) for the recently completed Shoal Management Project, the USACE required monitoring of sediment compaction in the fill area. CSE conducted compaction testing on 17 April 2012, one week after completion of the project. The results of the tests are included below. Average compaction values within the fill area were well below those of the control area at all sample locations and depths. CSE recommends that tilling should not be required due to the lower compaction values in the fill area relative to the control area and the relatively short length of the fill area (1,400 ft). If USFWS or USACE disagrees, or needs more information, please let me know. Recent photos of the fill area are included below for reference. In the event tilling is required, the City will coordinate with USFWS, SCDNR, and the Island Turtle Team to ensure protection of nesting turtles. Thank you for your assistance with this project.

Sincerely,

Coastal Science & Engineering (CSE)

Steven Traynum
Coastal Scientist

cc:

Melissa Bimbi (USFWS)
Linda Tucker (IOP)
Tim Kana (CSE)



CSE Job # 2384 - IOP Shoal Management Post Project Compaction															
D= Seaward edge of dune/structure B=Middle of berm Measurement taken 17 April 2012 Units are psi						Dune measurements were taken at seaward edge of sand fencing, where present. Colored values indicated >500 psi threshold. Where the instrument could not penetrate to depth, a value of 1000 was given									
Station	Sample	6"	12"	18"	6"	12"	18"	Station	Sample	6"	12"	18"	6"	12"	18"
Control Area				Averages			Fill Area				Averages				
286+00	D	240	600	640	213	593	693	310+00	D	320	320	480	320	300	420
		240	640	640						320	400	300			
		160	540	800						320	180	480			
	B	480	960	1000	480	907	987		B	300	500	640	300	553	547
		480	960	1000						320	520	520			
		480	800	960						280	640	480			
290+00	D	190	800	1000	270	463	1000	314+00	D	20	160	160	67	167	180
		320	290	1000						160	180	220			
		300	300	1000						20	160	160			
	B	380	1000	1000	340	773	720		B	280	600	800	220	600	807
		320	1000	1000						200	600	820			
		320	320	160						180	600	800			
294+00	D	480	520	480	587	507	507	318+00	D	190	320	300	170	313	320
		640	480	560						160	300	300			
		640	520	480						160	320	360			
	B	480	600	1000	400	567	927		B	320	780	840	313	740	827
		360	400	780						300	640	640			
		360	700	1000						320	800	1000			
Control Area		Average Dune			357	521	733	Fill Area		Average Dune			186	260	307
		Average Berm			407	749	878			Average Berm			278	631	727





April 13, 2012

Linda Tucker
City of Isle of Palms
PO Drawer 508
Isle of Palms SC 29451

RE: Pre-Project Lighting Survey
Isle of Palms Shoal Management Project [CSE 2384]

Dear Ms Tucker,

As a special condition of Permit No 2010-1041-2-IG, the City is required to conduct surveys of the direct and indirect lighting observable from the beach. Two surveys are required this year, and two are required in 2013. At the request of the City, CSE conducted the first lighting survey on the evening of March 12, 2012. This period is outside of turtle nesting season and also outside of certain time restrictions set forth in the City's lighting ordinance (attached below); therefore, some of the lights observed during this survey may not necessarily be in violation of the ordinance if they are turned off during the restricted times (May 1 through October 31). The permit condition is meant to be an effort to inform property owners and guests and does not include any enforcement measures or penalties.

CSE conducted the lighting survey by walking the project area beach at night and documenting observable direct and indirect lighting. Locations of light sources were marked on aerial photographs, and notes were recorded regarding the type of light (e.g. lamp in window, porch light, street light, etc). Still photography was also used to document light sources in many cases, with photos being taken from near the berm crest, using a standard point-and-shoot digital camera at its widest focal length. The majority of light sources documented occurred at the multifamily condo complexes in Wild Dunes. The types of light sources included direct and indirect interior lighting such as table lamps set in front of windows, TVs, and illuminated window shades, direct lighting from balconies and porches, direct and indirect lighting from parking areas beneath and around buildings, landscape lighting, pool lighting, and indirect lighting of building walls.

CSE digitized the general locations of light sources using GIS software as shown in Figure A. The corresponding descriptions of the light source are given in Table 1. Annotated photographs are also shown to provide a visual indication of the types of light sources observed during the survey.

Figure 1. General locations of light sources observed from the beach.

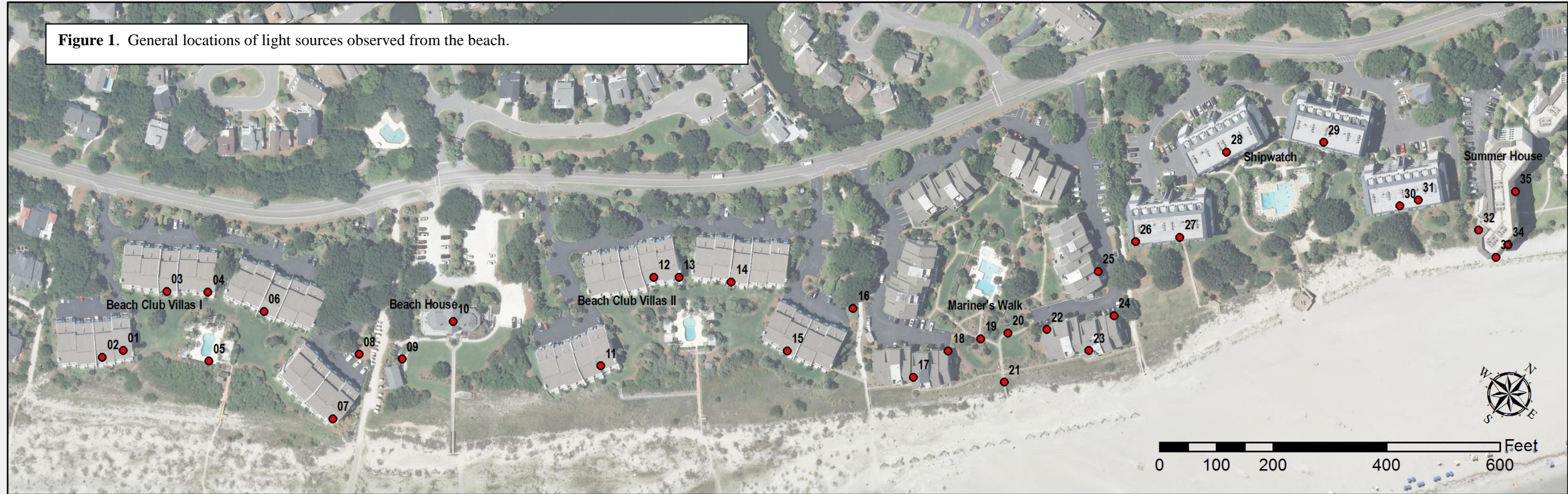




Table 1. Descriptions of light sources shown in Figure 1.

Point Number	Light Type	Point Number	Light Type
1	Direct	34	Balcony Lights
2	Window Lamp	35	Parking Area Lighting
3	Direct	36	Interior Lighting
4	Direct	37	Shielded Light
5	Shaded Pool Light	38	Interior Lighting
6	Window Lamp	39	Ambient Landscape Lighting
7	Interior Lighting	40	Balcony Lights
8	Pole Light	41	Balcony Lights
9	Ambient Landscape Lighting	42	Pole Light
10	Bright Interior Lighting	43	Pole Light
11	Interior Lighting	44	Balcony Lights
12	Window Lamp	45	Interior Lighting
13	Direct	46	Walkover Light
14	Window Lamp	47	Pole Light
15	Window Lamp	48	Window Lamp
16	Pole Light	49	Window Lamp
17	Window Lamp	50	Ground Floor Lighting
18	Direct	51	Walkover Light
19	Security Light	52	Pole Light
20	Shielded Light	53	Balcony Lights
21	Walkover Light	54	Multiple Interior, lamp, balcony lighting
22	Direct	55	Ambient Building Light
23	Window Lamp	56	Ambient Building Light
24	Direct	57	Pole Light
25	Security Light	58	Parking Area Lighting
26	Direct	59	Window Lamp
27	Direct	60	Ambient Building Light
28	Interior Lighting	61	Interior Lighting
29	Interior Lighting	62	Window Lamp
30	Direct - Bottom Floor	63	Interior Lighting
31	Interior Lighting	64	Interior Lighting
32	Stairwell Lighting	65	Off Island Tower
33	Interior Lighting		



A list of regime-specific light sources is below (locations marked in Figure 1 are in parentheses):

WD POBH – The Property Owners Beach House had several interior lights which created direct and indirect lighting (10). Palm trees near the picnic area were illuminated with upward looking landscape lighting (09).

Beach Club Villas I and II - Several units had lamps or TV's directly visible from the beach and others had interior lighting which illuminated walls or curtains, producing ambient lighting observable from the beach. Lights around the pools were not completely shaded from the beach (05). A light in the parking area at the north end of BCV II was directly visible from the beach (16).

Mariner's Walk - Several units had lamps or TV's directly visible from the beach and others had interior lighting which illuminated walls or curtains, producing ambient lighting observable from the beach. Several porch lights were directly visible from the beach (18, 22, 25). Landscape lighting around the pool and beach accesses were directly visible from the beach (20, 21).

Shipwatch - Several units had lamps or TV's directly visible from the beach and others had interior lighting which illuminated walls or curtains, producing ambient lighting observable from the beach. Orange security lighting is a direct light source (26).

Summer House - Several units had lamps or TV's directly visible from the beach and others had interior lighting which illuminated walls or curtains, producing ambient lighting observable from the beach. Pool lighting was not completely shaded and was visible from the beach (37). The stairwell on the southwest side of the building had multiple direct light sources (32).

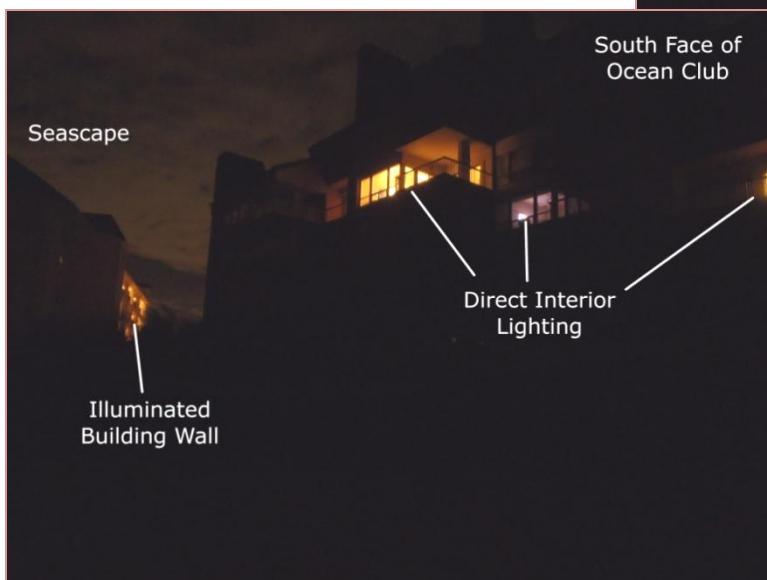
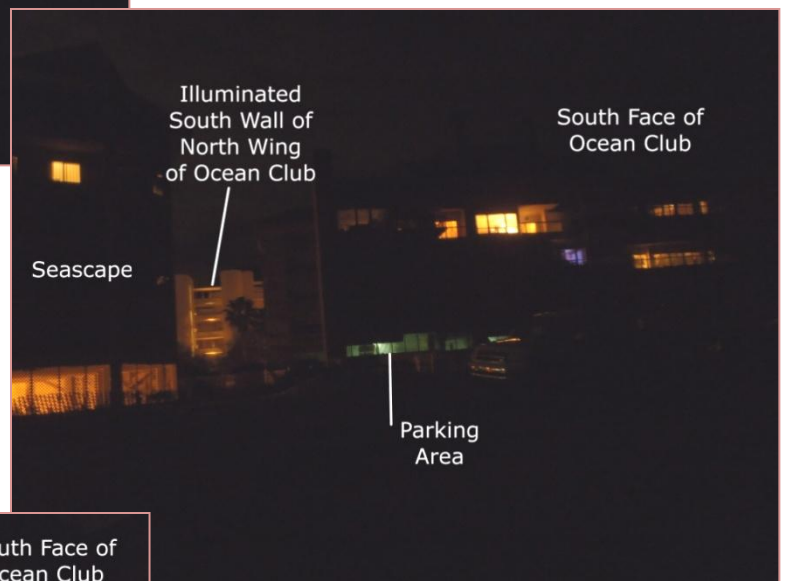
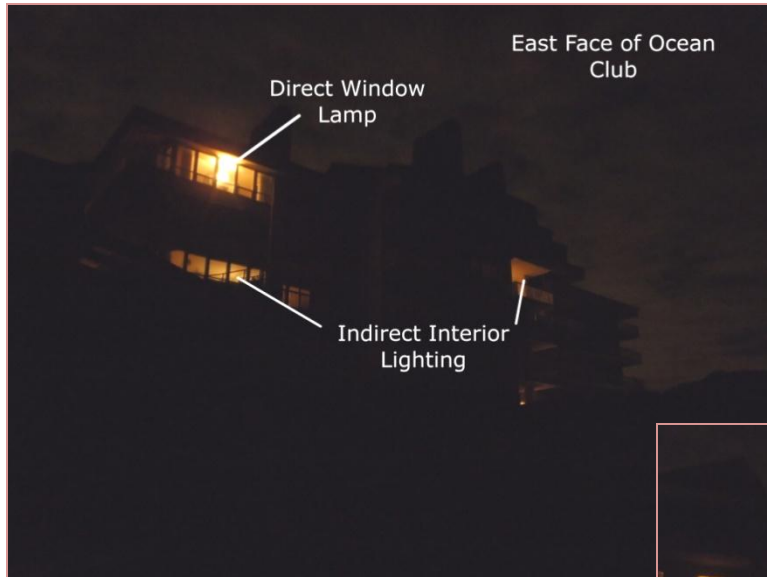
Summer Dunes Lane Properties - Several units had lamps or TV's directly visible from the beach and others had interior lighting which illuminated walls or curtains, producing ambient lighting observable from the beach. Exterior walls were illuminated from landscape lighting (39) and a porch light was visible from the beach (40).

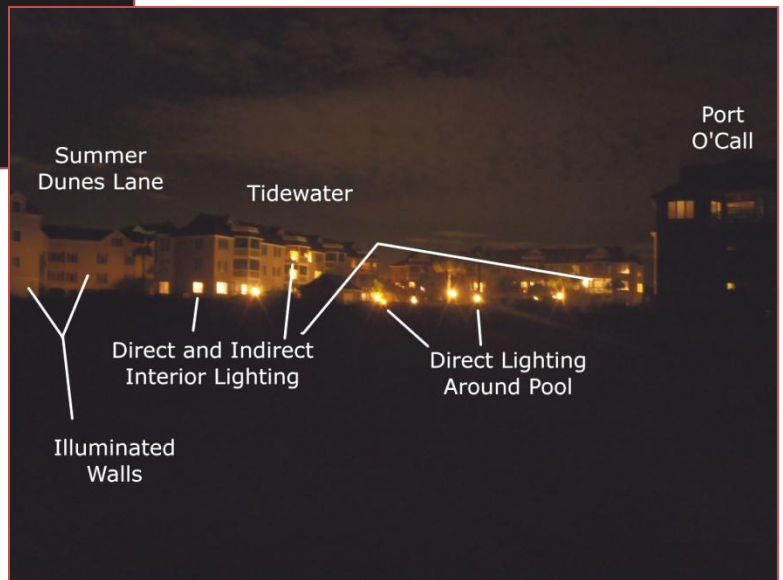
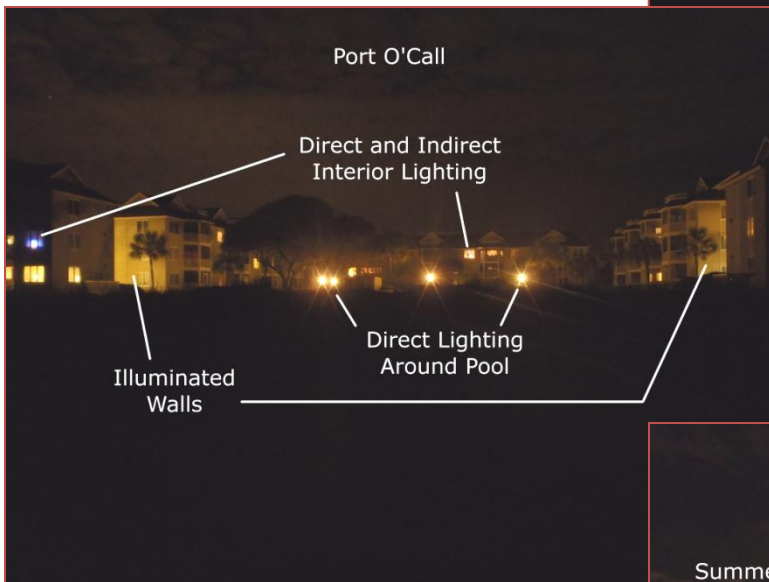
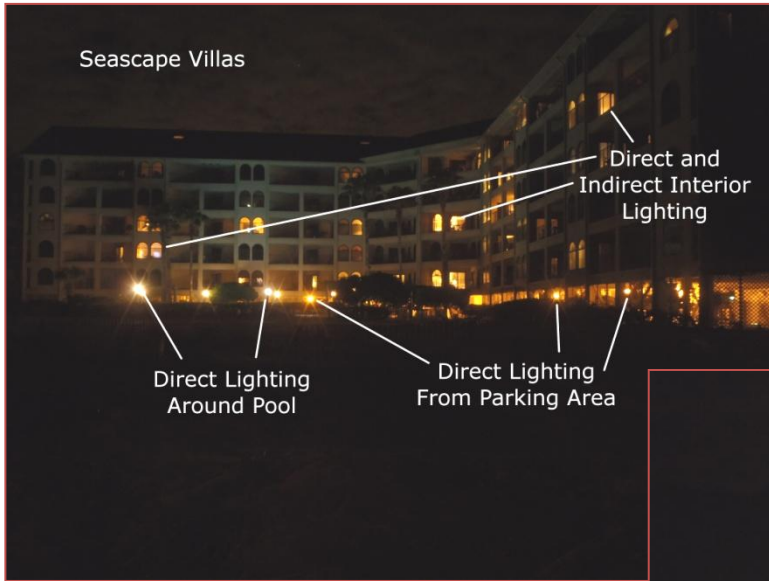
Tidewater - Several units had lamps or TV's directly visible from the beach and others had interior lighting which illuminated walls or curtains, producing ambient lighting observable from the beach. Pool lighting is not a direct light source (43). Streetlight in parking area is visible from beach (42).

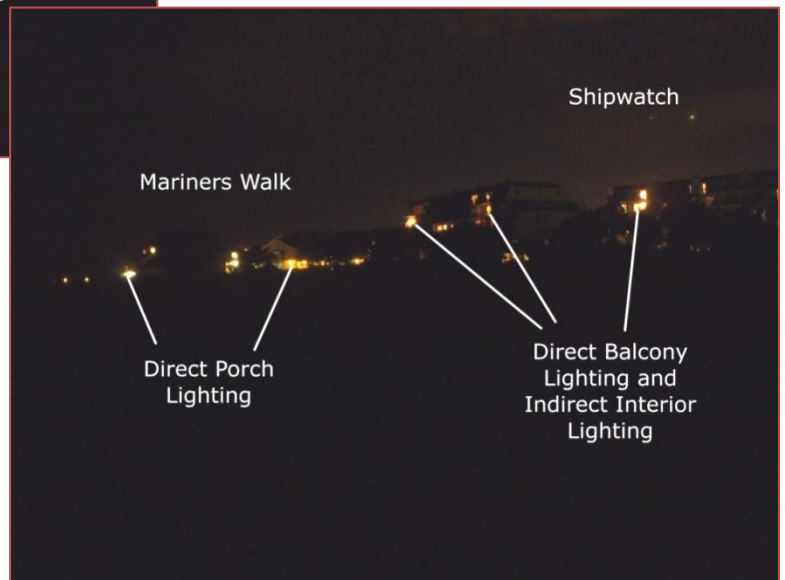
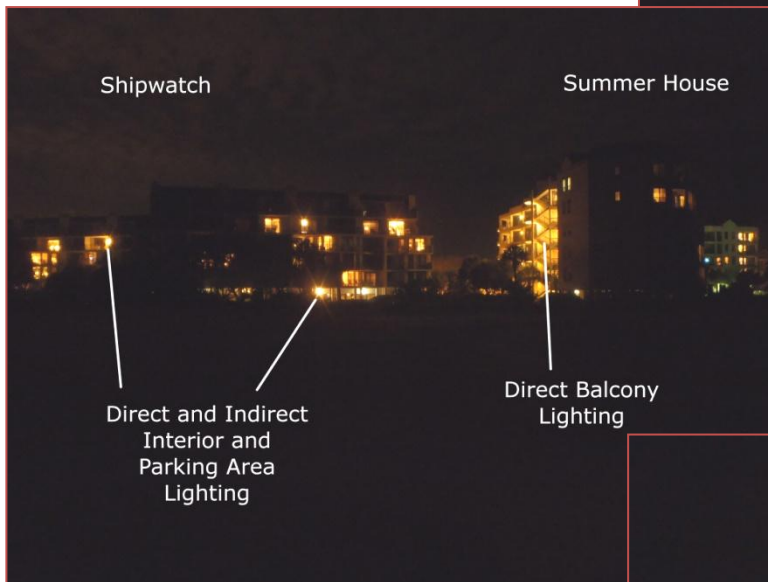
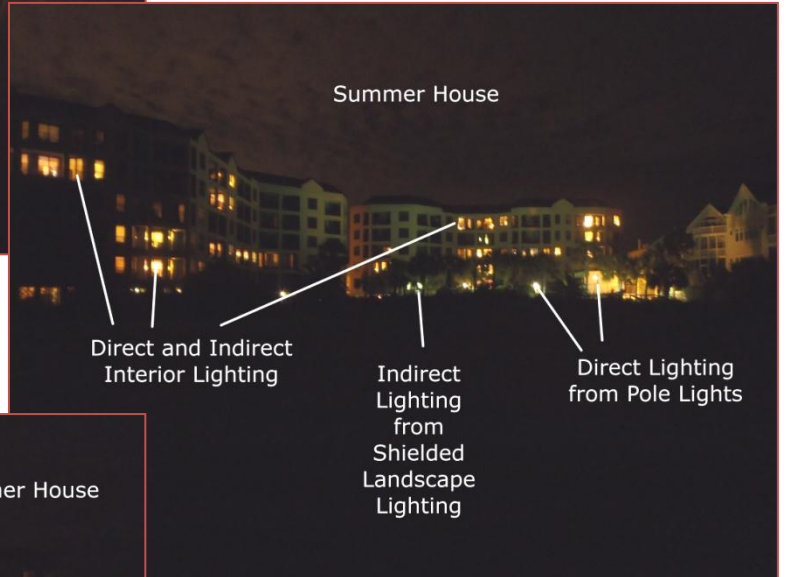
Port O'Call - Several units had lamps or TV's directly visible from the beach and others had interior lighting which illuminated walls or curtains, producing ambient lighting observable from the beach. Pole lights around the pool were a direct light source (47). Street lighting in the parking area was visible from the beach (52). Luminaries on the beach walkovers were not shaded and were a direct light source (46, 51).

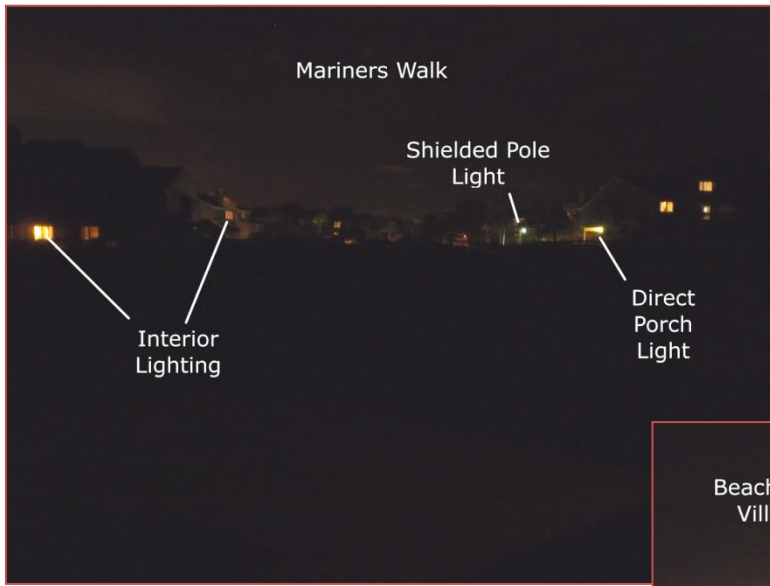
Seascape – Several units had lamps or TV's directly visible from the beach and others had interior lighting which illuminated walls or curtains, producing ambient lighting observable from the beach. Pole lights around the pool provided a direct source of light (57). Lighting in the ground floor garage provided a direct light source. Landscape lighting and the above lighting illuminated the walls of the complex (55, 56). Balcony lights on the landward side of the building are visible from the beach (53).

Ocean Club – Several units had lamps or TV’s directly visible from the beach and others had interior lighting which illuminated walls or curtains, producing ambient lighting observable from the beach. The south side of the north wing of the building was illuminated from upward directed lighting (60), making the wall a light source.











CSE recommends the City provide notices to each regime reminding them of the ordinance and identifying specific problems revealed from this survey. The notices should include information regarding the effects of artificial light on nesting sea turtles and hatchlings. CSE is coordinating with SCDNR and USFWS to obtain appropriate information. Correspondence should include links to the SCDNR sea turtle website regarding lighting, found at <http://www.dnr.sc.gov/seaturtle/lights.htm>. Owners should be informed that another survey will be performed in July, at which time any lighting visible from the beach will be subject to the city ordinance since the survey will fall between May 1 and October 31. Owners should be reminded to inform their guests about the lighting ordinance and the impacts of lights on sea turtles. A copy of the City Ordinance Section 5-4-17 is attached to this report. Regime managers should be encouraged to have maintenance personnel or volunteer owners periodically observe the property at night from the beach to identify light sources and recommend source-specific solutions to ensure that the property is in compliance with the ordinance and is not impacting sea turtles. Members of the Island Turtle Team may also be useful in identifying problem lighting during regular patrols.

The City may wish to establish an email list which periodically reminds managers and owners of the impacts of lighting on sea turtles. Perhaps the Turtle Team could send monthly updates on nesting activity and include reminders about the lighting impacts. I'll be happy to speak with representatives of the Turtle Team about ways to increase compliance.

Please let me know if CSE can assist the City in producing letters to the regimes or obtaining additional information regarding lighting impacts to sea turtles. As always, we appreciate the opportunity to assist the City with managing the beach.

Sincerely,

Coastal Science & Engineering (CSE)

A handwritten signature in black ink, appearing to read 'S. Traynum', written in a cursive style.

Steven Traynum
Coastal Scientist

Attachment

cc: Dave Kynoski, WDCA
Haiqing Kaczowski, CSE
Mary Hope Green, USACE
Melissa Bimbi, USFWS
Susan Davis, SCDNR



Attachment 1 – City of Isle of Palms Lighting Ordinance

Sec. 5-4-17. Sea turtle protection; outdoor lighting regulations.

- (a) Definitions. The following words, terms and phrases, when used in this section, shall have the meanings ascribed to them in this subsection, except where the context clearly indicates a different meaning:
- (1) Artificial light means any source of light emanating from a manmade device, including, but not limited to, incandescent, mercury vapor, metal halide, or sodium lamps, flashlights, spotlights, streetlights, vehicular lights, construction or security lights.
 - (2) Floodlight means reflector-type light fixture which is attached directly to a building and which is unshielded.
 - (3) Low profile luminary means a light fixture set on a base which raises the source of the light no higher than forty-eight inches (48") off the ground, and designed in such a way that light is directed downward from a hooded light source.
 - (4) Development means any existing structure for which a building permit has been duly issued and any new construction or remodeling of existing structures when such remodeling includes alteration of exterior lighting.
 - (5) Person means any individual, firm, association, joint venture, partnership, estate, trust, syndicate, fiduciary, corporation, group or unit, or Federal, State, County or municipal government.
 - (6) Pole lighting means a light fixture set on a base or pole which raises the source of the light higher than forty-eight inches (48") off the ground.
- (b) Development. No artificial light shall illuminate any area of the beach other than in compliance with this section. Building and electrical plans for construction of single-family or multifamily dwellings, commercial or other structures, including electrical plans associated with parking lots, dune walkovers or other outdoor lighting for real property if lighting associated with such construction or development can be seen from the beach, shall be in compliance with the following:
- (1) Floodlights shall be prohibited. Wall-mounted light fixtures shall be fitted with hoods so that no light illuminates the beach.
 - (2) Pole lighting shall be shielded in such a way that the point sources of light will not be visible from the beach. Outdoor lighting shall be held to the minimum necessary for security and convenience.
 - (3) Low-profile luminaries shall be used in parking lots and such lighting shall be positioned so that no light illuminates the beach.
 - (4) Dune crosswalks shall utilize low-profile shielded luminaries which shall be turned off from sunset to sunrise during the period of May 1 to October 31 of each year.
 - (5) Temporary security lights at construction sites shall not be mounted more than fifteen feet (15') above the ground. Illumination from the lights shall not spread beyond the boundary of the property being developed and in no case shall those lights illuminate the beach.
- (c) Use of lighting. It is the policy of the City for both new and existing development to minimize artificial light illuminating any area of the beach. To adhere to this policy, lighting of structures which can be seen from the beach shall be in compliance with the following:
- (1) Lights illuminating buildings or associate grounds for decorative or recreational purposes shall be shielded or screened such that they are not visible from the beach, or turned off from sunset to sunrise during the period of May 1 to October 31 of each year.
 - (2) Lights illuminating dune crosswalks of any area oceanward of the primary dune line shall be turned off from sunset to sunrise during the period of May 1 to October 31 of each year.
 - (3) Security lights shall be permitted throughout the night so long as low-profile luminaries are used and screened in such a way that those lights do not illuminate the beach.
- (d) Publicly owned lighting. Streetlights and lighting at parks and other publicly owned beach areas shall be subject to the following:
-



- (1) Streetlights shall be located so that most of their illumination will be directed away from the beach. These lights shall be equipped with low-pressure sodium bulbs and shades or shields that will prevent backlighting and render them not visible from the beach.
 - (2) Lights at parks or other public beach access points shall be shielded or shaded or shall not be utilized during the period of May 1 to October 31 of each year.
 - (e) Enforcement and penalty. Violation of any provision is hereby declared to be a misdemeanor, punishable and enforceable pursuant to the provisions of section 1-3-66.
- (Code 1994, § 5-4-17)
-