# Supplementary Report

**Natural Resource Assessment Near Day Moorings: Hawaii Island**  
**September 2016**

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Region 1. Day Moorings North of Kawaihae Harbor

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<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
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<tbody>
<tr>
<td>1. Black Point North</td>
<td>20.11295</td>
<td>-155.88626</td>
</tr>
<tr>
<td>2. Black Point South</td>
<td>20.10338</td>
<td>-155.88313</td>
</tr>
<tr>
<td>3. Black Point</td>
<td>20.10582</td>
<td>-155.88477</td>
</tr>
<tr>
<td>4. Kei Kei North</td>
<td>20.0804</td>
<td>-155.86763</td>
</tr>
<tr>
<td>5. Ulua Cavern</td>
<td>20.07436</td>
<td>-155.86435</td>
</tr>
<tr>
<td>6. Frog Rock</td>
<td>20.06492</td>
<td>-155.85443</td>
</tr>
<tr>
<td>7. Lava Dome Rock</td>
<td>20.0609</td>
<td>-155.85097</td>
</tr>
<tr>
<td>8. Crystal Cove</td>
<td>20.05367</td>
<td>-155.84583</td>
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</tbody>
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Coordinates in red have been updated to reflect the current position.
**Day Mooring 1.1: Black Point North**

Coral and gravel/rubble were abundant (40-75%) at the survey site. No corals greater than 1 meter in diameter were found inside or outside of the survey radius. Culcita novaeguineae (cushion star) was observed in the area. All attachments were intact, but coral growth was noted on the buoy and heavy coral growth as well as hydroid growth was noted on the chain. Coral was also observed growing over the ground attachment pins. A surface float was present as well as the submerged buoy. No broken corals, trash, or prohibited fishing activities were recorded during surveys, but abrasions were noted on Porites spp. One vessel was observed at the surface en route, as well as dolphins (Stenella longirostris).
MOORING ASSESSMENT

DM Number: DM-01
ACOE Permit: 1995 General
Latitude/Longitude: 20.11295, -155.88626
Buoy Depth: 13 ft.
Attachment Point Depth: 46 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on buoy; coral and hydroid growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>40-75%</td>
<td>5-10%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Porites* spp., *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa, Porites lobata, Palythoa caesia, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Unknown</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**SUMMARY**

Coral was abundant (40-75%) at the site. Three P. compressa greater than 1 meter in diameter were observed inside the survey radius, and multiple colonies of P. compressa and P. lobata were observed outside the radius. All attachments were intact, but the tagline was too long and likely abrading nearby coral. The ground attachment was also rubbing live coral nearby. No coral or AIS growth was noted on the buoy, but heavy coral growth was noted on the chain, weighing down the buoy. 2-5 broken corals, diseased P. lobata, and trash (dive weight) impacting coral were observed during surveys as well. 2 vessels were recorded at the surface: one scuba vessel and one fishing vessel. Both vessels were observed en route.
MOORING ASSESSMENT
DM Number: DM-03
ACOE Permit: Not Permitted
Latitude/Longitude: 20.10338, -155.88313
Buoy Depth: 17 ft.
Attachment Point Depth: 48 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Surface tag line is too long and abrading bottom; ground attachment is also abrading live coral; coral growth on the installation is weighing down the buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)
DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40% 10-40% 10-40% 40-75% &lt; 5% &lt; 5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora eydouxi*
Large (> 1 meter) Coral Heads: *Porites compressa* (3)
Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata, Montipora patula*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>En Route</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Fishing</td>
<td>En Route</td>
</tr>
</tbody>
</table>
Day Mooring 1.3: Black Point

SUMMARY

Coral was abundant (40-75%) at the survey site. Multiple P. compressa and P. lobata greater than 1 meter in diameter were found both inside and outside the survey radius. Buoy and chain attachments were intact, but coral and hydroid growth were noted on both the buoy and chain. The ground attachment was a two pin design, but one of the pins was broken and abrading nearby coral. 6-10 broken corals and trash impacting corals were observed on site, and Porites spp. and Pocillopora spp. were noted to be abraded and stressed. 2 vessels were recorded during surface surveys: an unknown vessel carrying one diver, and a fishing vessel employing poles.
MOORING ASSESSMENT

DM Number: DM-02
ACOE Permit: Not Permitted
Latitude/Longitude: 20.10582,-155.88477
Buoy Depth: 17 ft.
Attachment Point Depth: 33 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: No
Comments on Condition: One ground attachment pin is broken and abrading corals; coral and hydroid growth on both the buoy and attachment lines.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

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<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
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</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>5-10%</td>
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</tbody>
</table>

Coral Growing on Installation: *Pocillopora eydouxi*

Large (> 1 meter) Coral Heads: *Porites compressa* (5), *Porites lobata* (1)

Coral Species Within Radius: *Porites compressa*, *Porites lobata*, *Pocillopora meandrina*, *Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>Unknown</td>
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</table>
**Day Mooring 1.4: Kei Kei North**

**SUMMARY**

Coral was abundant (40-75%) at the site. No colonies greater than 1 meter in diameter were found inside the survey radius, but 1 P. solida was observed in the surroundings. Crown-of-thorns sea stars (Acanthaster planci) were also noted in the survey area. All attachments were intact, and the buoy chain was in good condition. Coral growth was found on both the buoy and chain, and hydroids were also noted on the chain. 2-5 broken corals and algal overgrowth on P. lobata and P. compressa were observed, but no trash or prohibited fishing were recorded. One scuba vessel was observed on a mooring at the surface, but the number of divers was unknown.
MOORING ASSESSMENT

DM Number: DM-05
ACOE Permit: 1995 General
Latitude/Longitude: 20.0804, -155.86763
Buoy Depth: 15 ft.
Attachment Point Depth: 48 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth noted on both the buoy and attachment line; hydroid growth also noted on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

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<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
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</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>5-10%</td>
<td>5-10%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
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</table>

Coral Growing on Installation: *Pocillopora meandrina, Porites spp.*
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Pocillopora eydouxi, Palythoa caesia, Montipora capitata, Montipora patula, Pavona varians*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
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</tbody>
</table>
Day Mooring 1.5: Ulua Cavern

SUMMARY

Coral and Hardbottom were abundant (40-75%) at the survey site. 1 P. lobata greater than 1 meter in diameter was observed inside the survey radius, and 4 more P. lobata along with 1 P. rus were observed in the surroundings. All attachments were intact and the chain was in good condition, but the tag line was too long. Coral growth was noted on the chain, and hydroid growth was noted on the buoy. One broken coral and bleaching and abrasions of P. lobata were recorded during surveys. No trash, prohibited fishing, or vessels were observed at the site.
MOORING ASSESSMENT

DM Number: DM-06
ACOE Permit: Not Permitted
Latitude/Longitude: 20.07436,-155.86435
Buoy Depth: 12 ft.
Attachment Point Depth: 28 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Tag line noted to be too long; hydroid growth on buoy, coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>5-10%</td>
<td>40-75%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora* spp.
Large (> 1 meter) Coral Heads: *Porites lobata* (1)
Coral Species Within Radius: *Porites compressa, Porites lobata, Porites rus, Montipora capitata, Pavona varians*

SURFACE ASSESSMENT

No vessels observed.
Day Mooring 1.6: Frog Rock

SUMMARY

Coral and gravel/rubble were abundant (40-75%) at the site. One *P. lobata* greater than 1 meter in diameter was found both inside and outside of the survey radius. Buoy D-rings were intact, but the chain attachment was not and the rope at the buoy was chaffing badly. The ground attachment was intact and in good condition. Coral growth was noted on both the buoy and chain, and hydroids were also recorded on the buoy. One broken coral and bleached/stressed *P. lobata* were recorded during surveys, with some algal overgrowth, but no trash or prohibited fishing were observed. One scuba vessel was recorded during surface surveys, anchored nearby.
MOORING ASSESSMENT

DM Number: DM-07
ACOE Permit: 1995 General
Latitude/Longitude 20.06492,-155.85443
Buoy Depth: 12 ft.
Attachment Point Depth: 46 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Line attachment to buoy has severe abrasions; coral growth noted on both buoy and attachment line, hydroid growth also noted on buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
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<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>40-75%</td>
<td>10-40%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>5-10%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: Pocillopora spp.
Large (> 1 meter) Coral Heads: Porites lobata (1)
Coral Species Within Radius: Porites compressa, Porites lobata, Porites rus, Porites evermanni, Montipora capitata, Montipora patula Pavona varians, Leptoseris incrustans

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>Anchored</td>
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</tbody>
</table>
Day Mooring 1.7: Lava Dome Rock

SUMMARY

Coral and hardbottom were abundant (40-75%) at the site. Multiple coral colonies greater than 1 meter in diameter were observed both inside and outside the survey radius, and one large (10 x 10 meter) Porites rus colony (mostly dead with live growth sections) was observed in the surroundings. There was no buoy D-ring, but all other attachments were intact, and the ground attachment had an extra cable. No coral growth was found on the buoy or chain, but hydroid growth was noted on both. One broken coral and bleached P. compressa and P. eydouxi were recorded, but no trash or prohibited fishing activities were observed. No vessels were observed during surface surveys.
MOORING ASSESSMENT

DM Number: DM-08
ACOE Permit: Not Permitted
Latitude/Longitude: 20.0609,-155.85097
Buoy Depth: 9 ft.
Attachment Point Depth: 43 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Buoy D-ring missing; hydroid growth noted on both the buoy and attachment line

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>40-75%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>5-10%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: *Porites compressa* (2), *Pocillopora eydouxi* (1)
Coral Species Within Radius: *Porites compressa, Porites lobata, Porites rus, Pocillopora meandrina, Montipora capitata, Pavona varians*

SURFACE ASSESSMENT

No vessels observed.
**Day Mooring 1.8: Crystal Cove**

**SUMMARY**

Coral was dominant (> 75%) at the survey site. Two *P. compressa* greater than 1 meter in diameter were observed inside the survey radius, and four were observed outside the radius. A large patch of *Abudefduf vaigiensis* eggs was also noted during surveys. The buoy attachment to chain was not intact and was chaffing, but all other attachments were intact. Coral growth was noted on both the buoy and chain. One broken coral and stressed *P. lobata* were observed, as well as sponge overgrowth of *P. compressa*. No trash, prohibited fishing activities, or vessels were observed.
MOORING ASSESSMENT

DM Number: DM-09
ACOE Permit: Not Permitted
Latitude/Longitude: 20.05367, -155.84583
Buoy Depth: 10 ft.
Attachment Point Depth: 42 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Attachment line is abrasing at buoy; coral growth on both buoy and attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
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<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>&gt; 75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: Porites spp., Pocillopora spp.
Large (> 1 meter) Coral Heads: Porites compressa (2)
Coral Species Within Radius: Porites compressa, Porites lobata, Montipora capitata, Leptoseris incrustans, Lepastrea purpurea

SURFACE ASSESSMENT

No vessels observed.
Region 2: Day Moorings from Puako to Paniau

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puako Condos</td>
<td>19.97342</td>
<td>-155.84358</td>
</tr>
<tr>
<td>Puffer Canyon</td>
<td>19.971</td>
<td>-155.84547</td>
</tr>
<tr>
<td>Puako Reef 55</td>
<td>19.9701</td>
<td>-155.84724</td>
</tr>
<tr>
<td>Puako Reef 69</td>
<td>19.97005</td>
<td>-155.84872</td>
</tr>
<tr>
<td>Puako Reef 112</td>
<td>19.96753</td>
<td>-155.85515</td>
</tr>
<tr>
<td>Paniau North</td>
<td>19.95979</td>
<td>-155.8597</td>
</tr>
<tr>
<td>Paniau South</td>
<td>19.95929</td>
<td>-155.86009</td>
</tr>
</tbody>
</table>

Coordinates in red have been updated to reflect the current position.
**Day Mooring 2.1: Puako Condos**

**SUMMARY**

Gravel/rubble was dominant (> 75%) and coral was occasional (5-10%) at the survey site. No colonies greater than 1 meter in diameter were observed inside the survey area, but 3 P. lobata were observed in the surroundings. All attachments were intact and the chain was in good condition. Coral growth was observed on both the buoy and chain, and hydroids were also noted on the buoy chain. One broken coral, algal overgrowth and abrasions on P. compressa, and bleaching and malformation of P. lobata were observed during surveys. No trash, prohibited fishing activities, or vessels were recorded.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 2010 LOP
Latitude/Longitude: 19.97342,-155.84358
Buoy Depth: 13 ft.
Attachment Point Depth: 36 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on buoy, coral and hydroid growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>&gt; 75%</td>
<td>5-10%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>5-10%</td>
</tr>
</tbody>
</table>

Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: Porites compressa, Porites lobata, Porites evermanni, Montipora capitata, Montipora patula, Pavona varians

SURFACE ASSESSMENT

No vessels observed.
**Day Mooring 2.2: Puffer Canyon**

**SUMMARY**

Hardbottom was abundant (40-75%) and coral was common (10-40%) at the site. 3 colonies of P. compressa greater than 1 meter in diameter were observed inside the survey radius, and 10 colonies were observed in the surroundings. All attachments were intact and the chain was in good condition, but the tagline was too long and dragging on the benthos. Coral growth was noted on both the buoy and chain, but no AIS growth was recorded on either component. One broken coral and bleached P. meandrina and P. compressa were observed, but no trash or prohibited fishing activities were recorded. One scuba vessel was observed at the surface on a mooring.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 2010 LOP
Latitude/Longitude: 19.971,-155.84547
Buoy Depth: 16 ft.
Attachment Point Depth: 37 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Tag line is too long and drags on the benthos; coral growth on both the buoy and attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>40-75%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
</tr>
</tbody>
</table>

Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata, Montipora patula, Pavona varians*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
Day Mooring 2.3: Puako Reef 55

SUMMARY
Coral was abundant (40-75%) at the survey site. One P. compressa greater than 1 meter in diameter was observed inside the survey radius, and three were observed in the surroundings. All attachments were intact and the buoy chain was in good condition, but the D-ring was pitted. Coral growth was noted on both the buoy and chain, and hydroids were also noted on the buoy. 6-10 broken corals were recorded, as well as bleaching, stress, and abrasion of corals in the survey area. Trash was also noted, but was not observed impacting corals. No vessels were recorded during surface surveys.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 1995 General
Latitude/Longitude: 19.9701,-155.84724
Buoy Depth: 12 ft.
Attachment Point Depth: 43 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Buoy D-ring is pitted; coral and hydroid growth on buoy, coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora spp.*, *Porites spp.*, *Pocillopora eydouxi*
Large (> 1 meter) Coral Heads: *Porites compressa* (1)
Coral Species Within Radius: *Porites compressa*, *Porites lobata*, *Montipora capitata*

SURFACE ASSESSMENT

No vessels observed.
SUMMARY

All but macroalgae and CCA were common (10-40%) at the site. One P. lobata greater than 1 meter in diameter was observed inside the survey radius, and 6 were observed in the surroundings. All attachments were intact and the chain was in good condition, but the top shackle was corroded. No coral or AIS growth was noted on the buoy, but coral growth was noted on the chain. 2-5 broken corals and bleached/stressed P. lobata were recorded during surveys, but no trash or prohibited fishing activities were observed. One scuba vessel was observed on a mooring at the surface.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 1995 General
Latitude/Longitude: 19.97005,-155.84872
Buoy Depth: 15 ft.
Attachment Point Depth: 30 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Top shackle of ground attachment is corroded; coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora* spp.
Large (> 1 meter) Coral Heads: *Porites lobata* (1)
Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
SUMMARY

All but macroalgae and CCA were common (10-40%) at the survey site. One P. lobata greater than 1 meter in diameter was observed inside the survey radius, but none were observed in the surroundings. All attachments were intact and the chain was in good condition, but the tag line was thin. Coral growth was noted on both the buoy and chain, and cyanobacteria was also noted on the chain. One broken coral and stressed P. lobata were noted at the site, but no trash or prohibited fishing were recorded. One scuba vessel on a mooring and one scuba vessel anchored were observed during surface surveys.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 1995 General
Latitude/Longitude: 19.96753,-155.85515
Buoy Depth: 10 ft.
Attachment Point Depth: 21 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Tag line is thin; coral growth noted on both the buoy and attachment line; cyanobacteria growth also noted on line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora* spp.
Large (> 1 meter) Coral Heads: *Porites lobata* (1)
Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Pocillopora meandrina, Palythoa caesia, wire coral*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>Anchored</td>
</tr>
</tbody>
</table>
**Day Mooring 2.6: Paniau North**

**SUMMARY**

Sand was dominant (> 75%) and coral was occasional (5-10%) at the site. One P. lobata greater than 1 meter in diameter was observed inside the survey radius, and 3 P. lobata were observed in the surroundings. Presence of Acanthaster planci was also noted at the site. All attachments were intact, but the D-ring was heavily corroded and one of the ground attachment pins was bearing all the weight. The downline was also frayed and knotted. Coral growth was found on both the buoy and chain, but no AIS growth was noted on either. One broken coral and abrasions on P. lobata were observed at the site, as well as bleaching of P. lobata and P. compressa. One scuba vessel was observed on a mooring during surface surveys.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.95979,-155.8597
Buoy Depth: 16 ft.
Attachment Point Depth: 39 ft.
Buoy Intact: Yes
Lines Intact: No
Ground Attachment Intact: Yes
Comments on Condition: Downline is frayed and knotted; one pin of the ground attachment is bearing all the weight; coral growth on both the buoy and attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&gt; 75%</td>
<td>&lt; 5%</td>
<td>5-10%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: Pocillopora spp., Porites spp., Pocillopora meandrina

Large (> 1 meter) Coral Heads: Porites lobata (1)

Coral Species Within Radius: Porites compressa, Porites lobata, Porites evermanni, Pocillopora damicornis, Pocillopora meandrina, Palythoa caesia, Montipora capitata, Montipora patula, Pavona varians

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
**Day Mooring 2.7: Paniau South**

**SUMMARY**

All were common (10-40%) except for macroalgae and CCA at the site. One P. lobata greater than 1 meter in diameter was observed outside the survey radius, and none were observed inside the survey radius. The buoy position was noted to be too high, but all attachments were intact and the chain was in good condition. No coral or AIS growth was noted on the buoy or chain. One broken coral and bleaching of P. lobata was observed, as well as tissue loss and sedimentation on P. evermanni. P. lobata was also noted to be diseased and overgrown. No trash or prohibited fishing activities were recorded. One scuba vessel was observed on a mooring during surface surveys.
MOORING ASSESSMENT

DM Number: N/A  
ACOE Permit: 1995 General  
Latitude/Longitude: 19.95929,-155.86009  
Buoy Depth: 7 ft.  
Attachment Point Depth: 20 ft.  
Buoy Intact: Yes  
Lines Intact: Yes  
Ground Attachment Intact: Yes  
Comments on Condition: Good condition.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
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<th>Macroalgae</th>
<th>CCA</th>
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<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A  
Large (> 1 meter) Coral Heads: N/A  
Coral Species Within Radius: *Porites lobata, Porites evermanni, Montipora capitata, wire coral*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
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</tbody>
</table>
Region 3: Day Moorings from Turtles to A Bay

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Turtles</td>
<td>19.94928</td>
<td>-155.87099</td>
</tr>
<tr>
<td>2. Haunted Cavern</td>
<td>19.94681</td>
<td>-155.87231</td>
</tr>
<tr>
<td>3. Pentagon</td>
<td>19.9156</td>
<td><strong>-155.89911</strong></td>
</tr>
<tr>
<td>4. A Bay Arches</td>
<td>19.91525</td>
<td>-155.90001</td>
</tr>
<tr>
<td>5. A Bay Unidentified 1</td>
<td>19.90443</td>
<td>-155.90339</td>
</tr>
<tr>
<td>6. A Bay Unidentified 2</td>
<td>19.91031</td>
<td>-155.89972</td>
</tr>
</tbody>
</table>

Coordinates in red have been updated to reflect the current position
Day Mooring 3.1: Turtles

SUMMARY

Gravel/rubble was abundant (40-75%) and coral was common (10-40%) at the survey site. 1 P. lobata greater than 1 meter in diameter was observed inside the survey radius, and 6 more were observed in the surrounding area. All attachments were intact, but there was minor corrosion at the ground attachment and extra chain at the pin. Coral growth was noted on the chain, but no coral or AIS growth was noted on the buoy. One broken coral and algal overgrowth of P. lobata was recorded, but no bleaching, trash, or prohibited fishing activities were present. 2 scuba vessels, with a total of 40 divers combined, were observed on a mooring, and one unknown vessel whose status could not be determined was observed at the surface, in addition to 3 kayaks and 3 freedivers.
MOORING ASSESSMENT

**DM Number:** DM-10  
**ACOE Permit:** Not Permitted  
**Latitude/Longitude:** 19.94928, -155.87099  
**Buoy Depth:** 13 ft.  
**Attachment Point Depth:** 29 ft.  
**Buoy Intact:** Yes  
**Lines Intact:** Yes  
**Ground Attachment Intact:** Yes  
**Comments on Condition:** Extra chain and minor corrosion on ground attachment; coral growth on line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

**DACOR Analysis:**

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>40-75%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

**Coral Growing on Installation:** *Pocillopora* spp.

**Large (> 1 meter) Coral Heads:** *Porites lobata* (1)

**Coral Species Within Radius:** *Porites compressa, Porites lobata, Porites evermanni, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>3</td>
<td>N/A</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

*Kayaks and freedivers also noted at the surface.*
**Day Mooring 3.2: Haunted Cavern**

**SUMMARY**

Coral, hardbottom, and CCA were common (10-40%) at the survey site. Multiple colonies of P. lobata and P. compressa greater than 1 meter in diameter were present both inside the survey radius and in the surroundings. All attachments were intact and the buoy chain was in good condition. Coral growth was found on both the buoy and chain, but no AIS growth was found on any buoy components. 2-5 broken corals, bleaching, and algal overgrowth were recorded on site, but no trash or prohibited fishing activities were observed. One scuba vessel carrying 25 divers was observed on a mooring, and 3 kayaks were observed en route during surface surveys.
MOORING ASSESSMENT

DM Number: DM-11
ACOE Permit: Not Permitted
Latitude/Longitude: 19.94681, -155.87231
Buoy Depth: 12 ft.
Attachment Point Depth: 33 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on both the buoy and attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
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</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*, *Porites spp.*
Large (> 1 meter) Coral Heads: *Porites lobata* (1), *Porites compressa* (9)
Coral Species Within Radius: *Porites compressa*, *Porites lobata*, *Montipora capitata*, *Montipora patula*, *Pavona varians*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>

*Kayaks also noted at the surface.*
**Day Mooring 3.3: Pentagon**

**SUMMARY**

Coral was dominant (> 75%) at the survey site. Multiple P. lobata colonies greater than 1 meter in diameter were observed both inside and outside the survey radius. All attachments were intact, and the buoy chain was in good condition, but there was some rust on the D-ring and line attachment. The buoy position was also noted to be high. No coral or AIS growth was noted on the buoy or chain. One broken coral and bleaching of P. meandrina was observed, as well as abrasions, overgrowth, and stress to P. lobata. No trash or prohibited fishing activities were recorded, and 2 vessels were observed during surface surveys. One scuba vessel was on a mooring, and one fishing vessel employing poles was en route.
MOORING ASSESSMENT

DM Number: DM-12
ACOE Permit: Not Permitted
Latitude/Longitude: 19.9156, -155.89911
Buoy Depth: 5 ft.
Attachment Point Depth: 13 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Rust on buoy D-ring and line attachment.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>5-10%</td>
<td>&gt; 75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: Porites lobata (6)
Coral Species Within Radius: Porites compressa, Porites lobata, Pocillopora meandrina, Montipora capitata, Pavona varians

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**SUMMARY**

Coral and CCA were common (10-40%) within the survey area. There were two buoys, one shallower at 4 feet and one deeper at 14 feet. Mooring buoy, chain, and ground attachments were found to be intact. Buoy position was higher than normal. Coral growth was found on the buoy chain, but no AIS growth was found on the buoy or chain. One broken coral was noted at the site, as well as some bleached coral. No trash or prohibited fishing activities were observed on site, but a lost or discarded dive weight was found on the reef. No vessels were observed in the area at the surface, and no protected species were observed above or below the surface.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 2005 LOP
Latitude/Longitude: 19.91525, -155.900010
Buoy Depth: 4, 14 ft.
Attachment Point Depth: 25 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: *Porites lobata* (1)
Coral Species Within Radius: *Porites compressa, Porites lobata, Pocillopora meandrina, Montipora capitata*

SURFACE ASSESSMENT

No vessels observed.
**Day Mooring 3.5: A Bay Unidentified 1**

![Underwater Images]

**SUMMARY**

Coral and CCA were abundant (40-75%) within the survey area. Two P. lobata greater than 1 meter in diameter were recorded within the survey area, and 6 were recorded in the area outside the survey radius. Buoy D-rings and ground attachments were not intact. Buoy position was normal, and no coral or AIS growth was observed on the buoy or chain. One broken coral was noted at the site, as well as some bleached coral. No trash or prohibited fishing were observed at the site, and one vessel was observed anchored nearby. The vessel carried 2 divers engaged in spearfishing activities. No protected species were observed above or below the surface.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.90443, -155.90339
Buoy Depth: 7 ft.
Attachment Point Depth: Not recorded
Buoy Intact: No
Lines Intact: No
Ground Attachment Intact: No
Comments on Condition: Improper ground attachment consisting of chain wrapped around reef; line is hand-tied to anchors; buoy D-rings are not intact.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
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<td>&lt; 5%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>40-75%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: *Porites lobata* (2)
Coral Species Within Radius: *Porites lobata, Pocillopora meandrina, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>Spearfishing</td>
<td>Anchored</td>
</tr>
</tbody>
</table>
Coral and hardbottom were abundant (40-75%) within the survey area. Three P. lobata greater than 1 meter in diameter were observed within the survey area. Buoy and ground attachments were not intact, but the buoy chain was in good condition. No coral or AIS growth was observed on the buoy or chain. Buoy position was higher than normal, and a bleach bottle float was attached to the tag line. One broken coral and bleached P. lobata were observed at the site. No trash, prohibited fishing, vessels, or protected species were observed at the site during either the surface or submerged surveys.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.91031, -155.89972
Buoy Depth: 5 ft.
Attachment Point Depth: 18 ft.
Buoy Intact: No
Lines Intact: Yes
Ground Attachment Intact: No
Comments on Condition: Improper ground attachment consisting of chain wrapped around reef; buoy D-rings are not intact.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>40-75%</td>
<td>40-75%</td>
<td>5-10%</td>
<td>5-10%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: *Porites lobata* (3)
Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Pocillopora meandrina, Montipora capitata*

SURFACE ASSESSMENT

No vessels observed.
Region 4: Day Moorings from Black Coral Arch to Touch of Gray

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Black Coral Arch</td>
<td>19.8359</td>
<td>-155.996483</td>
</tr>
<tr>
<td>2. Kua</td>
<td>19.812933</td>
<td>-156.008117</td>
</tr>
<tr>
<td>3. Touch of Gray</td>
<td>19.7827</td>
<td>-156.05265</td>
</tr>
</tbody>
</table>

Coordinates in red have been updated to reflect the current position.
SUMMARY

Coral, sand/silt, and gravel/rubble were common (10-40%) within the survey area. No corals greater than 1 meter in diameter were observed inside or outside of the survey radius. Buoy attachments and ground attachments were intact, and the buoy chain was in good condition. Coral growth was found on the buoy, but not the buoy chain, and no AIS were identified on either component. One broken coral was noted at the site, as well as instances of bleached P. meandrina and P. lobata. No vessels were observed during the surface survey, and no trash or prohibited fishing were observed underwater. Divers noted presence of Crown-of-Thorns Starfish (Acanthaster planci) and Cushion Star (Culcita novaeguineae) at the site, but no black coral or arching reef structures mentioned in the site name were observed during the surveys.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 1995 General
Latitude/Longitude: 19.8359,-155.996483
Buoy Depth: 13 ft.
Attachment Point Depth: 27 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Tag line is too long; coral growth on buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>5-10%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa, Porites lobata, Pocillopora meandrina, Montipora capitata*

SURFACE ASSESSMENT

No vessels observed.
**Day Mooring 4.2: Kua Bay**

**SUMMARY**

Coral and sand/silt were abundant (40-75%) at the survey site. No corals greater than 1 meter in diameter were found inside or around the survey radius. Bleached P. lobata was noted during the survey. Buoy and ground attachments were intact, and the buoy chain was in good condition, but the ground attachment consisted of one chain and one cable, with the cable bearing 100% of the load. No coral or AIS growth was observed on the buoy or the buoy chain. No broken coral, trash, prohibited fishing, or vessels were observed at the site. A steep rise in reef from 29 feet to 20 feet was observed between the surrounding substrate and the mooring base. A Spotted Eagle Ray (Aetobatus narinari) was observed during the underwater surveys.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 1995 General
Latitude/Longitude: 19.812933, -156.008117
Buoy Depth: 11 ft.
Attachment Point Depth: 20 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Ground attachment consists of one cable and one chain, with the cable bearing 100% of the load.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa, Porites lobata, Pocillopora meandrina, Montipora capitata*

SURFACE ASSESSMENT

No vessels observed.
Day Mooring 4.3: Touch of Gray

SUMMARY

Coral and hardbottom were abundant (40-75%) at the site. No corals greater than 1 meter in diameter were observed within or outside of the survey area. Buoy, chain, and ground attachments were intact and in good condition. The ground attachment consisted of two pins, but divers observed that all of the load was on one pin. There was no rope component, and a secondary float was attached further down on the chain. No coral or AIS growth was noted on the buoy or chain, and no broken or bleached corals were observed in the area. No trash, prohibited fishing, or vessels were observed during the surveys.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 1995 General
Latitude/Longitude: 19.7827, -156.05264
Buoy Depth: 18 ft.
Attachment Point Depth: 52 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: All load on one of two ground attachment pins; all chain components, no line; secondary buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>40-75%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites lobata, Pocillopora meandrina, Pocillopora eydouxi, Montipora capitata*

SURFACE ASSESSMENT

No vessels observed.
Region 5: Day Moorings from Hoover’s to Garden Eel Cove

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hoover’s</td>
<td>19.74037</td>
<td>-156.05556</td>
</tr>
<tr>
<td>2. GEC Aggressor</td>
<td>19.73728</td>
<td>-156.05469</td>
</tr>
<tr>
<td>3. GEC North</td>
<td>19.73725</td>
<td>-156.05406</td>
</tr>
<tr>
<td>4. GEC Deep</td>
<td>19.73705</td>
<td>-156.05434</td>
</tr>
<tr>
<td>5. GEC Middle Outside</td>
<td>19.73664</td>
<td>-156.05405</td>
</tr>
<tr>
<td>6. GEC Middle Inside</td>
<td>19.7365</td>
<td>-156.05374</td>
</tr>
<tr>
<td>7. GEC South Outside</td>
<td>19.73601</td>
<td>-156.05409</td>
</tr>
<tr>
<td>8. GEC South Inside</td>
<td>19.73598</td>
<td>-156.05388</td>
</tr>
</tbody>
</table>

Coordinates in red have been updated to reflect the current position.
**Day Mooring 5.1: Hoover's**

**SUMMARY**

Coral and hardbottom were abundant (40-75%) at the survey site. No coral colonies greater than 1 meter were found inside or outside of the survey radius. All attachments were intact, and the chain was in good condition. No broken corals, bleaching or disease, trash, or prohibited fishing activities were observed during the survey. A commercial vessel employing Kimpachi cages was observed on a mooring, and a fishing vessel employing poles was observed en route during surface surveys.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 1995 General
Latitude/Longitude: 19.74037, -156.05556
Buoy Depth: 7 ft.
Attachment Point Depth: 36 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on buoy, hydroid growth on both buoy and attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>5-10%</td>
<td>40-75%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Commercial (Kimpachi Cages)</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**Day Mooring 5.2: GEC Aggressor**

**SUMMARY**

Coral and gravel/rubble were abundant (40-75%) at the survey site. No corals greater than 1 meter in diameter were observed inside or outside of the survey radius. The buoy chain attachments were not intact and the chain was not in good condition. The ground attachment was intact, but was a non-standard construction consisting of a chain wrapped around a boulder. No coral or AIS growth was observed on the buoy or chain. No broken or bleached corals, trash, or prohibited fishing were observed at the site. Two commercial vessels and one fishing vessel employing poles were observed during the surface surveys. The status of the two commercial vessels was unknown, and the fishing vessel was drifting.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.73728, -156.05469
Buoy Depth: N/A
Attachment Point Depth: 80 ft.
Buoy Intact: No
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Non-standard ground attachment consisting of a chain wrapped around a boulder; tag line is too long and improperly attached; buoys are soft and improperly attached.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>40-75%</td>
<td>10-40%</td>
<td>10-40%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Commercial</td>
<td>Unknown</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Commercial</td>
<td>Unknown</td>
</tr>
<tr>
<td>3</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>Drifting</td>
</tr>
</tbody>
</table>
Day Mooring 5.3: GEC North

SUMMARY

Coral was dominant (> 75%) at this site. No corals greater than 1 meter in diameter were observed inside the survey radius, and one P. lobata greater than 1 meter was observed in the surrounding area. Buoy attachments were intact, but the ground attachment consisted of a single pin (non-standard). No coral or AIS growth was observed on the buoy or chain. Bleached P. lobata and P. meandrina were observed, but no broken corals, trash, or prohibited fishing were observed during the survey. 3 vessels were observed during the surface survey; 2 commercial vessels on moorings and one fishing vessel en route employing poles.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.73725, -156.05406
Buoy Depth: 7 ft.
Attachment Point Depth: 26 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Ground attachment consists of a single anchor pin.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
<td>&gt; 75%</td>
<td>&lt; 5%</td>
<td>40-75%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa*, *Porites lobata*, *Porites evermanni*, *Montipora capitata*, *Montipora patula*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Commercial</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Commercial</td>
<td>On Mooring</td>
</tr>
<tr>
<td>3</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**SUMMARY**

Sand/silt was dominant (> 75%) at the site, and coral was occasional (5-10%). No corals greater than 1 meter in diameter were found within the survey area, but 2 P. lobata greater than 1 meter were noted in the surroundings. All attachments were intact, and the buoy chain was in good condition. Coral growth was noted on the buoy, but no AIS growth was observed on the buoy or chain. One broken coral was observed at the site, and divers noted coral disease, but no details were given. No trash or prohibited fishing were observed. 2 vessels were noted during the surface surveys, both commercial vessels on moorings.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 2010 LOP
Latitude/Longitude: 19.73705, -156.05434
Buoy Depth: 37 ft.
Attachment Point Depth: 77 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&gt; 75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: Species not recorded
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites lobata, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Commercial</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Commercial</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
**Day Mooring 5.5: GEC Middle Outside**

**SUMMARY**

Coral was abundant at the survey site (40-75%). No corals greater than 1 meter in diameter were observed inside or around the survey radius. Buoy D-rings and ground attachments were not intact, with the ground attachment consisting of half cable, half chain, with moderate to severe corrosion. Coral growth was observed on the buoy, but no AIS growth was found on the buoy or chain. 2-5 broken corals and bleached P. meandrina were noted at the site, but no trash or prohibited fishing were observed. 2 commercial vessels were observed on moorings during the surface survey.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 2010 LOP
Latitude/Longitude: 19.73664, -156.05405
Buoy Depth: 10 ft.
Attachment Point Depth: 36 ft.
Buoy Intact: No
Lines Intact: Yes
Ground Attachment Intact: No
Comments on Condition: Ground attachment has moderate/severe corrosion and is half cable, half chain; buoy D-ring is not intact; coral growth on buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>5-10%</td>
<td>5-10%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: Species not recorded
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa, Porites lobata, Palythoa caesia, Cyphastrea agassizi, Montipora capitata, Montipora patula*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Commercial</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Commercial</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
Day Mooring 5.6: GEC Middle Inside

SUMMARY
Coral was abundant at the survey site (40-75%). No corals greater than 1 meter in diameter were observed inside or around the survey radius. All attachments were intact, and the buoy chain was in good condition. No coral or AIS growth were noted on the buoy or chain. Bleached Montipora spp. and stressed Porites spp. were observed in the surroundings, with the Porites spp. exhibiting algal overgrowth and pigmentation response. No broken corals, trash, or prohibited fishing activities were recorded, and one commercial vessel was observed on the mooring during surface surveys.

MOORING ASSESSMENT
DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.7365, -156.05374
Buoy Depth: 8 ft.
Attachment Point Depth: 26 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Good condition.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: Porites compressa, Porites lobata, Porites evermanni, Montipora capitata

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Commercial</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
Day Mooring 5.7: GEC South Outside

SUMMARY

Coral was dominant (> 75%) at this site. No corals greater than 1 meter in diameter were observed inside or surrounding the survey radius. Buoy attachments and ground attachments were intact, with one new shackle. Coral growth was observed on the buoy but not the buoy chain, and no AIS growth was observed on the buoy or chain. Bleached M. capitata was observed, growth anomalies (5 cm) were found on P. lobata, and algal overgrowth (40 cm) was observed on P. compressa. No broken corals, trash, or prohibited fishing were observed. Six vessels were observed during surface surveys; one sailing vessel en route, two fishing vessels employing poles (status unknown), and three commercial vessels on moorings.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 1995 General
Latitude/Longitude: 19.73601, -156.05409
Buoy Depth: 8 ft.
Attachment Point Depth: 33 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Good condition, one new shackle on ground attachment; coral growth on buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
<td>&gt; 75%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: Species not recorded
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Palythoa caesia, Montipora capitata, Montipora patula, Pavona varians*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Sailing</td>
<td>En Route</td>
</tr>
<tr>
<td>2-3</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>Unknown</td>
</tr>
<tr>
<td>4-6</td>
<td>N/A</td>
<td>Commercial</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
**Day Mooring 5.8: GEC South Inside**

**SUMMARY**

Coral was dominant (> 75%) at this site. No corals greater than 1 meter in diameter were observed inside or surrounding the survey radius. Buoy attachments and ground attachments were intact, and appeared to be newly installed with new shackles, chain, and buoy. No coral or AIS growth was observed on the buoy or chain. Bleached P. lobata and M. capitata were observed, and corals were stressed and covered with mucus, with algal overgrowth. No broken corals, trash, or prohibited fishing were observed. One commercial vessel was observed on a mooring during surface surveys.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.73598, -156.05388
Buoy Depth: 8 ft.
Attachment Point Depth: 20 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Good condition, newly installed components.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
<td>5-10%</td>
<td>&gt; 75%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: Porites compressa, Porites lobata, Porites evermanni, Pocillopora meandrina, Montipora capitata, Montipora patula, Pavona varians, Leptoseris incrustans

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Commercial</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
Region 6: Day Moorings from Keahole to Black Hole

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Keahole Sand Chute</td>
<td>19.732583</td>
<td>-156.05778</td>
</tr>
<tr>
<td>2. Keahole Wash Rock</td>
<td>19.732233</td>
<td>-156.059633</td>
</tr>
<tr>
<td>3. Pipe Dreams</td>
<td>19.729117</td>
<td>-156.06225</td>
</tr>
<tr>
<td>4. Black Hole</td>
<td>19.715533</td>
<td>-156.053967</td>
</tr>
</tbody>
</table>

Coordinates in red have been updated to reflect the current position.
**SUMMARY**

Coral, sand/silt, and gravel/rubble were abundant (40-75%) at the site. Colonies of *P. eydouxi* (branching) and *P. evermanni* (mounding) greater than 1 meter in diameter were observed within the survey area. No corals greater than 1 meter in diameter were found outside the survey area. Buoy and chain attachments were intact, but the ground attachment was corroded at the Y shackle. Coral growth (*P. meandrina*) was found on the chain, but no AIS growth was found on the buoy or chain. One broken coral and instances of bleached *P. lobata* and *P. meandrina* were observed at the site. No trash or prohibited fishing were recorded, and one commercial vessel employing Kampachi cages was observed at the surface (en route). A steep drop in depth was noted approximately 10 meters from the survey site.
MOORING ASSESSMENT

DM Number: DM-13
ACOE Permit: Not Permitted
Latitude/Longitude: 19.732583, -156.05778
Buoy Depth: 15 ft.
Attachment Point Depth: 30 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: No
Comments on Condition: Corrosion on ground attachment Y shackle; coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Percent Cover</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>40-75%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: *Pocillopora eydouxi* (1), *Porites evermanni* (1)
Coral Species Within Radius: *Porites lobata*, *Porites evermanni*, *Pocillopora eydouxi*, *Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Commercial (Kampachi Cages)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**Day Mooring 6.2: Keahole Wash Rock**

**SUMMARY**

Coral and hardbottom were abundant (40-75%) at the survey site. No corals greater than 1 meter in diameter were observed inside or outside of the survey radius. The buoy and chain were intact, but the ground attachment was not intact, with pitting in the chain. No coral or AIS growth was observed on the buoy or chain. No broken corals were noted, but bleaching of *P. lobata*, *P. meandrina*, and *P. eydouxi* was noted in the surroundings. No trash or prohibited fishing were observed at the site. Two vessels were observed during surface surveys. One was on a mooring, engaged in recreational scuba activities with 10+ divers. The other was a commercial vessel en route employing Kampachi cages.
MOORING ASSESSMENT

DM Number: DM-14
ACOE Permit: Not Permitted
Latitude/Longitude: 19.732233, -156.059633
Buoy Depth: 16 ft.
Attachment Point Depth: Not recorded
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: No
Comments on Condition: Ground attachment has pitting in chain.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>40-75%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites lobata, Porites duerdeni, Pocillopora meandrina, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10+</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Commercial (Kampachi Cages)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**Day Mooring 6.3: Pipe Dreams**

**SUMMARY**

Coral, sand/silt, and hardbottom were common (10-40%). No corals greater than 1 meter in diameter were found inside or around the survey radius. Buoy and chain attachments were intact, but the ground attachment was a non-standard, single pin design with signs of corrosion. No coral or AIS growth was observed on the buoy or chain, but other growth was noted on the buoy. Bleached P. meandrina was present at the site, but no trash or prohibited fishing were observed. Broken coral (2-5 corals) was noted at the site as well, and 2 vessels were observed at the surface. One vessel was a scuba tour with 10+ divers in use of a mooring, while the other was a commercial vessel en route.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.729117, -156.06225
Buoy Depth: 10 ft.
Attachment Point Depth: Not recorded
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: No
Comments on Condition: Ground attachment is corroded, single anchor pin attachment.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>5-10%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Pocillopora eydouxi, Montipora capitata, Montipora patula*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10+</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Commercial (Kampachi Cages)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
Day Mooring 6.4: Black Hole

SUMMARY

Coral, hardbottom, and gravel/rubble were common (10-40%) within the survey area. No corals greater than 1 meter in diameter were observed inside the survey radius, but one P. eydouxi was identified outside the radius. Buoy and ground attachments were intact, and the buoy chain was in good condition. Buoy position was noted as lower than usual, and coral growth (Porites spp.) was noted on the buoy. Coral growth was also noted on the buoy chain (4 P. meandrina), weighing down the buoy. No AIS were observed on the buoy or chain. One broken coral was noted at the site, and trash impacting corals was also observed. No vessels, prohibited fishing, or coral bleaching were noted during the survey.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 1995 General
Latitude/Longitude: 19.715533, -156.053967
Buoy Depth: 14 ft.
Attachment Point Depth: 57 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on both buoy and attachment line, weighing down buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: Pocillopora meandrina, Porites spp.
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: Porites compressa, Porites lobata, Porites evermanni, Pocillopora meandrina, Pocillopora eydouxi

SURFACE ASSESSMENT

No vessels observed.
Region 7: Day Moorings from Dottie’s Reef to Golden Arches

Coordinates in red have been updated to reflect the current position

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Dottie's Reef</td>
<td>19.70677</td>
<td>-156.05002</td>
</tr>
<tr>
<td>2. Rabbi's Reef</td>
<td>19.705983</td>
<td>-156.050933</td>
</tr>
<tr>
<td>3. Phantom Ridge</td>
<td>19.704917</td>
<td>-156.050267</td>
</tr>
<tr>
<td>4. Carpenter's Reef</td>
<td>19.70472</td>
<td>-156.05016</td>
</tr>
<tr>
<td>5. Golden Arches North</td>
<td>19.70338</td>
<td>-156.05011</td>
</tr>
<tr>
<td>6. Golden Arches South</td>
<td>19.70293</td>
<td>-156.04985</td>
</tr>
</tbody>
</table>
Day Mooring 7.1: Dottie’s Reef

SUMMARY

Coral, sand/silt, and hardbottom were common (10-40%) at the survey site. Two P. compressa greater than 1 meter were observed, with one inside and one outside the survey radius. All attachments were intact, and no coral growth was noted on the chain. Coral growth and hydroids were recorded on the buoy. Algal overgrowth was noted on P. lobata, but no broken corals, trash, or prohibited fishing activities were recorded. A rise in reef was recorded at the mooring base, with the base at 24 feet and the surrounding bottom at 38 feet. Sarcothelia edmondsoni and wire coral were recorded at the survey site. One scuba vessel with 10 divers was observed on a mooring at the surface, and one fishing vessel employing laynet was observed, but its mooring status was unknown.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 1995 General
Latitude/Longitude: 19.70677, -156.05002
Buoy Depth: 14 ft.
Attachment Point Depth: 28 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral and hydroid growth on buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>5-10%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>5-10%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: *Porites compressa* (1)
Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Palythoa caesia, Cyphastrea agassizi, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Fishing (laynet)</td>
<td>Unknown</td>
</tr>
</tbody>
</table>
Day Mooring 7.2: Rabbi’s Reef

SUMMARY

Gravel/rubble was abundant (40-75%) at the site, and coral and macroalgae were common (10-40%). No corals greater than 1 meter in diameter were found inside or around the survey radius. Buoy and chain attachments were intact, but the ground attachment was corroded. Coral growth (P. meandrina) was found on the chain, but no AIS growth was found on the buoy or chain. One broken coral was noted at the site, but no trash, prohibited fishing, or bleached coral were observed. One recreational scuba vessel was observed on a mooring at the surface, with 10+ divers on board.
MOORING ASSESSMENT

DM Number: DM-15
ACOE Permit: Not Permitted
Latitude/Longitude: 19.705983, -156.050933
Buoy Depth: 14 ft.
Attachment Point Depth: 28 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: No
Comments on Condition: Corrosion on ground tackle; coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>40-75%</td>
<td>5-10%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Pocillopora meandrina, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10+</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
**Day Mooring 7.3: Phantom Ridge**

**SUMMARY**

Coral, sand/silt, and hardbottom were common (10-40%). No corals greater than 1 meter in diameter were found inside or around the survey radius. All attachments were intact, but the buoy chain was not in good condition. Coral growth (P. meandrina) was found on the chain, but no coral or AIS growth were found on the buoy. Bleached P. meandrina and one broken coral were noted at the site, but no trash, prohibited fishing, or vessels were observed during the survey.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.704917, -156.050267
Buoy Depth: 14 ft.
Attachment Point Depth: 57 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Buoy line in poor condition; coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites lobata, Palythoa caesia, Cyphastrea agassizi, Pocillopora meandrina, Montipora capitata, Montipora patula*

SURFACE ASSESSMENT

No vessels observed.
**SUMMARY**

Hardbottom was abundant (40-75%) and coral was occasional (5-10%) at the survey site, and one *P. lobata* greater than 1 meter in diameter was observed within the survey radius. All attachments were intact and the buoy chain was in good condition. Coral growth was noted on the chain but not on the buoy. One broken coral was recorded, and bleaching of *P. meandrina* and disease of *Porites* spp. were also noted. No trash or prohibited fishing activities were observed, and one fishing vessel employing poles was observed en route at the surface.
MOORING ASSESSMENT

DM Number: DM-16
ACOE Permit: Not Permitted
Latitude/Longitude: 19.70472, -156.05016
Buoy Depth: 10 ft.
Attachment Point Depth: 34 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>5-10%</td>
<td>40-75%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*

Large (> 1 meter) Coral Heads: *Porites lobata* (1)

Coral Species Within Radius: *Porites lobata, Porites evermanni, Pocillopora eydouxi, Montipora capitata, Montipora patula*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**SUMMARY**

All but macroalgae and CCA were common (10-40%) in the survey area. No corals greater than 1 meter in diameter were observed inside or outside of the survey radius. All attachments were intact, but the anti-chafing gear was fraying. Coral growth was noted on the chain but not the buoy. Bleaching of *P. lobata*, *P. meandrina*, and *M. capitata* was observed, as well as one broken coral. No trash or prohibited fishing activities were recorded. Three vessels were observed during surface surveys. One was a dive vessel, with 6 divers aboard. The other two were a fishing vessel employing poles and a commercial vessel employing Kimpachi cages. All vessels were observed en route.
MOORING ASSESSMENT

DM Number: DM-17
ACOE Permit: Not Permitted
Latitude/Longitude: 19.70338, -156.05011
Buoy Depth: 12 ft.
Attachment Point Depth: 35 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Ground attachment anti-chafing gear is fraying; coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgeae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites lobata, Porites evermanni, Pocillopora eydouxi, Montipora capitata, Montipora patula*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>Recreational Scuba</td>
<td>En Route</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
<tr>
<td>3</td>
<td>N/A</td>
<td>Commercial (Kimpachi Cages)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**Day Mooring 7.6: Golden Arches South**

**SUMMARY**

Hardbottom was abundant (40-75%) and coral was common (10-40%) at the survey site. No corals greater than 1 meter in diameter were observed inside or outside the survey radius. All attachments were intact, but a minor fray was noted on the ground cable. Coral growth was noted on the chain, but no coral or AIS growth was noted on the buoy. 2-5 broken corals were recorded at the site, as well as bleaching of *P. meandrina* and abrasions on *Porites* spp. No trash or prohibited fishing activities were recorded. Two vessels were observed at the surface: a fishing vessel employing poles and a snorkel tour with 7 divers, both of which were en route.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.70293, -156.04985
Buoy Depth: 13 ft.
Attachment Point Depth: 27 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Minor fray in ground cable; coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>40-75%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: Pocillopora meandrina
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: Porites compressa, Porites lobata, Pocillopora eydouxi, Montipora capitata, Montipora patula

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
<tr>
<td>2</td>
<td>Unknown</td>
<td>Recreational Snorkel</td>
<td>En Route</td>
</tr>
</tbody>
</table>
Region 8: Day Moorings from Pyramid Pinnacle to Kaloko

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pyramid Pinnacle In</td>
<td>19.692533</td>
<td>-156.0457</td>
</tr>
<tr>
<td>2. Pyramid Pinnacle Out</td>
<td>19.692517</td>
<td>-156.04625</td>
</tr>
<tr>
<td>3. Skunk Hollow Inside</td>
<td>19.69138</td>
<td>-156.04303</td>
</tr>
<tr>
<td>19.69133</td>
<td></td>
<td>-156.0423</td>
</tr>
<tr>
<td>5. Lone Tree Arch</td>
<td>19.69113</td>
<td>-156.04076</td>
</tr>
<tr>
<td>6. Skunk Hollow Outside</td>
<td>19.6911</td>
<td>-156.04314</td>
</tr>
<tr>
<td>7. Freeze Face</td>
<td>19.69042</td>
<td>-156.03941</td>
</tr>
<tr>
<td>8. Windows</td>
<td>19.6859</td>
<td>156.03497</td>
</tr>
<tr>
<td>9. Kaloko Arches 1</td>
<td>19.68365</td>
<td>-156.03587</td>
</tr>
<tr>
<td>10. Kaloko Arches 2</td>
<td>19.68318</td>
<td>-156.03653</td>
</tr>
</tbody>
</table>

Coordinates in red have been updated to reflect the current position.
**SUMMARY**

Hardbottom and gravel/rubble were abundant (40-75%) at the site, and coral was common (10-40%). No corals greater than 1 meter in diameter were found inside or around the survey radius. All attachments were intact. Coral growth was observed on both the buoy and chain (*P. meandrina*), but no AIS growth was noted. One broken coral was observed at the site, but no bleaching or coral disease was observed. No trash or prohibited fishing were recorded, and 2 vessels were noted at the surface. One was a fishing vessel employing poles, and the other was a canoe for paddling. Both vessels were en route.
MOORING ASSESSMENT

DM Number: DM-19  
ACOE Permit: Not Permitted  
Latitude/Latitude: 19.692533, -156.0457  
Buoy Depth: 9 ft.  
Attachment Point Depth: 34 ft.  
Buoy Intact: Yes  
Lines Intact: Yes  
Ground Attachment Intact: Yes  
Comments on Condition: Coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>40-75%</td>
<td>5-10%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites lobata, Pocillopora meandrina, Cyphastrea agassizi, Montipora capitata, Montipora patula*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Canoe Paddling</td>
<td>En Route</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
<tr>
<td>3</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**Day Mooring 8.2: Pyramid Pinnacle Outside**

**SUMMARY**

Hardbottom and gravel/rubble were abundant (40-75%) at the site, and coral was common (10-40%). No corals greater than 1 meter in diameter were found inside or around the survey radius. All mooring attachments were intact. Coral growth was observed on both the buoy and chain (*P. meandrina*), with 10 colonies observed on the buoy chain, but no AIS growth was noted on either component. One broken coral was observed at the site, but no bleaching, trash, or prohibited fishing were observed. Two vessels were noted at the surface. One was a fishing vessel employing poles, and the other was a paddling canoe. Both vessels were en route.
MOORING ASSESSMENT

DM Number: DM-18
ACOE Permit: Not Permitted
Latitude/Longitude: 19.692517, -156.04625
Buoy Depth: 19 ft.
Attachment Point Depth: 66 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on buoy and heavy coral growth (10 colonies) on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>40-75%</td>
<td>40-75%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Canoe Paddling</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**Day Mooring 8.3: Skunk Hollow Inside**

**SUMMARY**
Sand/silt, hardbottom, and gravel/rubble were common (10-40%) at the survey site, and coral was occasional (5-10%). No corals greater than 1 meter in diameter were observed within the survey radius, and *P. eydouxi* was recorded in the surroundings. All attachments were intact, and coral growth was noted only on the buoy. One broken coral and bleaching of multiple species were observed, as well as disease on *P. lobata*, but no trash or prohibited fishing activities were recorded. One scuba vessel with 6 divers was observed en route at the surface.

**MOORING ASSESSMENT**
- **DM Number:** N/A
- **ACOE Permit:** Not Permitted
- **Latitude/Longitude:** 19.69138, -156.04303
- **Buoy Depth:** 10 ft.
- **Attachment Point Depth:** 37 ft.
- **Buoy Intact:** Yes
- **Lines Intact:** Yes
- **Ground Attachment Intact:** Yes
- **Comments on Condition:** Coral growth on buoy.
ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>Recreational Scuba</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**Day Mooring 8.4: Suck 'Em Up Cave**

**SUMMARY**

All but macroalgae and CCA were common (10-40%) at the survey site. No corals greater than 1 meter in diameter were observed inside or outside of the survey radius. All attachments were intact, and the chain was in good condition, with some coral growth. One broken coral and bleaching of *P. meandrina* with algal overgrowth were observed, but no trash or prohibited fishing activities were recorded. No vessel observations were made at the surface.

**MOORING ASSESSMENT**

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.69133, -156.0423
Buoy Depth: 10 ft.
Attachment Point Depth: 39 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on attachment line.
ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Porites* spp.

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Cyphastrea agassizi, Montipora capitata, Leptoseris incrustans*

SURFACE ASSESSMENT

No vessels observed.
SUMMARY

All but macroalgae and CCA were common (10-40%) at the survey site. 2 *P. eydouxi* colonies greater than 1 meter in diameter were observed within the survey radius, but no large colonies were observed in the surroundings. All attachments were intact, and coral growth was noted on both the buoy and chain. One broken coral and bleaching of *P. eydouxi* were observed, but no trash or prohibited fishing activities were impacting the site. One scuba vessel carrying 6 divers and one fishing vessel employing poles were observed en route at the surface.
MOORING ASSESSMENT

DM Number: DM-23
ACOE Permit: Not Permitted
Latitude/Longitude: 19.69113, -156.04076
Buoy Depth: 13 ft.
Attachment Point Depth: 38 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on both buoy and attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: Pocillopora meandrina, Pocillopora spp.
Large (> 1 meter) Coral Heads: Pocillopora eydouxi (2)
Coral Species Within Radius: Porites compressa, Porites lobata, Pocillopora eydouxi

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>Recreational Scuba</td>
<td>En Route</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**Day Mooring 8.6: Skunk Hollow Outside**

**SUMMARY**

Sand/silt, hardbottom, and gravel/rubble were common (10-40%) at the survey site, and coral was occasional (5-10%). No corals greater than 1 meter in diameter were observed inside or outside of the survey radius. Buoy D-rings and chain attachment were not intact, and the buoy was a bleach bottle. The ground attachment consisted of a single pin with a broken second pin and chain wrapped around rock. There was no ascent line. 10-20 broken corals were recorded at the site. Bleaching of *P. meandrina* and *P. eydouxi* was observed, as well as disease on *Porites spp*. No trash or prohibited fishing activities were observed. One scuba vessel was observed on a mooring, and one fishing vessel employing poles was observed en route.

**MOORING ASSESSMENT**

- **DM Number:** DM-22
- **ACOE Permit:** Not Permitted
- **Latitude/Longitude:** 19.6911, -156.04314
- **Buoy Depth:** 33 ft.
- **Attachment Point Depth:** 43 ft.
- **Buoy Intact:** No
- **Lines Intact:** No
- **Ground Attachment Intact:** No

**Comments on Condition:** Ground attachment has broken pin, consists of chain wrapped around rock; buoy is bleach bottle and D-ring not intact; no ascent line.
ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
Day Mooring 8.7: Freeze Face

SUMMARY

Gravel/rubble was dominant (> 75%) and coral was occasional (5-10%). One *P. lobata* and one *P. compressa* greater than 1 meter were observed outside the survey area. All attachments were intact, and no coral growth was noted on the buoy or chain, though hydroids were recorded growing on both. Fishing line was observed wrapped around an attachment shackle. Bleaching was recorded for multiple coral species, and abrasions were noted on *P. lobata*. One broken coral was recorded, but no trash or prohibited fishing activities were observed. Three vessels were observed during surface surveys: 2 fishing vessels employing poles and 1 snorkel vessel. All vessels were en route and not on moorings.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.69042, -156.03941
Buoy Depth: 8 ft.
Attachment Point Depth: 35 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Fishing line wrapped around ground attachment shackle; hydroid growth on both buoy and attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>&gt; 75%</td>
<td>5-10%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites lobata, Cyphastrea agassizl, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
<tr>
<td>3</td>
<td>Unknown</td>
<td>Recreational Snorkel</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**SUMMARY**

Coral, sand/silt, and hardbottom were common (10-40%) at the site. 2 *P. lobata* greater than 1 meter were observed within the survey radius, and more than 10 colonies of *P. lobata* and *P. compressa* were observed in the surroundings. All attachments were intact, and no coral or AIS growth was found on the buoy or chain. However, worm and barnacle growth were noted on the buoy, and zip ties and growth were noted on the line. 2-5 broken corals, as well as bleaching of *P. compressa* and *P. lobata*, with algal overgrowth and tissue loss, were recorded. Trash was recorded at the site, but was not observed to be impacting coral. 3 vessels were recorded during surface
surveys: a commercial vessel, a fishing vessel, and a snorkel vessel, all of which were en route. An illegal mooring was also observed nearby.

**MOORING ASSESSMENT**

- **DM Number:** N/A
- **ACOE Permit:** Not Permitted
- **Latitude/Longitude:** 19.6859, -156.03497
- **Buoy Depth:** 13 ft.
- **Attachment Point Depth:** 32 ft.
- **Buoy Intact:** Yes
- **Lines Intact:** Yes
- **Ground Attachment Intact:** Yes
- **Comments on Condition:** Worm and barnacle growth on buoy; zip ties and non-coral growth on attachment line; illegal mooring noted nearby.

**ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)**

**DACOR Analysis:**

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover 10-40%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
<td></td>
</tr>
</tbody>
</table>

- **Coral Growing on Installation:** N/A
- **Large (> 1 meter) Coral Heads:** *Porites lobata* (2)
- **Coral Species Within Radius:** *Porites compressa, Porites lobata, Porites duerdeni, Montipora capitata*

**SURFACE ASSESSMENT**

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Commercial</td>
<td>En Route</td>
</tr>
<tr>
<td>2</td>
<td>Unknown</td>
<td>Recreational Snorkel</td>
<td>En Route</td>
</tr>
<tr>
<td>3</td>
<td>N/A</td>
<td>Fishing</td>
<td>En Route</td>
</tr>
</tbody>
</table>
Day Mooring 8.9: Kaloko Arches 1

**SUMMARY**

All but macroalgae and CCA were common (10-40%) in the survey area. No colonies greater than 1 meter in diameter were observed inside the survey area, and 1 *P. lobata* greater than 1 meter was observed outside the radius. Buoy D-rings were not intact, and corrosion was noted on the top shackle. All other attachments were intact, and coral growth was noted on the chain but not the buoy. 2-5 broken corals and bleaching of *P. lobata* were recorded during surveys. *P. lobata* was also noted to have abrasions and overgrowth. No trash, prohibited fishing activities, or vessels at the surface were recorded.

**MOORING ASSESSMENT**

- **DM Number:** DM-24
- **ACOE Permit:** Not Permitted
- **Latitude/Longitude:** 19.68365, -156.03587
- **Buoy Depth:** 8 ft.
- **Attachment Point Depth:** 34 ft.
- **Buoy Intact:** No
- **Lines Intact:** Yes
- **Ground Attachment Intact:** Yes
Comments on Condition: Buoy D-rings not intact; corrosion on top shackle of ground attachment; coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Palythoa caesia, Montipora capitata*

SURFACE ASSESSMENT

No vessels observed.
SUMMARY

Sand/silt and gravel/rubble were abundant (40-75%) and coral was occasional (5-10%) at the survey site. No colonies greater than 1 meter were observed inside or outside of the survey radius. All attachments were intact, and no coral growth was noted on the buoy or chain. Hydroids were observed growing on the chain. One broken coral was recorded, and tissue loss was noted on *P. lobata*. Bleaching was recorded on *M. patula*, and *Porites spp.* were noted to be stressed, but no trash or prohibited fishing activities were recorded. Two vessels were observed during surface surveys, a fishing vessel employing poles while drifting, and a scuba vessel en route.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.68318, -156.03653
Buoy Depth: 12 ft.
Attachment Point Depth: 50 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Hydroid growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>40-75%</td>
<td>40-75%</td>
<td>5-10%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: Porites compressa, Porites lobata, Palythoa caesia, Montipora capitata, Montipora patula

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>Drifting</td>
</tr>
<tr>
<td>2</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>En Route</td>
</tr>
</tbody>
</table>
Region 9: Day Moorings from Terrapin to Honokohau

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Terrapin</td>
<td>19.67216</td>
<td>-156.03125</td>
</tr>
<tr>
<td>2. Turtle Pinnacles</td>
<td>19.67175</td>
<td>-156.0305</td>
</tr>
<tr>
<td>3. Turtle Pai</td>
<td>19.6717</td>
<td>-156.02985</td>
</tr>
<tr>
<td>4. Turtle Heaven</td>
<td>19.67108</td>
<td>-156.02924</td>
</tr>
<tr>
<td>5. Honokohau Inside</td>
<td>19.66793</td>
<td>-156.02882</td>
</tr>
<tr>
<td>6. Honokohau Middle</td>
<td>19.66786</td>
<td>-156.02911</td>
</tr>
<tr>
<td>7. Honokohau Outside</td>
<td>19.66773</td>
<td>-156.02946</td>
</tr>
</tbody>
</table>

Coordinates in red have been updated to reflect the current position.
**Day Mooring 9.1: Terrapin**

**SUMMARY**

Coral was abundant (40-75%) at the survey site. 1 P. compressa greater than 1 meter in diameter was identified within the survey radius, and a total of 12+ corals greater than 1 meter were observed in the surrounding area. All attachments were intact, but coral growth was found on both the buoy and chain. 6-10 broken corals and bleaching of *P. lobata* and *P. compressa* with algal overgrowth were observed, but no trash or prohibited fishing activities were recorded. Two fishing vessels employing poles were observed drifting at the surface.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.67216, -156.03125
Buoy Depth: 11 ft.
Attachment Point Depth: 37 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on buoy and attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
<td>5-10%</td>
<td>40-75%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: *Porites compressa* (1)
Coral Species Within Radius: *Porites compressa, Porites lobata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>Drifting</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>Drifting</td>
</tr>
</tbody>
</table>
**Day Mooring 9.2: Turtle Pinnacles**

**SUMMARY**

Sand/silt, gravel/rubble, and hardbottom were common (10-40%) and coral was occasional (5-10%) at the site. No corals greater than 1 meter in diameter were observed in or around the survey area. All components were intact, and coral growth was observed on both the buoy and chain (*P. meandrina*). One broken coral and bleaching of *P. lobata* were observed during the survey, but no trash or prohibited fishing were noted. 4 vessels were observed during surface surveys, all engaged in scuba activities. 3 of the vessels were on moorings, and the other was en route. Dolphins were also recorded during the surface surveys.

**MOORING ASSESSMENT**

- **DM Number:** N/A
- **ACOE Permit:** 1995 General
- **Latitude/Longitude:** 19.67175, -156.0305
- **Buoy Depth:** 10 ft.
- **Attachment Point Depth:** 39 ft.
- **Buoy Intact:** Yes
- **Lines Intact:** Yes
Ground Attachment Intact: Yes

Comments on Condition: Coral growth on buoy and attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
<td></td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Pocillopora meandrina, Pocillopora eydouxi, Palythoa caesia, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>Recreational Scuba</td>
<td>En Route</td>
</tr>
<tr>
<td>3</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>4</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
**Day Mooring 9.3: Turtle Pai**

**SUMMARY**

Coral was abundant (40-75%) at the survey site. 3 *P. lobata* greater than 1 meter in diameter was identified within the survey radius, and three were observed in the surrounding area. *Sarcothelia edmonsoni* was observed on site as well. Buoy D-rings were not intact, and the top eye splice was chafing through/cut. One broken coral was recorded at the site. Bleaching of multiple species and abrasions, tissue loss, and discoloration on *P. lobata* were observed. Trash was recorded at the site, but was not observed to be impacting coral. 6 vessels were recorded during surface surveys: 4 sailboats and 1 fishing vessel employing poles en route, and 1 scuba vessel on a mooring.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.6717, -156.02985
Buoy Depth: 10 ft.
Attachment Point Depth: 24 ft.
Buoy Intact: No
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Buoy D-rings not intact, top eye splice is chafing/cut; coral growth on buoy and attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: *Porites lobata* (3)
Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Palythoa caesia*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>N/A</td>
<td>Sailing</td>
<td>En Route</td>
</tr>
<tr>
<td>5</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>6</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**Day Mooring 9.4: Turtle Heaven**

**SUMMARY**

Coral, hardbottom, gravel/rubble, and sand/silt were all common (10-40%) at the site. No corals greater than 1 meter in diameter were observed within or outside of the survey area. Buoy, chain, and ground attachments were all intact. Coral growth was observed on the buoy chain (*P. meandrina*) but no coral or AIS growth was observed on the buoy. One broken coral and bleached *P. lobata* and *P. meandrina* were observed at the site, but no trash or prohibited fishing were noted. A reef rise from 29 feet in the surroundings to 23 feet at the mooring base was recorded. 4 vessels (1 snorkel, 3 scuba) were observed during surface surveys, with 3 of those vessels being on moorings. A total of 19 snorkelers and divers were observed, and dolphins were noted at the surface.

**MOORING ASSESSMENT**

**DM Number:** N/A

**ACOE Permit:** 1995 General
Latitude/Longitude: 19.67108, -156.02924
Buoy Depth: 10 ft.
Attachment Point Depth: 23 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa, Porites lobata, Cyphastrea agassizi, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>Recreational Snorkel</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>Recreational Scuba</td>
<td>En Route</td>
</tr>
</tbody>
</table>

*Dolphins also observed during surface assessment.*
**SUMMARY**

Coral and hardbottom were common (10-40%) at the survey site. 2 *P. lobata* and 10+ *P. lobata* greater than 1 meter in diameter were identified inside and outside of the survey radius, respectively. All attachments were intact, and coral growth was only noted on the chain. Coral growth was also present on the ground attachment pins. One broken coral was recorded, as well as bleaching of *P. lobata* and *P. compressa*. Algal overgrowth and abrasions were noted on *Porites* spp., but no trash or prohibited fishing activities were recorded. 5 vessels were observed during surface surveys, 4 of which were fishing vessels employing poles. The fifth vessel was a commercial vessel, and all vessels were observed en route.
MOORING ASSESSMENT

DM Number: N/A

ACOE Permit: 1995 General

Latitude/Longitude: 19.66793, -156.02882

Buoy Depth: 12 ft.

Attachment Point Depth: 20 ft.

Buoy Intact: Yes

Lines Intact: Yes

Ground Attachment Intact: Yes

Comments on Condition: Coral growth on attachment pins and line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: Pocilopora meandrina

Large (> 1 meter) Coral Heads: Porites lobata (2)

Coral Species Within Radius: Porites compressa, Porites lobata

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Commercial</td>
<td>En Route</td>
</tr>
<tr>
<td>2-5</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
SUMMARY

Coral was abundant (40-75%) at the survey site. 3 *P. lobata* and 10 *P. lobata* greater than 1 meter in diameter were identified inside and outside of the survey radius, respectively. Buoy and chain attachments were intact, but the ground attachment was not, consisting of a single pin and shackle. One broken coral was recorded, as well as bleaching of *P. lobata* and *P. meandrina*. Algal overgrowth was noted on *P. lobata*, but no trash or prohibited fishing activities were recorded. Six vessels were observed during surface surveys. Five were fishing vessels en route employing poles, and the sixth was a snorkel vessel on a mooring.
MOORING ASSESSMENT

DM Number: N/A

ACOE Permit: Not Permitted

Latitude/Longitude: 19.66786, -156.02911

Buoy Depth: 14 ft.

Attachment Point Depth: 18 ft.

Buoy Intact: Yes

Lines Intact: Yes

Ground Attachment Intact: Yes

Comments on Condition: Good condition.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A

Large (> 1 meter) Coral Heads: *Porites lobata (3)*

Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Pocillopora meandrina*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
<tr>
<td>6</td>
<td>Unknown</td>
<td>Recreational Snorkel</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
SUMMARY

Coral and hardbottom were abundant (40-75%) at the survey site. 2 *P. lobata* greater than 1 meter in diameter were identified both inside and outside of the survey radius. All attachments were intact, and coral growth was noted on both the buoy and chain. 6-10 broken corals were recorded, as well as bleaching of *P. lobata* and *P. compressa*. *P. lobata* was denuded and stressed, but no trash or prohibited fishing activities were recorded. Four vessels were observed during surface surveys. Three were fishing vessels en route employing poles, and the fourth was a snorkel vessel on a mooring.

MOORING ASSESSMENT
DM Number: N/A

ACOE Permit: Not Permitted

Latitude/Longitude: 19.66773, -156.02946

Buoy Depth: 14 ft.

Attachment Point Depth: 24 ft.

Buoy Intact: Yes

Lines Intact: Yes

Ground Attachment Intact: Yes

Comments on Condition: Coral growth on buoy and attachment line and pin.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>5-10%</td>
<td>40-75%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina, Porites spp.*
Large (> 1 meter) Coral Heads: *Porites lobata* (2)
Coral Species Within Radius: *Porites lobata, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
<tr>
<td>4</td>
<td>Unknown</td>
<td>Recreational Snorkel</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
Region 10: Day Moorings from Eel Cove to Air Tanks

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Eel Cove North</td>
<td>19.65503</td>
<td>-156.03183</td>
</tr>
<tr>
<td>2. Eel Cove South</td>
<td>19.65415</td>
<td>-156.03156</td>
</tr>
<tr>
<td>3. Outhouse</td>
<td>19.65021</td>
<td>-156.03023</td>
</tr>
<tr>
<td>4. Kaiwi Kamanu</td>
<td>19.64761</td>
<td>-156.0218</td>
</tr>
<tr>
<td>5. Kaiwi Sand Channel</td>
<td>19.64744</td>
<td>-156.02238</td>
</tr>
<tr>
<td>6. Kaiwi Arches</td>
<td>19.64733</td>
<td>-156.0229</td>
</tr>
<tr>
<td>7. Disneyland</td>
<td>19.64709</td>
<td>-156.0197</td>
</tr>
<tr>
<td>8. Kaiwi Wash Rock</td>
<td>19.64689</td>
<td>-156.02339</td>
</tr>
<tr>
<td>9. Air Tanks</td>
<td>19.64664</td>
<td>-156.01839</td>
</tr>
</tbody>
</table>

Coordinates in red have been updated to reflect the current position.
SUMMARY

Coral, hardbottom, sand/silt and gravel/rubble were all common (10-40%) within the survey area. No corals greater than 1 meter in diameter were observed in or around the survey area. Buoy attachment and ground attachments were corroded and not intact. No coral or AIS growth was observed on the buoy or buoy chain. Buoy position was higher than normal. One broken coral and bleached *P. meandrina* were noted at the site. No trash or prohibited fishing was observed, but one fishing vessel employing poles was observed en route at the surface. A steep slope was noted nearby the survey site, but no specific change of depth was recorded.

MOORING ASSESSMENT

DM Number: DM-25

ACOE Permit: Not Permitted

Latitude/Longitude: 19.65503, -156.03183

Buoy Depth: 4 ft.

Attachment Point Depth: 33 ft.

Buoy Intact: No

Lines Intact: Yes
Ground Attachment Intact: No

Comments on Condition: Buoy chain and ground attachments are corroded.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Palythoa caesia, Montipora capitata, Montipora patula, Leptoseris incrustans*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**Day Mooring 10.2: Eel Cove South**

**SUMMARY**

Hardbottom was dominant (> 75%) at the site, and coral was common (10-40%). No corals greater than 1 meter in diameter were found within the survey radius, but 2 *P. lobata* and 1 *P. evermanni* greater than 1 meter were identified in the surrounding area. Buoy and ground attachments were intact, and the buoy chain was in good condition. No coral or AIS growth was observed on the buoy or the buoy chain. No broken or bleached coral, trash, prohibited fishing, or vessels were observed at the site. Divers noted a shallow slope nearby, but no specific change in depth was given.
MOORING ASSESSMENT

DM Number: DM-26

ACOE Permit: Not Permitted

Latitude/Longitude: 19.65415, -156.03156

Buoy Depth: 13 ft.

Attachment Point Depth: 32 ft.

Buoy Intact: Yes

Lines Intact: Yes

Ground Attachment Intact: Yes

Comments on Condition: Good condition.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>5-10%</td>
<td>&gt; 75%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites lobata, Porites evermanni, Montipora capitata*

SURFACE ASSESSMENT

*No vessels observed.*
**SUMMARY**

Coral, hardbottom, and CCA were common (10-40%) at the survey site. No coral colonies greater than 1 meter in diameter were observed inside the radius, with 1 *P. compressa* observed outside the radius. Buoy D-rings were not intact, but all other attachments were intact. Coral growth was noted on both the buoy and chain. One broken coral and bleaching of *P. meandrina* and *P. lobata* were observed, with algal overgrowth noted. Trash was recorded at the site, but was not observed impacting corals. Three vessels were observed during surface surveys. A scuba vessel carrying 5...
divers and a snorkel vessel carrying 20 divers were observed en route, and a fishing vessel employing poles was observed drifting.

**MOORING ASSESSMENT**

DM Number: N/A

ACOE Permit: 1995 General

Latitude/Longitude: 19.65021, -156.03023

Buoy Depth: 5 ft.

Attachment Point Depth: 44 ft.

Buoy Intact: No

Lines Intact: Yes

Ground Attachment Intact: Yes

Comments on Condition: Buoy D-rings not intact; coral growth on buoy and attachment line.

**ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)**

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>10-40%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata*

**SURFACE ASSESSMENT**

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>Recreational Scuba</td>
<td>En Route</td>
</tr>
</tbody>
</table>
Day Mooring 10.4: Kaiwi Kamanu

SUMMARY

Coral, sand/silt, and gravel/rubble were common (10-40%) at the site. 5 P. compressa colonies greater than 1 meter were observed within the survey radius, and more than 10 colonies for each P.
lobata and P. compressa, along with 1 P. evermanni, were observed in the surrounding areas. Buoy D-rings were not intact, and the buoy chain was corroded. The ground attachment consisted of a single pin, with the second pin broken and dragging. The tag line was also noted to be too long. 2-5 broken corals, bleached P. lobata, and coral abrasions were recorded during the survey, as well as trash impacting corals in the area. A single vessel with 20 snorkelers aboard was observed on a mooring during surface surveys.

**MOORING ASSESSMENT**

**DM Number:** DM-31

**ACOE Permit:** Not Permitted

**Latitude/Longitude:** 19.64761, -156.0218

**Buoy Depth:** 15 ft.

**Attachment Point Depth:** 37 ft.

**Buoy Intact:** No

**Lines Intact:** Yes

**Ground Attachment Intact:** No

**Comments on Condition:** Second ground attachment pin is broken and dragging; buoy D-rings not intact and chain is corroded; tag line is too long.

**ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)**

**DACOR Analysis:**

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

**Coral Growing on Installation:** N/A

**Large (> 1 meter) Coral Heads:** Porites compressa (5)

**Coral Species Within Radius:** Porites compressa, Porites lobata, Palythoa caesia, Montipora capitata
### SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>Recreational Snorkel</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>

**Day Mooring 10.5: Kaiwi Sand Channel**
SUMMARY
Coral and hardbottom were common (10-40%) in the survey area. 1 *P. lobata* colony greater than 1 meter was observed inside the radius, with more than 10 colonies of *P. lobata* greater than 1 meter outside the radius. All attachments were intact, but corrosion was noted on the top shackle and the ground attachment. Hydroid growth was noted on the buoy, but no coral growth was found on the buoy or chain. 6-10 broken corals were recorded on site, as well as bleaching of *P. lobata* and *P. compressa*. *P. lobata* was also noted to have abrasions, and recently dead corals with turf algae growth were recorded in the area. No trash or prohibited fishing activities were recorded. One scuba tour with 10 divers and one snorkel tour with 20 divers were recorded on moorings during surface surveys.

MOORING ASSESSMENT
DM Number: DM-30
ACOE Permit: Not Permitted
Latitude/Longitude: 19.64744, -156.02238
Buoy Depth: 5 ft.
Attachment Point Depth: 37 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Some corrosion on ground attachment and top shackle; hydroid growth on buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: *Porites lobata* (1)
Coral Species Within Radius: *Porites compressa, Porites lobata, Palythoa caesia, Montipora capitata*

**SURFACE ASSESSMENT**

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>Recreational Snorkel</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>

*Day Mooring 10.6: Kaiwi Arches*

**SUMMARY**

Coral and hardbottom were common (10-40%) at the survey site. No coral colonies greater than 1 meter were found outside of the survey radius, but one large *P. lobata* was found inside the radius. All attachments were intact, and the chain was in good condition. 2-5 broken corals were recorded on site, as well as bleaching and multiple abrasions to coral. Tissue loss and algal overgrowth were also recorded on *P. lobata*. Two tour vessels were identified at the surface. A snorkel vessel carrying three divers and a scuba vessel carrying 10 divers were both observed on moorings.

**MOORING ASSESSMENT**

DM Number: DM-28
ACOE Permit: 1995 General

Latitude/Longitude: 19.64733, -156.0229

Buoy Depth: 6 ft.

Attachment Point Depth: 33 ft.

Buoy Intact: Yes

Lines Intact: Yes

Ground Attachment Intact: Yes

Comments on Condition: Coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
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</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>5-10%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Porites lobata*

Large (> 1 meter) Coral Heads: *Porites lobata (1)*

Coral Species Within Radius: *Porites compressa, Porites lobata, Palythoa caesia, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>Recreational Snorkel</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
Day Mooring 10.7: Disneyland
SUMMARY

Coral, sand/silt, and hardbottom were common (10-40%) at the survey site. One *P. lobata* and one *P. compressa* greater than 1 meter were observed within the survey area, and one *P. lobata* and more than 10 *P. compressa* greater than 1 meter were observed outside the radius. All attachments were intact, but coral growth was noted on both the buoy and chain. 2-5 broken corals were observed, and *P. lobata* was noted for bleaching and abrasions. No trash or prohibited fishing activities were recorded. A steep slope was noted nearby the survey area, but no change in depth was recorded. Two vessels were noted at the surface, both on moorings. One was a snorkel tour (# divers unknown) and the other was a sailing vessel.

MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 1995 General
Latitude/Longitude: 19.64709, -156.0197
Buoy Depth: 17 ft.
Attachment Point Depth: 34 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on buoy and attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
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<td>5-10%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Porites spp., Pocillopora meandrina*
Large (> 1 meter) Coral Heads: *Porites lobata* (1), *Porites compressa* (1)
Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata*
SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Snorkel</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Sailing</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>

**Day Mooring 10.8: Kaiwi Wash Rock**

SUMMARY

Coral, sand/silt, and gravel/rubble were common (10-40%) in the survey area. No colonies greater than 1 meter in diameter were observed inside the survey area, and 3 *P. compressa* and 2 *P. lobata* greater than 1 meter were observed outside the radius. All attachments were intact, and the chain was in good condition. Coral growth was noted on the buoy, but not on the chain. One broken coral and bleaching of *P. lobata* and *P. compressa* were recorded during surveys. *P. lobata* was also noted to have abrasions, with evidence of stress. No trash or prohibited fishing activities were recorded. One snorkel tour with 8 divers was recorded on a mooring, and one sailing vessel was observed en route.
MOORING ASSESSMENT

DM Number: DM-27

ACOE Permit: Not Permitted

Latitude/Longitude: 19.64689, -156.02339

Buoy Depth: 10 ft.

Attachment Point Depth: 42 ft.

Buoy Intact: Yes

Lines Intact: Yes

Ground Attachment Intact: Yes

Comments on Condition: Coral growth on buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Porites spp.*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Pocillopora meandrina, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Sailing</td>
<td>En Route</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>Recreational Snorkel</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
Day Mooring 10.9: Air Tanks

SUMMARY

Coral, sand/silt, and gravel/rubble were common (10-40%) at the survey site. One *P. lobata* greater than 1 meter in diameter was observed in the 10-meter radius, and more than 10 *P. lobata* and 3 *P. compressa* were observed in the surrounding area. All attachments were intact, and the chain was in good condition. There was coral growth on the chain but no coral or AIS growth on the buoy. Bleached *P. lobata* and *P. compressa* were observed, and one broken coral was recorded. Trash was noted at the site, but was not observed impacting coral. Two vessels were observed: one sailing vessel on a mooring, and one snorkel vessel en route.

MOORING ASSESSMENT
DM Number: N/A
ACOE Permit: 1995 General
Latitude/Longitude: 19.64664, -156.01839
Buoy Depth: 10 ft.
Attachment Point Depth: 25 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Slit</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: *Porites lobata (1)*
Coral Species Within Radius: *Porites compressa, Porites lobata, Palythoa caesia*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Sailing</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>Unknown</td>
<td>Recreational Snorkel</td>
<td>En Route</td>
</tr>
</tbody>
</table>
Region 11: Day Moorings from Shark Fin Rock to Casa Cave

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Shark Fin Rock</td>
<td>19.64366</td>
<td>-156.01566</td>
</tr>
<tr>
<td>2. Old Airport South</td>
<td>19.64356</td>
<td>-156.01567</td>
</tr>
<tr>
<td>3. Casa Cave</td>
<td>19.61605</td>
<td>-155.98682</td>
</tr>
</tbody>
</table>

Coordinates in red have been updated to reflect the current position.
Day Mooring 11.1: Shark Fin Rock

SUMMARY

Coral, hardbottom, gravel/rubble, and macroalgae were common (10-40%) at the survey site. A total of 5 coral colonies greater than 1 meter were observed within the survey radius, and a total of 8 colonies were observed in the surroundings. *Sarcothelia edmonsoni* was noted at the survey site as well. Buoy D-rings, chain attachment, and ground attachment were not intact, with the ground attachment consisting of a single pin. *Porites spp.* was growing over the ground attachment pin, but no coral growth was found on the buoy or chain, though hydroids were noted on the chain. 6-10 broken corals and bleaching of multiple species were observed, as well as algal overgrowth, but no trash or prohibited fishing activities were recorded. One snorkel vessel was observed on a mooring at the surface.

MOORING ASSESSMENT

**DM Number:** DM-33

**ACOE Permit:** Not Permitted

**Latitude/Longitude:** 19.64366, -156.01566

**Buoy Depth:** 12 ft.

**Attachment Point Depth:** 35 ft.

**Buoy Intact:** No

**Lines Intact:** Yes
Ground Attachment Intact: No

Comments on Condition: Buoy D-rings not intact; single pin ground attachment has Porites overgrowth; hydroid growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A

Large (> 1 meter) Coral Heads: *Porites lobata* (4), *Porites compressa* (1)

Coral Species Within Radius: *Porites compressa*, *Porites lobata*, *Montipora capitata*, *Leptoseris incrustans*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Snorkel</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
SUMMARY

Coral was abundant (40-75%) at the survey site. Multiple coral colonies greater than 1 meter in diameter were observed both inside and outside the survey radius. All attachments were intact, and the buoy chain was in good condition, but the D-ring was busting through the buoy. The ground attachment consisted of a single pin, with *P. lobata* overgrowing the pin. No coral of AIS growth was noted on the buoy or chain. 2-5 broken corals, bleaching of *P. lobata* with algal overgrowth, and denuded *P. compressa* were observed at the site. No trash, prohibited fishing activities, or vessels at the surface were recorded.

MOORING ASSESSMENT

DM Number: N/A

ACOE Permit: Not Permitted

Latitude/Longitude: 19.64356, -156.01567

Buoy Depth: 11 ft.

Attachment Point Depth: 39 ft.

Buoy Intact: No

Lines Intact: Yes

Ground Attachment Intact: Yes

Comments on Condition: D-ring is busting through buoy; ground attachment has coral overgrowth.
ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macrolgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>40-75%</td>
<td>10-40%</td>
<td>5-10%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A

Large (> 1 meter) Coral Heads: *Porites lobata* (3), *Porites compressa* (3)

Coral Species Within Radius: *Porites solida*, *Porites compressa*, *Porites lobata*, *Montipora capitata*

SURFACE ASSESSMENT

No vessels observed.

*Day Mooring 11.3: Casa Cave*
SUMMARY

All substrates but macroalgae and CCA were common (10-40%). Five *P. lobata* greater than 1 meter in diameter were observed within the survey radius, and a total of 14 corals from three species greater than 1 meter were observed outside the survey radius. All attachments were intact, with no coral growth on the buoy or chain. Hydroid growth was noted on the mooring line. 2-5 broken corals as well as bleaching, algal overgrowth, and abrasions were recorded for corals in the area, but there was no trash or prohibited fishing. Two recreational vessels (1 snorkel, 1 scuba) were observed at the surface, with 20 and 4 divers, respectively. Both vessels were observed en route.
MOORING ASSESSMENT

DM Number: N/A

ACOE Permit: 1995 General

Latitude/Longitude: 19.61605, -155.98682

Buoy Depth: 13 ft.

Attachment Point Depth: 37 ft.

Buoy Intact: Yes

Lines Intact: Yes

Ground Attachment Intact: Yes

Comments on Condition: Hydroid growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A

Large (> 1 meter) Coral Heads: *Porites lobata* (5)

Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>Recreational Snorkel</td>
<td>En Route</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>Recreational Scuba</td>
<td>En Route</td>
</tr>
</tbody>
</table>
Region 12: Day Moorings at Keauhou

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Keauhou Middle N</td>
<td>19.55941</td>
<td>-155.96754</td>
</tr>
<tr>
<td>2. Keauhou Inside North</td>
<td>19.55938</td>
<td>-155.96709</td>
</tr>
<tr>
<td>4. Keauhou South</td>
<td>19.55901</td>
<td>-155.96773</td>
</tr>
</tbody>
</table>

Coordinates in red have been updated to reflect the current position.
SUMMARY

Coral and gravel/rubble were abundant (40-75%) at the survey site. 1 *P. lobata* greater than 1 meter in diameter was observed within the survey radius, and 2 *P. lobata* greater than 1 meter were observed outside the radius. The mooring attachments and buoy were intact. There was no coral or AIS growth on the buoy or chain, but the buoy had calcareous and turf growth. One broken coral and bleaching of *P. lobata* and *P. meandrina* were observed, and coral disease was also noted. No trash or prohibited fishing activities were recorded. One fishing vessel employing poles was observed.
during surface surveys, but the observer could not tell if the vessel was anchored, en route, or on a mooring.

**MOORING ASSESSMENT**

DM Number: N/A

ACOE Permit: 2010 LOP

Latitude/Longitude: 19.55941, -155.96754

Buoy Depth: 11 ft.

Attachment Point Depth: 35 ft.

Buoy Intact: Yes

Lines Intact: Yes

Ground Attachment Intact: Yes

Comments on Condition: Good condition.

**ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)**

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>40-75%</td>
<td>10-40%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>5-10%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A

Large (> 1 meter) Coral Heads: *Porites lobata (1)*

Coral Species Within Radius: *Porites compressa, Porites lobata, Porites brighami, Porites evermanni, Montipora capitata*

**SURFACE ASSESSMENT**

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>Unknown</td>
</tr>
</tbody>
</table>
**Day Mooring 12.2: Keauhou Inside North**

**SUMMARY**

Coral was abundant (40-75%) at the survey site. Six massive *P. lobata* greater than 1 meter in diameter were observed within the survey radius, and 14 coral colonies greater than 1 meter were observed outside the radius. Five of the *P. lobata* were noted to be recovering from bleaching, and disease was noted in the surrounding areas. The mooring was in poor condition, with a bent thimble at the ground attachment and a missing buoy. The ground attachment was also non-standard, with a single attachment point. No coral or AIS growth was found on the buoy or chain. Bleached *P. lobata*
and *P. meandrina* were recorded at the site, but no broken corals, trash, or prohibited fishing activities were observed. One recreational canoe was observed during surface surveys.

**MOORING ASSESSMENT**

**DM Number:** N/A  
**ACOE Permit:** 1995 General  
**Latitude/Longitude:** 19.55938, -155.96709  
**Buoy Depth:** N/A  
**Attachment Point Depth:** 28 ft.  
**Buoy Intact:** No  
**Lines Intact:** No  
**Ground Attachment Intact:** No  
**Comments on Condition:** Single pin ground attachment with bent thimble; buoy is missing.

**ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)**

**DACOR Analysis:**

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>5-10%</td>
</tr>
</tbody>
</table>

**Coral Growing on Installation:** N/A  
**Large (> 1 meter) Coral Heads:** *Porites lobata* (6)  
**Coral Species Within Radius:** *Porites compressa, Porites lobata, Montipora capitata*

**SURFACE ASSESSMENT**

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Recreational Canoe</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**SUMMARY**

Coral and gravel/rubble were abundant (40-75%) at the survey site. Massive *P. lobata* and 3 mounding *P. evermanni* greater than 1 meter in diameter were observed within the survey radius, and 2 mounding *P. lobata* greater than 1 meter were observed outside the radius. Mooring attachments and chain were corroded and in poor condition. No coral or AIS growth was found on the buoy chain, but coral growth was noted on the buoy. No broken or bleached corals, trash, or
prohibited fishing activities were observed. One fishing vessel en route was observed during surface surveys.

**Mooring Assessment**

DM Number: N/A

ACOE Permit: 2010 LOP

Latitude/Longitude: 19.55913, -155.96744

Buoy Depth: 16 ft.

Attachment Point Depth: 31 ft.

Buoy Intact: Yes

Lines Intact: No

Ground Attachment Intact: No

Comments on Condition: Corrosion on ground attachment and lines; coral growth on buoy.

**Ecological Assessment (10-Meter Survey Radius)**

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>40-75%</td>
<td>N/A</td>
<td>40-75%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Species not recorded*

Large (> 1 meter) Coral Heads: *Porites lobata (1), Porites evermanni (3)*

Coral Species Within Radius: *Porites compressa, Porites lobata, Porites brighami, Porites lichen, Palythoa caesia, Montipora capitata, Montipora patula, Pavona varians, Pavona duerdeni*

**Surface Assessment**

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Fishing</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**Summary**

Coral was dominant (> 75%) at the survey site. Mounding *P. lobata* and branching *P. compressa* greater than 1 meter in diameter were observed within the survey radius, and 1 mounding *P. lobata* greater than 1 meter were observed outside the radius. The ground attachment was intact, but had a loose shackle, hook, and chain at the attachment point. The buoy attachment and chain were corroded. No coral or AIS growth was found on the buoy or chain. 2-5 broken *P. compressa* were observed at the site, but no bleached corals, trash, or prohibited fishing activities were observed.

One cruise/snorkel vessel, the Hula Kai, was observed en route during surface surveys. A total of 16 kayaks was also recorded at the surface.

**Moorings Assessment**

**DM Number:** N/A

**ACOE Permit:** 2010 LOP

**Latitude/Longitude:** 19.55901, -155.96773
Buoy Depth: 7 ft.
Attachment Point Depth: 34 ft.
Buoy Intact: No
Lines Intact: No
Ground Attachment Intact: Yes
Comments on Condition: Buoy attachment and line is corroded; loose shackle, hook, and chain at ground attachment.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>5-10%</td>
<td>N/A</td>
<td>&gt; 75%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: *Porites lobata (1), Porites compressa (1)*
Coral Species Within Radius: *Porites compressa, Porites lobata, Porites brighami, Porites lichen, Porites duerdeni, Porites evermanni, Pocillopora eydouxi, Montipora capitata, Montipora patula, Pavona varians*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Cruise/Snorkel (Hula Kai)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
Day Mooring 12.5: Keauhou Aggressor North

SUMMARY

Coral and gravel/rubble were abundant (40-75%) at the site. Four mounding *P. lobata* greater than 1 meter in diameter were found within the survey radius, and three were found outside the survey radius. A rise in the reef from 43 feet to 37 feet was observed at the mooring area. The mooring components were in poor condition, and the mooring construction was non-standard, consisting of a chain wrapped around a boulder and a Styrofoam buoy. Buoy position was lower than normal. No coral or AIS growth was found on the buoy or chain. 10-20 broken corals and bleached *P. lobata* and *P. compressa* were recorded at the site, as well as trash impacting corals. Chain debris was found in the surrounding area, and parts of the mooring were abrading corals. No vessels were recorded during surface surveys.

MOORING ASSESSMENT

DM Number: N/A

ACOE Permit: Not Permitted

Latitude/Longitude: 19.55889, -155.96797

Buoy Depth: N/A

Attachment Point Depth: 44 ft.

Buoy Intact: No
Lines Intact: No

Ground Attachment Intact: No

Comments on Condition: Non-standard ground attachment consisting of chain wrapped around boulder; non-standard Styrofoam buoy, insufficient to keep chain off bottom; no line, all chain.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>40-75%</td>
<td>N/A</td>
<td>40-75%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A

Large (> 1 meter) Coral Heads: *Porites lobata* (4)

Coral Species Within Radius: *Porites compressa, Porites lobata, Porites duerdeni, Porites evermanni, Pocillopora meandrina, Pocillopora eydouxi, Montipora capitata, Montipora patula, Pavona varians, Pavona duerdeni*

SURFACE ASSESSMENT

No vessels observed.
Day Mooring 12.6: Keauhou Aggressor South

SUMMARY

Coral and gravel/rubble were abundant (40-75%) at the site. One massive *P. lobata* greater than 1 meter in diameter was found within the survey radius, and three were found outside the survey radius. The mooring components were in poor condition, and the mooring construction was non-standard, consisting of a chain wrapped around a boulder and a bleach bottle buoy. Buoy position was lower than normal. No coral or AIS growth were found on the buoy or chain. 6-10 broken corals and bleached *P. lobata* and *P. meandrina* were recorded at the site, as well as trash impacting
corals. Chain debris was found in the surrounding area. No vessels were recorded during surface surveys.

**MOORING ASSESSMENT**

DM Number: N/A

ACOE Permit: Not Permitted

Latitude/Longitude: 19.55885, -155.968

Buoy Depth: 37 ft.

Attachment Point Depth: 44 ft.

Buoy Intact: No

Lines Intact: No

Ground Attachment Intact: No

Comments on Condition: Non-standard ground attachment consisting of chain wrapped around boulder; non-standard bleach bottle buoy

**ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)**

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>40-75%</td>
<td>N/A</td>
<td>40-75%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A

Large (> 1 meter) Coral Heads: *Porites lobata (1)*

Coral Species Within Radius: *Porites compressa, Porites lobata, Porites duerdeni, Porites evermanni, Pocillopora meandrina, Montipora capitata, Montipora patula*

**SURFACE ASSESSMENT**

No vessels observed.
Region 13: Day Moorings from Mano Point to Kealakekua Bay

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mano Point</td>
<td>19.54595</td>
<td>-155.96165</td>
</tr>
<tr>
<td>2. Chimney</td>
<td>19.54125</td>
<td>-155.96001</td>
</tr>
<tr>
<td>3. Coral Dome</td>
<td>19.52178</td>
<td>-155.95937</td>
</tr>
<tr>
<td>4. Henry’s Cave</td>
<td>19.50826</td>
<td>-155.95486</td>
</tr>
<tr>
<td>5. Long Lava Tube</td>
<td>19.50398</td>
<td>-155.95305</td>
</tr>
<tr>
<td>6. Amphitheater</td>
<td>19.50308</td>
<td>-155.95241</td>
</tr>
<tr>
<td>7. Driftwood</td>
<td>19.49881</td>
<td>-155.95148</td>
</tr>
<tr>
<td>8. The Dome</td>
<td>19.49705</td>
<td>-155.95003</td>
</tr>
<tr>
<td>9. Ridges</td>
<td>19.49442</td>
<td>-155.95016</td>
</tr>
<tr>
<td>10. Kealakekua Bay</td>
<td>19.48194</td>
<td>-155.93236</td>
</tr>
</tbody>
</table>

Coordinates in red have been updated to reflect the current position
All but macroalgae and CCA were common (10-40%) at the survey site. No coral colonies greater than 1 meter in diameter were observed inside the radius, with 1 *P. compressa* and 2 *P. lobata* observed outside the radius. All attachments were intact, and no coral or AIS growth was noted on the buoy. The buoy chain had coral growth and hydroids. One broken coral and bleaching of *P. meandrina* and *P. lobata* were observed, but no trash or prohibited fishing activities were impacting the site. *P. lobata* and *M. capitata* also exhibited abrasions, tissue loss and discoloration, and algal overgrowth. One fishing vessel was observed employing poles en route at the surface.
MOORING ASSESSMENT

DM Number: DM-35
ACOE Permit: Not Permitted
Latitude/Longitude: 19.54595, -155.96165
Buoy Depth: 8 ft.
Attachment Point Depth: 43 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes
Comments on Condition: Coral and hydroid growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa*, *Porites lobata*, *Palythoa caesia*, *Montipora capitata*, *Montipora patula*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
</tbody>
</table>

*Day Mooring 13.2: Chimney*
**SUMMARY**

Gravel/rubble was abundant (40-75%) and coral was common (10-40%). Two *P. lobata* greater than 1 meter in diameter were observed within the survey radius, and more than 10 *P. lobata* greater than 1 meter were observed outside the radius, with a 3-meter *P. lobata* noted approximately 50 feet away from the site. Mooring buoy and line were intact, but the ground attachment was corroded and the anti-chafing gear was broken and dragged under by coral growth. Attachment chain was noted scraping the limestone. One broken coral and bleached/stressed corals were noted at the site, as well as trash impacting coral. One recreational scuba vessel was recorded en route at the surface.
MOORING ASSESSMENT

DM Number: DM-36

ACOE Permit: Not Permitted

Latitude/Longitude: 19.54125, -155.96001

Buoy Depth: 9 ft.

Attachment Point Depth: 40 ft.

Buoy Intact: Yes

Lines Intact: Yes

Ground Attachment Intact: No

Comments on Condition: Ground attachment anti-chafing gear broken, corrosion on ground tackle; coral growth on buoy and attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
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<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>40-75%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina, Porites spp.*

Large (> 1 meter) Coral Heads: *Porites lobata* (2)

Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata, Leptoseris incrustans*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>En Route</td>
</tr>
</tbody>
</table>
**Day Mooring 13.3: Coral Dome**

![Image of underwater scene]

**SUMMARY**

Hardbottom consisting of basalt and limestone was abundant (40-75%) and coral was common (10-40%). No coral colonies greater than 1 meter were observed within the survey radius, but 3 *P. lobata* greater than 1 meter were observed in the surroundings. All attachments were intact, and coral growth was noted on the buoy but not the chain. One broken coral and bleaching and disease were noted at the site. Trash was also noted, though it was not observed to be impacting coral. One fishing vessel employing poles was observed en route at the surface.
MOORING ASSESSMENT

DM Number: DM-39

ACOE Permit: Not Permitted

Latitude/Longitude: 19.52178, -155.95937

Buoy Depth: 12 ft.

Attachment Point Depth: 35 ft.

Buoy Intact: Yes

Lines Intact: Yes

Ground Attachment Intact: Yes

Comments on Condition: Coral growth on buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
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<th>Macroalgae</th>
<th>CCA</th>
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<tbody>
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<td>&lt; 5%</td>
<td>40-75%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata, Fungia scutaria*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
</table>
**Day Mooring 13.4: Henry’s Cave**

SUMMARY

Sand/silt and gravel/rubble were abundant (40-75%) and coral was common (10-40%) in the survey area. No corals greater than 1 meter were identified within the survey radius, but 4 *P. lobata* were observed outside the survey area. Buoy and chain attachments were intact, but the ground attachment consisted of only a single attachment point and did not have any chain. Coral growth was noted on the chain but not the buoy. One broken coral was recorded at the site, and bleaching and algal overgrowth were observed. *P. lobata* was also noted to be denuded and stressed. No trash or prohibited fishing activities were recorded, and one dive vessel was observed at the surface on a mooring.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: Not Permitted
Latitude/Longitude: 19.50826, -155.95486
Buoy Depth: 11 ft.
Attachment Point Depth: 42 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: No
Comments on Condition: Single ground attachment with no chain component; coral growth on attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
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<td>40-75%</td>
<td>&lt; 5%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
**Day Mooring 13.5: Long Lava Tube**

**SUMMARY**

Coral, hard bottom, and gravel/rubble were common (10-40%) at the survey site. No coral colonies greater than 1 meter in diameter were observed in the radius or surroundings. All attachments were intact, and coral growth was noted on both the buoy and chain as well as one of the ground attachment pins. One broken coral and bleaching of *P. meandrina* and *P. lobata* were observed, but no trash or prohibited fishing activities were impacting the site. *P. lobata* was also denuded and abraded, with algal overgrowth, and many dead coral structures in the surroundings were noted. One scuba vessel was observed on a mooring during surface surveys.

**MOORING ASSESSMENT**

**DM Number:** DM-43  
**ACOE Permit:** Not Permitted  
**Latitude/Longitude:** 19.50398, -155.95305  
**Buoy Depth:** 9 ft.  
**Attachment Point Depth:** 32 ft.  
**Buoy Intact:** Yes  
**Lines Intact:** Yes
Ground Attachment Intact: Yes

Comments on Condition: Coral overgrowth on ground attachment; coral growth on buoy and attachment line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
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<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
**SUMMARY**

Hardbottom was dominant (> 75%) and coral was common (10-40%) at the survey site. No corals greater than 1 meter in diameter were observed inside or outside the survey radius. All attachments were intact, but there was minor corrosion on the ground tackle. No broken corals, trash, or prohibited fishing activities were recorded at the site, but denuded *P. lobata* and *P. compressa* were observed, as well as bleaching of *P. lobata*. 2 vessels were observed at the surface, both of which were snorkel vessels en route.
MOORING ASSESSMENT

DM Number: DM-44

ACOE Permit: Not Permitted

Latitude/Longitude: 19.50308, -155.95241

Buoy Depth: 12 ft.

Attachment Point Depth: 37 ft.

Buoy Intact: Yes

Lines Intact: Yes

Ground Attachment Intact: Yes

Comments on Condition: Minor corrosion on ground attachment tackle; coral growth on buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Percent Cover</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td></td>
<td>5-10%</td>
<td>5-10%</td>
<td>&gt; 75%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina, Porites lobata*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Porites duerdeni, Porites evermanni, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Unknown</td>
<td>Recreational Snorkel</td>
<td>En Route</td>
</tr>
</tbody>
</table>
Day Mooring 13.7: Driftwood

SUMMARY

Hardbottom was dominant (> 75%) and coral was common (10-40%) at the site. No corals greater than 1 meter in diameter were observed in the survey radius or surroundings. All attachments were intact, and the ground attachment consisted of two sets of chains, which may indicate an issue with electrolysis. Coral growth was noted on the buoy, and hydroid growth was noted on the chain. No broken corals, trash, or prohibited fishing activities were observed in the area. Bleached *P. lobata* and algal overgrowth were recorded during surveys. Four vessels were observed during surface surveys. One fishing vessel employing poles, one sailing vessel, and one recreational vessel were recorded en route, and one snorkel vessel was recorded on a mooring.

MOORING ASSESSMENT

DM Number: DM-45
ACOE Permit: Not Permitted
Latitude/Longitude: 19.49881, -155.95148
Buoy Depth: 10 ft.
Attachment Point Depth: 41 ft.
Buoy Intact: Yes
Lines Intact: Yes
Ground Attachment Intact: Yes

Comments on Condition: 2 sets of chain on ground attachment; coral growth on buoy; hydroid growth on line.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
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<td>5-10%</td>
<td>&gt; 75%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Sailing</td>
<td>En Route</td>
</tr>
<tr>
<td>3</td>
<td>Unknown</td>
<td>Recreational Snorkel</td>
<td>On Mooring</td>
</tr>
<tr>
<td>4</td>
<td>N/A</td>
<td>Recreation</td>
<td>En Route</td>
</tr>
</tbody>
</table>

*Day Mooring 13.8: The Dome*
SUMMARY

Hardbottom and sand/silt were abundant (40-75%) and coral was common (10-40%) at the site. No colonies greater than 1 meter in diameter were observed inside the survey radius, and one *P. eydouxi* was observed in the surroundings. Crown-of-thorns predation on *P. lobata* was also observed in the survey area. All attachments were intact, but there was minor corrosion on the ground attachment. No coral or AIS growth was observed on the buoy or chain. No broken coral, trash, or prohibited fishing activities were recorded, but bleaching of *M. capitata* was noted. One scuba vessel and one fishing vessel employing poles were observed during surface surveys, but their status could not be determined.
MOORING ASSESSMENT

DM Number: N/A

ACOE Permit: Not Permitted

Latitude/Longitude: 19.49705, -155.95003

Buoy Depth: 13 ft.

Attachment Point Depth: 34 ft.

Buoy Intact: Yes

Lines Intact: Yes

Ground Attachment Intact: Yes

Comments on Condition: Minor corrosion on ground attachment.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
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<td>10-40%</td>
<td>40-75%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Palythoa caesia, Montipora capitate*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>Unknown</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

*Day Mooring 13.9: Ridges*
SUMMARY

Hardbottom was abundant (40-75%) and coral was common (10-40%) at the site. No colonies greater than 1 meter in diameter were observed inside or outside of the survey radius. One large (10 in.) Linckia spp. starfish and abundant sponges were also observed in the survey area. Buoy and chain attachments were intact, but the ground attachment has one loose pin that is coming free. Coral growth was found on the buoy but not the chain, and no AIS growth was noted on either. One broken coral and bleached P. lobata with algal overgrowth were observed, but no trash or prohibited fishing activities were recorded. 4 vessels were observed during surface surveys: One snorkel vessel on a mooring carrying 40 divers, 2 fishing vessels employing poles (one anchored, one en route), and one unknown vessel whose status could not be determined.

MOORING ASSESSMENT

DM Number: DM-46

ACOE Permit: Not Permitted

Latitude/Longitude: 19.49442, -155.95016

Buoy Depth: 9 ft.

Attachment Point Depth: 33 ft.

Buoy Intact: Yes

Lines Intact: Yes

Ground Attachment Intact: No
Comments on Condition: One ground attachment pin coming free from substrate; coral growth on buoy.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
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<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
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</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>40-75%</td>
<td>40-75%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: *Pocillopora meandrina*

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites lobata, Porites evermanni, Palythoa caesia, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>40</td>
<td>Recreational Snorkel</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>Anchored</td>
</tr>
<tr>
<td>3</td>
<td>N/A</td>
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<td>Unknown</td>
</tr>
<tr>
<td>4</td>
<td>N/A</td>
<td>Fishing (pole)</td>
<td>En Route</td>
</tr>
</tbody>
</table>
# Region 14: Day Moorings from 3 Room Cave to Auau

![Map of Kona Coast Day-Use Mooring Buoys](image)

<table>
<thead>
<tr>
<th>Site</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 3 Room Cave</td>
<td>19.324333</td>
<td>-155.89033</td>
</tr>
<tr>
<td>2. Paradise Pinnacle</td>
<td>19.322333</td>
<td>-155.89127</td>
</tr>
<tr>
<td>3. Auau South</td>
<td>19.2944</td>
<td>-155.8894</td>
</tr>
<tr>
<td>4. Auau North</td>
<td>19.29433</td>
<td>-155.88942</td>
</tr>
</tbody>
</table>

Coordinates in red have been updated to reflect the current position.
**Day Mooring 14.1: 3 Room Cave**

**SUMMARY**

Gravel/rubble was abundant (40-75%) and coral was occasional (5-10%) at the site. No corals greater than 1 meter in diameter were observed inside or outside the survey radius. Buoy D-rings and attachment to chain were not intact, and the buoy position was noted to be too low. The ground attachment consisted of two cables attached under rubble, and the attachment type could not be determined. No coral or AIS growth were observed on the buoy or chain. 2-5 broken corals and *P. lobata* with bleaching and abrasions were noted in the survey area, but no trash or prohibited fishing activities were observed. 2 vessels were observed during surface surveys: a scuba vessel carrying 8 divers on a mooring, and a snorkel vessel live boating nearby.

**MOORING ASSESSMENT**

- **DM Number:** N/A
- **ACOE Permit:** 1995 General
- **Latitude/Longitude:** 19.324333, -155.89033
- **Buoy Depth:** N/A
- **Attachment Point Depth:** 53 ft.
- **Buoy Intact:** No
- **Lines Intact:** No
Ground Attachment Intact: No

Comments on Condition: Buoy missing, D-rings not intact; ground attachment type unknown, cables attached under rubble.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>10-40%</td>
<td>40-75%</td>
<td>10-40%</td>
<td>5-10%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: *Porites compressa, Porites lobata, Porites evermanni, Montipora capitata*

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
<tr>
<td>2</td>
<td>Unknown</td>
<td>Recreational Snorkel</td>
<td>Live Boating</td>
</tr>
</tbody>
</table>
**Day Mooring 14.2: Paradise Pinnacle**

**SUMMARY**

Hardbottom was dominant (> 75%) and coral was occasional (5-10%) at the site. No corals greater than 1 meter in diameter were observed inside or outside the survey radius. Abundant bivalve mortality was noted at the site. Buoy D-rings and chain attachment were not intact, and the ground attachment consisted of a single pin with chain only attached. The float was a bleach bottle secured near the attachment point, and was not sufficient enough to lift the chain from the substrate, resulting in a clear radius of bare substrate surrounding the pin. 10-20 broken corals and abraded *P. lobata* were also noted at the site, but no bleaching, trash, or prohibited fishing activities were observed. No vessels were observed at the surface.
MOORING ASSESSMENT

DM Number: N/A
ACOE Permit: 1995 General
Latitude/Longitude: 19.322333, -155.89127
Buoy Depth: N/A
Attachment Point Depth: 35 ft.
Buoy Intact: No
Lines Intact: No
Ground Attachment Intact: No
Comments on Condition: Non-standard bleach bottle buoy, D-rings not intact; no line, single chain; ground attachment is single pin with chain lying on substrate, radius of damage around ground attachment.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
<td>&gt; 75%</td>
<td>5-10%</td>
<td>5-10%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A
Large (> 1 meter) Coral Heads: N/A
Coral Species Within Radius: Porites compressa, Porites lobata, Montipora capitata, Antipatharia spp.

SURFACE ASSESSMENT

No vessels observed.
**Day Mooring 14.3: Auau South**

**SUMMARY**

Coral was dominant (> 75%) at the survey site, but no corals greater than 1 meter in diameter were observed inside or outside the survey radius. Buoy D-rings and chain attachments were not intact, and no buoy was present. The ground attachment consisted of a non-standard chain wrapped around rock, and there was severe corrosion to the chain. No coral or AIS growth was noted on the buoy or chain. 6-10 broken corals were recorded at the site, and algal overgrowth was noted on *Porites spp.*, particularly *P. lobata*. Abrasions were also noted on corals, but no trash or prohibited fishing activities were recorded. One vessel was recorded at the surface, a scuba vessel on a mooring. The number of divers aboard was unknown.

**MOORING ASSESSMENT**

- **DM Number:** N/A
- **ACOE Permit:** Not Permitted
- **Latitude/Longitude:** 19.2944, -155.8894
- **Buoy Depth:** N/A
- **Attachment Point Depth:** 32 ft.
- **Buoy Intact:** No
Lines Intact: Yes

Ground Attachment Intact: No

Comments on Condition: Non-standard ground attachment consisting of chain wrapped around rock, with severe corrosion; buoy missing, D-rings not intact.

ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>40-75%</td>
<td>5-10%</td>
<td>10-40%</td>
<td>&gt; 75%</td>
<td>&lt; 5%</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A

Large (> 1 meter) Coral Heads: N/A

Coral Species Within Radius: Porites lobata, Porites evermanni, Pocillopora meandrina, Montipora capitata, Pavona duerdeni

SURFACE ASSESSMENT

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>

Day Mooring 14.4: Auau North
SUMMARY

Coral, hardbottom, and gravel/rubble were common (10-40%) at the site. *P. compressa* beds at 100 ft. and 60 ft. were observed inside and outside the survey radius, respectively. Buoy D-rings and chain attachments were not intact, and the float consisted of a bleach bottle with no buoy; float position was noted to be too low. An old disused mooring chain was immediately adjacent to the current chain, and the ground attachment consisted of a non-standard chain wrapped around rock. No coral or AIS growth were observed on the buoy or chain. 6-10 broken corals were recorded at the site, as well as algal overgrowth on *P. lobata, P. compressa*, and *M. capitata*. *P. lobata* were also denuded, and a cyanobacteria bloom was observed covering corals in the area, with bivalve mortality.
noted. One vessel was recorded at the surface, a scuba vessel on a mooring. The number of divers aboard was unknown.

**MOORING ASSESSMENT**

DM Number: N/A

ACOE Permit: 1995 General

Latitude/Longitude: 19.29433, -155.88942

Buoy Depth: N/A

Attachment Point Depth: 45 ft.

Buoy Intact: No

Lines Intact: No

Ground Attachment Intact: No

Comments on Condition: Non-standard ground attachment consisting of chain wrapped around rock; disused chain adjacent to current mooring; buoy missing, D-rings not intact, bleach bottle float.

**ECOLOGICAL ASSESSMENT (10-METER SURVEY RADIUS)**

DACOR Analysis:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Sand/Silt</th>
<th>Rubble</th>
<th>Hardbottom</th>
<th>Coral</th>
<th>Macroalgae</th>
<th>CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Cover</td>
<td>5-10%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>10-40%</td>
<td>&lt; 5%</td>
<td>5-10%</td>
</tr>
</tbody>
</table>

Coral Growing on Installation: N/A

Large (> 1 meter) Coral Heads: *Porites compressa (beds at 100')*

Coral Species Within Radius: *Porites compressa, Porites lobata, Montipora capitata*

**SURFACE ASSESSMENT**

<table>
<thead>
<tr>
<th>Vessel #</th>
<th># of Divers</th>
<th>Purpose/Activity</th>
<th>Mooring Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown</td>
<td>Recreational Scuba</td>
<td>On Mooring</td>
</tr>
</tbody>
</table>
Appendix F: Literature Cited


FUNDING
This publication is the result of funding from the National Oceanic and Atmospheric Administration (NA 13NOS4820014) through the Division of Aquatic Resources to the University of Hawaii, Social Science Research Institute, Hawaii Coral Reef Initiative.