

14 September 2010
AMEC Project No. 9151000900.0001

Eileen Maher
Port of San Diego
Environmental Services
3165 Pacific Highway
San Diego, California 92101-1128

**Re: Marina Trash Skimmer Monitoring
4th Quarterly Report – July 2010 – August 2010
San Diego, California**

Dear Ms. Maher:

1.0 SIGNIFICANT MILESTONES

- Successful continual operation of four trash skimmers around San Diego Bay

2.0 SUMMARY

This fourth quarterly report provides a summary of debris collected between 1 July and 31 August 2010 for trash skimmers installed at four marinas within San Diego Bay. This is the final reporting quarter of debris reporting. However, the four trash skimmers will continue to operate at their respective marinas and the maintenance workers at each marina will continue taking notes and log the types and quantities of trash collected. Water quality data is not included in this report because of an equipment malfunction during the time of sampling. However, the amount of trash collected at each location indicates that the skimmers are operational and effective at removing marine debris in the four locations.

2.1 Marina Trash Logs

2.1.1 Cabrillo Island Marina (formerly Harbor Island West Marina)

The Harbor Island West Marina trash skimmer was relocated to the Cabrillo Isle Marina in April 2010. Trash data collected between 1 July 2010 and 31 August 2010 at the Cabrillo Isle Marina is provided in Table 1. A total of approximately 925 gallons of trash were collected during the quarter at this location; 395 gallons in July, and 530 gallons in August. Similar to the 3rd quarter, kelp and leaves were the predominant type of trash collected with other marine debris including



plastic, wood, and glass bottles. The bilge pad was changed twice during the quarter, although a sheen was never observed at the site.

Table 1. Cabrillo Isle Marina Trash Skimmer Log 2010 Q3

Date	Time	Vol of Trash (gal)	Type and Percentage of Trash	Sheen	Bilge Pad	Pad Changed	Weather (clear, rain, wind, rain in previous days)
7/1/2010	9:15AM	7	KL = 86%, PL = 14%		X		cloudy
7/2/2010	9:15AM	20	KL = 100%		X		sunny
7/3/2010	9:40AM	2	KL = 100%		X		cloudy
7/4/2010	9:20AM	20	KL = 100%		X		cloudy
7/5/2010	9:20AM	20	KL = 100%		X		cloudy
7/6/2010	10:05AM	3	KL = 100%		X		cloudy
7/7/2010	9:21AM	15	KL = 100%		X		cloudy
7/8/2010	9:40AM	27.5	GB = 2%, PL = 4%, KL = 91%, WD = 4%		X		cloudy
7/9/2010	11:25AM	40	KL = 100%		X		cloudy
7/10/2010	10:45AM	5	KL = 100%		X		cloudy
7/11/2010	10:00AM	5	KL = 100%		X		sunny
7/12/2010	9:15AM	30	KL = 100%		X		sunny
7/13/2010	9:30AM	10	KL = 50%, PL = 50%		X		sunny
7/14/2010	9:15AM	20	KL = 100%		X		sunny
7/15/2010	9:40AM	10	KL = 100%		X		sunny
7/16/2010	9:20AM	15	KL = 100%		X		sunny
7/17/2010	9:15AM	4	KL = 100%		X		sunny
7/18/2010	9:55AM	2	KL = 100%		X		cloudy
7/19/2010	9:15AM	10	KL = 100%			X	cloudy
7/20/2010	9:15AM	8	KL = 100%		X		cloudy
7/21/2010	9:10AM	2	KL = 100%		X		cloudy/misty
7/22/2010	9:10AM	4	KL = 100%			X	cloudy
7/23/2010	9:35AM	4	KL = 100%		X		cloudy
7/24/2010	9:15AM	10	KL = 100%		X		cloudy
7/25/2010	9:25AM	4.5	KL = 89%, PL = 11%		X		cloudy
7/26/2010	9:15AM	2	KL = 100%		X		cloudy
7/27/2010	9:20AM	2	KL = 100%		X		cloudy
7/28/2010	9:25AM	3	KL = 100%		X		cloudy
7/29/2010	9:10AM	30	KL = 100%		X		cloudy
7/30/2010	9:15AM	30	KL = 100%		X		cloudy
7/31/2010	9:40AM	30	KL = 100%		X		cloudy
Total Volume (gal) for July = 395							



Table 1. Cabrillo Isle Marina Trash Skimmer Log 2010 Q3

Date	Time	Vol of Trash (gal)	Type and Percentage of Trash	Sheen	Bilge Pad	Pad Changed	Weather (clear, rain, wind, rain in previous days)
8/1/2010	9:15AM	1	KL = 100%		X		sunny
8/2/2010	9:30AM	30	KL = 100%		X		sunny
8/3/2010	9:15AM	20	KL = 100%		X		sunny
8/4/2010	9:20AM	3	KL = 100%		X		cloudy
8/5/2010	9:10AM	10	KL = 100%				cloudy
8/6/2010	9:10AM	10	KL = 100%		X		cloudy
8/7/2010	11:35AM	2	KL = 100%		X		sunny
8/8/2010	9:35AM	2	KL = 100%		X		sunny
8/9/2010	9:30AM	2	KL = 100%		X		cloudy
8/10/2010	10:04 AM	33	KL = 91%, SC = 3%, PL = 3%, WD = 3%		X		cloudy
8/11/2010	9:10 AM	30	KL = 100%		X		cloudy
8/12/2010	4:55 PM	30	KL = 100%		X		sunny
8/13/2010	9:30 AM	40	KL = 100%		X		sunny
8/14/2010	9:35 AM	30	KL = 100%		X		cloudy
8/15/2010	10:25 AM	33	GB = 3%, LV = 3%, KL = 91%, PL = 3%		X		cloudy
8/16/2010	9:30 AM	25	KL = 100%		X		sunny
8/17/2010	9:30 AM	7	KL = 100%		X		sunny
8/18/2010	9:10 AM	40	KL = 100%		X		sunny
8/19/2010	9:20 AM	22	KL = 86%, PL = 5%, LV = 5%, WD = 5%		X		sunny
8/20/2010	9:30 AM	20	KL = 100%		X		sunny
8/21/2010	10:15 AM	16	KL = 94%, WD = 6%		X		sunny
8/22/2010	9:30 AM	7	KL = 71%, LV = 14%, PL = 14%		X		sunny
8/23/2010	9:30 AM	60	KL = 100%		X		sunny
8/24/2010	9:30 AM	8	KL = 63%, LV = 25%, PL = 13%		X		sunny
8/25/2010	9:10 AM	40	KL = 100%		X		sunny

Table 1. Cabrillo Isle Marina Trash Skimmer Log 2010 Q3

Date	Time	Vol of Trash (gal)	Type and Percentage of Trash	Sheen	Bilge Pad	Pad Changed	Weather (clear, rain, wind, rain in previous days)
8/26/2010	9:30 AM	9	KL = 67%, LV = 11%, PL = 11%, WD = 11%		X		sunny
8/27/2010	Trash skimmer off line due to a maintenance issue						
8/28/2010	Trash skimmer off line due to a maintenance issue						
8/29/2010	Trash skimmer off line due to a maintenance issue						
8/30/2010	Trash skimmer off line due to a maintenance issue						
8/31/2010	Trash skimmer off line due to a maintenance issue						
Total Volume (gal) for August = 530							
Total Volume (gal) for July - August = 925							

Trash Codes:

Animal	=	AN	Scum	=	SC
Cigarette Butt	=	CB	Styrofoam	=	SF
Glass Bottle	=	GB	Toys/Balls	=	TY
Kelp	=	KL	Wood	=	WD
Leaves	=	LV	Other	=	OR
Plastic (bottle/container/wrapper)	=	PL			

2.1.2 Point Loma Marina

The trash skimmer at the Point Loma Marina is installed along the east side of the main dock located in the northeast corner of America's Cup Harbor, an area that tends to collect debris via prevailing winds and current circulation (Figure 3). An elevated public walkway with shops, restaurants and businesses overlooks this area.

Between July and August 2010, the Point Loma Marina skimmer collected a total of approximately 39 pounds of trash; 17 pounds in July and 22 pounds in August (Table 2). Kelp was the only type of debris in the skimmer in July. In addition to kelp, debris collected in the skimmer during August included leaves, one occurrence of a cigarette butt, and a passive-drifting animal (jellyfish). A sheen was never observed at this site, although a bilge pad was maintained at this location.

Table 2. Point Loma Trash Skimmer Log 2010 Q3

Date	Time	Weight of Trash (lbs)	Vol of Trash (gal)	Type and Percentage of Trash	Sheen	Bilge Pad	Pad Changed	Weather (clear, rain, wind, rain in previous days)
7/1/2010	8:00AM	3		KL = 100%		X		clear
7/8/2010		1		KL = 100%		X		clear
7/12/2010		1		KL = 100%		X		clear

Table 2. Point Loma Trash Skimmer Log 2010 Q3

Date	Time	Weight of Trash (lbs)	Vol of Trash (gal)	Type and Percentage of Trash	Sheen	Bilge Pad	Pad Changed	Weather (clear, rain, wind, rain in previous days)
7/15/2010		3		KL = 100%		X		clear
7/17/2010		3		KL = 100%		X		clear
7/19/2010		1		KL = 100%		X		cloudy
7/24/2010		3		KL = 100%		X		cloudy
7/31/2010		2		KL = 100%		X		cloudy
Total Weight (lbs) for July = 17								
8/2/2010	9:00AM	1		KL = 100%		X		clear
8/5/2010	2:00PM	2		KL = 100%		X		clear
8/7/2010	9:00AM	1		KL = 100%		X		windy
8/9/2010	10:00AM	3		KL = 99%, CB = 1%		X		clear
8/12/2010	2:00PM	5		KL = 99%, AN = 1%		X		clear
8/14/2010	10:30AM	2		KL = 100%		X		clear
8/16/2010	8:00AM	1		LV = 100%		X		windy
8/19/2010	9:00AM	2		LV = 90%, KL = 10%		X		clear
8/21/2010	2:00PM	1		KL = 100%		X		clear
8/23/2010	7:00AM	1		LV = 100%		X		clear
8/26/2010	9:00AM	0		skimmer off		X		clear
8/28/2010	10:00AM	2		KL = 100%		X		clear
8/30/2010	8:00AM	1		LV = 100%		X		clear
Total Weight (lbs) for August = 22								
Total Weight (lbs) for July - August = 39								

Trash Codes:

Animal	=	AN	Scum	=	SC
Cigarette Butt	=	CB	Styrofoam	=	SF
Glass Bottle	=	GB	Toys/Balls	=	TY
Kelp	=	KL	Wood	=	WD
Leaves	=	LV	Other	=	OR
Plastic (bottle/container/wrapper)	=	PL			

2.1.3 Half Moon Marina

The skimmer at Half Moon Marina is located at the eastern end of the Shelter Island Basin (Figure 4). The location is immediately adjacent to an open concert venue at Humphrey's By the Bay (Humphrey's), an inner harbor area with limited flushing that chronically accumulates debris and often has a visible surface sheen. The Humphrey's concert venue overlooks the marina, providing an optimum location for signage recognizing the Port's environmental stewardship. Between July and August 2010, the Half Moon Marina skimmer collected a total of approximately 810 gallons of trash; 390 gallons in July and 420 gallons in August (Table 3). The dominate types of debris collected included leaves, plastic debris, wood, cigarette butts, and

glass bottles (Photograph No. 1). There were 4 occasions when a sheen was observed at this site, and the bilge pad was changed 8 times. The presence of greater quantities of anthropogenic marine debris is likely due to the nearby concert venue.

Table 3. Half Moon Marina Trash Skimmer Log 2010 Q3

Date	Time	Vol of Trash (gal)	Type and Percentage of Trash	Sheen	Bilge Pad	Pad Changed	Weather (clear, rain, wind, rain in previous days)
7/1/2010	2:30PM	20	PL = 30%, LV = 30%, WD = 10%, GB = 5%, CB = 5%, TY = 5%, OR = 15%			X	cloudy/sunny
7/2/2010	2:30PM	20	PL = 20%, LV = 40%, KL = 5%, SF = 5%, WD = 5%, CB = 5%, OR = 10%				cloudy/sunny
7/5/2010	2:30PM	10	LV = 50%, PL = 20%, WD = 10%, CB = 5%, GB = 5%, OR = 10%				cloudy
7/6/2010	2:30PM	15	LV = 40%, PL = 30%, WD = 15%, CB = 5%, GB = 5%, OR = 15%				cloudy
7/7/2010	2:30PM	10	LV = 50%, PL = 20%, WD = 10%, TY = 5%, CB = 5%, GB = 5%, OR = 5%				sunny
7/8/2010	2:30PM	10	LV = 40%, PL = 20%, WD = 10%, CB = 5%, GB = 5%, TY = 5%, OR = 5%			X	sunny
7/9/2010	2:30PM	10	LV = 40%, PL = 30%,				sunny

Table 3. Half Moon Marina Trash Skimmer Log 2010 Q3

Date	Time	Vol of Trash (gal)	Type and Percentage of Trash	Sheen	Bilge Pad	Pad Changed	Weather (clear, rain, wind, rain in previous days)
			WD = 15%, CB = 5%, GB = 5%, OR = 15%				
7/12/2010	2:30PM	20	LV = 50%, PL = 20%, WD = 10%, TY = 5%, CB = 5%, OR = 10%				cloudy/sunny
7/13/2010	2:30PM	30	LV = 50%, PL = 15%, WD = 10%, CB = 5%, GB = 5%, OR = 15%				cloudy/sunny
7/14/2010	2:30PM	30	LV = 40%, PL = 30%, WD = 10%, CB = 5%, GB = 5%, OR = 10%				cloudy/sunny
7/15/2010	2:30PM	20	LV = 30%, PL = 20%, WD = 10%, CB = 5%, GB = 5%, TY = 5%, OR = 15%				cloudy/sunny
7/16/2010	2:30PM	20	LV = 50%, PL = 20%, WD = 15%, SF = 5%, CB = 5%, GB = 5%				cloudy/sunny
7/19/2010	2:30PM	10	LV = 40%, PL = 20%, WD = 10%, SF = 5%, TY = 5%, OR = 10%				cloudy/sunny
7/20/2010	2:30PM	10	LV = 40%, PL = 20%, WD = 10%, CB = 5%, GB = 5%, TY = 5%, OR = 15%			X	cloudy/sunny

Table 3. Half Moon Marina Trash Skimmer Log 2010 Q3

Date	Time	Vol of Trash (gal)	Type and Percentage of Trash	Sheen	Bilge Pad	Pad Changed	Weather (clear, rain, wind, rain in previous days)
7/21/2010	2:30PM	30	LV = 50%, PL = 20%, WD = 5%, CB = 5%, GB = 5%, TY = 5%, OR = 10%				cloudy
7/22/2010	2:30PM	30	LV = 40%, PL = 20%, WD = 10%, CB = 5%, GB = 5%, SF = 5%, OR = 15%				cloudy
7/23/2010	2:30PM	15	LV = 40%, PL = 20%, WD = 10%, CB = 5%, GB = 5%, TY = 10%, OR = 10%				cloudy
7/26/2010	2:30PM	20	LV = 50%, PL = 20%, WD = 10%, CB = 5%, GB = 5%, OR = 10%			X	cloudy
7/28/2010	2:30PM	20	LV = 40%, PL = 30%, WD = 10%, CB = 5%, GB = 5%, OR = 10%				cloudy
7/29/2010	2:30PM	30	LV = 50%, PL = 30%, WD = 15%, OR = 5%				cloudy
7/30/2010	2:30PM	10	LV = 40%, PL = 20%, WD = 5%, CB = 5%, GB = 5%, TY = 5%, OR = 15%				cloudy
Total Volume (gal) for July = 390							
8/2/2010	2:30PM	20	LV = 40%, PL = 20%, WD = 10%,			X	clear/sunny

Table 3. Half Moon Marina Trash Skimmer Log 2010 Q3

Date	Time	Vol of Trash (gal)	Type and Percentage of Trash	Sheen	Bilge Pad	Pad Changed	Weather (clear, rain, wind, rain in previous days)
			GB = 5%, CB = 5%, OR = 20%				
8/3/2010	2:30PM	10	LV = 40%, PL = 30% WD = 10%, CB = 5%, GB = 5%, OR = 10%	X			clear/sunny
8/4/2010	2:30PM	30	LV = 50%, PL = 20%, WD = 10%, CB = 5%, GB = 5%, OR = 10%				clear/sunny
8/5/2010	2:30PM	20	LV = 40%, PL = 30%, WD = 5%, SF = 5%, CB = 5%, AN = 11%, OR = 9%				cloudy/sunny
8/6/2010	2:30PM	10	LV = 40%, PL = 10%, WD = 10%, CB = 5%, GB = 5%, OR = 10%				cloudy/sunny
8/9/2010	2:30PM	10	LV = 50%, PL = 20%, WD = 10%, CB = 5%, GB = 5%, OR = 10%			X	clear/sunny
8/10/2010	2:30PM	10	LV = 40%, PL = 20%, WD = 10%, CB = 5%, GB = 5%, TY = 5%, OR = 15%				clear/sunny
8/11/2010	2:30PM	10	LV = 40%, PL = 30%, WD = 10% CB = 5%, GB = 5%, OR = 10%	X			clear/sunny

Table 3. Half Moon Marina Trash Skimmer Log 2010 Q3

Date	Time	Vol of Trash (gal)	Type and Percentage of Trash	Sheen	Bilge Pad	Pad Changed	Weather (clear, rain, wind, rain in previous days)
8/12/2010	2:30PM	10	LV = 50%, PL = 30%, WD = 10%, CB = 5%, GB = 5%				clear/sunny
8/13/2010	2:30PM	30	LV = 40%, PL = 30%, WD = 10%, CB = 5%, GB = 5%, OR = 10%				clear/sunny
8/16/2010	2:30PM	20	LV = 30%, PL = 30%, WD = 10%, CB = 5%, GB = 5%, TY = 10%, OR = 10%				clear/sunny
8/17/2010	2:30PM	30	LV = 40%, PL = 30%, WD = 10%, CB = 5%, AN = 5%, OR = 10%				clear/sunny
8/18/2010	2:30PM	20	LV = 40%, PL = 30%, WD = 10%, CB = 5%, SF = 5%, OR = 10%				clear/sunny
8/19/2010	2:30PM	30	LV = 40%, PL = 30%, WD = 10%, CB = 5%, SF = 5%, OR = 10%	X		X	clear/sunny
8/20/2010	2:30PM	30	LV = 40%, PL = 30%, WD = 10%, GB = 5%, CB = 5%, OR = 10%				clear/sunny
8/23/2010	2:30PM	20	LV = 40%, PL = 30%, WD = 10%, CB = 5%, GB = 5%, OR = 10%				clear/sunny



Table 3. Half Moon Marina Trash Skimmer Log 2010 Q3

Date	Time	Vol of Trash (gal)	Type and Percentage of Trash	Sheen	Bilge Pad	Pad Changed	Weather (clear, rain, wind, rain in previous days)
8/24/2010	2:30PM	10	LV = 30%, PL = 30%, WD = 10%, OR = 10%, CB = 5%, GB = 5%, SF = 10%				clear/sunny
8/25/2010	2:30PM	10	LV = 40%, PL = 30%, WD = 10%, CB = 5%, GB = 5%, OR = 10%				clear/sunny
8/26/2010	2:30PM	30	LV = 30%, PL = 30%, WD = 10%, CB = 5%, GB = 5%, KL = 5%, OR = 15%			X	clear/sunny
8/27/2010	2:30PM	20	LV = 40%, PL = 30%, WD = 10%, CB = 5%, GB = 5%, OR = 10%				clear/sunny
8/30/2010	2:30PM	10	LV = 40%, PL = 20%, WD = 10%, SF = 4%, CB = 5%, GB = 5%, AN = 1%, OR = 15%	X			clear/sunny
8/31/2010	2:30PM	30	LV = 40%, PL = 30%, WD = 10%, CB = 5%, GB = 5%, OR = 10%				clear/sunny
Total Volume (gal) for August = 420							
Total Volume (gal) for July - August = 810							

Trash Codes:

Animal	=	AN	Scum	=	SC
Cigarette Butt	=	CB	Styrofoam	=	SF
Glass Bottle	=	GB	Toys/Balls	=	TY
Kelp	=	KL	Wood	=	WD
Leaves	=	LV	Other	=	OR
Plastic (bottle/container/wrapper)	=	PL			

2.1.4 Pier 32 Marina

The skimmer at the Pier 32 Marina, like the others, is also located in an area that receives limited tidal flushing (Figure 5). Its location in the northeast corner of the marina is protected from predominant winds by a rip-rap breakwater that extends approximately 20 feet above the water surface at mean low tide. The skimmer is highly visible and can be viewed from the landside walkway above the rip-rap. Nearby is the marina's BBQ/picnic area as well as an open public area known as "The Beach".

Between July and August, 2010 the skimmer at the Pier 32 Marina collected approximately 410 pounds of trash; 192 pounds in July and 218 pounds in August. July logs begin on 5 July due to skimmer maintenance issues (Table 4). Once back online, kelp was the only type of marine debris collected at this location. Although a surface sheen was observed seven times at this location, the bilge pad was never changed during the quarter.

Examples of before and after trash skimmer operation at Pier 32 Marina are shown in Photograph No. 2 and Photograph No. 3.

Table 4. Pier 32 Marine Trash Skimmer Log 2010 Q3

Date	Time	Weight of Trash (lbs)	Vol of Trash (gal)	Type and Percentage of Trash	Sheen	Bilge Pad	Pad Changed	Weather (clear, rain, wind)
7/1/2010 to 7/4/2010	Trash skimmer off line due to a maintenance issue							
7/5/2010	9:30AM	6		KL = 100%		X		cloudy
7/6/2010	10:00AM	2		KL = 100%				
7/7/2010	10:00AM	2		KL = 100%				
7/8/2010	10:00AM	3		KL = 100%				
7/9/2010	11:00AM	5		KL = 100%				
7/10/2010	7:30AM	5		KL = 100%				
7/11/2010	10:00AM	20		KL = 100%				
7/12/2010	10:00AM	12		KL = 100%				
7/13/2010	10:00AM	10		KL = 100%				
7/14/2010	10:00AM	5		KL = 100%				
7/15/2010	7:30AM	15		KL = 100%				
7/16/2010	10:00AM	5		KL = 100%				
7/17/2010	10:00AM	5		KL = 100%				
7/18/2010	10:00AM	15		KL = 100%				
7/19/2010	10:00AM	5		KL = 100%				
7/20/2010	7:30AM	3		KL = 100%				
7/21/2010	8:00AM	4		KL = 100%				
7/22/2010	1:30PM	15		KL = 100%				
7/23/2010	7:30AM	10		KL = 100%				
7/24/2010	7:30AM	5		KL = 100%				
7/25/2010	7:30AM	5		KL = 100%				
7/26/2010	9:00AM	10		KL = 100%				
7/27/2010	9:00AM	5		KL = 100%	X	X		clear



Table 4. Pier 32 Marine Trash Skimmer Log 2010 Q3

Date	Time	Weight of Trash (lbs)	Vol of Trash (gal)	Type and Percentage of Trash	Sheen	Bilge Pad	Pad Changed	Weather (clear, rain, wind)
7/28/2010	9:00AM	3		KL = 100%	X	X		clear
7/29/2010	3:30PM	5		KL = 100%		X		clear
7/30/2010	8:00AM	5		KL = 100%		X		clear
7/31/2010	8:00AM	7		KL = 100%		X		clear
Total Weight (lbs) July = 192								
8/1/2010	7:30AM	10		KL = 100%		X		cloudy
8/2/2010	7:30AM	7		KL = 100%		X		clear
8/3/2010	7:30AM	2		KL = 100%		X		clear
8/4/2010	8:00AM	2		KL = 100%	X	X		clear
8/5/2010	7:30AM	5		KL = 100%		X		windy
8/6/2010	8:00AM	6		KL = 100%	X	X		clear
8/7/2010	7:30AM	10		KL = 100%	X	X		clear
8/8/2010	7:30AM	20		KL = 100%		X		windy
8/9/2010	7:30AM	20		KL = 100%		X		windy
8/10/2010	7:30AM	10		KL = 100%		X		windy
8/11/2010	7:30AM	5		KL = 100%		X		windy
8/12/2010	9:00AM	3		KL = 100%		X		windy
8/13/2010	9:00AM	5		KL = 100%		X		clear
8/14/2010	7:30AM	5		KL = 100%		X		clear
8/15/2010	7:30AM	3		KL = 100%		X		clear
8/16/2010	7:30AM	5		KL = 100%		X		clear
8/17/2010	7:30AM	3		KL = 100%		X		clear
8/18/2010	9:00AM	8		KL = 100%		X		clear
8/19/2010	7:30AM	10		KL = 100%		X		clear
8/20/2010	7:30AM	10		KL = 100%		X		clear
8/21/2010	7:30AM	20		KL = 100%		X		clear
8/22/2010	9:00AM	7		KL = 100%		X		clear
8/23/2010	9:00AM	8		KL = 100%		X		clear
8/24/2010	10:00AM	8		KL = 100%	X	X		clear
8/25/2010	10:00AM	8		KL = 100%	X	X		clear
8/26/2010	9:00AM	5		KL = 100%		X		windy
8/27/2010	10:00AM	3		KL = 100%		X		clear
8/28/2010	10:00AM	3		KL = 100%		X		clear
8/29/2010	8:00AM	2		KL = 100%		X		clear
8/30/2010	8:00AM	3		KL = 100%		X		clear
8/31/2010	9:00AM	2		KL = 100%		X		clear
Total Weight (lbs) August = 218								
Total Weight (lbs) July - August = 410								

Trash Codes:

Animal	=	AN	Scum	=	SC
Cigarette Butt	=	CB	Styrofoam	=	SF
Glass Bottle	=	GB	Toys/Balls	=	TY
Kelp	=	KL	Wood	=	WD
Leaves	=	LV	Other	=	OR
Plastic (bottle/container/wrapper)	=	PL			

2.1.5 Total Marine Debris Collected (January-August 2010)

The total amount of trash collected by each of the skimmers during the 8 month period is presented in Table 5. Between January and August, 2010, the Half Moon Marina skimmer collected a grand total of 6425 gallons of trash while the Harbor Island West Marina (pre April 2010)/Cabrillo Isle Marina (post April 2010) trash skimmer collected a grand total of 1562.25 gallons of trash.

Point Loma and Pier 32 trash skimmer debris was measured by weight instead of volume by skimmer monitors between January and August 2010. The skimmers at Point Loma and Pier 32 collected a grand total of 334 pounds and 1804.5 pounds of debris, respectively.

A sheen was observed on the water most frequently at the Cabrillo Isle Marina skimmer (38 times) during the 8 month period; however, sheen observation at the Half Moon Marina was not much less (34 times) (Table 5). A sheen was only observed on the water 9 times at both the Point Loma and Pier 32 Marinas between January – August 2010.

Photographs No. 4 – 7 show various types of debris collected throughout the course of this project. Because of the placement of these Trash Skimmers, this debris was successfully removed from San Diego Bay.

Table 5. Totals for Trash Skimmer Log 2010 Q3

Skimmer Location	Units	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Total Trash Collected	Sheen Observations
Half Moon Marina	gallons	1215	1150	1125	745	800	580	390	420	6425	34
Harbor Island West / Cabrillo Marina	gallons	38	2	0	262	213.75	121.5	395	530	1562.25	38
Point Loma	pounds	53	82	58	38	21	43	17	22	334	9
Pier 32	pounds	270	278	598	76.5	117	55	192	218	1804.5	9

2.1.6 Conclusion

In conclusion, trash skimmers placed at all four marinas were successful in collecting marine debris. All four locations collected anthropogenic debris during the January – August 2010 monitoring period; however, the dominant type of debris collected was not anthropogenic (mostly kelp and leaves).

Water quality changes were not able to be quantified at the culmination of this monitoring event due to equipment malfunction; however, the collection of large, floating debris was successful and it can be concluded that water quality improved by the removal of larger suspended objects.

It would be beneficial in the future to continue developing standardized methodologies for trash skimmer monitoring and to begin collecting regular photographic logs of debris collected.

If you have any questions or concerns regarding this report, please contact me at 858-300-4300 or by email at tyler.huff@amec.com.

Respectfully submitted,

AMEC Earth & Environmental, Inc.



Tyler Huff
Aquatic Scientist

W:\2010\Letters\9-151-000900 POSD Trash Skimmer Monitoring Quarterly Reports\4th Quarter Report\Trash_Skimmer_Fourth_Quarterly_Report.doc

Enclosures:

- Photograph No. 1 Half Moon Marina Trash Skimmer
- Photograph No. 2 Pier 32 Marina Trash Skimmer Area – Before Operation
- Photograph No. 3 Pier 32 Marina Trash Skimmer Area – After Operation
- Photograph No. 4 Debris Collected by Trash Skimmer
- Photograph No. 5 Debris Collected by Trash Skimmer
- Photograph No. 6 Debris Collected by Trash Skimmer
- Photograph No. 7 Debris Collected by Trash Skimmer
- Figure 1 Trash Skimmer Locations
- Figure 2 Cabrillo Isle Marina Trash Skimmer Location
- Figure 3 Point Loma Marina Trash Skimmer Location
- Figure 4 Half Moon Marina Trash Skimmer Location
- Figure 5 Pier 32 Marina Trash Skimmer Location

Port of San Diego
Marina Trash Skimmer Monitoring
4th Quarterly Report – July 2010 – August 2010
AMEC Project No. 9151000900
14 September 2010



PHOTOGRAPHIC LOG

**MARINA TRASH SKIMMER
FOURTH QUARTLERLY REPORT
PHOTOGRAPHIC LOG**



Photograph No. 1

Half Moon Marina - Trash Skimmer



Photograph No. 2

Pier 32 Marina Trash Skimmer Area – Before Operation

**AMEC Job No.
9151000900.0001**

**Reviewed By:
Michelle Bowman**

**Prepared By:
Tyler Huff**



**MARINA TRASH SKIMMER
FOURTH QUARTLERLY REPORT
PHOTOGRAPHIC LOG**



Photograph No. 3

Pier 32 Marina Trash Skimmer – After Operation



Photograph No. 4

Debris Collected by Trash Skimmer

**AMEC Job No.
9151000900.0001**

**Reviewed By:
Michelle Bowman**

**Prepared By:
Tyler Huff**



**MARINA TRASH SKIMMER
FOURTH QUARTLERLY REPORT
PHOTOGRAPHIC LOG**



Photograph No. 5

Debris Collected by Trash Skimmer



Photograph No. 6

Debris Collected by Trash Skimmer

**AMEC Job No.
9151000900.0001**

**Reviewed By:
Michelle Bowman**

**Prepared By:
Tyler Huff**



**MARINA TRASH SKIMMER
FOURTH QUARTLERLY REPORT
PHOTOGRAPHIC LOG**



Photograph No. 7

Debris Collected by Trash Skimmer

**AMEC Job No.
9151000900.0001**

**Reviewed By:
Michelle Bowman**

**Prepared By:
Tyler Huff**



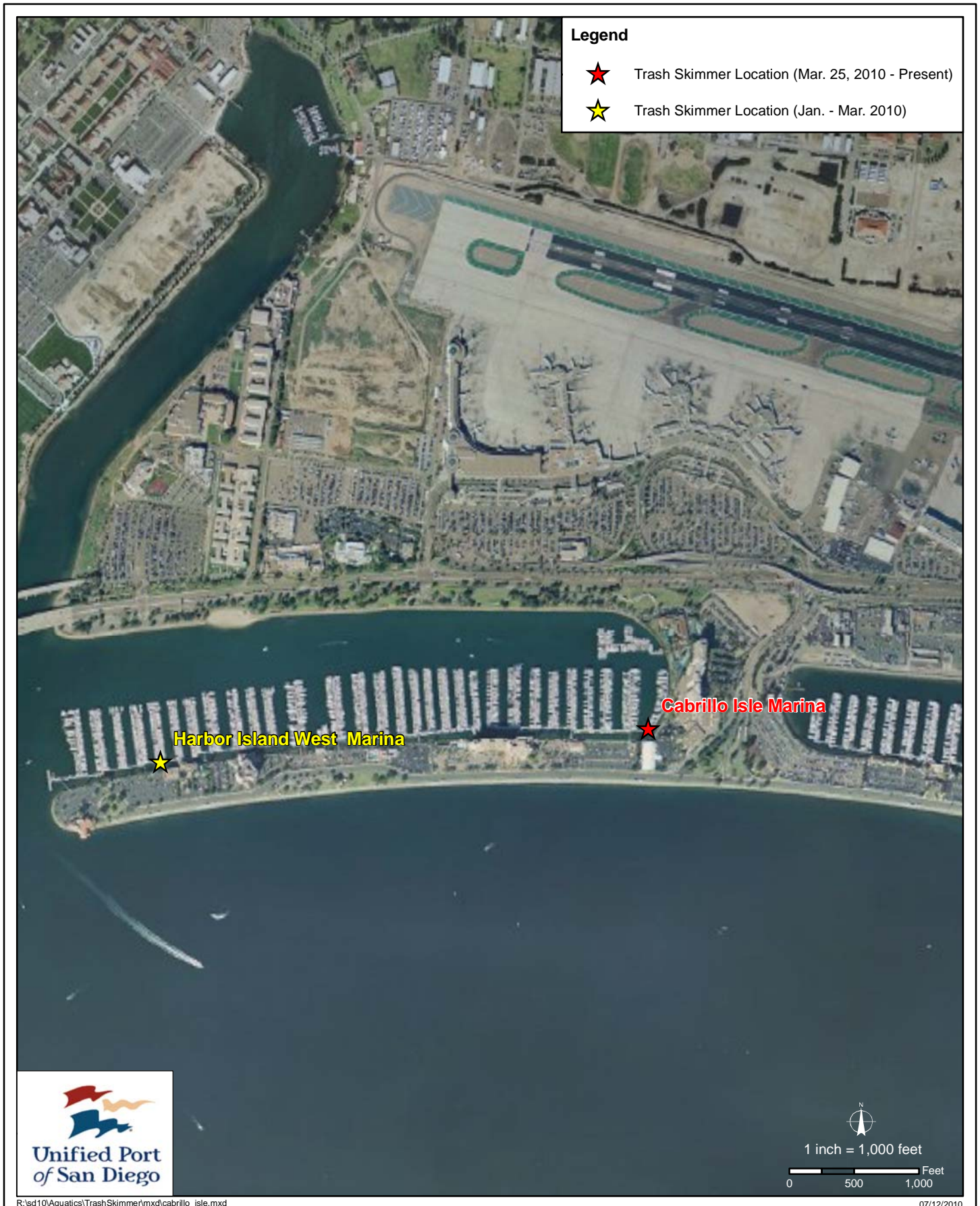


FIGURES



Marina Trash Skimmer Locations
 September 2010

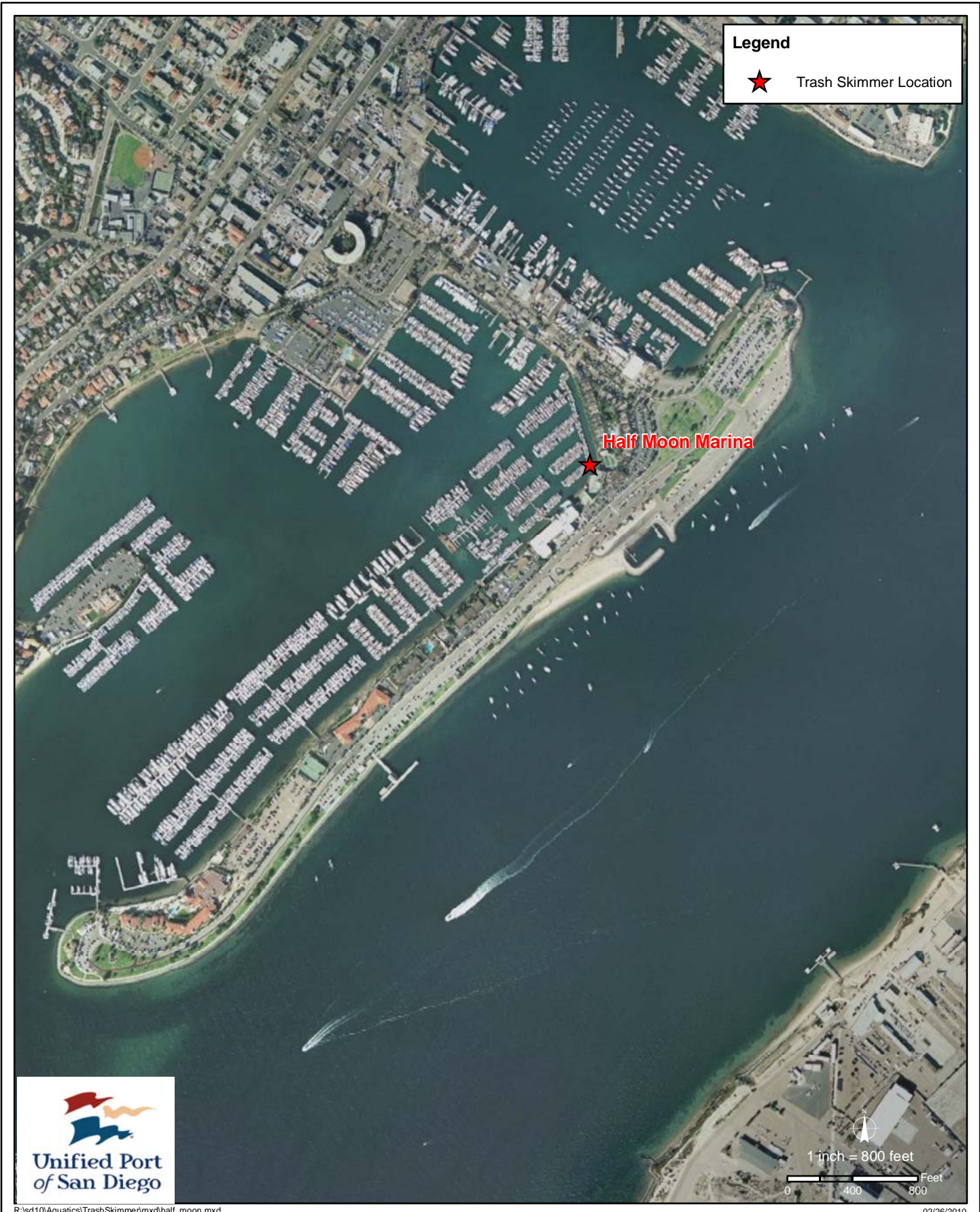
FIGURE
 1





Point Loma Marina
Trash Skimmer Location

FIGURE
3



Half Moon Marina
Trash Skimmer Location

FIGURE
4



**Pier 32 Marina
Trash Skimmer Location**

**FIGURE
5**

