

**The Physiological Effects of Dredge-Spoil
on the Oxygen Metabolism of
Charleston Harbor, SC, Marine Benthic Invertebrates**

Final Report Submitted by:

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Submitted to:

U.S. Environmental Protection Agency

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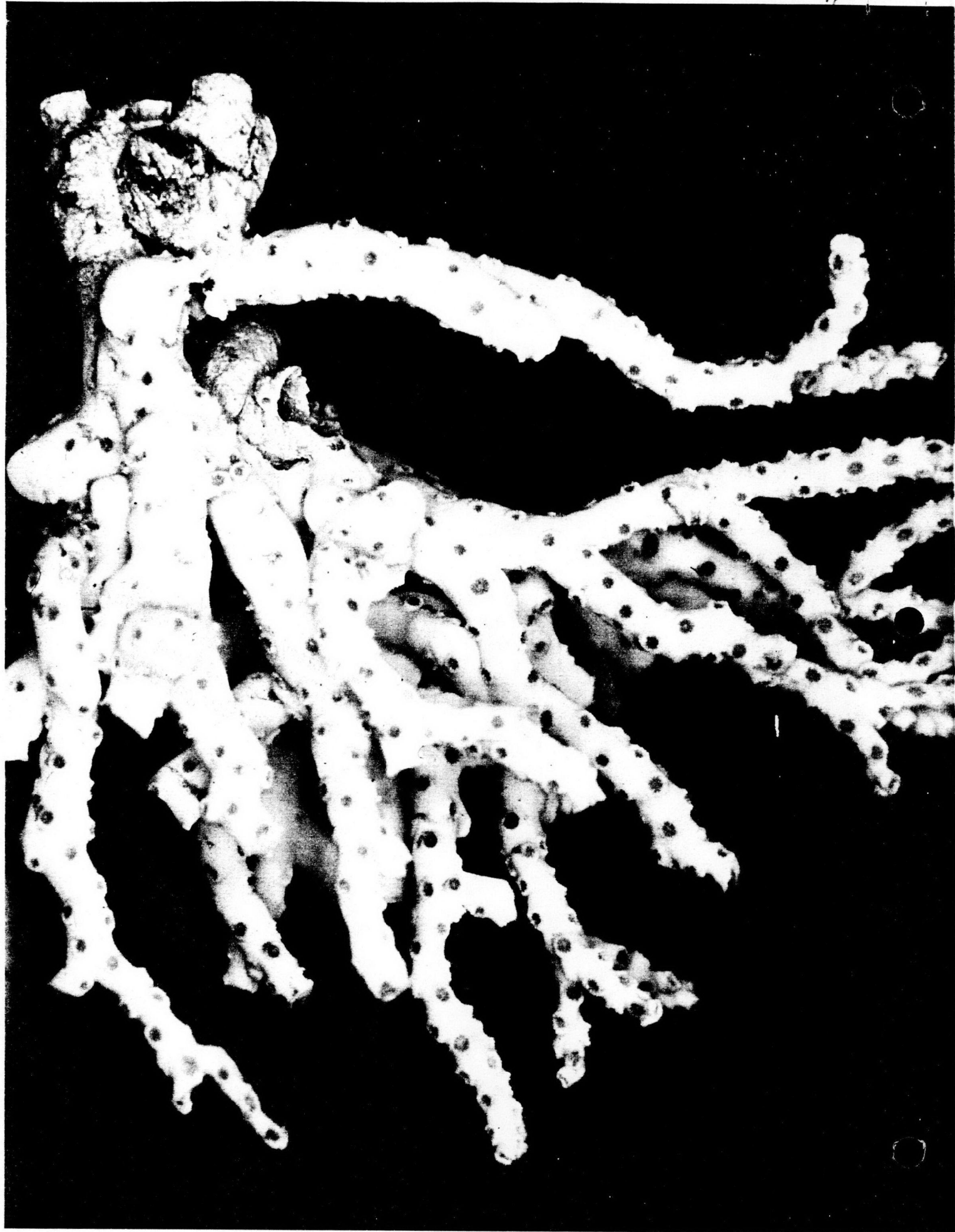
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Abstract

Livebottom areas off the coast of South Carolina support a rich assemblage of benthic invertebrates including sponges, tunicates, soft corals, and hard corals. As part of the dredging of Charleston Harbor, it is proposed to dump the dredge spoil immediately offshore near several of these reefs. The numerically dominant hard coral on these livebottoms is the photosynthetic scleractinian *Oculina arbuscula* (Verrill, 1863); the dominant soft coral is the nonphotosynthetic gorgonian *Lophogorgia hebes* (Verrill, 1869).

Intact colonies of *Oculina arbuscula* and *Lophogorgia hebes* were collected at a depth of 15 m and placed inside plexiglass chambers sitting on top of an *in situ* bioassay respirometer which continuously measured oxygen flux metabolism of the corals under control (without sediment) and experimental (with sediment) conditions. Dredge spoil was collected daily from beside barges dumping Charleston Harbor dredge-spoil sediments onto the disposal site and placed into the chambers with the experimental organisms. Oxygen flux metabolism was measured under four sediment loads (ambient, <4 mg/l, 8 mg/l, 150 mg/l, and 250 mg/l) for *Oculina* and three sediment loads (ambient, <4 mg/l, 100 mg/l, and 210 mg/l) for *Lophogorgia*.

Although confinement in the experimental chambers did not effect coral metabolism, exposure to dredge spoil sediment had an immediate and significantly adverse effect on coral photosynthesis and respiration. *Oculina* respiration rates fell from $-7.3 \pm$ to -6.00 ± 0.1 and net photosynthesis from 8.5 ± 0.6 to 6.8 ± 0.7 $\mu\text{g O}_2\text{cm}^{-2}\text{h}^{-1}$ during the experimental period. Likewise, compensation irradiance (I_c) rose from 80 to 140 $\mu\text{E m}^{-2}\text{s}^{-1}$, and α fell from 0.09 ± 0.01 to 0.05 ± 0.1 . During exposure to sediment, corals exhibit a dramatic reduction in net photosynthesis. The response is not dependent on the order in which the sediments are applied, but rather is dependent on the concentration of sediments applied: as sediment load increases from 8 mg/l to 150 mg/l, the effect becomes significant and remains so above this level. The integrated coral production / respiration ratio drops from 0.64 ± 0.03 without sediment to 0.23 ± 0.02 with the highest sediment load.

All colonies of *Lophogorgia* responded to exposure dredge-spoil with a significant reduction in their respiration rate from -2.15 to -1.11 μgO_2 $\mu\text{g protein (10}^{-1}\text{) h}^{-1}$.

Our metabolic data reveal that intermediate levels of stress occur for *O. arbuscula* that are a function of the sediment load applied. Both long-term responsiveness and immediate short-term productivity rates of the coral are damaged by exposure to sediment concentrations above 100 mg/l. Coral photosynthesis remained depressed for at least 24 hours after the sediment load has been removed and the coral has been returned to normal ambient water conditions. This latter fact demonstrates that the reduced photosynthesis measured when corals are directly exposed to sediment is not entirely due to the reduced irradiance that exists under elevated turbidity. The photosynthesis depression has an historical component that is highly correlated with previous exposure to sediment loads in excess of 100 mg/l.

Taken together, these data suggest that while coral recovery from single episodes of low-level sediment exposure is likely, recovery from repeated low level exposures or single episodes of high-level exposure seems more problematic. We recommend that future operations (1) avoid dumping on the hardgrounds, (2) avoid dumping more than two days in a row in exactly the same place, and (3) to the extent possible, avoid repeated elevations of the sediment load above 100 mg/l (15 NTU) on hardgrounds adjacent to the dump site.

Table of Contents

Cover page

Frontice Plate: *Oculina arbuscula* (Verrill, 1863), 15 m depth, Charleston Harbor, SC.

Abstract

Table of Contents

List of Tables

List of Figures

List of Appendices

Introduction

Materials and Methods

Coral Collection

Sediment Collection

***In situ* Respirometry**

Biomass Measurements

Oxygen Flux Calculations

Statistical Analysis of the Data

Experimental Design

Results

Discussion

Recommendations

Acknowledgements

Bibliography

Appendices

List of Tables

- Table 1. (Materials & Methods) Biomass values for *Oculina* specimens.
- Table 2. (Materials & Methods) Biomass values for *Lophogorgia* specimens.
- Table 3. (Experimental Design) Chronology for *Oculina* experiments.
- Table 4. (Experimental Design) Experimental treatments for *Oculina*.
- Table 5. (Experimental Design) Experimental and control sediment weights for *Oculina*.
- Table 6. (Experimental Design) Chronology for *Lophogorgia* experiments.
- Table 7. (Experimental Design) Experimental treatments for *Lophogorgia*.
- Table 8. (Experimental Design) Experimental and control sediment weights for *Lophogorgia*.
- Table 9. (Results, Control) S.O.D. of dredge-spoil sediment.
- Table 10. (Results, P vs I, Control) Photosynthetic oxygen flux characteristics of the long-term controls for *Oculina arbuscula*.
- Table 11. (Results, P vs I, Control vs. Experimental) Photosynthetic oxygen flux characteristics for experimental specimens of *Oculina arbuscula*.
- Table 12. (Results, Oxygen Flux, Control vs. Experimental) Net oxygen flux photosynthesis with and without sediment for experimental specimens of *Oculina arbuscula*.
- Table 13. (Results, Oxygen Flux, Control vs. Experimental) Net and gross carbon production with and without sediment for experimental specimens of *Oculina arbuscula*.
- Table 14. (Results, Integrated P/R ratios, Control vs. Experimental) Integrated P/R ratios of specimens of *Oculina arbuscula* with and without sediment.
- Table 15. (Results, Oxygen Flux, Controls vs. Experimental) Respiration of specimens of *Lophogorgia hebes* with and without sediment.

List of Figures

- Figure 1. The experimental study site lies due east of James Island, South Carolina, south of the Fort Sumter Range demarcation line. NOAA Nautical Chart 11521.
- Figure 2. Map of the Charleston Harbor Ocean Dredged Material Disposal Site (ODMDS). The parallelogram (dotted line) indicates the area historically used for dredge-spoil that has been designated to receive material dredged during the Charleston Harbor Deepening Project (Winn *et al.*, 1989). The smaller rectangle inside this area is under consideration for future ocean disposal. Livebottoms are present in both the larger and the smaller sites. (S.C. Wildlife Resources Department, 1990).
- Figure 3. Charleston Harbor, SC, ODMDS oyster plot of current speed (knots) and direction. Data were recorded with an ENDECO Type 174SSM solid state memory current meter. Fig. 4a Data were recorded from 06/21/90 to 07/17/90. Fig. 4b. Data were recorded from 07/24/90 to 08/20/90. Fig. 4b Data were recorded from 11/15/90 to 12/11/90. Data supplied by EPA.
- Figure 4. Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for 24-hour runs of the long-term control specimens of *Oculina arbuscula* colonies without any sediment application ($\mu\text{g O}_2 \text{ cm}^{-2} \text{ h}^{-1} \pm \text{S.E.}$). Fig. 5a (top) for Day 1, Fig. 5b (middle) for Day 2, and Fig. 5c (bottom) for Day 3. Specimens remained in the experimental chambers for the full three-day period.
- Figure 5. Pooled production vs. light intensity curves for *Oculina arbuscula* colonies prior to the application of sediment ($\mu\text{g O}_2 \text{ cm}^{-2} \text{ h}^{-1} \pm \text{S.E.}$; $N = 5$). Fig. 6a (top) for colonies on Day 1 (Files EA02O15C, Experimental Chambers 1, 2, and 3, & EB02O15C, Experimental Chambers 1 and 2); Fig. 6b (middle) for colonies on Day 2 (Files EA04O15C, Experimental Chambers 1, 2, and 3, & EB04O15C, Experimental Chambers 1 and 2); and Fig. 6c (bottom) for colonies on Day 3 (Files EA06O15C, Experimental Chambers 1, 2, and 3, & EB06O15C, Experimental Chambers 1 and 2). See Tables 1 & 2 for the chronology and treatment history for each day; see Appendix 1 for the numerical data, and Appendix 2 for additional graphic output.
- Figure 6. Net oxygen production (mean $\mu\text{g O}_2 \text{ cm}^{-2} \text{ h}^{-1} \pm \text{S.E.}$; $N = 5$) during incubations under ambient ($< 4 \text{ mg/l}$) and three additional experimental sediment loads for specimens of *Oculina arbuscula*, Charleston Harbor, SC, 15 m depth.
- Figure 7. Net oxygen flux ($\mu\text{g O}_2 \text{ cm}^{-2} \text{ h}^{-1}$) for control and experimental colonies of *Oculina arbuscula*, Charleston Harbor, SC, 15 m depth with and without sedimentation application. Oxygen fluxes are computed for control corals without any sediment (open squares) and for experimental corals during sediment application (solid dots). The data are arranged from lowest to highest concentration of sediment ($> 4.0 \text{ mg/l}$, 8 mg/l , 150 mg/l , and 250 mg/l).

Figure 8. Integrated total net carbon production (mean $\mu\text{g C cm}^{-2} \text{ h}^{-1} \pm \text{S.E.}$; $N = 5$) during incubations with and without sediment under different sediment loads for specimens of *Oculina arbuscula*, Charleston Harbor, SC, 15 m depth.

Appendices

Appendix 1: Oxygen data tables

Appendix 1A Data table for the Day 1 experiments on *Oculina arbuscula* with sediment (EA03O15C & EB03O15C) and without sediment (EA02O15C & EB02O15C), Charleston Harbor, SC, 15 m depth.

Appendix 1B Data table for the Day 2 experiments on *Oculina arbuscula* with sediment (EA05O15C & EB05O15C) and without sediment (EA04O15C & EB04O15C), Charleston Harbor, SC, 15 m depth.

Appendix 1C Data table for the Day 1 experiments on *Oculina arbuscula* with sediment (EA07O15C & EB07O15C) and without sediment (EA06O15C & EB06O15C), Charleston Harbor, SC, 15 m depth.

Appendix 1D Data table for the Day 1 experiments on *Lophogorgia hebes* with sediment (EA10LO15C & EB10L15C) and without sediment (EA09L15C & EB09L15C), Charleston Harbor, SC, 15 m depth.

Appendix 1E Data table for the Day 2 experiments on *Lophogorgia hebes* with sediment (EA12L15C & EB12L15C) and without sediment (EA11L15C & EB11L15C), Charleston Harbor, SC, 15 m depth.

Appendix 2: Figures

Appendix 2A Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for Day 1 *Oculina arbuscula* colonies (N=5; files, EA02O15C & EB02O15C) before the application of sediment.

Appendix 2B Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for Day 2 *Oculina arbuscula* colonies (N=5; files, EA04O15C & EB04O15C) before the application of sediment.

Appendix 2C Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for Day 3 *Oculina arbuscula* colonies (N=5; files, EA06O15C & EB06O15C) before the application of sediment.

Appendix 2D Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for the long-term control *Oculina arbuscula* colonies (N=3; files, EB08O15C, EB09O15C, & EB10O15C) before the application of sediment.

Appendix 3, Sediment data tables

Appendix 3A Total suspended solids, settable solids, and turbidity of water samples from the Charleston Harbor ODMDS experimental site 07/10/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Oculina arbuscula*. The PM sample is the background ambient water sediment load.

Appendix 3B Total suspended solids, settable solids, and turbidity of water samples from the Charleston Harbor ODMDS experimental site 07/11/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Oculina arbuscula*. The PM sample is the background ambient water sediment load.

Appendix 3C Total suspended solids, settable solids, and turbidity of water samples from the Charleston Harbor ODMDS experimental site 07/12/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Oculina arbuscula*. The PM sample is the background ambient water sediment load.

Appendix 3D Total suspended solids, settable solids, and turbidity of water samples from the Charleston Harbor ODMDS experimental site 07/14/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Lophogorgia hebes*. The PM sample is the background ambient water sediment load.

Appendix E Total suspended solids, settable solids, and turbidity of water samples from the Charleston Harbor ODMDS experimental site 07/10/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Lophogorgia hebes*. The PM sample is the background ambient water sediment load.

Introduction

Hard ground areas off the coast of South Carolina support a rich assemblage of benthic invertebrates including sponges, tunicates, soft corals, and hard corals (Field, 1949; Pearse and Williams, 1951; Menzies *et al.*, 1966; Uchupi, 1967; Cain, 1972; Johnson *et al.*, 1974; Hunt, 1974; Dorges, 1977; BLM, 1981; Zingmark, 1978; Parker *et al.*, 1983; Wenner *et al.*, 1983). While these living assemblages are dominated by animals (Hopkinson, 1985), algae are seasonally abundant (Schneider, 1976; Frankenberg, 1977; Frankenberg and Lieper, 1977) and contribute to total primary production (Hopkinson, 1985). In the absence of data on the rate of primary productivity of the attached algae, most studies emphasize water column productivity and the detrital food chain as the main sources of nutrition for fish populations of the Atlantic southeastern region (Haines and Dunstan, 1975; Oertel and Dunstan, 1981). However, it is well known that these "livebottoms", as they are locally known by fishermen, are extremely important feeding and breeding grounds for many commercially valuable species (Grimes, 1979; Miller and Richards, 1979; Sedberry and Van Dolah, 1984).

As part of the dredging of Charleston Harbor, it is proposed to dump the dredge spoil immediately offshore near several of these reefs (Winn *et al.*, 1989) (Figures 1 & 2). Based upon current meter studies (Stefanson *et al.*, 1971; McGregor, 1979; Figure 3), several hard ground areas near the mouth of Charleston Harbor are likely to be impacted. The main impacts are likely to be a temporary increase in the suspended sediment load in the water column and an increase in the amount of sediment deposited under the dredge spoil plume (Owen, 1977; Wilson, 1979). In addition, one can also predict a change in both the quantity and spectral quality of light in the affected area (Jones and Willis, 1956).

Figure 1. The experimental study site lies due east of James Island, South Carolina, south of the Fort Sumter Range demarcation line. NOAA Nautical Chart 11521.

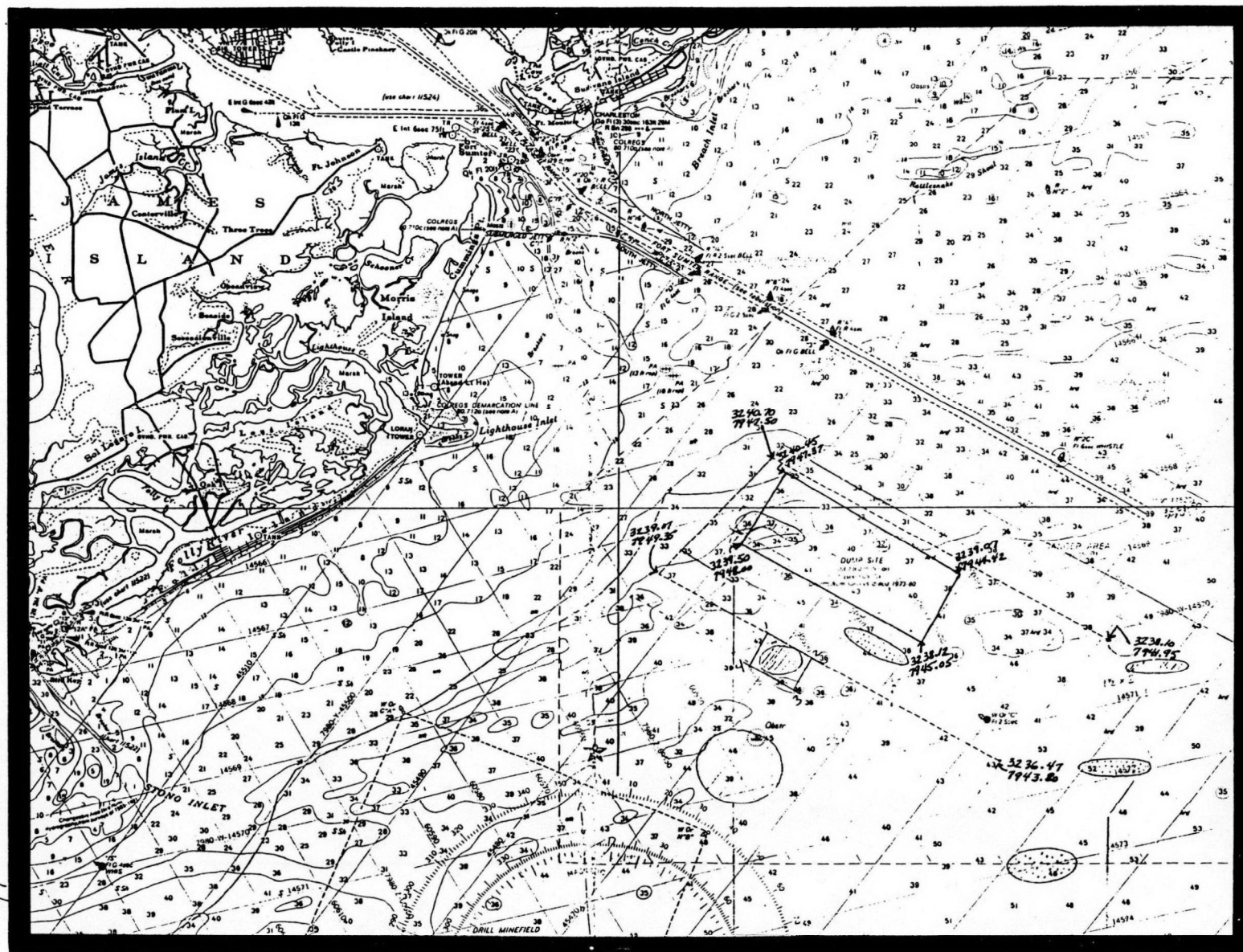
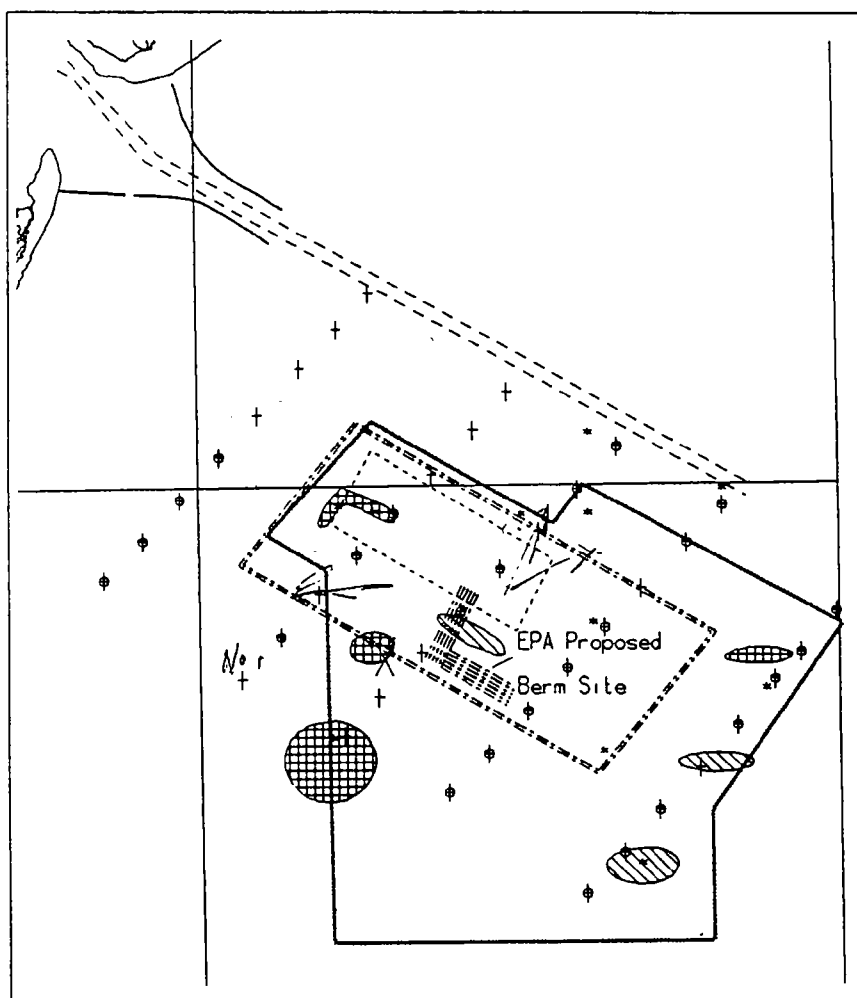


Figure 2. Map of the Charleston Harbor Ocean Dredged Material Disposal Site (ODMDS). The parallelogram (dotted line) indicates the area historically used for dredge-spoil that has been designated to receive material dredged during the Charleston Harbor Deepening Project (Winn *et al.*, 1989). The smaller rectangle inside this area is under consideration for future ocean disposal. Livebottoms are present in both the larger and the smaller sites. (S.C. Wildlife Resources Department, 1990).

CHARLESTON OFFSHORE DREDGE MATERIAL DISPOSAL SITE

Scale 1 80,000



KEY

- ⊞ Livebottom (EPA Survey)
- ⊞ Patchy Livebottom (EPA Survey)
- ⊕ Some Sponge in D Sample (1978)
- * Prime Fishing Spot (Maps Unique, 1989)
- ⊞ Charleston Harbor Deepening ODMDS
- ⊞ Charleston ODMDS
- ⊞ EPA Survey Area
- X EPA Control Site

North



The numerically dominant hard coral on these livebottoms is *Oculina arbuscula* (Verrill, 1863), the ivory bush coral (Ruppert and Fox, 1988). As with most other shallow water scleractinian corals, species in the genus *Oculina* have intracellular symbiotic dinoflagellate algae, zooxanthellae, and are capable of photosynthesis (Muscatine *et al.*, 1979). There is a transfer of photosynthetically fixed carbon from the algae to the coral, and this transfer of organic material creates an energetic and carbon dependence on the symbiotic algae by the coral (McCloskey *et al.*, 1978; Muscatine *et al.*, 1981; Porter *et al.*, 1984; Dubinsky *et al.*, 1984). Since this process is light driven, any factor that interferes with photosynthesis reduces productivity.

In contrast, the dominant soft coral is *Lophogorgia hebes* (Verrill, 1869). Little is known about its biology (Bayer, 1961), but it is a non-zooxanthellate species and as a consequence is not dependent directly on light for any part of its nutrition.

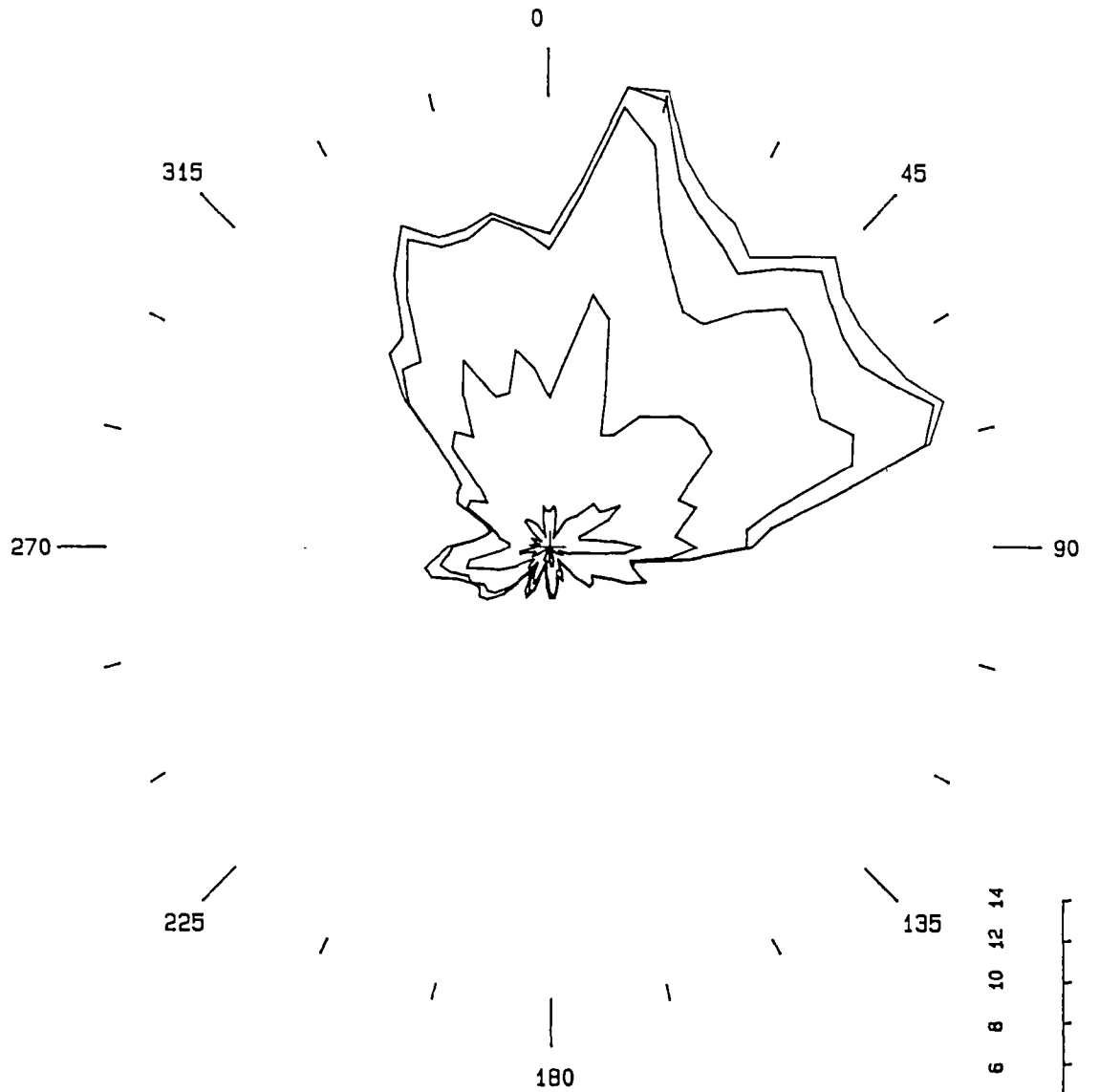
Sedimentation can reduce the amount of light in the water column (Jones and Willis, 1956; Rogers, 1979; Dallmeyer *et al.*, 1982; Abdel-Salam and Porter, 1988). Further, sediment on the living tissues of organisms must be removed for normal metabolic function and zooplankton capture (Lewis and Price 1976 and 1975), and this requires an expenditure of energy (Porter and Rogers, in prep.) Sedimentation is known to adversely influence the growth of corals (Morelock and Koenig, 1967; Goreau and Goreau, 1959; Dodge *et al.*, 1974; Bak, 1978; Rogers, 1983 and 1990; and Hubbard, 1986) and also the distribution of coral reefs (Brock *et al.*, 1966; Roy and Smith, 1971; Hubbard and Pocock, 1972; Hubbard, 1973; Aller and Dodge, 1974; Loya, 1976; Garrett and Scoffin, 1977; Lasker, 1980). In its extreme, elevated sedimentation due to dredging has been shown to kill Atlantic reefs (Brock *et al.*, 1966;

14

Figure 3. Charleston Harbor, SC, ODMDS oyster plot of current speed (knots) and direction. Data were recorded with an ENDECO Type 174SSM solid state memory current meter. Fig. 4a Data were recorded from 06/21/90 to 07/17/90. Fig. 4b. Data were recorded from 07/24/90 to 08/20/90. Fig. 4b Data were recorded from 11/15/90 to 12/11/90. Data supplied by EPA.

CHARLESTON HARBOR ODMDS CURRENT METER STUDY

Speed Class Interval = 0.15



OYSTER PLOT OF SPEED AND DIRECTION

From 21-JUN-90 To 17-JUL-90

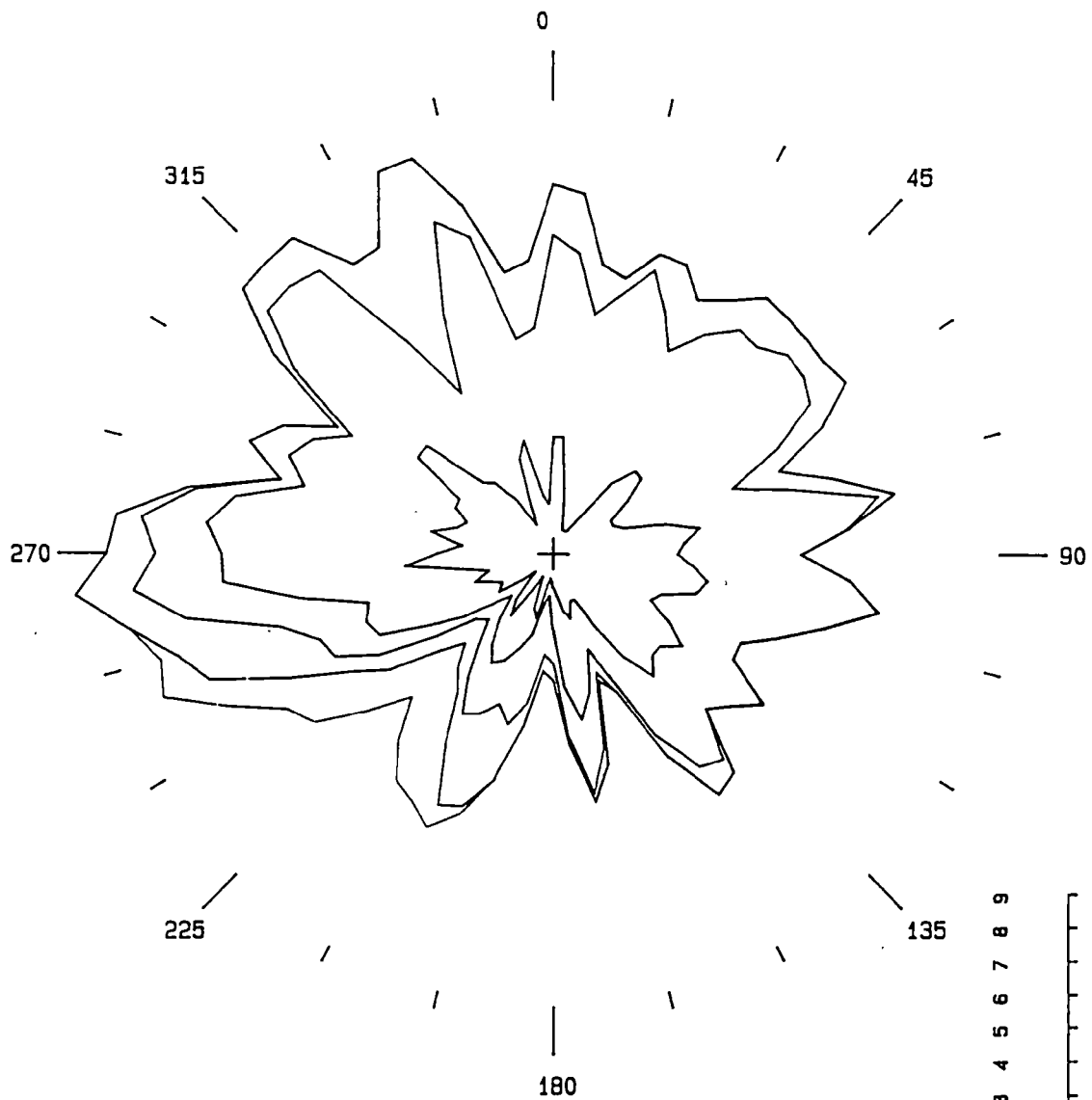
0 2 4 6 8 10 12 14
No. of Obs.

ENDECO Type 174SSM Solid State Memory Current Meter

16

HARLESTON HARBOR ODMDS CURRENT METER STUDY

Speed Class Interval = 0.13



OYSTER PLOT OF SPEED AND DIRECTION

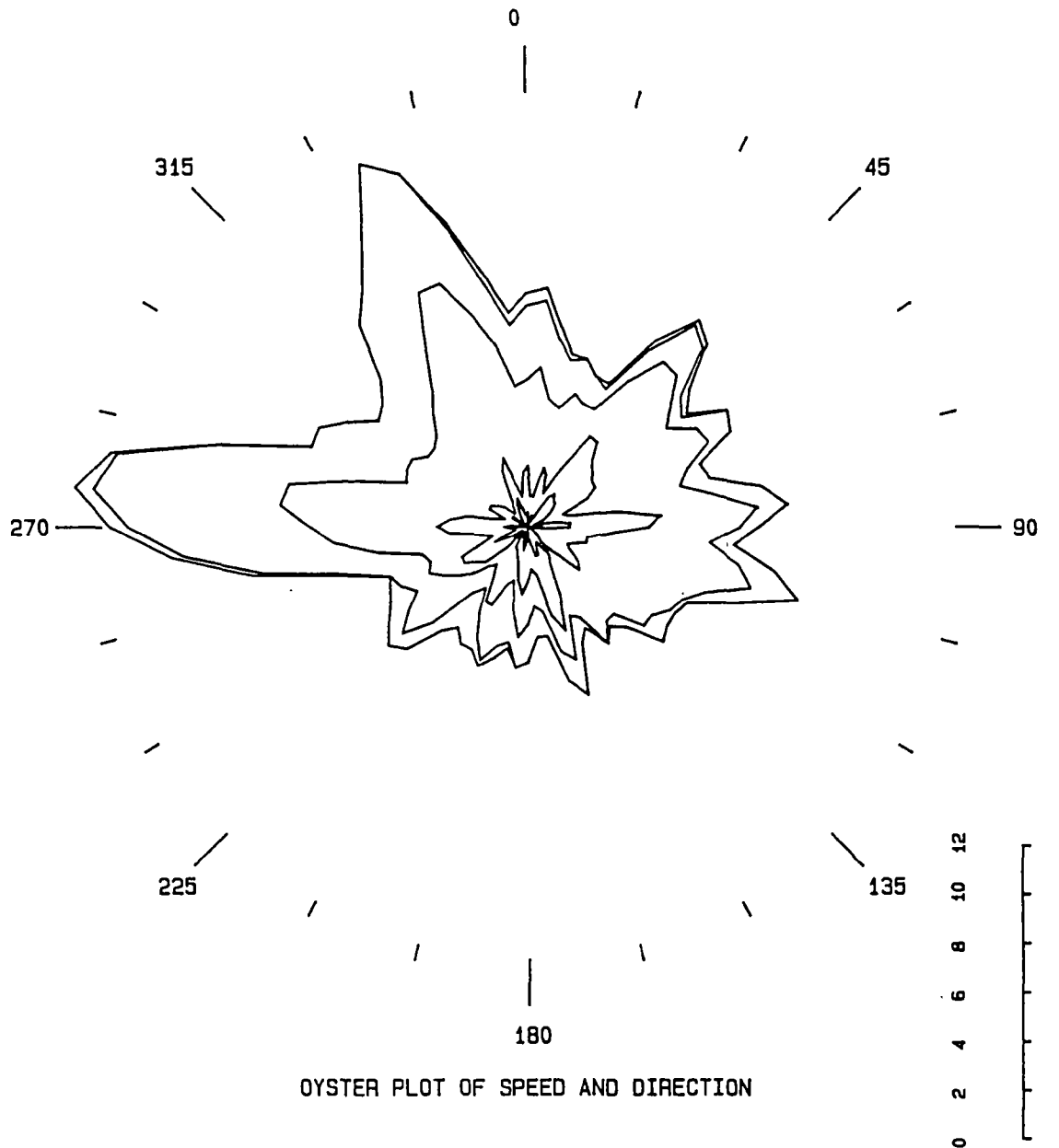
From 24-JUL-90 To 20-AUG-90

0 1 2 3 4 5 6 7 8 9
No. of Obs.

ENDECO Type 174SSM Solid State Memory Current Meter

CHARLESTON HARBOR ODMOS CURRENT METER STUDY

Speed Class Interval = 0.07



Marsh and Gordon, 1974; Maragos, 1972; Smith *et al.*, 1973; Dodge and Vaisnys, 1977; Bak, 1978; Marszalek, 1981).

In this study, we investigate the impact of dredge spoil on the health of two local benthic marine invertebrates, the photosynthetic hard coral *Oculina arbuscula* and the nonphotosynthetic soft coral, *Lophogorgia hebes*. We examine the relation between their oxygen flux metabolism and the application of known quantities of sediment from barges dumping dredge spoil from Charleston Harbor in the Ocean Dredged Material Disposal Site (Figures 1 & 2) in order to recommend procedures that will minimize the impact of this practice.

Materials and Methods

Coral Collection

Intact colonies of *Oculina arbuscula* and *Lophogorgia hebes* were collected at a depth of 15 m and moved underwater to the experimental site. Seven colonies of *O. arbuscula* were selected (Table 1), and six colonies of *L. hebes* (Table 2). Care was taken to select only unblemished colonies and not to abrade living tissue during removal. The *Oculina* colonies had living surface areas ranging from 63 cm² to 318 cm², and displacement volumes ranging from 31 ml to 117 ml (Table 1). *Lophogorgia* colonies varied in displacement volume from 1.5 ml to 3.4 ml (Table 2).

Dredge-Spoil Sediment Collection

Since the dredging of Charleston Harbor is an ongoing process, considerable realism was introduced into our experimental design by the collection of sediments from beside the barge dumping Charleston Harbor dredge-spoil sediments onto the disposal site (Figure 1). Divers collected the highly turbid slurry of sediments and water from 10 cm above the bottom at depth

Table 1. Biomass values for Charleston Harbor scleractinian corals, *Oculina arbuscula* (Verrill, 1863).

Spec. No.	Expt. Nos.	Ch. No.	Displ. Vol. (ml)	S.A. (cm ²)	Zoox. (#/cm ²) (x 10 ⁶)	Chl <i>a</i> (μg/cm ²)	Chl <i>a</i> (pg/cell)	<i>a/c</i> ₂ ratio
0000	†	-	31.0	63	3.06	3.03	0.99	1.65
1255	*	1A	62.5	191	2.54	5.80	2.28	2.07
1256	*	2A	42.5	124	5.53	1.43	0.26	3.11
1257	*	3A	50.5	213	3.58	4.51	1.26	1.63
1258	**	1B	42.8	78	3.06	5.30	1.73	3.88
1259	**	2B	117.0	318	1.91	2.40	1.26	1.07
1265	‡	1C	79.8	206	2.96	6.40	2.16	1.86

† Additional biomass and control reference specimen.

* Sediment application 1: Before, EA02O15C (24 hrs) and After, EA03O15C (2 hrs)
Sediment application 2: Before, EA04O15C (24 hrs) and After, EA05O15C (2 hrs)
Sediment application 3: Before, EA06O15C (24 hrs) and After, EA07O15C (2 hrs)

** Sediment application 1: Before, EB02O15C (24 hrs) and After, EB03O15C (2 hrs)
Sediment application 2: Before, EB04O15C (24 hrs) and After, EB05O15C (2 hrs)
Sediment application 3: Before, EB06O15C (24 hrs) and After, EB07O15C (2 hrs)

‡ Control for confinement in the chambers:
Day 1, EB08O15C (24 hrs)
Day 2, EB09O15C (24 hrs)
Day 3, EB10O15C (24 hrs)

Table 2. Biomass values (mean $\pm$ S.D.) for Charleston Harbor, SC, soft corals, *Lophogorgia hebes* (Verrill, 1869).

Specimen No.	Experiment No.	Ch. No.	Displ. Vol. (ml)	Protein (mg)	Ash Free Dry Wt. (mg)
1262	*	1A	3.7	4.70 $\pm$ 0.07	34.4 $\pm$ 5.5
1263	*	2A	1.7	3.32 $\pm$ 0.02	16.8 $\pm$ 1.5
1264	*	3A	3.4	4.12 $\pm$ 0.05	28.4 $\pm$ 4.9
1261	**	3B	2.5	4.26 $\pm$ 0.04	21.0 $\pm$ 9.9
1266	†	-	1.5	2.68 $\pm$ 0.09	8.8 $\pm$ 1.2
1299	†	-	2.2	4.22 $\pm$ 0.09	35.6 $\pm$ 1.2

* Sediment application 4: Before, EA09L15C (24 hrs) and After, EA10L15C (2 hrs)
Sediment application 5: Before, EA11L15C (24 hrs) and After, EA12L15C (2 hrs)

** Sediment application 4: Before, EB09L15C (24 hrs) and After, EB10L15C (2 hrs)
Sediment application 5: Before, EB11L15C (24 hrs) and After, EB12L15C (2 hrs)

† Additional biomass and control reference specimens.

of 15 m depth. By the time the sediment load reached the bottom, the resultant slurry had reached the salinity of the ambient seawater of 35 ppt. Suspended sediments were collected daily and the material transported back to the surface in closed plastic containers (water collection dates, times, and sediment content are listed in Appendix 3). The material was transported by boat directly to the experimental site and taken back down through the water column to the experimental chambers. The jug containing the material was shaken vigorously under water and then poured into the open experimental chambers containing the experimental corals. Because of this protocol, the experiments conducted mimic the effects of an actual barge dumping event for benthic invertebrates next to (but not directly under) a barge dump.

***In situ* Respirometry**

Animals were placed inside six plexiglass chambers sitting on top of an *in situ* bioassay respirometer (Porter, 1980; Dallmeyer *et al.*, 1982; Abdel-Salam and Porter, 1988). The experimental chambers were made of plexiglass, were 2.3 liters in volume, and were covered with a quartz top. The side of each chamber was penetrated with a port for the insertion of a Y.S.I. polarographic oxygen electrode especially designed for connection to Envirocon five-pin underwater cables. All penetrations of the chambers were O-ring sealed. Guide pins on the top of the instrument package held the chambers directly over pedestals on which the experimental corals sat, and under which a 3" stir bar spun at 120 R.P.M. Each oxygen electrode cable was connected to an Envirocon panel penetrator on the side of the instrument package. Data on the oxygen concentration inside the experimental chamber were recorded on a 12-channel OmniData Data Logger powered by three internal 12-volt rechargeable gel-cell batteries. These batteries also powered an external Pelagic Electronics deep sea pump which turned on for two minutes

22

duration every three hours. This pumping action completely flushed all of the water contained in the experimental chambers once every three hours and replaced it with external ambient seawater. Oxygen tensions inside the chambers never rose or fell by more than 30% of the ambient concentrations.

Ambient photosynthetically active radiation (P.A.R.) was measured by an external 4π spherical quantum sensor attached by an Envirocon two-pin cable to a LiCor 185A quantum meter. Maximum irradiance at 15 m at this locality did not exceed $400\ \mu\text{E m}^{-2}\text{ s}^{-1}$, and so the meter was set on the 0-1000 $\mu\text{E m}^{-2}\text{ s}^{-1}$ range.

Biomass Measurements

Coral surface area was measured by wrapping aluminum foil over all living surfaces of each *Oculina* colony and then spreading the foil out on a digitizing tablet for area calculation (Marsh, 1970). This biological surface area was then used as the normalizing biomass unit in all oxygen flux calculations. Displacement volume was measured by submersion of the coral specimens in a beaker of water, and collecting the volume of the liquid displaced. This value was subtracted from the known volume of each experimental chamber in order to convert the oxygen concentrations measured in the chamber into the weight of oxygen consumed or evolved by each specimen. Coral tissue (Table 1) was removed from the skeleton using a dental Waterpic (Johannes and Wiebe, 1970) with cold seawater. The resultant slurry was centrifuged to separate the symbiotic zooxanthellae from the coral tissue. The zooxanthellae sedimented in the centrifuge pellet were counted using a standard blood hemocytometer, and their chlorophyll pigment content determined using standard spectrophotometric equations (Jeffrey and Humphrey, 1975). Protein content was also determined spectrophotometrically using the Lowry technique

23

(Lowry *et al.*, 1951).

Tissue from colonies of *Lophogorgia* (Table 2) was scraped off of the gorgonian skeleton, and the ash free dry weight of this material determined at 580 °C. Lowry protein content of this material was also made. Surface tissue only was included in this determination since the normalizing biomass unit was meant to include only respiring biomass, and not skeletal material.

Calculation of Oxygen Flux Data

Readings of oxygen concentrations ($\text{mg/l} \pm 0.01$) inside the six chambers and ambient irradiance ($\mu\text{E m}^{-2}\text{s}^{-1} \pm 1$) on the external *in situ* light sensor outside the chambers were taken once every four minutes and stored digitally on an EPROM data pack inside the data logger (see Appendix 1 for the original data). These data were read by a Zenith 286 microcomputer and converted to oxygen mass by subtracting the displacement volume of the experimental coral from the experimental chamber volume and multiplying the resultant volume by the recorded oxygen concentration. Consecutive four minute readings were subtracted from one another. To this ΔO_2 value was added the probe consumption rate (determined in empty chambers), and the resulting value divided by the coral biomass value to give the oxygen flux rate ($\mu\text{gO}_2 \text{ cm}^{-2} \text{ h}^{-1}$) normalized per hour under control (no sediment) and experimental (sediment applied) conditions.

One of the six chambers did not have a coral specimen in it but also received the same amount of sediment as the experimental coral chambers. This blank control was necessary in order to determine the sediment oxygen demand (S.O.D.) during the two hour experimental period, as well as the probe consumption rate (C.O.D.) for the remaining twenty-two hours.

Interpretive models were used to analyze the measured oxygen fluxes (McCloskey *et al.*, 1980; Porter, 1980; and Muscatine *et al.*, 1981). The relationship between photosynthesis and

24

light intensity was modeled (see Appendix 2) using the hyperbolic tangent function (Jasby and Platt, 1976). Photosynthetic and respiratory quotients were estimated as 1.1 and 0.8, respectively (Fitt and Pardy, 1981; Pardy and White, 1977). Not all four days of an experimental run had the same cloud conditions, and therefore the integrated light available to the corals varied from day to day. In order to be able to compare the overall photosynthetic response between corals whose photosynthetic responses had originally been measured on different days, integrated P/R ratios were calculated using idealized "cloudless day" light conditions.

Statistical Analysis of the Data

Oxygen and light flux data are recorded every 4 minutes giving 30 repeated measures in a two hour period for each of five ($N = 5$) replicates of each treatment. Means and variances of the "with" and "without" sediment conditions for each treatment are calculated, and the variances tested for equality (Sokal and Rohlf, 1981). Difference between means are calculated directly using a Student's T test if the variances are equal, and indirectly using Satterthwaite's test if the variances are unequal.

***In situ* Experimental Design**

The experimental design for both the hard coral (*Oculina*) and soft coral (*Lophogorgia*) experiments was similar. On the first day, animals were placed in the experimental chambers and their pre-treatment oxygen flux metabolism (both respiration and photosynthesis) was monitored for 22 hours (Experimental Treatment Without Sediment; $N = 5$ *Oculina*; $N = 4$ *Lophogorgia*). On the morning of the second day, dredge-spoil was dumped into chambers (Sediment Application 1; Tables 3 & 4) containing animals designated to receive dredge-spoil

25

Table 3. Experimental chronology for *Oculina arbuscula*, Charleston Harbor, 15m, and the data analysis file names.

	Sediment Application 1	Sediment Application 2	Sediment Application 3	Length
Respirometer A				
Before	EA02O15C.ANA	EA04O15C.ANA	EA06O15C.ANA	24 hrs
After	EA03O15C.ANA	EA05O15C.ANA	EA07O15C.ANA	2 hrs
Respirometer B				
Before	EB02O15C.ANA	EB04O15C.ANA	EB07O15C.ANA	24 hrs
After	EB03O15C.ANA	EB05O15C.ANA	EB07O15C.ANA	2 hrs

Table 4. Experimental treatments of *Oculina arbuscula*, Charleston Harbor, 15m.

Machine #	Chamber #	Coral #	Treatment Type	Treatment Frequency
A	1A	1255	w + w/o sediment	Dump 1, Day 1 Dump 2, Day 2 Dump 3, Day 3
	2A	1256	w + w/o sediment	Dump 1, Day 1 Dump 2, Day 2 Dump 3, Day 3
	3A	1257	w + w/o sediment	Dump 1, Day 1 Dump 2, Day 2 Dump 3, Day 3
B	1B	1258	w + w/o sediment	Dump 1, Day 1 Dump 2, Day 2 Dump 3, Day 3
	2B	1259	w + w/o sediment	Dump 1, Day 1 Dump 2, Day 2 Dump 3, Day 3
	3B	Empty	w + w/o sediment	Dump 1, Day 1 Dump 2, Day 2 Dump 3, Day 3
B	5B	1265	Long-term control	Day1, Day 2, Day 3

Table 5. Experimental treatments for *Oculina arbuscula*, Charleston Harbor, 15m, including the background values of total suspended solids and the weight of sediments applied during each experiment.

Date	Data File Name	Control (Background Values)			Experimental Applications		
		Total Suspen. Solids (mg/l)	Sett. Solids (ml/l)	Turb. (NTU)	Total Suspen. Solids (mg/l)	Sett. Solids (ml/l)	Turb. (NTU)
07/10	EA02O15C EB02O15C	5.2	0.1 U	0.7			
07/10	EA03O15C EB03O15C				8.0	0.1 U	2.2
07/11	EA04O15C EB04O15C	4 U	0.1 U	0.7			
07/11	EA05O15C EB05O15C				250	4.0	66
07/12	EA06O15C EB06O15C	4 U	0.1 U	0.7			
07/12	EA07O15C EB07O15C				150	1.4	30

(Experimental Treatment With Sediment), but not into chambers containing the long-term control group (Long-term Control). The stir-bars located inside the chambers kept the sediments fully in suspension in the chambers. Oxygen flux metabolism was then monitored for two hours with sediment in the experimental chambers. Therefore, each animal served as its own pre-treatment control, and oxygen flux measurements were made continuously before (control), during (with), and after (without) application of sediment. On the morning of the third and fourth days, this experimental protocol was repeated with different concentrations of sediment (Sediment Applications 2 & 3; Tables 3 - 5). In each case a pre-treatment "before" incubation (without sediment) of twenty-two hours was followed by an experimental treatment "after" incubation (with sediment) of two hours. In this experimental design, the same animals received sediment of differing weights, but on successive days. *Oculina* experiments lasted for five days (Tables 3 - 5); *Lophogorgia* experiments lasted for four days (Tables 6 - 8).

For *Oculina*, there were three experimental sediment treatments (Tables 3 - 5): (1) sediment weight = 8 mg/l (day 1), (2) sediment weight = 250 mg/l (day 2), and (3) sediment weight = 150 mg/l (day 3), and two control conditions: (1) blank chambers (with and without sediment for each experimental condition) to assess both probe consumption (C.O.D.) and the sediment oxygen demand (S.O.D.) of the introduced dredge spoil, and (2) coral chambers with the same coral in the chamber for three successive days to assess the effects of long-term confinement on coral oxygen flux metabolism (Control B.O.D.).

For *Lophogorgia*, there were two experimental treatments (Tables 6 - 8): (1) sediment weight = 210 mg/l (day 1) and (2) sediment weight = 100 mg/l (day 2), and one control condition: blank chambers (with and without sediment for each experimental condition) to assess

28

Table 6. Experimental chronology, *Lophogorgia hebes*, Charleston Harbor, SC, 15 m:
Data analysis file names

	Sediment Application 1	Sediment Application 2	Length
Respirometer A			
Before	EA09L15C.ANA	EA11L15C.ANA	24 hrs
After	EA10L15C.ANA	EA12L15C.ANA	2 hrs
Respirometer B			
Before	EB09L15C.ANA	EB11L15C.ANA	24 hrs
After	EB10L15C.ANA	EB12L15C.ANA	2 hrs

Table 7. Experimental treatments, *Lophogorgia hebes*, Charleston Harbor, SC, 15 m.

Machine #	Chamber #	Coral #	Treatment Type	Treatment Frequency
A	1A	1262	w + w/o sediment	Dump 4, Day 4 Dump 5, Day 5
	2A	1263	w + w/o sediment	Dump 4, Day 4 Dump 5, Day 5
	3A	1264	w + w/o sediment	Dump 4, Day 4 Dump 5, Day 5
B	1B	Empty	w + w/o sediment	Dump 4, Day 4 Dump 5, Day 5
	3B	1261	w + w/o sediment	Dump 4, Day 4 Dump 5, Day 5

Table 8. Experimental treatments for *Lophogorgia hebes*, Charleston Harbor, SC, 15 m, including the background values of total suspended solids and the weight of sediments applied during each experiment.

Date	File	Control (Background Values)			Experimental Applications		
		Total Suspen. Solids (mg/l)	Sett. Solids (ml/l)	Turb. (NTU)	Total Suspen. Solids (mg/l)	Sett. Solids (ml/l)	Turb. (NTU.)
07/14	EA09L15C EB09L15C	4 U	0.1 U	0.2			
07/14	EA10L15C EB10L15C				210	0.9	48
07/15	EA11L15C EB11L15C	4 U	0.1 U	0.4			
07/15	EA12L15C EB12L15C				100	1.2	15

both probe consumption (C.O.D.) and the sediment oxygen demand (S.O.D.) of the introduced dredge spoil to coral experiments (B.O.D. for control and experimental conditions).

Results

Dredge-spoil

The dredge-spoil sediment poured into the chambers did not have an oxygen demand (S.O.D.) detectable over and above the chemical oxygen demand (C.O.D.) of the polarographic oxygen electrodes (Table 9). Therefore the introduction of this sediment into the experimental chambers did not necessitate the use of a correction factor for oxygen flux measurements made in experimental chambers with sediment.

Oculina arbuscula

Confinement in the chambers did not effect coral metabolism. Oxygen flux characteristics calculated daily for the long-term control specimens held in the chambers for four days demonstrated that confinement did not change any of these characteristics significantly (Table 10). These data are plotted in Figure 4. Respiration rate remained near $-7.0 \mu\text{gO}_2\text{cm}^{-2}\text{h}^{-1}$ and net photosynthesis averaged 11 (same units) for the seventy-two hour control period. The compensation irradiance (I_c), the irradiance at which net photosynthesis equaled respiration was roughly $80 \mu\text{E m}^{-2}\text{s}^{-1}$ and the break point (I_k), at which an increase in irradiance did not produce a significant increase in production remained around $300 \mu\text{E m}^{-2}\text{s}^{-1}$. The initial slope of the P vs. I curve (α) was 0.08. These controls are critical to the interpretation of the sediment treatment experiments because they demonstrate clearly that confinement in the experimental chambers is not a factor in the modification of photosynthetic and respiratory responses.

Exposure to dredge spoil sediment had a significant and adverse effect on coral

Table 9. Sediment oxygen demand (S.O.D., $\mu\text{g O}_2$ / chamber / hr; mean $\pm$ S.E.; N = 5 for each treatment) of dredge-spoil introduced into blank control chambers without corals and either with or without sediment.

Treatment	Background Oxygen Consumption in the Chambers		Significant Difference
	Without Sediment (probe C.O.D. only)	With Sediment (probe C.O.D. & S.O.D.)	
8 mg/l	-42.3 $\pm$ 1.8	-50.4 $\pm$ 8.1	N.S.
150 mg/l	-8.1 $\pm$ 0.3	-8.1 $\pm$ 0.6	N.S.
250 mg/l	-7.2 $\pm$ 0.3	-8.1 $\pm$ 0.9	N.S.

Table 10. Photosynthetic oxygen flux characteristics of the long-term control specimens of *Oculina arbuscula*,
(mean $\pm$ S.E.; N = 2).

		EB08O15C Dy 1	EB09O15C Dy 2	EB10O15C Dy 3	
Parameter	Units	Mean $\pm$ S.E.	Mean $\pm$ S.E.	Mean $\pm$ S.E.	Sig. Diff.
r^*	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	-7.35 ± 0.24	-7.25 ± 0.24	-6.93 ± 0.24	N.S.
$P_{\text{net max}}^*$	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	9.69 ± 2.08	11.65 ± 2.22	12.31 ± 3.06	N.S.
$P_{\text{net max}}^{**}$	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	10.69 ± 2.31	10.85 ± 0.99	10.58 ± 0.94	N.S.
$P_{\text{gross max}}^*$	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	17.06 ± 2.08	18.96 ± 2.22	19.43 ± 3.06	N.S.
I_c	$\mu\text{Em}^{-2}\text{s}^{-1}$	88 ± 8	77 ± 6	87 ± 10	N.S.
I_k	$\mu\text{Em}^{-2}\text{s}^{-1}$	293 ± 62	278 ± 58	323 ± 93	N.S.
α	$\mu\text{gO}_2\text{cm}^{-2}\text{h}^{-1}\mu\text{E}^{-1}\text{m}^{-2}\text{s}^{-1}$	0.08 ± 0.01	0.09 ± 0.01	0.08 ± 0.01	N.S.

* Computed from the P vs I hyperbolic tangent function

** Calculated from the raw data

Table 11. Photosynthetic oxygen flux characteristics for experimental specimens of *Oculina arbuscula*,
(mean $\pm$ S.E.; N = 5).

		EA02O15C Day 1 (The day before any sediment application)	EA04O15C Day 2 (The day after the 8 mg/l sediment application)	EA06O15C Day 3 (The day after the 250 mg/l sediment application)	
Parameter	Units	Mean $\pm$ S.E.	Mean $\pm$ S.E.	Mean $\pm$ S.E.	Sig. Diff. †
r^*	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	-7.33 ± 0.11	-6.83 ± 0.11	-6.05 ± 0.10	$1 = 2 > 3$
$P_{\text{net max}}^*$	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	8.38 ± 1.90	8.30 ± 3.95	6.26 ± 2.86	$1 = 2 > 3$
$P_{\text{net max}}^{**}$	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	8.54 ± 0.64	8.40 ± 0.39	6.83 ± 0.79	$1 = 2 > 3$
$P_{\text{gross max}}^*$	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	15.79 ± 1.90	15.18 ± 3.95	12.41 ± 2.86	N.S.
I_c	$\mu\text{Em}^{-2}\text{s}^{-1}$	81 ± 9	143 ± 13	136 ± 13	$1 < 2 = 3$
I_k	$\mu\text{Em}^{-2}\text{s}^{-1}$	255 ± 53	459 ± 202	410 ± 156	N.S.
α	$\mu\text{gO}_2\text{cm}^{-2}\text{h}^{-1}\mu\text{E}^{-1}\text{m}^{-2}\text{s}^{-1}$	0.09 ± 0.01	0.05 ± 0.00	0.05 ± 0.00	$1 > 2 = 3$

* Computed from the P vs I Hyperbolic Tangent Function

** Calculated from the raw data

34 † Significance level: $P > 0.05$

Figure 4. Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for 24-hour runs of the long-term control specimens of *Oculina arbuscula* colonies without any sediment application ($\mu\text{g O}_2 \text{ cm}^{-2} \text{ h}^{-1} \pm \text{S.E.}$). Fig. 5a (top) for Day 1, Fig. 5b (middle) for Day 2, and Fig. 5c (bottom) for Day 3. Specimens remained in the experimental chambers for the full three-day period.

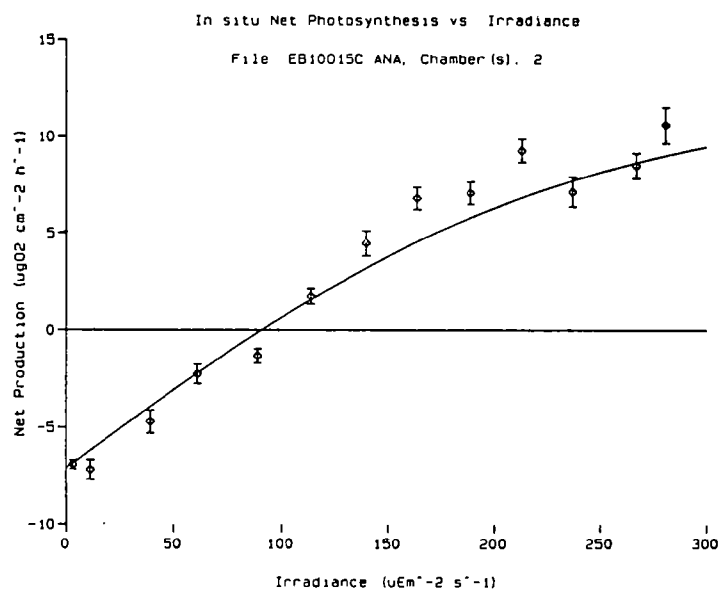
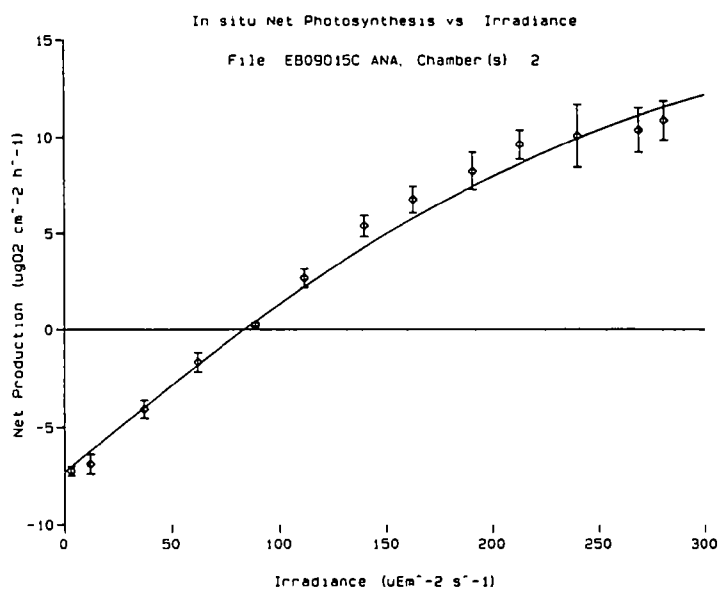
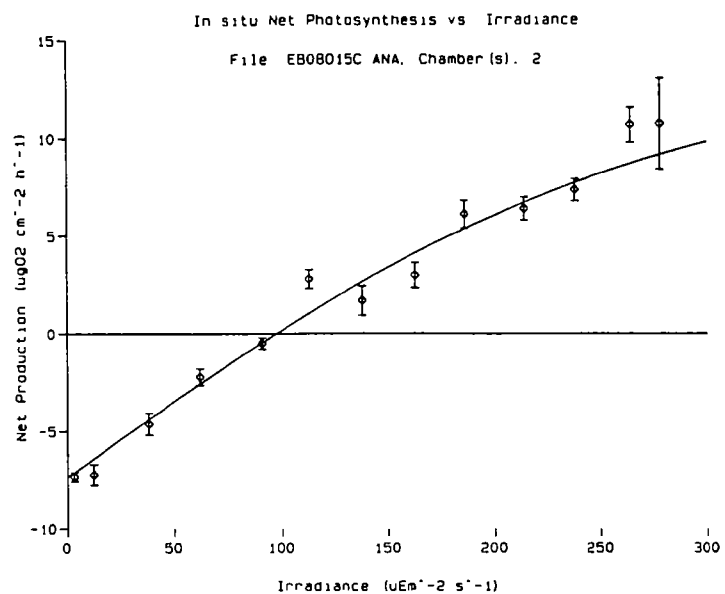
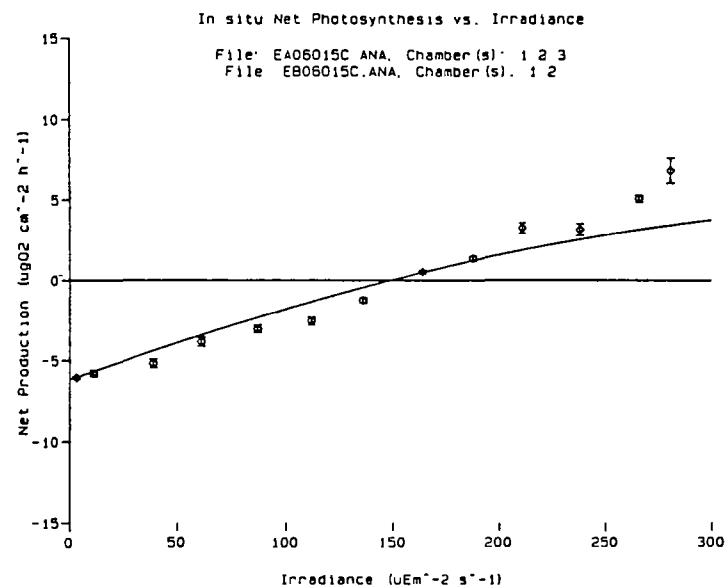
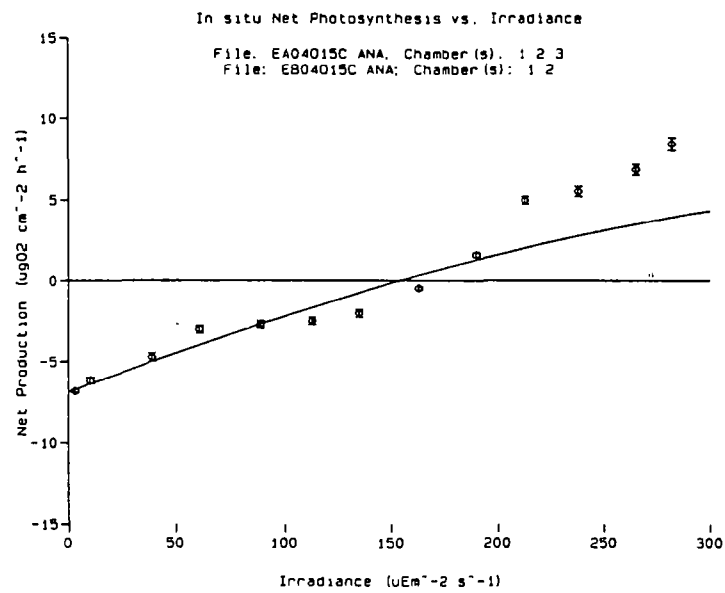
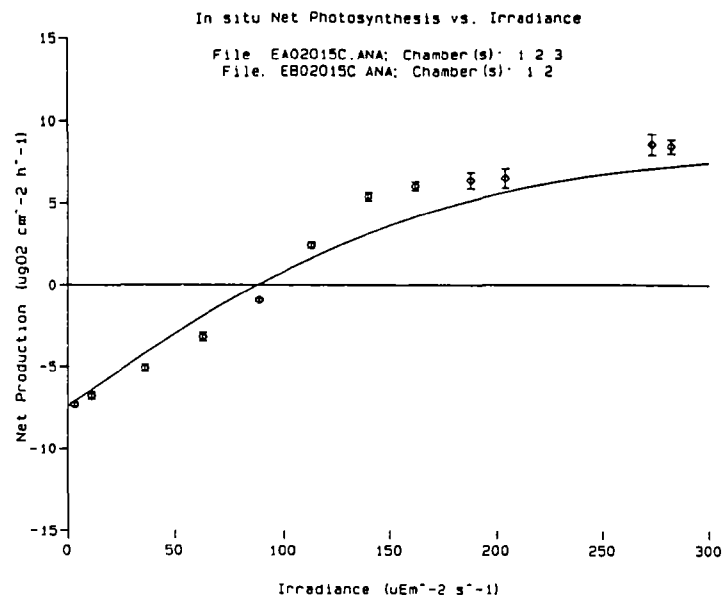


Figure 5. Pooled production vs. light intensity curves for *Oculina arbuscula* colonies prior to the application of sediment ($\mu\text{g O}_2 \text{ cm}^{-2} \text{ h}^{-1} \pm \text{S.E.}$; $N = 5$). Fig. 6a (top) for colonies on Day 1 (Files EA02O15C, Experimental Chambers 1, 2, and 3, & EB02O15C, Experimental Chambers 1 and 2); Fig. 6b (middle) for colonies on Day 2 (Files EA04O15C, Experimental Chambers 1, 2, and 3, & EB04O15C, Experimental Chambers 1 and 2); and Fig. 6c (bottom) for colonies on Day 3 (Files EA06O15C, Experimental Chambers 1, 2, and 3, & EB06O15C, Experimental Chambers 1 and 2). See Tables 1 & 2 for the chronology and treatment history for each day; see Appendix 1 for the numerical data, and Appendix 2 for additional graphic output.



metabolism. Every metabolic characteristic measured deteriorated during the three day experiment, despite the fact the sediment exposure was for only two hours on each day. Figure 5 plots the changes through time of the experimental corals from the pre-treatment condition (Figure 5a, top) to the condition on the last day (Figure 5c, bottom). Table 11 demonstrates that respiration rates fell from -7.3 to -6.00 and net photosynthesis from 8.5 to 6.8 $\mu\text{gO}_2\text{cm}^{-2}\text{h}^{-1}$ during the experimental period. Likewise, compensation irradiance (I_c) rose from 80 to 140 $\mu\text{E m}^{-2}\text{s}^{-1}$ and α fell from 0.09 to 0.05. These changes suggest an increasing deterioration in the organism's ability to utilize light for production. Even the significant reduction in respiration rate during this period is not able to prevent a significant reduction in net photosynthesis (Table 11).

Exposure to dredge spoil sediment had an immediate adverse effect on coral net photosynthesis. Table 12 compares net photosynthesis with and without sediment and demonstrates that even under similar irradiance levels, corals exposed to sediment exhibit a dramatic reduction in net production. The response is not dependent on the order in which the sediments are applied, but rather is dependent on the concentration of sediment applied. Figure 6 reveals that as sediment load increases from 8 mg/l to 150 mg/l, the effect becomes significant (Table 12), and remains so when a sediment load of 250 mg/l is applied. This response is summarized in Figure 7 which demonstrates that as sediment load increases, the coral's photosynthesis drops precipitously and its respiration declines less dramatically, but never the less significantly (Table 11).

The presence of the heaviest sediment loads in the water column is devastating to coral's ability to accumulate carbon compounds from photosynthesis. For equivalent one hour periods,

Table 12. Net oxygen production values With and Without sediment for (N = 5) colonies of *Oculina arbuscula*.

		EA02	EA03	EA04	EA05	EA06	EA07
Coral	Units	W/O Control	W 8 mg/l	W/O Control	W 250 mg/l	W/O Control	W 150 mg/l
1	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	4.59 ± 0.27	3.30 ± 0.15	1.68 ± 0.75	-5.76 ± 0.66	3.60 ± 0.09	-1.62 ± 0.12
2	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	8.88 ± 0.27	9.54 ± 1.02	4.92 ± 1.14	0.93 ± 2.97	6.15 ± 0.72	2.64 ± 1.08
3	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	10.50 ± 1.17	8.58 ± 0.15	5.97 ± 1.32	2.52 ± 0.75	6.75 ± 0.39	3.81 ± 0.15
4	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	7.50 ± 1.08	6.69 ± 0.54	4.59 ± 1.11	2.37 ± 1.05	6.21 ± 0.48	3.78 ± 0.54
5	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	6.06 ± 0.66	6.00 ± 0.21	5.70 ± 0.48	0.24 ± 3.01	5.79 ± 0.30	4.26 ± 0.30
Mean	$\mu\text{gO}_2\text{cm}^{-2}\text{hr}^{-1}$	7.51	6.82	4.57	0.06	5.70	2.57
Light A	$\mu\text{Em}^{-2}\text{s}^{-1}$	207.04 ± 12.96	210.00 ± 12.56	219.5 ± 4.92	220.03 ± 2.78	264.40 ± 5.56	253.97 ± 3.38
Light B	$\mu\text{Em}^{-2}\text{s}^{-1}$	211.13 ± 12.58	211.04 ± 12.57	244.83 ± 5.05	217.79 ± 2.92	271.00 ± 2.21	268.13 ± 1.39
Empty Chamber 3		-1.41 ± 0.06	-1.68 ± 0.27	-0.24 ± 0.00	-0.27 ± 0.03	-0.27 ± 0.00	-0.27 ± 0.03

Figure 6. Net oxygen production (mean $\mu\text{g O}_2 \text{ cm}^{-2} \text{ h}^{-1} \pm \text{S.E.}$; $N = 5$) during incubations under ambient ($< 4 \text{ mg/l}$) and three additional experimental sediment loads for specimens of *Oculina arbuscula*, Charleston Harbor, SC, 15 m depth.

Net Oxygen Production During Incubations Under
Different Sediment Loads for *Oculina arbuscula*
Charleston Harbor, SC

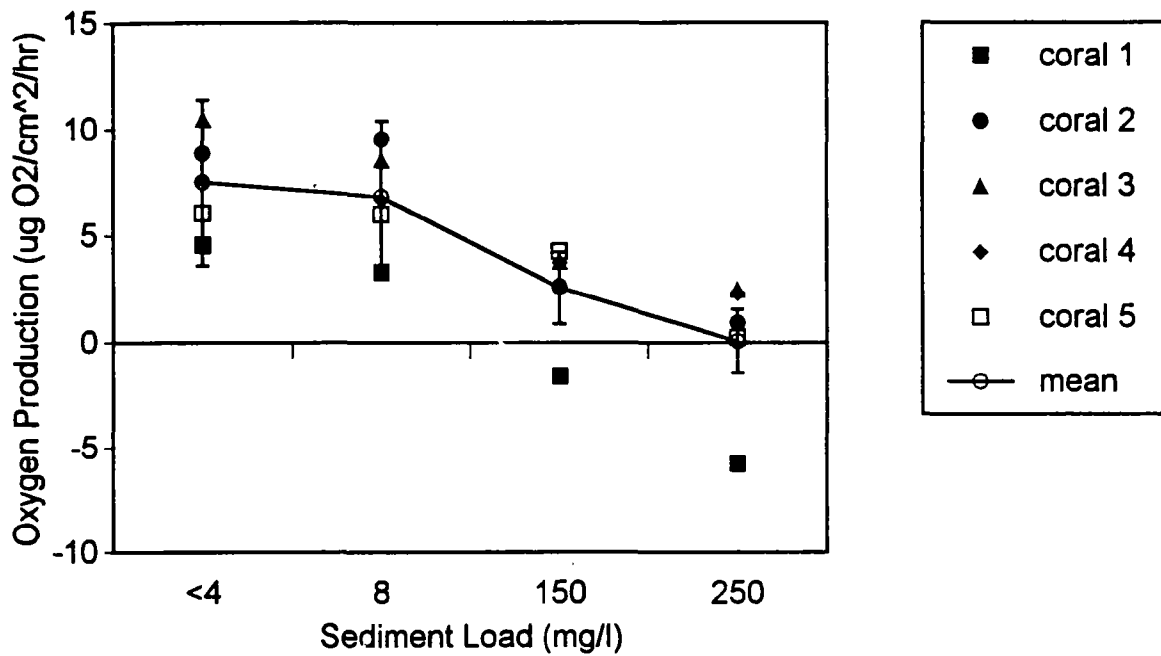
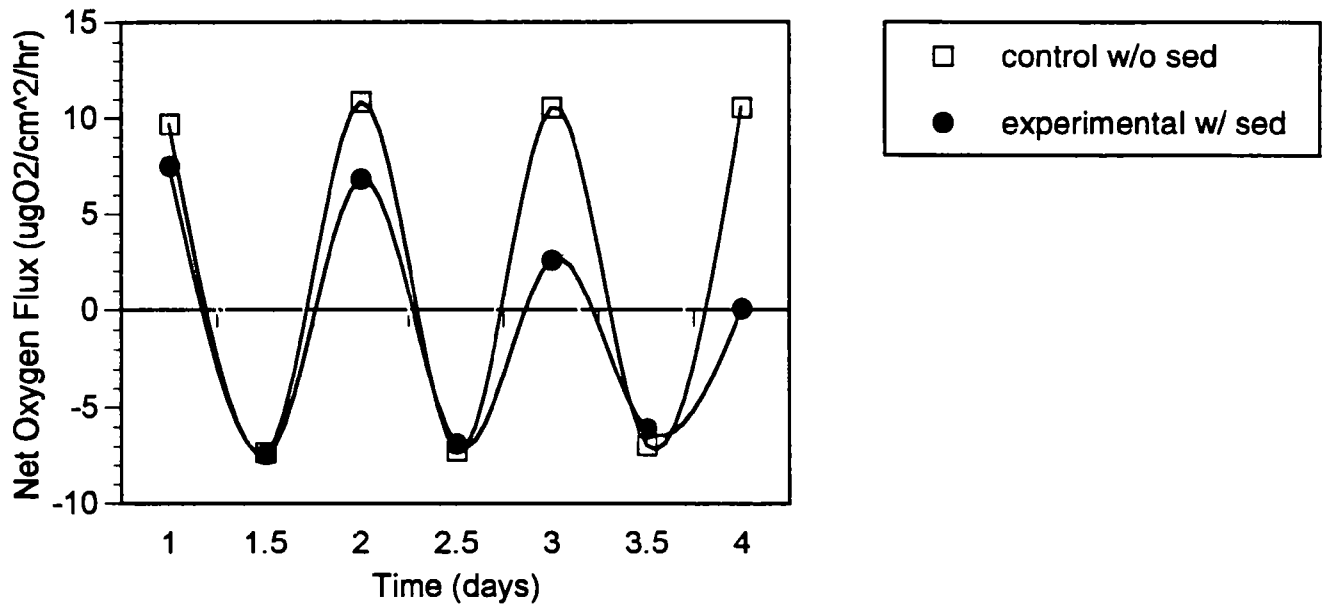


Figure 7. Net oxygen flux ($\mu\text{g O}_2 \text{ cm}^{-2} \text{ h}^{-1}$) for control and experimental colonies of *Oculina arbuscula*, Charleston Harbor, SC, 15 m depth with and without sedimentation application. Oxygen fluxes are computed for control corals without any sediment (open squares) and for experimental corals during sediment application (solid dots). The data are arranged from lowest to highest concentration of sediment (> 4.0 mg/l, 8 mg/l, 150 mg/l, and 250 mg/l).

Net Oxygen Flux of Experimental Colonies of
Oculina arbuscula With And Without
Sediment Application
Charleston Harbor, SC



the effect of sediment on integrated net carbon production can be seen in Figure 8. These values are especially revealing (Table 13), because they demonstrated that the integrated carbon total during these periods of bright sunlight, but with the heaviest sediment load, is actually negative ($-0.22 \mu\text{g C cm}^{-2} \text{ h}^{-1}$; Table 13). This has a profound effect on the integrated P/R ratio (Table 14) which drops from 0.64 without sediment to 0.23 with sediment. This means that whereas the coral was previously able to get 64% of its carbon from photosynthesis, under high sediment loads, this input drops to 23% of its minimum daily requirement.

Lophogorgia hebes

All colonies of *Lophogorgia* responded to exposure dredge-spoil with a significant reduction in their respiration rate (Table 15). As with colonies of *Oculina*, specimens showed a marked deterioration in metabolic rate as the experiments proceeded (Table 15).

Discussion

Zooxanthellate corals are mostly tropical, and the presence of abundant populations of *Oculina arbuscula* in this locality is of considerable interest in and of itself (Macintyre *et al.*, 1975). This species was originally described by Verrill from South Carolina (Verrill, 1863) and its type locality is Charleston Harbor. The holotype specimen of *O. arbuscula* still exists in the Museum of Comparative Zoology at Harvard University. *O. arbuscula* is closely related to *O. diffusa* (Lamarck, 1816), a species with a much wider distribution throughout Florida and the Caribbean (Squires, 1958). It is not known if the Charleston Harbor colonies of *O. arbuscula* represent a distinct species, as Verrill suggests, or are merely the northern-most population of *O. diffusa*. The species-level taxonomy of this coral is important, however, for two reasons. First, if it is a distinct species, based on its highly restricted geographic distribution, it might

Table 13. Net and gross carbon production of *Oculina arbuscula* With and Without Sediment ($\mu\text{g C}/\text{cm}^2/\text{hr}$).

	8 mg / l				150 mg / l				250 mg / l			
	Control		Experimental		Control		Experimental		Control		Experimental	
Coral #	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross
1	1.98	3.51	1.41	2.94	1.12	2.82	-0.80	0.90	1.73	3.11	-2.91	-1.55
2	3.57	7.90	2.96	7.29	1.86	5.41	0.16	3.71	3.44	7.41	-0.14	3.83
3	4.54	6.96	3.04	5.46	2.31	4.63	1.48	3.81	4.36	6.56	0.52	2.74
4	3.45	7.42	2.19	6.15	1.91	4.30	1.70	4.09	2.96	6.73	0.94	4.71
5	2.23	3.90	2.00	3.66	2.11	5.66	1.67	5.22	2.88	4.44	0.45	2.01
Mean	3.15	5.94	2.32	5.10	1.86	4.56	0.83	3.55	3.07	5.65	-0.22	2.35
S.D.	1.05	2.07	0.69	1.79	0.45	1.12	1.12	1.60	0.96	1.80	1.55	2.41
C.I.			N.S	N.S.			p > 0.05	N.S.			p > 0.05	p > 0.05

Figure 8. Integrated total net carbon production (mean $\mu\text{g C cm}^{-2} \text{ h}^{-1} \pm \text{S.E.}$; $N = 5$) during incubations with and without sediment under different sediment loads for specimens of *Oculina arbuscula*, Charleston Harbor, SC, 15 m depth.

Integrated Total Net Carbon Production
During Incubations Under Different Sediment Loads
for *Oculina arbuscula*
Charleston Harbor, SC

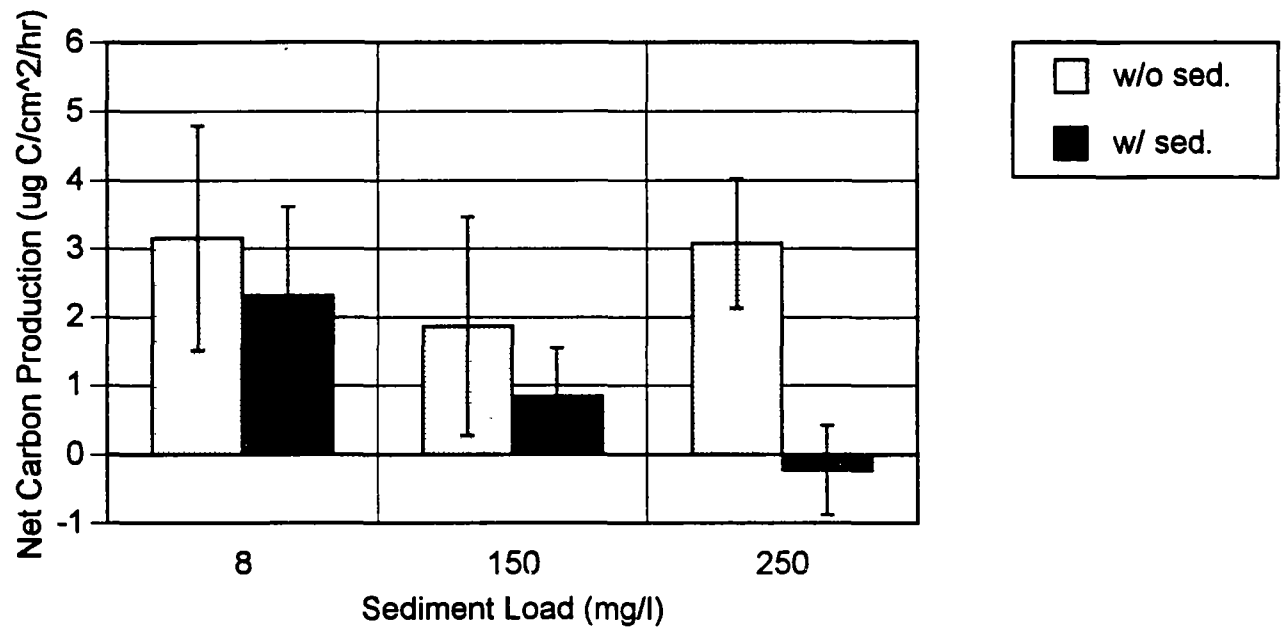


Table 14. Integrated P/R ratios of colonies (N = 5; mean $\pm$ S.E.) of *Oculina arbuscula* at 15 m depth Before, After, and During sediment application.

Before Control	After 1 Days	After 2 Days	During (8 mg/l)	During (150 mg/l)	During (250 mg/l)
0.64 $\pm$ 0.03	0.41 $\pm$ 0.03	0.46 $\pm$ 0.02	0.61 $\pm$ 0.04	0.43 $\pm$ 0.03	0.23 $\pm$ 0.02

Table 15. Net oxygen consumption values With and Without sediment application for (N = 4) colonies of *Lophogorgia hebes* in Charleston Harbor, SC, 15 m.

		EA09	EA10	EA11	EA12
Coral	Units	W/O Sediment (Control)	W Sediment 210 mg/l	W/O Sediment (Control)	W Sediment 100 mg/l
1	$\mu\text{g O}_2 \mu\text{g protein (10}^{-1}\text{) h}^{-1}$	-1.71 $\pm$ 0.06	-1.23 $\pm$ 0.06	-1.32 $\pm$ 0.03	-0.84 $\pm$ 0.03
2	$\mu\text{g O}_2 \mu\text{g protein (10}^{-1}\text{) h}^{-1}$	-2.43 $\pm$ 0.09	-2.1 $\pm$ 0.06	-1.62 $\pm$ 0.09	-1.38 $\pm$ 0.06
3	$\mu\text{g O}_2 \mu\text{g protein (10}^{-1}\text{) h}^{-1}$	-2.16 $\pm$ 0.09	-1.74 $\pm$ 0.06	-1.95 $\pm$ 0.06	-1.08 $\pm$ 0.06
4	$\mu\text{g O}_2 \mu\text{g protein (10}^{-1}\text{) h}^{-1}$	-2.31 $\pm$ 0.06	-1.41 $\pm$ 0.03	-1.83 $\pm$ 0.03	-1.14 $\pm$ 0.03
Mean	$\mu\text{g O}_2 \mu\text{g protein (10}^{-1}\text{) h}^{-1}$	-2.15	-1.62	-1.68	-1.11

qualify for listing as a threatened or endangered species should its home range or population size become further restricted. Second, this coral's distribution includes the Gray's Reef National Marine Sanctuary off the coast of Savannah, Georgia. Given the restricted distribution of this species and the presence of a valid holotype in the MCZ, protection of this sanctuary might be improved by the presence of this unique species.

Our data reveal intermediate levels of stress for *O. arbuscula* as measured by oxygen flux studies which are a function of the sediment load applied (Tables 11 and 12; Figures 6 and 7). Most striking is that both the long-term responsiveness and the immediate productivity of the coral are damaged by exposure to sediment concentrations above 100 mg/l. Lower net production (Table 12) may be due to either increased respiration, lower photosynthesis, or both. Oxygen measurements made during the application of sediment in other studies show an initial elevation in respiration rates for some corals (Abdel-Salam and Porter, 1988; Porter and Rogers, in prep.), but measurements made after a week of exposure to sediments show reduced respiration and reduced mucus secretion in others (Parnrong, 1985). In another study, exposure to single pulses of 200 mg cm²d⁻¹ of coarse sediment showed only reduced mucus production (Peters and Pilson, 1985), but not modified respiration rate. Since our sediment application occurred only during the day, our studies do not reveal if a temporary elevation in respiration is occurring. The respiration measurements made at night between experimental runs, however, clearly reveal that respiration rate slows down for specimens exposed to sediment, and further that this condition accelerates as exposure continues on subsequent days. The soft coral, *Lophogorgia hebes*, also reveals this same pattern of increasingly depressed respiration rates (Table 15).

Likewise, the photosynthetic capacity of corals treated with sediment goes down and stays down with repeated exposure (Table 12). Coral photosynthesis remains depressed for at least 24 hours after the sediment load has been removed and the coral has been returned to normal ambient water conditions. This latter fact is highly revealing because it demonstrates that the reduced photosynthesis measured when corals are exposed to sediment is not entirely due to the reduced irradiance that exists under higher turbidity. The photosynthesis depression has a historical component to it that is highly correlated with previous exposure to sediment loads in excess of 100 mg/l.

Zooxanthellate corals rely heavily on the productivity of their symbiotic algae. Typically, shallow water corals (living at depths of 15 m or less) receive 100% of their carbon from their associated algae (Porter, 1985; Wyman *et al.*, 1987; Muscatine *et al.*, 1989). Charleston Harbor corals are already below this photosynthetic input, with carbon contributions from the algae, even under ideal lighting conditions, reaching only 64% (Table 14). To make up for this carbon deficit, these corals must rely heavily zooplankton feeding and/or other heterotrophic sources of carbon (Porter, 1974; Lewis and Price, 1975), processes with which sediment may also interfere. Especially at the highest sediment loads, the deficit is so great that to survive it seems likely that corals must draw temporarily on internal carbon and energy reserves. The most analogous situation to this for reef corals is a condition called "coral bleaching." This condition is caused by elevated sea temperatures (Porter *et al.*, 1989) but is analogous in other respects since it is a period in which algal production is impaired, and, as a consequence, the P/R ratio of the coral drops and the coral slowly utilizes its internal energy and carbohydrate reserves. Recovery from this condition is possible if the algal-invertebrate association

reestablishes itself (Fitt *et al.*, 1993), but not before the coral has been rendered sterile for that reproductive year (Szmant and Gassman, 1990).

Taken together, these data suggest that while coral recovery from single episodes of low-level exposure is likely, recovery from repeated exposures or single episodes of high-level exposure seems less likely.

Recommendations

Based on the data at hand, we make four specific recommendations for the disposal of dredged harbor material:

- (1) Determine the geographic distribution of "livebottom" (rock) and softbottom (sedimentary) environments. Avoid dumping on the hardgrounds. Instead dump on the areas that already have shifting sediments as the predominant bottom type.

The practical problem of determining which of these two areas the barge is over is relatively easy: "livebottom" environments are rock surfaces and have many erect sessile invertebrates such as sponges, gorgonians and corals growing on them; softbottom environments have no erect sessile invertebrates and are dominated by shifting sediments.

- (2) Avoid dumping more than two days in a row in exactly the same place.

Our data show that while recovery from one episode of dumping is possible, repeated stress causes a reduction in the coral's ability to recover.

- (3) To the extent possible, avoid repeated elevations of the sediment load above 100 mg/l (15 NTU). Suspended sediment loads above this threshold have a markedly adverse effect on both the photosynthesis and respiration of the benthic invertebrates included in our study.

- (4) Benthic monitoring stations must be established and resurveyed periodically.

In the absence of long-term data on the health and viability of these livebottom environments, little light can be shed on the long-term impact of this dumping practice on the local flora and fauna.

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Appendix 1, Tables

Appendix 1A Data table for the Day 1 experiments on *Oculina arbuscula* with sediment (EA03O15C & EB03O15C) and without sediment (EA02O15C & EB02O15C), Charleston Harbor, SC, 15 m depth.

Appendix 1B Data table for the Day 2 experiments on *Oculina arbuscula* with sediment (EA05O15C & EB05O15C) and without sediment (EA04O15C & EB04O15C), Charleston Harbor, SC, 15 m depth.

Appendix 1C Data table for the Day 1 experiments on *Oculina arbuscula* with sediment (EA07O15C & EB07O15C) and without sediment (EA06O15C & EB06O15C), Charleston Harbor, SC, 15 m depth.

Appendix 1D Data table for the Day 1 experiments on *Lophogorgia hebes* with sediment (EA10LO15C & EB10L15C) and without sediment (EA09L15C & EB09L15C), Charleston Harbor, SC, 15 m depth.

Appendix 1E Data table for the Day 2 experiments on *Lophogorgia hebes* with sediment (EA12LO15C & EB12L15C) and without sediment (EA11L15C & EB11L15C), Charleston Harbor, SC, 15 m depth.

Appendix 2, Figures

Appendix 2A Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for Day 1 *Oculina arbuscula* colonies (N=5; files, EA02O15C & EB02O15C) before the application of sediment.

Appendix 2B Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for Day 2 *Oculina arbuscula* colonies (N=5; files, EA04O15C & EB04O15C) before the application of sediment.

Appendix 2C Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for Day 3 *Oculina arbuscula* colonies (N=5; files, EA06O15C & EB06O15C) before the application of sediment.

Appendix 2D Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for the long-term control *Oculina arbuscula* colonies (N=3; files, EB08O15C, EB09O15C, & EB10O15C) before the application of sediment.

Appendix 3, Sediment data tables

Appendix 3A Total suspended solids, settleable solids, and turbidity of water samples from the Charleston Harbor ODMS experimental site 07/10/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Oculina arbuscula*. The PM sample is the background ambient water sediment load.

Appendix 3B Total suspended solids, settleable solids, and turbidity of water samples from the Charleston Harbor ODMS experimental site 07/11/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Oculina arbuscula*. The PM sample is the background ambient water sediment load.

Appendix 3C Total suspended solids, settleable solids, and turbidity of water samples from the Charleston Harbor ODMS experimental site 07/12/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Oculina arbuscula*. The PM sample is the background ambient water sediment load.

Appendix 3D Total suspended solids, settleable solids, and turbidity of water samples from the Charleston Harbor ODMS experimental site 07/14/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Lophogorgia hebes*. The PM sample is the background ambient water sediment load.

Appendix 3E Total suspended solids, settleable solids, and turbidity of water samples from the Charleston Harbor ODMS experimental site 07/10/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Lophogorgia hebes*. The PM sample is the background ambient water sediment load.

Appendix 1A Data table for the Day 1 experiments on *Oculina arbuscula* with sediment (EA03O15C & EB03O15C) and without sediment (EA02O15C & EB02O15C), Charleston Harbor, SC, 15 m depth.

EA02015C.ANA

EA02 Oarb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Light	Pump
07/09 14:00	0.0000	0.0000	0.0000	278	0.00
07/09 14:04	0.0000	0.0000	0.0000	275	0.00
07/09 14:08	0.0000	0.0000	0.0000	279	0.00
07/09 14:12	0.0000	0.0000	0.0000	278	0.00
07/09 14:16	0.0000	0.0000	0.0000	288	0.00
07/09 14:20	1.7424	3.1498	4.2398	286	0.00
07/09 14:24	1.7201	3.6846	4.4394	278	0.00
07/09 14:28	1.6532	3.2568	4.3729	275	0.00
07/09 14:32	1.8317	3.3994	4.0845	283	0.00
07/09 14:36	1.6532	3.3281	3.9292	286	0.00
07/09 14:40	1.7870	3.3637	3.9070	287	0.00
07/09 14:44	1.8316	2.6506	3.7518	276	0.00
07/09 14:48	1.7870	3.0072	3.5965	281	0.00
07/09 14:52	1.8539	3.2924	3.9958	279	0.00
07/09 14:56	1.8540	3.0072	3.7518	280	0.00
07/09 15:00	1.7201	3.0428	3.6852	272	0.00
07/09 15:04	1.7201	3.0072	3.8627	272	0.00
07/09 15:08	1.7424	3.2211	3.8849	272	0.00
07/09 15:36	2.2777	3.4220	4.0623	159	0.00
07/09 15:40	2.3223	3.6489	3.9736	154	0.00
07/09 15:44	2.0547	3.2211	3.7518	152	0.00
07/09 15:48	1.9209	3.2924	3.7296	156	0.00
07/09 15:52	1.6978	3.0428	3.4634	147	0.00
07/09 15:56	1.5417	2.6863	3.2415	147	0.00
07/09 16:00	1.2518	2.7933	3.0197	146	0.00
07/09 16:04	1.2518	2.8289	3.0863	139	0.00
07/09 16:08	1.0511	2.8289	2.7535	142	0.00
07/09 16:12	0.8058	2.6506	2.6870	146	0.00
07/09 16:16	0.7166	1.9732	2.7092	139	0.00
07/09 16:20	0.8281	2.2585	2.5982	138	0.00
07/09 16:24	0.6943	2.6150	2.5317	134	0.00
07/09 16:28	0.7612	1.9376	2.3320	135	0.00
07/09 16:32	0.8727	2.2941	2.5982	136	0.00
07/09 16:36	0.8281	2.5080	2.1324	131	0.00
07/09 16:40	0.6274	2.2941	2.1324	129	0.00
07/09 16:44	0.5828	1.7237	1.6444	116	0.00
07/09 16:48	0.3374	1.5454	1.4669	118	0.00
07/09 16:52	0.4266	1.2958	1.1342	123	0.00
07/09 16:56	0.2036	1.4384	1.4669	118	0.00
07/09 17:00	0.0698	1.0819	1.1563	109	0.00
07/09 17:04	-0.2201	1.2602	1.3782	107	0.00
07/09 17:08	-0.0640	1.2245	1.3338	109	0.00
07/09 17:12	-0.2647	0.9393	1.0232	104	0.00
07/09 17:16	-0.3539	0.6184	1.0232	102	0.00
07/09 17:20	-0.2870	0.5471	0.7349	99	0.00
07/09 17:24	-0.2870	0.2975	0.8901	99	0.00
07/09 17:28	-0.5323	0.2262	0.7570	95	0.00
07/09 17:32	-0.8222	0.1193	0.8901	91	0.00
07/09 17:36	-0.5100	-0.3086	0.5352	88	0.00
07/09 17:40	-0.7107	-0.3086	0.6905	88	0.00
07/09 17:44	-0.8222	-0.5581	0.0694	90	0.00
07/09 17:48	-0.9337	-0.8790	-0.1303	90	0.00
07/09 17:52	-0.7999	-1.0929	-0.5296	89	0.00
07/09 17:56	-1.1345	-1.0573	-0.4852	89	0.00
07/09 18:00	-1.3575	-1.0216	-0.8401	84	0.00
07/09 18:04	-1.2237	-1.0216	-0.7736	83	0.00

07/09 18:08	-1.2460	-1.3069	-0.6849	79	0.00
07/09 18:36	-1.1791	-2.3408	-0.9954	74	0.00
07/09 18:40	-1.0899	-2.1625	-1.1063	51	0.00
07/09 18:44	-1.1122	-2.5547	-1.0842	48	0.00
07/09 18:48	-1.0899	-2.6973	-1.1507	45	0.00
07/09 18:52	-1.1345	-3.1965	-1.3504	42	0.00
07/09 18:56	-1.1568	-2.9113	-1.3503	40	0.00
07/09 19:00	-1.2014	-3.0895	-1.1951	38	0.00
07/09 19:04	-1.2683	-3.2321	-1.3504	35	0.00
07/09 19:08	-1.2683	-3.1608	-1.4835	33	0.00
07/09 19:12	-1.2237	-2.9826	-1.5722	30	0.00
07/09 19:16	-1.3129	-3.1965	-1.4835	28	0.00
07/09 19:20	-1.3129	-3.1965	-1.6609	27	0.00
07/09 19:24	-1.2460	-3.1252	-1.5944	24	0.00
07/09 19:28	-1.3798	-3.2321	-1.7940	21	0.00
07/09 19:32	-1.3129	-3.1252	-1.8606	20	0.00
07/09 19:36	-1.1791	-3.2321	-2.0380	19	0.00
07/09 19:40	-1.2237	-3.0895	-2.0824	17	0.00
07/09 19:44	-1.3129	-3.5530	-1.9271	15	0.00
07/09 19:48	-1.1791	-3.1252	-2.0380	13	0.00
07/09 19:52	-1.2460	-3.4817	-1.9937	12	0.00
07/09 19:56	-1.4467	-3.5174	-1.9937	10	0.00
07/09 20:00	-1.3352	-3.8026	-1.9493	8	0.00
07/09 20:04	-1.3352	-3.4817	-2.1489	6	0.00
07/09 20:08	-1.4021	-3.8739	-2.1933	5	0.00
07/09 20:12	-1.4021	-3.8382	-2.1268	5	0.00
07/09 20:16	-1.3129	-3.9096	-2.0824	4	0.00
07/09 20:20	-1.4021	-3.6956	-2.2599	3	0.00
07/09 20:24	-1.3129	-3.8739	-2.3042	2	0.00
07/09 20:28	-1.4690	-3.9809	-2.1711	0	0.00
07/09 20:32	-1.4467	-3.9452	-2.2599	0	0.00
07/09 20:36	-1.2906	-3.7313	-2.3486	1	0.00
07/09 20:40	-1.3129	-4.0522	-2.3042	0	0.00
07/09 20:44	-1.3352	-4.0165	-2.2599	0	0.00
07/09 20:48	-1.1568	-3.9096	-2.1268	0	0.00
07/09 20:52	-1.2906	-3.9452	-2.2377	0	0.00
07/09 20:56	-1.3575	-3.9095	-2.1933	0	0.00
07/09 21:00	-1.3575	-3.8382	-2.1711	0	0.00
07/09 21:04	-1.2906	-3.7669	-2.0380	0	0.00
07/09 21:08	-1.2237	-3.9809	-2.2599	0	0.00
07/09 21:36	-1.2237	-3.9809	-2.7701	0	0.00
07/09 21:40	-2.3610	-3.8856	-2.4373	0	0.00
07/09 21:44	-2.4056	-4.4443	-2.1489	0	0.00
07/09 21:48	-2.1603	-4.3730	-2.4817	0	0.00
07/09 21:52	-2.1380	-4.3730	-2.5039	0	0.00
07/09 21:56	-2.0934	-4.4087	-2.3486	0	0.00
07/09 22:00	-2.0488	-4.4087	-2.6148	0	0.00
07/09 22:04	-1.8481	-4.4443	-2.5704	0	0.00
07/09 22:08	-1.8481	-4.4443	-2.3042	0	0.00
07/09 22:12	-1.8258	-4.4087	-2.2820	0	0.00
07/09 22:16	-1.6697	-4.0878	-2.4595	0	0.00
07/09 22:20	-1.6920	-3.6600	-2.2155	0	0.00
07/09 22:24	-1.5805	-4.4087	-2.3264	0	0.00
07/09 22:28	-1.4690	-4.0878	-2.2820	0	0.00
07/09 22:32	-1.4244	-3.9095	-2.3486	0	0.00
07/09 22:36	-1.4021	-2.5191	-1.9937	0	0.00
07/09 22:40	-1.2014	0.0000	-2.0824	0	0.00
07/09 22:44	-1.3798	-3.9809	-2.0602	0	0.00
07/09 22:48	-1.3129	-4.2304	-1.9049	0	0.00
07/09 22:52	-1.2014	-4.2661	-1.9271	0	0.00

07/09 22:56	-1.1345	0.0000	-2.0602	0	0.00
07/09 23:00	-1.3352	-3.9452	-2.1933	0	0.00
07/09 23:04	-1.2460	-3.9809	-2.0824	0	0.00
07/09 23:08	-1.2014	-4.0165	-2.2377	0	0.00
07/09 23:12	-1.1568	-3.9452	-2.1711	0	0.00
07/09 23:16	-1.1791	-4.1948	-2.2155	0	0.00
07/09 23:20	-0.9560	-4.0165	-1.9493	0	0.00
07/09 23:24	-0.8445	-4.1235	-2.1046	0	0.00
07/09 23:28	-0.9337	-3.5887	-1.8162	0	0.00
07/09 23:32	-0.8668	-3.8382	-1.7718	0	0.00
07/09 23:36	-1.0229	-3.6243	-1.8384	0	0.00
07/09 23:40	-0.9784	-3.9096	-1.9937	0	0.00
07/09 23:44	-0.8445	-3.5530	-1.6609	0	0.00
07/09 23:48	-0.8222	-4.0878	-1.8606	0	0.00
07/09 23:52	-0.9560	-3.9452	-1.9715	0	0.00
07/09 23:56	-0.7107	-3.7669	-1.7940	0	0.00
07/10 00:00	-0.7107	-3.5530	-1.8384	0	0.00
07/10 00:04	-0.8891	-3.6956	-1.8162	0	0.00
07/10 00:08	-0.8222	-3.4104	-1.8384	0	0.00
07/10 00:36	0.0000	-4.2304	-2.7257	0	0.00
07/10 00:40	0.0000	0.0000	-2.8144	0	0.00
07/10 00:44	-2.2495	-4.4443	-2.7923	0	0.00
07/10 00:48	-2.1380	0.0000	-2.5261	0	0.00
07/10 00:52	-2.1157	-4.4800	-2.3708	0	0.00
07/10 00:56	-2.0265	-4.4443	-2.1933	0	0.00
07/10 01:00	-1.9150	-3.9095	-2.0158	0	0.00
07/10 01:04	-1.9150	-3.9452	-2.0824	0	0.00
07/10 01:08	-1.6697	-4.1591	-2.4595	0	0.00
07/10 01:12	-1.9150	-4.0165	-2.4151	0	0.00
07/10 01:16	-1.5805	-4.1235	-2.3042	0	0.00
07/10 01:20	-1.6028	-4.1591	-2.3042	0	0.00
07/10 01:24	-1.4913	-4.1948	-2.2599	0	0.00
07/10 01:28	-1.7589	-4.0165	-1.9493	0	0.00
07/10 01:32	-1.3575	-4.1591	-2.0602	0	0.00
07/10 01:36	-1.6251	-4.0522	-2.3486	0	0.00
07/10 01:40	-1.4913	-3.9809	-1.9937	0	0.00
07/10 01:44	-1.4021	-3.9809	-2.2155	0	0.00
07/10 01:48	-1.3129	-4.0522	-2.1268	0	0.00
07/10 01:52	-1.3129	-4.1235	-2.0602	0	0.00
07/10 01:56	-1.2906	-4.0878	-1.8384	0	0.00
07/10 02:00	-1.1345	-4.1948	-2.1268	0	0.00
07/10 02:04	-1.2014	-4.0165	-1.8606	0	0.00
07/10 02:08	-1.1345	-3.9095	-2.0824	0	0.00
07/10 02:12	-1.2237	-2.2695	-2.0602	0	0.00
07/10 02:16	-1.0676	-3.7313	-2.1268	0	0.00
07/10 02:20	-1.3129	-3.6600	-2.1711	0	0.00
07/10 02:24	-1.1345	-3.8739	-2.2155	0	0.00
07/10 02:28	-1.1345	-3.7313	-2.0602	0	0.00
07/10 02:32	-1.0007	0.0000	-1.9715	0	0.00
07/10 02:36	-0.9114	-3.4817	-1.8384	0	0.00
07/10 02:40	-0.9337	-3.6243	-1.9049	0	0.00
07/10 02:44	-0.9560	-3.5887	-1.8606	0	0.00
07/10 02:48	-0.8668	-3.5530	-1.9271	0	0.00
07/10 02:52	-0.7553	-0.7008	-1.9049	0	0.00
07/10 02:56	-1.0229	-3.9809	-2.0824	0	0.00
07/10 03:00	-0.6215	-3.7313	-1.9493	0	0.00
07/10 03:04	-0.5769	-3.8382	-1.9271	0	0.00
07/10 03:08	-0.4654	-3.6956	-1.7718	0	0.00
07/10 03:36	-2.3610	-4.0878	-2.4151	0	0.00
07/10 03:40	-2.1826	-3.8026	-2.4817	0	0.00

07/10 03:44	-2.1826	-4.3374	-2.6813	0	0.00
07/10 03:48	-2.1157	-4.1235	-2.4817	0	0.00
07/10 03:52	-2.0934	-4.1948	-2.4595	0	0.00
07/10 03:56	-1.8927	-4.1591	-2.4151	0	0.00
07/10 04:00	-1.7589	-4.3017	-2.3042	0	0.00
07/10 04:04	-1.6028	-3.8026	-2.2820	0	0.00
07/10 04:08	-1.6251	-3.9809	-2.2599	0	0.00
07/10 04:12	-1.4690	-3.7313	-2.2599	0	0.00
07/10 04:16	-1.5582	-3.9452	-2.2155	0	0.00
07/10 04:20	-1.5136	-3.7313	-2.3486	0	0.00
07/10 04:24	-1.5582	-3.8739	-2.3708	0	0.00
07/10 04:28	-1.2683	-3.6956	-2.3264	0	0.00
07/10 04:32	-1.5582	-4.0878	-2.0824	0	0.00
07/10 04:36	-1.3352	-3.7313	-2.2377	0	0.00
07/10 04:40	-1.2014	-3.9809	-2.1046	0	0.00
07/10 04:44	-1.2460	-3.8026	-2.1268	0	0.00
07/10 04:48	-1.4021	-3.0539	-2.2155	0	0.00
07/10 04:52	-1.1345	-3.7669	-2.3486	0	0.00
07/10 04:56	-1.2014	-3.7313	-2.2377	0	0.00
07/10 05:00	-1.4244	-3.5530	-2.2155	0	0.00
07/10 05:04	-1.2014	-3.7669	-2.0158	0	0.00
07/10 05:08	-0.9114	-4.4800	-2.2155	0	0.00
07/10 05:12	-1.2237	-3.3747	-2.1046	0	0.00
07/10 05:16	-1.1345	-3.6956	-2.0602	0	0.00
07/10 05:20	-1.0453	-3.6600	-2.1489	0	0.00
07/10 05:24	-1.0229	-3.5530	-2.1489	0	0.00
07/10 05:28	-1.2014	-3.5530	-1.9271	0	0.00
07/10 05:32	-1.0453	-3.4104	-2.1268	0	0.00
07/10 05:36	-1.1122	-3.4461	-1.7718	0	0.00
07/10 05:40	-1.1345	-3.3391	-1.8606	0	0.00
07/10 05:44	1.1180	-3.1608	-2.0158	0	0.00
07/10 05:48	-1.0230	-3.2678	-1.9715	0	0.00
07/10 05:52	-0.8445	-3.4817	-1.6609	0	0.00
07/10 05:56	-0.8891	-3.1965	-2.1489	0	0.00
07/10 06:00	-0.8222	-3.2321	-1.9049	0	0.00
07/10 06:04	0.0000	0.7967	-1.7940	0	0.00
07/10 06:08	-1.0229	-3.2321	-1.8384	0	0.00
07/10 06:36	-2.3833	-3.9452	-2.4817	1	0.00
07/10 06:40	-2.2941	-3.9809	-2.4151	6	0.00
07/10 06:44	-2.1157	-3.6956	-2.2820	6	0.00
07/10 06:48	-2.0488	-3.7313	-2.3264	7	0.00
07/10 06:52	-1.8481	-3.8382	-2.0824	9	0.00
07/10 06:56	-1.5582	-3.6956	-2.0824	12	0.00
07/10 07:00	-1.6028	-3.5530	-1.9493	13	0.00
07/10 07:04	-1.3798	-3.3391	-1.9715	16	0.00
07/10 07:08	-1.3575	-3.4817	-1.8827	17	0.00
07/10 07:12	-1.3129	-3.2321	-1.9049	19	0.00
07/10 07:16	-1.3129	-3.2321	-1.8162	21	0.00
07/10 07:20	-1.0899	-3.0182	-1.7718	22	0.00
07/10 07:24	-1.0453	-2.8043	-1.6609	26	0.00
07/10 07:28	-1.0676	-2.5547	-1.6831	26	0.00
07/10 07:32	-1.0676	-2.7686	-1.8162	28	0.00
07/10 07:36	-1.1568	-2.6260	-1.5500	31	0.00
07/10 07:40	-0.9560	-2.8043	-1.4391	33	0.00
07/10 07:44	-1.0007	-2.8043	-1.4391	36	0.00
07/10 07:48	-0.7553	-2.5904	-1.3282	38	0.00
07/10 07:52	-0.6661	-2.5904	-1.0176	41	0.00
07/10 07:56	-0.5769	-2.4834	-0.9289	46	0.00
07/10 08:00	-0.7330	-2.1982	-1.0842	48	0.00
07/10 08:04	-0.5100	-2.1625	-0.8401	48	0.00

07/10 08:08	-0.6215	-2.1625	-0.9511	52	0.00
07/10 08:12	-0.5769	-1.8417	-0.8845	55	0.00
07/10 08:16	-0.4877	-1.8060	-1.0176	56	0.00
07/10 08:20	-0.3316	-1.7347	-0.7736	61	0.00
07/10 08:24	-0.3316	-1.7347	-0.9289	63	0.00
07/10 08:28	-0.3762	-1.3782	-0.6183	69	0.00
07/10 08:32	-0.1086	-1.2712	-0.6183	73	0.00
07/10 08:36	0.0252	-1.3425	-0.5074	78	0.00
07/10 08:40	0.0029	-1.1286	-0.3521	81	0.00
07/10 08:44	0.0029	-1.0573	-0.0859	87	0.00
07/10 08:48	0.2036	-1.1643	0.0250	87	0.00
07/10 08:52	0.1813	-1.0929	0.1137	91	0.00
07/10 08:56	0.2482	-0.8434	0.2246	95	0.00
07/10 09:00	0.2036	-0.8790	0.3799	98	0.00
07/10 09:04	0.5605	-0.9147	0.2690	109	0.00
07/10 09:08	0.6051	-0.5581	0.3577	111	0.00
07/10 09:36	0.5828	0.1193	0.9789	114	0.00
07/10 09:40	0.7166	0.6541	1.1342	146	0.00
07/10 09:44	0.7835	0.5471	1.2229	155	0.00
07/10 09:48	0.8727	0.9393	1.3560	163	0.00
07/10 09:52	1.0065	1.0819	1.5778	166	0.00
07/10 09:56	1.1403	1.3315	1.8662	168	0.00
07/10 10:00	1.1403	1.5454	2.0215	172	0.00
07/10 10:04	1.4302	1.9376	2.2877	174	0.00
07/10 10:08	1.3633	2.2941	2.4651	177	0.00
07/10 10:12	1.5194	2.5080	2.3542	173	0.00
07/10 10:16	1.5194	2.8289	2.4873	172	0.00
07/10 10:20	1.4525	2.4011	2.5317	144	0.00
07/10 10:24	1.1180	3.2924	2.3099	119	0.00
07/10 10:28	1.1849	2.1515	1.9993	140	0.00
07/10 10:32	1.0065	1.9376	2.0437	141	0.00
07/10 10:36	1.0288	1.9019	2.0215	147	0.00
07/10 10:40	1.1849	2.2941	2.1324	153	0.00
07/10 10:44	1.3633	1.3315	2.3542	164	0.00
07/10 10:48	1.3187	2.4011	2.5539	154	0.00
07/10 10:52	1.5640	2.6853	2.8423	155	0.00
07/10 10:56	1.5417	2.7220	2.8866	172	0.00
07/10 11:00	1.5194	2.7576	2.9310	181	0.00
07/10 11:04	1.6086	3.0735	2.7313	188	0.00
07/10 11:08	1.4971	2.6853	2.7092	198	0.00
07/10 11:12	1.2295	3.0735	2.3099	196	0.00
07/10 11:16	1.0288	2.3298	2.1102	207	0.00
07/10 11:20	1.9619	2.9732	3.9106	203	0.00
07/10 11:24	1.8504	2.7593	2.1324	204	0.00
07/10 11:28	1.8727	2.9376	2.9327	203	0.00
07/10 11:32	1.8950	2.2602	2.9771	190	0.00

EB02015C.ANA

EB02 Oarb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Light	Pump
07/09 13:53	0.0000	0.0000	0.0000	274	0.00
07/09 13:57	0.0000	0.0000	0.0000	278	0.00
07/09 14:01	0.0000	0.0000	0.0000	278	0.00
07/09 14:05	0.0000	0.0000	0.0000	274	0.00
07/09 14:09	0.0000	0.0000	0.0000	278	0.00
07/09 14:13	3.2351	1.5400	0.0096	277	0.00
07/09 14:17	3.3670	1.7904	0.0059	287	0.00
07/09 14:21	3.0401	2.2495	0.0069	285	0.00
07/09 14:25	2.4441	2.0130	0.0014	277	0.00
07/09 14:29	2.9059	2.3608	0.0041	274	0.00
07/09 14:33	3.4018	1.9157	0.0069	282	0.00
07/09 14:37	2.9441	2.1104	0.0032	285	0.00
07/09 14:41	3.1368	2.8739	0.0050	286	0.00
07/09 14:45	3.3100	2.1104	0.0032	275	0.00
07/09 14:49	2.8482	2.0409	0.0050	280	0.00
07/09 14:53	2.7905	2.1243	0.0014	278	0.00
07/09 14:57	2.7327	2.4800	0.0014	279	0.00
07/09 15:25	2.9636	2.8800	-0.3400	271	0.00
07/09 15:29	3.0791	2.8634	-0.5200	271	0.00
07/09 15:33	2.4872	2.4721	-0.9300	271	0.00
07/09 15:37	2.5019	2.2774	-0.7900	158	0.00
07/09 15:41	2.0214	2.1800	-0.2900	153	0.00
07/09 15:45	2.6173	2.1104	-0.8400	151	0.00
07/09 15:49	2.4441	2.8044	-0.8800	156	0.00
07/09 15:53	1.8669	1.8044	-0.8800	146	0.00
07/09 15:57	2.7327	1.7765	-0.5200	146	0.00
07/09 16:01	1.6360	1.7765	-0.5600	145	0.00
07/09 16:05	1.8669	1.4705	-0.2000	138	0.00
07/09 16:09	2.0978	1.7487	-0.5600	141	0.00
07/09 16:13	1.8669	1.4287	-0.5600	145	0.00
07/09 16:17	2.4628	1.4566	-0.7500	138	0.00
07/09 16:21	1.7514	1.4705	-0.9700	137	0.00
07/09 16:25	1.6360	1.4844	-0.2000	133	0.00
07/09 16:29	1.5205	1.3731	-0.9700	134	0.00
07/09 16:33	1.4051	1.5122	-0.7500	135	0.00
07/09 16:37	1.0588	1.3453	-0.8400	130	0.00
07/09 16:41	1.6360	1.2896	-0.3400	128	0.00
07/09 16:45	1.5205	1.3731	-0.9300	115	0.00
07/09 16:49	0.8279	0.8305	-0.4300	117	0.00
07/09 16:53	0.7124	1.0253	-0.4300	122	0.00
07/09 16:57	0.8856	0.9975	-0.3400	117	0.00
07/09 17:01	0.5970	0.7470	-0.9700	110	0.00
07/09 17:05	0.3661	0.5801	-0.7900	106	0.00
07/09 17:09	0.7702	0.6775	-0.3400	108	0.00
07/09 17:13	0.4815	0.5384	-0.2900	105	0.00
07/09 17:17	0.5970	0.6218	-0.1000	102	0.00
07/09 17:21	0.0775	0.4410	-0.8400	99	0.00
07/09 17:25	0.0197	0.4132	-0.9700	99	0.00
07/09 17:29	-0.2111	0.5801	-0.3800	94	0.00
07/09 17:33	-0.0957	0.3436	-0.7000	90	0.00
07/09 17:37	-0.6152	-0.1711	-0.9700	88	0.00
07/09 17:41	-1.1347	0.2740	-0.6100	88	0.00
07/09 17:45	-0.6729	-0.0181	-0.7000	89	0.00
07/09 17:49	-1.1347	0.0236	-0.9300	89	0.00
07/09 17:53	-1.4810	-0.2129	-0.5600	88	0.00
07/09 17:57	-1.5965	-0.0738	-0.4700	89	0.00

07/09 18:25	-1.9428	-0.2964	-0.2900	73	0.00
07/09 18:29	-1.1347	-0.7137	-0.5200	73	0.00
07/09 18:33	-1.8851	-0.4216	-0.8800	73	0.00
07/09 18:37	-1.0006	-0.6302	-0.0600	73	0.00
07/09 18:41	-1.2315	-0.9224	-0.7900	51	0.00
07/09 18:45	-1.5965	-0.8389	-0.4300	47	0.00
07/09 18:49	-2.5778	-0.7415	-0.3400	44	0.00
07/09 18:53	-2.1737	-1.2424	-0.9300	41	0.00
07/09 18:57	-2.4046	-0.8667	-0.6100	40	0.00
07/09 19:01	-2.5778	-0.8250	-0.7500	37	0.00
07/09 19:05	-2.2127	-1.2980	-0.4300	34	0.00
07/09 19:09	-2.1160	-0.9641	-0.6100	32	0.00
07/09 19:13	-2.7509	-0.7415	-0.6100	29	0.00
07/09 19:17	-2.2705	-1.2980	-0.1200	27	0.00
07/09 19:21	-2.6932	-1.3397	-0.1400	26	0.00
07/09 19:25	-2.5778	-1.0337	-0.5200	23	0.00
07/09 19:29	-2.6745	-1.1589	-0.4300	21	0.00
07/09 19:33	-2.8664	-1.4371	-0.4700	20	0.00
07/09 19:37	-2.9241	-1.3258	-0.3400	18	0.00
07/09 19:41	-2.3859	-1.0754	-0.2000	16	0.00
07/09 19:45	-2.3282	-1.2006	-0.7900	15	0.00
07/09 19:49	-2.1550	-1.6319	-0.1000	12	0.00
07/09 19:53	-2.2127	-1.3954	-0.1100	11	0.00
07/09 19:57	-2.8087	-0.9641	-0.8400	10	0.00
07/09 20:01	-2.4046	-1.3676	-0.1000	8	0.00
07/09 20:05	-3.8477	-1.7293	-0.5200	7	0.00
07/09 20:09	-3.5591	-1.4093	-0.9700	6	0.00
07/09 20:13	-2.8664	-1.5763	-0.6100	4	0.00
07/09 20:17	-3.0396	-2.0910	-0.1200	4	0.00
07/09 20:21	-3.9054	-1.0337	-0.7900	3	0.00
07/09 20:25	-2.8087	-0.7694	-0.1700	1	0.00
07/09 20:29	-2.5201	-0.8667	-0.2500	1	0.00
07/09 20:33	-4.4826	-1.1589	-0.1200	0	0.00
07/09 20:37	-4.2518	-1.0059	-0.5600	0	0.00
07/09 20:41	-3.4436	-1.7154	-0.1100	0	0.00
07/09 20:45	-3.5591	-2.1049	-0.1000	0	0.00
07/09 20:49	-4.1363	-1.7849	-0.2300	0	0.00
07/09 20:53	-2.5201	-1.5067	-0.1000	0	0.00
07/09 20:57	-3.0396	-1.4093	-0.1900	0	0.00
07/09 21:25	-4.1363	-1.8267	-0.6500	0	0.00
07/09 21:29	0.0000	-1.4510	-0.1400	0	0.00
07/09 21:33	-4.4826	-1.6875	-0.8400	0	0.00
07/09 21:37	-4.1363	-1.5902	-0.7900	0	0.00
07/09 21:41	-4.4249	-1.7154	-0.9300	0	0.00
07/09 21:45	-4.1363	-1.8128	-0.3800	0	0.00
07/09 21:49	-4.1940	-1.9519	-0.9700	0	0.00
07/09 21:53	-3.7323	-1.6319	-0.4700	0	0.00
07/09 21:57	-4.0209	-2.0910	-0.5600	0	0.00
07/09 22:01	-3.4436	-1.1450	-0.5600	0	0.00
07/09 22:05	-4.3672	-1.5206	-0.7500	0	0.00
07/09 22:09	-2.7509	-1.4928	-0.4300	0	0.00
07/09 22:13	-3.8477	-1.7432	-0.9300	0	0.00
07/09 22:17	-3.9054	-0.8667	-0.7900	0	0.00
07/09 22:21	-3.5014	-1.5067	-0.5200	0	0.00
07/09 22:25	-2.8087	-1.1728	-0.1100	0	0.00
07/09 22:29	-4.2518	-1.7710	-0.8800	0	0.00
07/09 22:33	-3.6168	-1.4371	-0.6100	0	0.00
07/09 22:37	-3.5014	-1.6041	-0.7900	0	0.00
07/09 22:41	-4.0786	-1.9936	-0.1000	0	0.00
07/09 22:45	-3.5591	-1.2841	-0.3800	0	0.00

07/09 22:49	-3.2127	-0.6441	-0.3400	0	0.00
07/09 22:53	-3.4436	-1.9101	-0.7000	0	0.00
07/09 22:57	-3.5014	-1.6875	-0.8400	0	0.00
07/09 23:01	-2.6355	-1.3537	-0.7500	0	0.00
07/09 23:05	-2.9241	-2.2023	-0.5600	0	0.00
07/09 23:09	-3.9631	-1.8545	-0.8400	0	0.00
07/09 23:13	-2.3469	-1.1589	-0.3800	0	0.00
07/09 23:17	-3.4436	-1.1450	0.1100	0	0.00
07/09 23:21	-4.1940	-2.0771	-0.2500	0	0.00
07/09 23:25	-3.9054	-0.0877	-0.1000	0	0.00
07/09 23:29	-2.6932	-1.1311	-0.7500	0	0.00
07/09 23:33	0.0000	-1.6597	-0.1200	0	0.00
07/09 23:37	-3.5013	-1.7710	-0.1300	0	0.00
07/09 23:41	-2.5201	-0.2407	-0.7500	0	0.00
07/09 23:45	-4.3095	-1.7293	-0.7000	0	0.00
07/09 23:49	-3.5013	-2.5223	-0.6500	0	0.00
07/09 23:53	-1.0770	-0.5885	-0.7000	0	0.00
07/09 23:57	-3.2127	-0.5607	-0.6100	0	0.00
07/10 00:25	0.0000	-1.2424	-0.4300	0	0.00
07/10 00:29	0.0000	-1.4093	-0.2900	0	0.00
07/10 00:33	-3.7900	-2.1188	-0.8400	0	0.00
07/10 00:37	-4.0786	-1.7988	-0.7500	0	0.00
07/10 00:41	-3.5014	-1.7015	-0.8400	0	0.00
07/10 00:45	-4.1940	-1.9380	-0.4700	0	0.00
07/10 00:49	-3.3282	-1.5902	-0.1100	0	0.00
07/10 00:53	-3.4436	-1.8128	-0.7900	0	0.00
07/10 00:57	-3.3859	-1.5763	-0.9700	0	0.00
07/10 01:01	-4.4249	-1.7710	-0.1300	0	0.00
07/10 01:05	-3.5013	-1.6597	-0.9300	0	0.00
07/10 01:09	-3.6168	-1.9658	-0.9300	0	0.00
07/10 01:13	0.0000	-1.4510	-0.9300	0	0.00
07/10 01:17	0.0000	-1.6458	-0.7000	0	0.00
07/10 01:21	0.0000	-1.9658	-0.3800	0	0.00
07/10 01:25	-3.9054	-1.6876	-0.1200	0	0.00
07/10 01:29	0.0000	-2.3831	-0.7500	0	0.00
07/10 01:33	-2.9818	-0.4911	-0.5200	0	0.00
07/10 01:37	-3.4436	-1.3676	-0.1200	0	0.00
07/10 01:41	-3.1550	-0.7415	-0.1100	0	0.00
07/10 01:45	-3.4436	-0.8389	0.2900	0	0.00
07/10 01:49	-2.4046	-0.4633	-0.2900	0	0.00
07/10 01:53	-3.0973	-1.4232	-0.8400	0	0.00
07/10 01:57	-2.4046	-1.3537	-0.7500	0	0.00
07/10 02:01	-3.3859	-2.2718	-0.1200	0	0.00
07/10 02:05	-2.9818	-2.0771	-0.1200	0	0.00
07/10 02:09	-4.3672	-2.2997	-0.1200	0	0.00
07/10 02:13	0.0000	-2.1606	-0.9700	0	0.00
07/10 02:17	0.0000	-1.8128	-0.1000	0	0.00
07/10 02:21	-3.0973	-0.1294	-0.8800	0	0.00
07/10 02:25	-4.3672	-1.6458	-0.1300	0	0.00
07/10 02:29	-3.0973	-1.4093	-0.1200	0	0.00
07/10 02:33	-3.7323	-1.8267	-0.1200	0	0.00
07/10 02:37	-3.2127	-1.5484	-0.4300	0	0.00
07/10 02:41	-3.3859	-1.1589	-0.1100	0	0.00
07/10 02:45	-3.9054	-0.0598	-0.7900	0	0.00
07/10 02:49	-4.3672	-0.6581	-0.8800	0	0.00
07/10 02:53	-2.2892	-0.1990	-0.1000	0	0.00
07/10 02:57	-3.4436	-0.5329	-0.1400	0	0.00
07/10 03:25	-3.7900	-1.5067	-0.1000	0	0.00
07/10 03:29	-4.4827	-1.7293	-0.7000	0	0.00
07/10 03:33	-4.3095	-1.7432	-0.7500	0	0.00

07/10 03:37	-4.0786	-1.5484	-0.8400	0	0.00
07/10 03:41	0.0000	-1.7293	-0.7000	0	0.00
07/10 03:45	-3.5591	-1.7154	-0.7000	0	0.00
07/10 03:49	-4.1940	-1.6736	-0.9300	0	0.00
07/10 03:53	-2.9818	-1.5067	-0.1000	0	0.00
07/10 03:57	0.0000	-1.6319	-0.7500	0	0.00
07/10 04:01	-4.0209	-1.4789	-0.8800	0	0.00
07/10 04:05	-4.3672	-1.7154	-0.7000	0	0.00
07/10 04:09	-3.9631	-1.6458	-0.6500	0	0.00
07/10 04:13	-3.2127	-1.5345	-0.1000	0	0.00
07/10 04:17	-3.2705	-2.2023	-0.1300	0	0.00
07/10 04:21	-2.9241	-1.7154	-0.1200	0	0.00
07/10 04:25	-2.4046	-1.6041	-0.1000	0	0.00
07/10 04:29	-4.0209	-1.2980	-0.1300	0	0.00
07/10 04:33	0.0000	-1.2285	-0.1100	0	0.00
07/10 04:37	-4.4827	-0.5746	-0.1200	0	0.00
07/10 04:41	-3.6745	-1.2980	-0.8400	0	0.00
07/10 04:45	-4.2518	-0.8667	-0.1200	0	0.00
07/10 04:49	-3.1550	-1.0476	-0.7000	0	0.00
07/10 04:53	-2.8087	-2.4666	-0.2500	0	0.00
07/10 04:57	-3.3859	-0.4633	-0.2500	0	0.00
07/10 05:01	0.0000	-0.9363	-0.5600	0	0.00
07/10 05:05	-3.9054	-2.4527	-0.6100	0	0.00
07/10 05:09	-3.9631	-2.0075	-0.9300	0	0.00
07/10 05:13	-2.7509	-0.2407	-0.1000	0	0.00
07/10 05:17	-3.7900	-2.6196	-0.9300	0	0.00
07/10 05:21	-3.0396	-2.3553	-0.8400	0	0.00
07/10 05:25	-3.1550	-0.3242	-0.6500	0	0.00
07/10 05:29	-3.6745	-1.2980	-0.1100	0	0.00
07/10 05:33	-4.4249	-0.8250	-0.1200	0	0.00
07/10 05:37	-1.7119	-1.8406	-0.7000	0	0.00
07/10 05:41	0.0000	0.1349	-0.8800	0	0.00
07/10 05:45	-2.0583	-1.7710	-0.1200	0	0.00
07/10 05:49	-1.9428	-0.2824	-0.1100	0	0.00
07/10 05:53	-3.0396	-2.6336	-0.5200	0	0.00
07/10 05:57	-3.6745	-1.5623	-0.1200	0	0.00
07/10 06:25	-4.0786	-1.6875	0.0200	0	0.00
07/10 06:29	-3.9054	-0.9085	-0.7500	1	0.00
07/10 06:33	-3.5591	-1.6041	-0.7000	0	0.00
07/10 06:37	-3.8477	-1.6180	-0.9700	1	0.00
07/10 06:41	-4.0209	-1.3119	-0.7500	5	0.00
07/10 06:45	-3.5014	-1.1867	-0.1900	7	0.00
07/10 06:49	-3.6168	-1.5762	-0.1600	7	0.00
07/10 06:53	-3.5014	-1.3537	-0.1200	9	0.00
07/10 06:57	-2.7322	-1.3815	-0.1200	11	0.00
07/10 07:01	-2.8664	-1.9101	-0.1200	13	0.00
07/10 07:05	-2.8087	-1.5623	-0.3400	16	0.00
07/10 07:09	-2.4436	-1.7571	-0.2500	17	0.00
07/10 07:13	-2.0973	-1.3537	-0.1100	20	0.00
07/10 07:17	-2.3859	-1.0754	-0.8800	20	0.00
07/10 07:21	-2.9818	-1.0746	-0.9700	23	0.00
07/10 07:25	-2.6168	-1.2145	-0.7900	25	0.00
07/10 07:29	-2.0006	-1.3397	-0.1500	26	0.00
07/10 07:33	-2.8087	-0.8807	-0.1000	28	0.00
07/10 07:37	-2.2892	-1.2841	-0.1600	31	0.00
07/10 07:41	-2.9818	-1.5345	-0.1300	33	0.00
07/10 07:45	-1.5388	-0.0738	-0.1900	36	0.00
07/10 07:49	-2.4046	-0.6859	-0.1100	38	0.00
07/10 07:53	-2.4046	-0.8250	-0.7500	41	0.00
07/10 07:57	-1.8274	-0.0459	-0.5200	46	0.00

07/10 08:01	-1.8274	0.2601	-0.7900	48	0.00
07/10 08:05	-1.8274	-1.5763	-0.3800	49	0.00
07/10 08:09	-1.1160	-0.1990	-0.4700	52	0.00
07/10 08:13	-1.1737	-1.2563	-0.1000	54	0.00
07/10 08:17	-1.5778	-0.6441	-0.7900	56	0.00
07/10 08:21	-1.3469	-1.8267	-0.1300	60	0.00
07/10 08:25	-1.7119	0.0375	-0.1100	63	0.00
07/10 08:29	-1.7697	-0.6442	-0.1700	68	0.00
07/10 08:33	-0.7307	-0.0459	-0.1400	73	0.00
07/10 08:37	-0.7884	-0.2268	-0.1600	78	0.00
07/10 08:41	-0.2111	0.0932	-0.1000	80	0.00
07/10 08:45	-0.4810	-0.0738	-0.1500	86	0.00
07/10 08:49	-0.2689	0.4549	-0.6500	88	0.00
07/10 08:53	-0.0957	0.7331	-0.1300	92	0.00
07/10 08:57	-0.1347	0.1294	-0.4700	95	0.00
07/10 09:25	0.6547	0.5940	0.2300	115	0.00
07/10 09:29	0.4238	0.5801	-0.1300	115	0.00
07/10 09:33	1.8092	0.5940	-0.1200	115	0.00
07/10 09:37	0.8279	0.3714	-0.8400	115	0.00
07/10 09:41	0.7702	0.9001	-0.5600	146	0.00
07/10 09:45	1.0010	0.7610	-0.6500	154	0.00
07/10 09:49	1.6937	1.2618	-0.0600	163	0.00
07/10 09:53	1.0588	1.3453	-0.0200	167	0.00
07/10 09:57	1.6937	1.1366	0.0600	168	0.00
07/10 10:01	2.9059	1.3870	-0.7900	172	0.00
07/10 10:05	1.8669	1.3592	-0.2900	174	0.00
07/10 10:09	1.8092	1.5957	-0.2500	176	0.00
07/10 10:13	2.3864	1.3035	-0.7900	172	0.00
07/10 10:17	1.3310	2.0269	-0.1000	172	0.00
07/10 10:21	1.0978	1.6096	-0.4700	144	0.00
07/10 10:25	0.4441	1.5122	-0.4300	120	0.00
07/10 10:29	1.2710	1.2896	-0.6100	139	0.00
07/10 10:33	1.9823	1.6096	-0.6100	141	0.00
07/10 10:37	1.1742	1.3592	-0.7500	146	0.00
07/10 10:41	2.6750	1.5122	-0.5600	152	0.00
07/10 10:45	2.2132	1.8183	-0.1100	164	0.00
07/10 10:49	2.0791	2.1243	-0.1200	153	0.00
07/10 10:53	2.2710	2.0826	-0.7900	154	0.00
07/10 10:57	2.3864	1.8878	-0.1000	171	0.00
07/10 11:01	1.2897	1.9017	-0.9300	180	0.00
07/10 11:05	2.5596	1.6931	-0.4700	188	0.00
07/10 11:09	1.4051	1.4566	-0.6100	199	0.00
07/10 11:13	2.5019	1.6652	-0.4300	197	0.00
07/10 11:17	1.9246	1.5818	-0.0600	206	0.00
07/10 11:21	2.2710	1.5539	-0.3800	202	0.00
07/10 11:25	1.5206	1.8183	-0.1500	203	0.00
07/10 11:29	2.0401	1.6791	-0.0200	203	0.00

EA03015C.ANA

EA03 Oarb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Light	Pump
07/10 11:40	0.0000	0.0000	0.0000	275	0.00
07/10 11:44	0.0000	0.0000	0.0000	267	0.00
07/10 11:48	0.0000	0.0000	0.0000	278	0.00
07/10 11:52	0.0000	0.0000	0.0000	277	0.00
07/10 11:56	0.0000	0.0000	0.0000	287	0.00
07/10 12:00	1.0973	1.5097	2.3986	285	0.00
07/10 12:04	1.1196	1.6167	2.4651	277	0.00
07/10 12:08	1.1419	2.4011	2.6204	274	0.00
07/10 12:12	1.1866	2.5793	2.5761	280	0.00
07/10 12:16	1.2759	3.1854	2.7313	280	0.00
07/10 12:20	1.2536	3.2568	2.7757	280	0.00
07/10 12:24	1.5662	3.7202	3.0641	270	0.00
07/10 12:28	1.4322	3.6133	2.7092	280	0.00
07/10 12:32	1.4099	3.5420	3.1750	270	0.00
07/10 12:36	1.4322	3.6489	3.0863	270	0.00
07/10 12:40	1.5215	3.4350	3.0197	271	0.00
07/10 12:44	1.2312	3.5776	2.9754	271	0.00
07/10 12:48	1.3875	3.6133	3.3746	271	0.00
07/10 12:52	1.3205	4.0055	3.0863	271	0.00
07/10 12:56	1.1866	3.5776	3.0641	158	0.00
07/10 13:00	1.0973	3.5776	3.0419	152	0.00
07/10 13:04	1.1642	3.6846	2.8866	150	0.00
07/10 13:08	1.0303	3.2924	2.7535	156	0.00
07/10 13:12	0.9856	2.9359	2.7313	146	0.00
07/10 13:16	0.9186	3.0428	2.8866	146	0.00
07/10 13:20	0.8070	3.5063	2.8201	145	0.00
07/10 13:24	0.6953	3.0072	2.8866	138	0.00
07/10 13:28	0.6060	2.9715	2.9975	141	0.00
07/10 13:32	0.6730	3.3281	2.8423	145	0.00
07/10 13:36	0.6953	3.0785	2.7757	145	0.00
07/10 13:40	0.7400	2.9359	2.9310	138	0.00
07/10 13:44	0.9409	3.1141	2.9088	137	0.00
07/10 13:48	0.8516	3.2567	2.6204	133	0.00

EB03015C.ANA

EB03 Oarb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Light	Pump
07/10 11:41	0.0000	0.0000	0.0000	271	0.00
07/10 11:45	0.0000	0.0000	0.0000	265	0.00
07/10 11:49	0.0000	0.0000	0.0000	279	0.00
07/10 11:53	0.0000	0.0000	0.0000	278	0.00
07/10 11:57	0.0000	0.0000	0.0000	289	0.00
07/10 12:01	1.3474	1.3174	-1.3900	287	0.00
07/10 12:05	1.4628	1.5539	-0.3000	278	0.00
07/10 12:09	1.7514	1.7070	-0.4800	275	0.00
07/10 12:13	1.4628	1.6791	-1.1100	281	0.00
07/10 12:17	1.6937	1.6374	-0.3900	281	0.00
07/10 12:21	2.6750	2.1939	-0.3900	281	0.00
07/10 12:25	2.5019	2.1243	-0.7500	271	0.00
07/10 12:29	2.6750	2.1104	-1.2500	281	0.00
07/10 12:33	2.6750	2.3330	0.3900	271	0.00
07/10 12:37	2.8482	2.2078	-0.3400	271	0.00
07/10 12:41	2.3864	2.0826	0.2000	272	0.00
07/10 12:45	2.3287	2.1939	-0.5200	272	0.00
07/10 12:49	2.6173	2.5556	0.5700	272	0.00
07/10 12:53	2.9059	2.2078	-1.0200	272	0.00
07/10 12:57	2.6173	2.1800	-0.3400	159	0.00
07/10 13:01	2.2710	2.2078	-1.0700	153	0.00
07/10 13:05	2.5019	1.8739	-0.9300	151	0.00
07/10 13:09	2.0401	1.6791	-0.3400	157	0.00
07/10 13:13	1.8669	2.1800	-0.2500	147	0.00
07/10 13:17	1.9246	2.0269	-0.3900	147	0.00
07/10 13:21	2.4441	2.0130	-0.2000	146	0.00
07/10 13:25	2.1555	1.9574	-0.1100	139	0.00
07/10 13:29	2.0978	1.9852	-1.0200	142	0.00
07/10 13:33	2.2710	1.8878	-0.6600	146	0.00
07/10 13:37	2.5018	1.8183	-0.8900	146	0.00
07/10 13:41	2.0401	2.1522	-1.3000	139	0.00
07/10 13:45	1.9823	2.0965	-0.7500	138	0.00
07/10 13:49	2.4441	1.9156	-0.5200	134	0.00

Appendix 1B Data table for the Day 2 experiments on *Oculina arbuscula* with sediment (EA05O15C & EB05O15C) and without sediment (EA04O15C & EB04O15C), Charleston Harbor, SC, 15 m depth.

EA04015C.ANA

EA04 Oarb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Light	Pump
07/10 13:56	0.0000	0.0000	0.0000	275	0.00
07/10 14:00	0.0000	0.0000	0.0000	278	0.00
07/10 14:04	0.0000	0.0000	0.0000	275	0.00
07/10 14:08	0.0000	0.0000	0.0000	278	0.00
07/10 14:12	0.0000	0.0000	0.0000	278	0.00
07/10 14:16	1.5215	2.5437	4.1306	288	0.00
07/10 14:20	1.4992	2.7576	4.1306	286	0.00
07/10 14:24	1.7002	3.1854	2.9310	278	0.00
07/10 14:28	1.6778	3.9698	3.2637	274	0.00
07/10 14:32	1.6332	3.4350	4.1972	282	0.00
07/10 14:36	1.5885	3.5776	4.0419	286	0.00
07/10 14:40	1.7002	3.4707	4.1750	286	0.00
07/10 14:44	1.6108	3.6133	3.2194	276	0.00
07/10 14:48	1.5662	3.0428	4.9754	281	0.00
07/10 14:52	1.4545	3.1141	2.7757	279	0.00
07/10 14:56	1.2982	2.9359	4.7313	280	0.00
07/10 15:00	1.2982	3.0785	2.8866	272	0.00
07/10 15:04	1.1196	2.6863	2.8866	272	0.00
07/10 15:08	1.9856	3.5080	2.7535	272	0.00
07/10 15:36	1.1196	2.6863	2.8866	254	0.00
07/10 15:40	1.2759	1.9732	2.9088	239	0.00
07/10 15:44	1.0749	2.2228	2.7313	231	0.00
07/10 15:48	0.9633	1.7593	2.3542	230	0.00
07/10 15:52	0.8293	1.9019	2.2433	222	0.00
07/10 15:56	0.7176	1.8306	2.0658	218	0.00
07/10 16:00	0.3827	1.7593	1.9771	218	0.00
07/10 16:04	0.4050	1.5811	1.5778	214	0.00
07/10 16:08	0.1817	1.7237	1.7331	208	0.00
07/10 16:12	0.0478	1.0106	1.3782	206	0.00
07/10 16:16	-0.1309	0.7610	1.2007	200	0.00
07/10 16:20	-0.1309	0.5115	0.8680	194	0.00
07/10 16:24	-0.1532	-0.1303	0.8901	188	0.00
07/10 16:28	-0.2425	-0.3442	0.4908	183	0.00
07/10 16:32	-0.4212	-0.0233	0.5574	188	0.00
07/10 16:36	-0.3542	-0.0590	0.4908	181	0.00
07/10 16:40	-0.4882	-0.2373	0.4687	178	0.00
07/10 16:44	-0.5775	0.3332	0.4021	173	0.00
07/10 16:48	-0.5775	0.3688	0.2912	169	0.00
07/10 16:52	-0.4658	-0.0947	0.0915	164	0.00
07/10 16:56	-0.5998	-0.1660	0.1803	162	0.00
07/10 17:00	-0.5552	-0.0590	-0.0194	164	0.00
07/10 17:04	-0.7115	-0.4868	-0.1746	158	0.00
07/10 17:08	-0.7115	-0.2016	-0.2856	157	0.00
07/10 17:12	-0.7785	0.2619	-0.2856	151	0.00
07/10 17:16	-0.6445	-0.8790	-0.5074	148	0.00
07/10 17:20	-0.8231	-0.2729	-0.5961	141	0.00
07/10 17:24	-0.8231	-0.8790	-0.5518	134	0.00
07/10 17:28	-0.8901	-1.6277	-0.5739	132	0.00
07/10 17:32	-0.9348	-2.3051	-0.8845	126	0.00
07/10 17:36	-1.1581	-1.5564	-0.9067	119	0.00
07/10 17:40	-1.0911	-2.5191	-1.0398	119	0.00
07/10 17:44	-1.1804	-1.9843	-1.3725	115	0.00
07/10 17:48	-1.2251	-1.8060	-1.5056	111	0.00
07/10 17:52	-1.2027	-1.7704	-1.4834	105	0.00
07/10 17:56	-1.1804	-1.7347	-1.5722	99	0.00
07/10 18:00	-1.1357	-1.3425	-1.5500	95	0.00

80

07/10 18:04	-1.0911	-1.6277	-1.4834	89	0.00
07/10 18:08	-1.0464	-1.5208	-1.4835	85	0.00
07/10 18:36	-1.3144	-2.6973	-1.2394	83	0.00
07/10 18:40	-1.1581	-2.6973	-1.2394	59	0.00
07/10 18:44	-1.1804	-2.4834	-1.0620	56	0.00
07/10 18:48	-1.1804	-2.5547	-1.1729	53	0.00
07/10 18:52	-1.0687	-2.7330	-1.3503	51	0.00
07/10 18:56	-1.1134	-2.1269	-1.1951	47	0.00
07/10 19:00	-1.2697	-2.7330	-1.3725	44	0.00
07/10 19:04	-1.1804	-2.4478	-1.3725	42	0.00
07/10 19:08	-1.1804	-2.9113	-1.5056	37	0.00
07/10 19:12	-1.2251	-3.0539	-1.4169	29	0.00
07/10 19:16	-1.0687	-3.3391	-1.5722	21	0.00
07/10 19:20	-1.0464	-2.9469	-1.3947	18	0.00
07/10 19:24	-1.0687	-3.4104	-1.6609	16	0.00
07/10 19:28	-1.1804	-2.9469	-1.7718	14	0.00
07/10 19:32	-1.2697	-2.8400	-1.8384	13	0.00
07/10 19:36	-1.4037	-3.3747	-1.9271	12	0.00
07/10 19:40	-1.2697	-3.1252	-1.8606	11	0.00
07/10 19:44	-1.2251	-1.3069	-1.8606	10	0.00
07/10 19:48	-1.3367	-2.9826	-1.7940	9	0.00
07/10 19:52	-1.0911	-3.1608	-1.8384	9	0.00
07/10 19:56	-1.1581	-2.8400	-1.7940	9	0.00
07/10 20:00	-1.2697	-3.0182	-2.0158	7	0.00
07/10 20:04	-1.2697	0.0000	-2.0158	6	0.00
07/10 20:08	-1.1134	-3.3034	-1.9715	5	0.00
07/10 20:12	-1.2250	-1.6990	-1.9493	4	0.00
07/10 20:16	-1.1581	-3.2321	-1.9715	3	0.00
07/10 20:20	-1.2697	-1.8417	-1.9493	2	0.00
07/10 20:24	-1.1581	-3.3747	-1.9049	2	0.00
07/10 20:28	-1.2474	-3.3391	-2.0602	2	0.00
07/10 20:32	-1.2474	0.0000	-2.0158	1	0.00
07/10 20:36	-1.1581	-3.3747	-1.9271	1	0.00
07/10 20:40	-0.9571	0.0000	-1.9937	1	0.00
07/10 20:44	-1.1134	-3.5174	-2.0602	0	0.00
07/10 20:48	-0.9124	-3.6956	-2.0158	0	0.00
07/10 20:52	-0.8454	-3.5174	-2.0158	0	0.00
07/10 20:56	-0.9124	-3.2678	-2.0158	0	0.00
07/10 21:00	-1.0018	-3.3747	-1.9271	0	0.00
07/10 21:04	-0.8901	-3.4461	-1.8606	0	0.00
07/10 21:08	-1.1134	-2.9469	-1.7940	0	0.00
07/10 21:36	0.0000	-4.1948	-2.4595	0	0.00
07/10 21:40	-2.0736	-4.4443	-2.3930	0	0.00
07/10 21:44	-1.9619	-4.3017	-2.3264	0	0.00
07/10 21:48	-2.0066	-3.9809	-2.4373	0	0.00
07/10 21:52	-1.8280	-4.1235	-2.2377	0	0.00
07/10 21:56	-1.8726	-4.0522	-2.4151	0	0.00
07/10 22:00	-1.7833	-4.3017	-2.3042	0	0.00
07/10 22:04	-1.9173	-3.9809	-2.3042	0	0.00
07/10 22:08	-1.8056	-3.9452	-2.2155	0	0.00
07/10 22:12	-1.6493	-3.9452	-2.2155	0	0.00
07/10 22:16	-1.4707	-3.9809	-2.1046	0	0.00
07/10 22:20	-1.5823	-4.0522	-2.1268	0	0.00
07/10 22:24	-1.3590	-3.9809	-2.0824	0	0.00
07/10 22:28	-1.2920	-3.9452	-2.0380	0	0.00
07/10 22:32	-1.4260	-3.9095	-2.0602	0	0.00
07/10 22:36	-1.4484	-3.4817	-1.9715	0	0.00
07/10 22:40	-1.3144	-3.8382	-2.0824	0	0.00
07/10 22:44	-1.3367	-2.1982	-2.0380	0	0.00
07/10 22:48	-1.2474	-3.7313	-2.0602	0	0.00

07/10 22:52	-1.1804	-3.5530	-1.9715	0	0.00
07/10 22:56	-1.0687	-3.8382	-1.9049	0	0.00
07/10 23:00	-1.1134	-3.5887	-1.7053	0	0.00
07/10 23:04	-1.0687	0.0000	-1.9271	0	0.00
07/10 23:08	-1.0687	-3.3747	-1.7053	0	0.00
07/10 23:12	-1.0687	-3.4461	-1.7940	0	0.00
07/10 23:16	-1.1357	-3.3747	-1.8384	0	0.00
07/10 23:20	-1.0241	-3.2321	-1.6831	0	0.00
07/10 23:24	-0.8901	-2.9826	-1.4835	0	0.00
07/10 23:28	-1.0464	-2.3408	-1.6387	0	0.00
07/10 23:32	-0.8231	-3.5174	-1.5722	0	0.00
07/10 23:36	-0.8008	-3.2678	-1.5278	0	0.00
07/10 23:40	-0.7115	-3.3034	-1.5944	0	0.00
07/10 23:44	-0.8008	-0.6295	-1.7275	0	0.00
07/10 23:48	-0.6668	-4.4800	-1.6387	0	0.00
07/10 23:52	-0.7115	-3.1965	-1.5500	0	0.00
07/10 23:56	-0.6668	-3.5530	-1.5500	0	0.00
07/11 00:00	-0.7561	-3.3034	-1.4834	0	0.00
07/11 00:04	-0.6221	0.0000	-1.4613	0	0.00
07/11 00:08	-0.7785	-3.0895	-1.5278	0	0.00
07/11 00:36	-2.1182	-3.7669	-2.3708	0	0.00
07/11 00:40	-2.0736	-3.8382	-2.3486	0	0.00
07/11 00:44	-2.0066	-3.7313	-2.3264	0	0.00
07/11 00:48	-1.9843	-3.7313	-2.2377	0	0.00
07/11 00:52	-1.8280	-3.7669	-2.2599	0	0.00
07/11 00:56	-1.8726	-4.1235	-2.2377	0	0.00
07/11 01:00	-1.7386	-3.8739	-2.1933	0	0.00
07/11 01:04	-1.5377	-3.9096	-2.0824	0	0.00
07/11 01:08	-1.5823	-3.8739	-2.1268	0	0.00
07/11 01:12	-1.4930	-3.6956	-2.1268	0	0.00
07/11 01:16	-1.3590	-3.6956	-2.2155	0	0.00
07/11 01:20	-1.3590	-3.9809	-2.0380	0	0.00
07/11 01:24	-1.4484	-3.7313	-2.0824	0	0.00
07/11 01:28	-1.4930	-3.6956	-2.0824	0	0.00
07/11 01:32	-1.3814	-4.0522	-1.9715	0	0.00
07/11 01:36	-1.4037	-2.7686	-2.0158	0	0.00
07/11 01:40	-1.3814	-3.7313	-2.1268	0	0.00
07/11 01:44	-1.4037	-3.6956	-2.0158	0	0.00
07/11 01:48	-1.2250	-3.6956	-1.9049	0	0.00
07/11 01:52	-1.2027	-3.4104	-2.0824	0	0.00
07/11 01:56	-1.1357	-4.2304	-1.7940	0	0.00
07/11 02:00	-1.0018	-3.0895	-1.8606	0	0.00
07/11 02:04	-1.0464	-3.2678	-1.8827	0	0.00
07/11 02:08	-0.9794	-3.2678	-1.9493	0	0.00
07/11 02:12	-1.1134	-3.5174	-1.7940	0	0.00
07/11 02:16	-1.0241	-3.4104	-2.0158	0	0.00
07/11 02:20	-1.0911	-3.5530	-1.8162	0	0.00
07/11 02:24	-0.8901	-3.3034	-1.8606	0	0.00
07/11 02:28	-0.8901	-3.2678	-1.7496	0	0.00
07/11 02:32	-0.8231	-3.3034	-1.7940	0	0.00
07/11 02:36	-0.9348	-3.0182	-1.5500	0	0.00
07/11 02:40	-0.8678	-2.9826	-1.7275	0	0.00
07/11 02:44	-0.8901	-3.0895	-1.6165	0	0.00
07/11 02:48	-0.8231	-3.0539	-1.7275	0	0.00
07/11 02:52	-0.8901	-3.0182	-1.7053	0	0.00
07/11 02:56	-0.6668	-3.3747	-1.7053	0	0.00
07/11 03:00	-0.8008	-3.3391	-1.7053	0	0.00
07/11 03:04	-0.7785	-3.2678	-1.7275	0	0.00
07/11 03:08	-0.8231	-3.5174	-1.6831	0	0.00
07/11 03:36	-2.1852	-4.1235	-2.4151	0	0.00

07/11 03:40	-2.0736	-4.0522	-2.4595	0	0.00
07/11 03:44	-2.1852	-4.0165	-2.2155	0	0.00
07/11 03:48	-1.9173	-4.0878	-2.3042	0	0.00
07/11 03:52	-1.8280	-4.1235	-2.3708	0	0.00
07/11 03:56	-1.7610	-3.8382	-2.1711	0	0.00
07/11 04:00	-1.6047	-3.9452	-2.3486	0	0.00
07/11 04:04	-1.6716	-3.9095	-2.3486	0	0.00
07/11 04:08	-1.6716	-3.8382	-2.2155	0	0.00
07/11 04:12	-1.5823	-3.5887	-2.1046	0	0.00
07/11 04:16	-1.5377	-3.7313	-2.2155	0	0.00
07/11 04:20	-1.3814	-3.6600	-2.1046	0	0.00
07/11 04:24	-1.3367	-3.7313	-2.1489	0	0.00
07/11 04:28	-1.3367	-3.5530	-1.9493	0	0.00
07/11 04:32	-1.2027	-3.8026	-2.0158	0	0.00
07/11 04:36	-1.2697	-3.7313	-2.0602	0	0.00
07/11 04:40	-1.3590	-3.5530	-1.9937	0	0.00
07/11 04:44	-1.1357	-3.4817	-1.7940	0	0.00
07/11 04:48	-1.2697	-3.5887	-1.9937	0	0.00
07/11 04:52	-1.1134	-3.6600	-1.9271	0	0.00
07/11 04:56	-1.0241	-3.4461	-1.9271	0	0.00
07/11 05:00	-0.9794	-3.5887	-1.8606	0	0.00
07/11 05:04	-1.0911	-3.4461	-2.1268	0	0.00
07/11 05:08	-0.8678	-3.2321	-1.9271	0	0.00
07/11 05:12	-0.9124	-2.9469	-1.8827	0	0.00
07/11 05:16	-0.8008	-2.9113	-1.8606	0	0.00
07/11 05:20	-0.8008	-3.1965	-1.8606	0	0.00
07/11 05:24	-0.6891	-3.1252	-1.8162	0	0.00
07/11 05:28	-0.6445	-3.3748	-1.8606	0	0.00
07/11 05:32	-0.7338	-1.2712	-1.7940	0	0.00
07/11 05:36	-0.6445	-3.4817	-1.7940	0	0.00
07/11 05:40	-0.6891	-3.1252	-1.7053	0	0.00
07/11 05:44	-0.6891	-3.3391	-1.7053	0	0.00
07/11 05:48	-0.5105	-3.1965	-1.6387	0	0.00
07/11 05:52	-0.6891	0.0000	-1.7718	0	0.00
07/11 05:56	-0.8008	-3.3391	-1.8384	0	0.00
07/11 06:00	-0.6891	-3.2321	-1.7496	0	0.00
07/11 06:04	-0.5328	-3.2321	-1.5944	1	0.00
07/11 06:08	-0.7338	-3.1252	-1.6609	2	0.00
07/11 06:36	-1.8503	-3.9809	-2.2155	2	0.00
07/11 06:40	-1.6047	-3.9096	-2.2377	7	0.00
07/11 06:44	-1.5377	-3.7313	-2.1268	8	0.00
07/11 06:48	-1.6270	-3.5887	-1.9937	10	0.00
07/11 06:52	-1.5823	-3.2678	-1.9715	11	0.00
07/11 06:56	-1.4707	-3.3391	-1.7275	13	0.00
07/11 07:00	-1.4260	-3.3391	-1.7940	15	0.00
07/11 07:04	-1.4707	-3.3034	-1.6387	17	0.00
07/11 07:08	-1.1804	-3.5174	-1.6609	20	0.00
07/11 07:12	-1.2251	-3.1965	-1.4613	22	0.00
07/11 07:16	-1.2027	-3.0895	-1.5944	24	0.00
07/11 07:20	-1.1581	-2.9469	-1.4834	27	0.00
07/11 07:24	-1.0018	-0.8434	-1.3947	30	0.00
07/11 07:28	-0.9794	-2.6973	-1.3947	32	0.00
07/11 07:32	-0.9124	-2.7686	-1.3947	36	0.00
07/11 07:36	-0.7785	-2.8400	-1.6387	38	0.00
07/11 07:40	-0.7785	-2.4834	-1.3725	42	0.00
07/11 07:44	-0.8008	0.0000	-1.3503	44	0.00
07/11 07:48	-0.8231	-1.9486	-1.0842	46	0.00
07/11 07:52	-0.7561	-1.9486	-0.8623	49	0.00
07/11 07:56	-0.8008	-1.6277	-0.6405	52	0.00
07/11 08:00	-0.5328	-1.6991	-0.6405	57	0.00

07/11 08:04	-0.5998	-1.3069	-0.4852	61	0.00
07/11 08:08	-0.4882	-1.3782	-0.6183	65	0.00
07/11 08:12	-0.4658	-1.1643	-0.5961	70	0.00
07/11 08:16	-0.4882	-1.0929	-0.3521	72	0.00
07/11 08:20	-0.6891	-1.1999	-0.5518	73	0.00
07/11 08:24	-0.5775	-1.3782	-0.5296	77	0.00
07/11 08:28	-0.6445	-1.2712	-0.4852	80	0.00
07/11 08:32	-0.6445	-1.3425	-0.4630	88	0.00
07/11 08:36	-0.6221	-1.1642	-0.3299	95	0.00
07/11 08:40	-0.5105	-0.8434	-0.1081	96	0.00
07/11 08:44	-0.4435	-0.4155	-0.0415	100	0.00
07/11 08:48	-0.4435	-0.5225	0.1137	105	0.00
07/11 08:52	-0.4212	-0.3086	-0.0194	109	0.00
07/11 08:56	-0.3542	-0.3442	-0.0637	110	0.00
07/11 09:00	-0.3989	-0.3799	-0.1081	114	0.00
07/11 09:04	-0.3765	-0.7721	-0.1968	121	0.00
07/11 09:08	-0.3319	-0.7008	-0.3743	123	0.00
07/11 09:36	-0.1823	-0.8790	-0.2412	132	0.00
07/11 09:40	-0.4037	-0.7008	-0.1303	172	0.00
07/11 09:44	-0.4260	0.0123	0.0915	182	0.00
07/11 09:48	-0.1581	0.1193	0.6683	186	0.00
07/11 09:52	-0.1134	1.1532	0.9789	192	0.00
07/11 09:56	-0.0018	1.4741	1.2007	191	0.00
07/11 10:00	-0.0911	1.5811	1.4669	197	0.00
07/11 10:04	0.9124	1.2958	1.5778	207	0.00
07/11 10:08	0.9687	1.5811	1.4669	216	0.00
07/11 10:12	0.9794	1.1176	1.3116	228	0.00
07/11 10:16	1.0008	1.4384	1.5334	233	0.00
07/11 10:20	1.8454	1.4028	1.5556	238	0.00
07/11 10:24	1.8008	1.6880	1.5778	246	0.00
07/11 10:28	1.8008	1.5097	1.4891	245	0.00
07/11 10:32	1.7338	1.7593	1.5113	253	0.00
07/11 10:36	1.7785	1.8663	2.4891	260	0.00
07/11 10:40	1.5328	2.1871	2.4669	267	0.00
07/11 10:44	1.6668	3.2941	3.6444	271	0.00
07/11 10:48	1.5328	2.7220	2.6887	268	0.00
07/11 10:52	1.5552	3.7933	3.9327	272	0.00
07/11 10:56	1.5328	2.6863	2.9106	264	0.00
07/11 11:00	1.6891	3.0428	2.7775	268	0.00
07/11 11:04	2.5552	3.9002	4.9771	282	0.00
07/11 11:08	-0.0221	1.0072	1.9327	197	0.00
07/11 11:12	-0.0221	1.2567	1.0215	197	0.00
07/11 11:16	0.6668	1.4707	2.2433	207	0.00
07/11 11:20	1.5775	1.3281	2.2655	203	0.00
07/11 11:24	1.5105	1.6133	2.1546	204	0.00
07/11 11:28	1.4212	1.6133	2.2877	204	0.00
07/11 11:32	1.3542	1.5420	2.2211	225	0.00
07/11 11:36	1.3542	1.5420	2.1102	215	0.00
07/11 11:40	1.4212	1.7559	2.2211	221	0.00
07/11 11:44	1.4435	1.6133	2.1989	222	0.00
07/11 11:48	1.3319	1.5776	2.3099	233	0.00
07/11 11:52	1.4212	2.6489	2.0437	241	0.00
07/11 11:56	1.3319	2.5776	2.0880	245	0.00
07/11 12:00	1.3319	2.3994	2.2877	245	0.00

824

EB04015C.ANA

EB04 Oarb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Light	Pump
07/10 13:57	0.0000	0.0000	0.0000	276	0.00
07/10 14:01	0.0000	0.0000	0.0000	279	0.00
07/10 14:05	0.0000	0.0000	0.0000	275	0.00
07/10 14:09	0.0000	0.0000	0.0000	279	0.00
07/10 14:13	0.0000	0.0000	0.0000	278	0.00
07/10 14:17	2.9823	2.6026	-0.0800	288	0.00
07/10 14:21	2.6360	2.6721	-0.0900	286	0.00
07/10 14:25	2.5596	2.6391	-0.0700	278	0.00
07/10 14:29	3.0214	2.5417	-0.0800	275	0.00
07/10 14:33	2.9059	2.6913	-0.0900	283	0.00
07/10 14:37	2.0978	2.6391	-0.0700	286	0.00
07/10 14:41	2.4441	2.5417	-0.0200	287	0.00
07/10 14:45	2.7327	2.1939	-0.0600	276	0.00
07/10 14:49	2.2132	2.6774	-0.1000	281	0.00
07/10 14:53	1.7514	2.4026	-0.0400	279	0.00
07/10 14:57	3.5019	2.5826	-0.0700	280	0.00
07/10 15:25	1.3100	2.2913	-0.0800	254	0.00
07/10 15:29	1.9823	2.3469	-0.0800	254	0.00
07/10 15:33	2.7905	2.5278	-0.1200	254	0.00
07/10 15:37	1.8669	2.2078	-0.0200	254	0.00
07/10 15:41	1.4051	2.5417	-0.1000	240	0.00
07/10 15:45	1.8669	2.0965	-0.0700	231	0.00
07/10 15:49	1.7514	1.9991	-0.1100	230	0.00
07/10 15:53	1.3474	2.0409	-0.0800	222	0.00
07/10 15:57	1.1165	1.6791	-0.0700	219	0.00
07/10 16:01	2.2710	1.6791	-0.0100	218	0.00
07/10 16:05	1.0588	1.7348	0.0000	214	0.00
07/10 16:09	1.1742	1.5957	-0.0100	208	0.00
07/10 16:13	1.0588	1.3592	-0.0300	207	0.00
07/10 16:17	0.5970	1.3592	-0.0800	201	0.00
07/10 16:21	-0.0957	1.0392	-0.0800	194	0.00
07/10 16:25	0.0775	0.9557	-0.1100	188	0.00
07/10 16:29	-0.2111	0.7470	-0.1100	183	0.00
07/10 16:33	-0.3266	0.7470	-0.0400	189	0.00
07/10 16:37	-0.6152	0.6497	-0.0700	182	0.00
07/10 16:41	-0.4998	0.8166	-0.1300	179	0.00
07/10 16:45	-0.6729	0.6357	-0.0800	173	0.00
07/10 16:49	-0.4998	0.6497	-0.0600	169	0.00
07/10 16:53	-0.6729	0.5662	-0.1500	164	0.00
07/10 16:57	-0.4420	0.5523	-0.1200	162	0.00
07/10 17:01	-0.6729	0.3158	-0.1000	165	0.00
07/10 17:05	-0.4420	0.5105	-0.1400	158	0.00
07/10 17:09	-1.1347	0.2740	-0.1000	158	0.00
07/10 17:13	-0.5575	0.2462	-0.0400	151	0.00
07/10 17:17	-1.0193	0.1767	-0.0700	148	0.00
07/10 17:21	-1.0770	0.1906	-0.0200	142	0.00
07/10 17:25	-1.5388	-0.0042	-0.0200	134	0.00
07/10 17:29	-1.1924	-0.1990	-0.0200	132	0.00
07/10 17:33	-1.2502	-0.1685	-0.0700	126	0.00
07/10 17:37	-1.7119	-0.2772	-0.0200	120	0.00
07/10 17:41	-1.7697	-0.2607	-0.0700	119	0.00
07/10 17:45	-2.0006	-0.3302	-0.0300	116	0.00
07/10 17:49	-2.1737	-0.2189	-0.0600	111	0.00
07/10 17:53	-2.4046	-0.3720	-0.0700	105	0.00
07/10 17:57	-1.0006	-0.2911	-0.1000	100	0.00
07/10 18:25	-1.4233	-0.2268	-0.1200	84	0.00

07/10 18:29	-1.4623	-0.2824	-0.0900	83	0.00
07/10 18:33	-1.1160	-0.5885	-0.1000	83	0.00
07/10 18:37	-1.1737	-0.7415	-0.0300	84	0.00
07/10 18:41	-1.7697	-0.3659	-0.0800	59	0.00
07/10 18:45	-1.8274	-0.8946	0.0000	56	0.00
07/10 18:49	-2.4046	-1.1450	-0.0600	54	0.00
07/10 18:53	-1.7119	-0.5885	-0.1000	52	0.00
07/10 18:57	-2.8087	-0.5468	-0.1300	47	0.00
07/10 19:01	-2.6355	-1.2285	-0.0800	44	0.00
07/10 19:05	-2.8664	-0.8389	-0.1300	43	0.00
07/10 19:09	-2.3469	-0.6442	-0.0700	37	0.00
07/10 19:13	-2.2314	-0.7276	-0.0700	29	0.00
07/10 19:17	-2.0006	-0.6302	-0.0300	22	0.00
07/10 19:21	-2.7509	-0.5468	-0.0800	18	0.00
07/10 19:25	-3.2127	-1.1728	-0.0200	16	0.00
07/10 19:29	-2.6932	-0.7415	-0.0600	14	0.00
07/10 19:33	-3.7322	-0.8389	0.0000	13	0.00
07/10 19:37	-3.7900	-1.4650	-0.0800	12	0.00
07/10 19:41	-1.5388	-1.2006	-0.0700	11	0.00
07/10 19:45	-1.9428	-0.7276	-0.1300	10	0.00
07/10 19:49	-2.8664	-1.1311	-0.0800	10	0.00
07/10 19:53	-3.2127	-1.7154	-0.1600	10	0.00
07/10 19:57	-2.5778	-1.4510	-0.1200	10	0.00
07/10 20:01	-3.1550	-1.2563	-0.0600	8	0.00
07/10 20:05	-4.0209	-1.5484	-0.0200	6	0.00
07/10 20:09	-3.0973	-1.3537	-0.0600	6	0.00
07/10 20:13	-3.0973	-0.7554	0.0000	4	0.00
07/10 20:17	-2.8087	-0.4911	-0.0400	4	0.00
07/10 20:21	-3.9631	-1.1450	-0.0700	1	0.00
07/10 20:25	-3.5591	-0.6720	-0.0500	0	0.00
07/10 20:29	-3.7322	-1.0615	-0.0600	1	0.00
07/10 20:33	-3.2127	-1.2841	-0.1100	0	0.00
07/10 20:37	-3.9054	-1.5345	-0.0700	0	0.00
07/10 20:41	-4.4249	-2.0075	-0.0800	0	0.00
07/10 20:45	-3.1550	-1.8406	-0.1200	0	0.00
07/10 20:49	-3.5014	-1.1728	-0.0700	0	0.00
07/10 20:53	-3.6745	-1.3397	-0.0700	0	0.00
07/10 20:57	-4.1940	-1.9101	-0.1300	0	0.00
07/10 21:25	-3.5014	-1.6458	-0.1300	0	0.00
07/10 21:29	-4.4826	-2.1049	-0.0300	0	0.00
07/10 21:33	-3.2127	-1.3537	-0.1400	0	0.00
07/10 21:37	-3.7900	-1.6180	-0.1000	0	0.00
07/10 21:41	-3.8477	-1.7849	-0.1500	0	0.00
07/10 21:45	0.0000	-1.4789	-0.1100	0	0.00
07/10 21:49	-3.2127	-1.3815	-0.1200	0	0.00
07/10 21:53	-3.9631	-1.7154	-0.0200	0	0.00
07/10 21:57	-2.5778	-1.2980	-0.0900	0	0.00
07/10 22:01	-4.4826	-1.8128	-0.0400	0	0.00
07/10 22:05	-3.3859	-2.1188	-0.1100	0	0.00
07/10 22:09	-4.0786	-1.7710	-0.0500	0	0.00
07/10 22:13	-2.9818	-1.1867	-0.1100	0	0.00
07/10 22:17	0.0000	-1.6875	-0.1200	0	0.00
07/10 22:21	-3.7900	-1.7849	-0.0800	0	0.00
07/10 22:25	-4.0786	-0.9641	-0.1100	0	0.00
07/10 22:29	-2.7509	-0.6441	-0.1300	0	0.00
07/10 22:33	-4.1363	-1.5762	-0.0700	0	0.00
07/10 22:37	-3.2127	-1.1728	-0.0100	0	0.00
07/10 22:41	-2.8664	-1.1032	-0.1100	0	0.00
07/10 22:45	-2.0006	-1.0337	-0.0800	0	0.00
07/10 22:49	0.0000	-1.4928	-0.1200	0	0.00

07/10 22:53	-3.0396	-1.0615	-0.1300	0	0.00
07/10 22:57	-3.9631	-1.3676	-0.1500	0	0.00
07/10 23:01	-3.6168	-1.8962	-0.0600	0	0.00
07/10 23:05	0.0000	-1.4789	-0.0400	0	0.00
07/10 23:09	-2.0006	-0.6441	-0.0200	0	0.00
07/10 23:13	-2.7509	-1.7432	0.0000	0	0.00
07/10 23:17	-4.0786	-1.6319	-0.0200	0	0.00
07/10 23:21	-3.3282	0.3436	-0.0800	0	0.00
07/10 23:25	-2.2314	-1.0198	-0.0800	0	0.00
07/10 23:29	0.0000	-1.9101	-0.0600	0	0.00
07/10 23:33	-4.1363	-0.9919	-0.1400	0	0.00
07/10 23:37	-2.2314	-1.6319	-0.0900	0	0.00
07/10 23:41	-4.1363	-2.2023	-0.0500	0	0.00
07/10 23:45	-2.7510	-1.0198	-0.0700	0	0.00
07/10 23:49	-1.4810	-1.2702	-0.1200	0	0.00
07/10 23:53	-4.4249	0.0654	-0.0200	0	0.00
07/10 23:57	-2.9241	-0.3937	-0.0800	0	0.00
07/11 00:25	-3.6168	-1.1867	-0.0300	0	0.00
07/11 00:29	-3.5013	-1.3537	-0.0800	0	0.00
07/11 00:33	-3.4436	-1.8267	-0.0200	0	0.00
07/11 00:37	-3.1550	-1.7849	-0.0800	0	0.00
07/11 00:41	-3.3859	-1.1728	-0.0300	0	0.00
07/11 00:45	0.0000	-1.6319	-0.0600	0	0.00
07/11 00:49	-4.2518	-1.6875	-0.0400	0	0.00
07/11 00:53	0.0000	-1.1589	-0.1000	0	0.00
07/11 00:57	0.0000	-1.1032	-0.0200	0	0.00
07/11 01:01	-4.2518	-1.9658	-0.0700	0	0.00
07/11 01:05	-4.1363	-1.6736	-0.0700	0	0.00
07/11 01:09	-3.2705	-1.3815	-0.0800	0	0.00
07/11 01:13	-1.8851	-1.3954	-0.0200	0	0.00
07/11 01:17	-3.3282	-1.2702	-0.0900	0	0.00
07/11 01:21	-2.6355	-0.8250	-0.0900	0	0.00
07/11 01:25	-2.2314	-1.0337	-0.1200	0	0.00
07/11 01:29	-3.3859	-0.9780	-0.1300	0	0.00
07/11 01:33	0.0000	-2.4249	-0.1500	0	0.00
07/11 01:37	-4.3672	-1.1032	-0.1800	0	0.00
07/11 01:41	0.0000	-1.2006	-0.1300	0	0.00
07/11 01:45	-4.3095	-2.5084	-0.1100	0	0.00
07/11 01:49	-4.1940	-0.9780	-0.1300	0	0.00
07/11 01:53	-3.3282	-0.6163	-0.1200	0	0.00
07/11 01:57	-2.5778	0.0000	-0.0200	0	0.00
07/11 02:01	-4.1363	-1.9519	-0.0800	0	0.00
07/11 02:05	-3.6168	-1.0337	-0.0600	0	0.00
07/11 02:09	-3.9054	-2.4110	0.0000	0	0.00
07/11 02:13	-3.4436	-0.8528	-0.0100	0	0.00
07/11 02:17	-3.7322	-0.3381	-0.0800	0	0.00
07/11 02:21	-2.6932	-1.4093	-0.0300	0	0.00
07/11 02:25	-2.2314	-1.5206	-0.0800	0	0.00
07/11 02:29	-3.0396	-0.9919	-0.1200	0	0.00
07/11 02:33	-3.2705	-1.0754	-0.1200	0	0.00
07/11 02:37	-1.5965	-0.3798	-0.1000	0	0.00
07/11 02:41	-3.3859	-0.6720	-0.0700	0	0.00
07/11 02:45	0.0000	-0.6302	-0.0900	0	0.00
07/11 02:49	-1.6542	-0.8946	-0.0700	0	0.00
07/11 02:53	-3.6745	-1.4510	-0.0600	0	0.00
07/11 02:57	-4.3672	-2.3275	-0.0800	0	0.00
07/11 03:25	-3.9054	-1.7849	-0.0600	0	0.00
07/11 03:29	-4.0786	-1.7710	-0.0400	0	0.00
07/11 03:33	-4.0209	-1.0893	-0.0500	0	0.00
07/11 03:37	-4.3672	-1.4371	-0.0700	0	0.00

07/11 03:41	0.0000	-1.3676	-0.1000	0	0.00
07/11 03:45	-3.6745	-1.3537	-0.0700	0	0.00
07/11 03:49	-4.1363	-1.1032	-0.1000	0	0.00
07/11 03:53	-2.9818	-1.5623	-0.0800	0	0.00
07/11 03:57	-3.1550	-1.3676	-0.0400	0	0.00
07/11 04:01	-3.0396	-1.3676	-0.0700	0	0.00
07/11 04:05	-3.5014	-1.9797	-0.0800	0	0.00
07/11 04:09	-2.9241	-1.5763	-0.0900	0	0.00
07/11 04:13	-3.5014	-1.0754	-0.0900	0	0.00
07/11 04:17	-4.1363	-1.9519	-0.1300	0	0.00
07/11 04:21	-3.5591	-1.0615	-0.1000	0	0.00
07/11 04:25	-3.5591	-0.9919	-0.1100	0	0.00
07/11 04:29	-2.2892	-0.8111	-0.1200	0	0.00
07/11 04:33	-3.3282	-2.0353	-0.1100	0	0.00
07/11 04:37	-3.2127	-0.3937	-0.1100	0	0.00
07/11 04:41	-2.7509	-0.8946	-0.1200	0	0.00
07/11 04:45	-2.2315	-1.6041	-0.0700	0	0.00
07/11 04:49	-3.7322	-0.9641	-0.0900	0	0.00
07/11 04:53	-2.8087	-1.8684	-0.1300	0	0.00
07/11 04:57	-3.2127	-1.7293	-0.1100	0	0.00
07/11 05:01	-3.6745	-1.7710	-0.0700	0	0.00
07/11 05:05	0.0000	-1.5345	-0.1000	0	0.00
07/11 05:09	-3.2705	0.0000	-0.1000	0	0.00
07/11 05:13	0.0000	-1.3954	-0.1000	0	0.00
07/11 05:17	-3.9631	-0.8111	-0.0900	0	0.00
07/11 05:21	-2.1737	-1.0615	-0.1000	0	0.00
07/11 05:25	-2.6355	0.4827	-0.1000	0	0.00
07/11 05:29	-3.9054	-1.3676	-0.0600	0	0.00
07/11 05:33	-3.1550	1.0253	-0.0200	0	0.00
07/11 05:37	-2.7509	-1.9101	-0.0400	0	0.00
07/11 05:41	-4.0209	-1.9658	-0.0500	0	0.00
07/11 05:45	-2.5201	-2.2162	-0.0700	0	0.00
07/11 05:49	-3.3859	1.0948	-0.0800	0	0.00
07/11 05:53	-1.9428	-1.4650	-0.0700	0	0.00
07/11 05:57	-3.5014	-0.9780	-0.1300	0	0.00
07/11 06:25	-3.1550	-1.6319	-0.1100	0	0.00
07/11 06:29	-4.0786	-1.5763	-0.1100	0	0.00
07/11 06:33	-3.3282	-1.2563	-0.0500	0	0.00
07/11 06:37	-3.2127	-0.7833	-0.0700	0	0.00
07/11 06:41	-2.5778	-1.3676	-0.1200	8	0.00
07/11 06:45	-3.8477	-0.9224	-0.0700	8	0.00
07/11 06:49	-3.6745	-0.8807	0.0000	10	0.00
07/11 06:53	-4.2518	-1.2841	-0.0900	11	0.00
07/11 06:57	-3.7322	-2.0353	-0.0900	14	0.00
07/11 07:01	-3.4436	-0.6859	-0.0400	16	0.00
07/11 07:05	-3.9054	-1.8406	-0.1200	17	0.00
07/11 07:09	-1.9428	-1.8406	-0.1300	20	0.00
07/11 07:13	-2.2314	-1.0893	-0.1500	22	0.00
07/11 07:17	-1.7119	-0.5329	-0.1100	24	0.00
07/11 07:21	-1.5388	-0.7972	-0.1300	27	0.00
07/11 07:25	-2.0583	-0.7972	-0.0500	30	0.00
07/11 07:29	-2.4623	-0.9224	-0.0900	32	0.00
07/11 07:33	-1.6542	-0.7554	-0.0100	36	0.00
07/11 07:37	-2.0583	-0.4355	-0.0200	39	0.00
07/11 07:41	-2.9241	-1.4232	-0.0500	42	0.00
07/11 07:45	-1.7697	-0.9502	-0.1200	45	0.00
07/11 07:49	-2.5778	-0.4494	-0.0700	46	0.00
07/11 07:53	-2.5201	-1.3119	-0.0700	50	0.00
07/11 07:57	-1.7119	-1.1589	-0.1200	52	0.00
07/11 08:01	-1.8851	-0.3659	-0.0700	58	0.00

07/11 08:05	-0.8461	0.3436	-0.0400	61	0.00
07/11 08:09	-0.3266	0.4688	-0.1000	66	0.00
07/11 08:13	-0.3843	-0.3520	-0.0700	71	0.00
07/11 08:17	-1.4233	-0.1851	-0.0400	72	0.00
07/11 08:21	-0.6152	0.9557	-0.0300	73	0.00
07/11 08:25	-1.7697	-0.0877	-0.0400	78	0.00
07/11 08:29	-1.0583	-0.1711	-0.0600	81	0.00
07/11 08:33	-1.5965	1.3453	-0.0600	89	0.00
07/11 08:37	-0.9038	0.7192	-0.0500	95	0.00
07/11 08:41	-2.1160	-0.6720	-0.1400	97	0.00
07/11 08:45	-1.0770	-0.2772	-0.1000	100	0.00
07/11 08:49	-0.6152	-0.2216	-0.0500	106	0.00
07/11 08:53	-0.2111	-0.2329	-0.0700	109	0.00
07/11 08:57	-0.3266	-0.1242	-0.1000	111	0.00
07/11 09:25	-0.4998	0.1627	-0.0800	132	0.00
07/11 09:29	-0.7884	-0.0738	-0.1300	132	0.00
07/11 09:33	-1.4810	0.0236	-0.1400	133	0.00
07/11 09:37	-1.4810	0.3853	-0.1300	132	0.00
07/11 09:41	-0.0193	0.3853	-0.0500	173	0.00
07/11 09:45	-0.2501	0.6636	-0.0600	183	0.00
07/11 09:49	0.4815	1.0114	-0.0200	187	0.00
07/11 09:53	0.3474	1.1505	-0.0200	193	0.00
07/11 09:57	0.9433	1.5261	-0.0400	192	0.00
07/11 10:01	1.2319	1.3035	-0.0800	198	0.00
07/11 10:05	2.0978	1.2340	-0.1000	208	0.00
07/11 10:09	1.9823	1.7765	-0.0500	216	0.00
07/11 10:13	1.2319	1.7765	-0.1100	229	0.00
07/11 10:17	2.2132	1.4566	-0.0700	233	0.00
07/11 10:21	1.9246	1.8878	-0.1000	238	0.00
07/11 10:25	1.9246	1.9991	-0.0500	246	0.00
07/11 10:29	0.9433	1.8044	-0.0600	246	0.00
07/11 10:33	1.7515	1.7070	-0.0700	254	0.00
07/11 10:37	1.1165	1.7765	-0.0500	260	0.00
07/11 10:41	1.5206	1.7070	0.0000	267	0.00
07/11 10:45	1.9246	2.0130	-0.0600	271	0.00
07/11 10:49	1.5783	1.8878	-0.1000	268	0.00
07/11 10:53	1.7514	2.2078	-0.0300	272	0.00
07/11 10:57	2.9059	2.3330	-0.1100	264	0.00
07/11 11:01	2.2132	2.4304	-0.1300	268	0.00
07/11 11:05	2.5205	2.0965	-0.0400	282	0.00
07/11 11:09	1.6750	2.3608	-0.0600	197	0.00
07/11 11:13	1.8482	2.3747	-0.1000	197	0.00
07/11 11:17	1.5783	2.3608	-0.0600	207	0.00
07/11 11:21	2.1555	2.4860	-0.0800	203	0.00
07/11 11:25	1.9636	2.5834	-0.0400	204	0.00
07/11 11:29	2.3864	2.4721	-0.0100	204	0.00
07/11 11:33	2.0978	2.5278	-0.0100	225	0.00
07/11 11:37	1.2522	2.6112	0.0000	215	0.00
07/11 11:41	2.8482	2.4304	-0.0100	221	0.00
07/11 11:45	2.4441	2.6112	-0.0400	222	0.00
07/11 11:49	2.7905	2.5973	-0.1200	233	0.00
07/11 11:53	2.4441	2.6112	-0.0600	241	0.00
07/11 11:57	2.4441	2.4582	-0.1300	245	0.00

EA05015C.ANA

EA05 Oarb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Light	Pump
07/11 12:04	0.0000	0.0000	0.0000	240	0.00
07/11 12:08	0.0000	0.0000	0.0000	230	0.00
07/11 12:12	0.0000	0.0000	0.0000	242	0.00
07/11 12:16	0.0000	0.0000	0.0000	234	0.00
07/11 12:20	0.0000	0.0000	0.0000	223	0.00
07/11 12:24	-3.0114	-1.3376	-0.3320	222	0.00
07/11 12:28	-3.0561	-0.0590	1.1563	216	0.00
07/11 12:32	-2.8998	0.3688	-0.4669	226	0.00
07/11 12:36	-2.5202	0.7610	0.9106	205	0.00
07/11 12:40	-2.5648	0.4758	1.3782	205	0.00
07/11 12:44	-2.3862	0.8680	0.6000	204	0.00
07/11 12:48	-2.2746	-1.1176	0.8884	208	0.00
07/11 12:52	-2.2746	0.9036	0.7775	208	0.00
07/11 12:56	-2.2522	1.2245	0.7553	204	0.00
07/11 13:00	-2.0736	1.4741	1.0659	205	0.00
07/11 13:04	-2.1182	1.4384	1.0880	205	0.00
07/11 13:08	-2.0513	-1.6167	1.0215	226	0.00
07/11 13:12	-1.8726	-1.9019	1.1102	216	0.00
07/11 13:16	-1.8280	0.0445	1.2655	222	0.00
07/11 13:20	-1.8503	0.1515	-0.3542	222	0.00
07/11 13:24	-1.7833	0.1872	1.2655	246	0.00
07/11 13:28	-1.6940	0.2585	1.2877	246	0.00
07/11 13:32	-1.8056	0.5150	1.2877	251	0.00
07/11 13:36	-1.7163	0.4724	1.1989	202	0.00
07/11 13:40	-1.5600	0.3654	0.9549	222	0.00
07/11 13:44	-1.6047	0.5150	1.1768	201	0.00
07/11 13:48	-1.6716	-1.3298	1.3099	231	0.00
07/11 13:52	-1.5600	-1.3298	1.1102	205	0.00
07/11 13:56	-1.5153	0.4011	1.0880	204	0.00
07/11 14:00	-1.6270	1.1515	-0.3986	207	0.00
07/11 14:04	-1.5377	1.1158	1.1546	246	0.00
07/11 14:08	-1.5153	-1.4367	0.8384	231	0.00
07/11 14:12	-1.5823	1.2228	0.8384	205	0.00
07/11 14:16	-1.6047	1.1515	0.7997	205	0.00
07/11 14:20	-1.5600	1.2228	0.7775	222	0.00
07/11 14:24	-1.4707	1.2941	0.6444	236	0.00
07/11 14:28	-1.5153	0.8306	0.7331	246	0.00
07/11 14:32	-1.3590	1.2228	0.7775	246	0.00
07/11 14:36	-1.4037	0.8306	0.9106	235	0.00

EB05015C.ANA

EB05 Oarb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Light	Pump
07/11 12:13	0.0000	0.0000	0.0000	230	0.00
07/11 12:17	0.0000	0.0000	0.0000	220	0.00
07/11 12:21	0.0000	0.0000	0.0000	223	0.00
07/11 12:25	0.0000	0.0000	0.0000	222	0.00
07/11 12:29	0.0000	0.0000	0.0000	216	0.00
07/11 12:33	0.9433	1.3731	-0.3900	226	0.00
07/11 12:37	-0.7124	1.3313	-0.2300	205	0.00
07/11 12:41	1.0010	-0.5818	-0.0700	205	0.00
07/11 12:45	-0.1352	-0.7626	-0.0200	204	0.00
07/11 12:49	-0.4815	-0.5261	-0.0500	208	0.00
07/11 12:53	-0.4238	-0.5678	-0.0000	208	0.00
07/11 12:57	0.5970	1.7765	-0.0400	204	0.00
07/11 13:01	0.7702	1.6931	-0.0700	205	0.00
07/11 13:05	0.5205	1.6652	-0.1300	205	0.00
07/11 13:09	0.6547	-0.8183	-0.1300	226	0.00
07/11 13:13	1.2897	-0.8739	-0.1000	216	0.00
07/11 13:17	1.0588	-0.8878	-0.0800	222	0.00
07/11 13:21	0.9433	-0.9852	-0.0100	222	0.00
07/11 13:25	1.0588	1.8322	-0.0600	246	0.00
07/11 13:29	1.1165	-0.9296	-0.0500	246	0.00
07/11 13:33	0.9433	0.0409	-0.0800	251	0.00
07/11 13:37	1.4628	0.2774	-0.0400	202	0.00
07/11 13:41	0.5206	0.1661	-0.1100	222	0.00
07/11 13:45	0.9433	0.0826	-0.1000	201	0.00
07/11 13:49	0.6937	0.1939	-0.0500	231	0.00
07/11 13:53	0.5206	0.2774	-0.0200	205	0.00
07/11 13:57	1.5206	0.0548	-0.0800	204	0.00
07/11 14:01	1.5783	-0.9991	-0.0300	207	0.00
07/11 14:05	1.4051	0.2217	-0.0400	246	0.00
07/11 14:09	1.4628	-0.9156	-0.0700	231	0.00
07/11 14:13	1.1742	-0.9435	-0.0900	205	0.00
07/11 14:17	0.7702	1.8043	-0.0700	205	0.00
07/11 14:21	0.9433	-0.9296	-0.1200	222	0.00
07/11 14:25	0.8856	0.1661	-0.1200	236	0.00

Appendix 1C Data table for the Day 1 experiments on *Oculina arbuscula* with sediment (EA07O15C & EB07O15C) and without sediment (EA06O15C & EB06O15C), Charleston Harbor, SC, 15 m depth.

EA06015C.ANA

EA06 Oarb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Light	Pump
07/11 14:44	0.0000	0.0000	0.0000	275	0.00
07/11 14:48	0.0000	0.0000	0.0000	280	0.00
07/11 14:52	0.0000	0.0000	0.0000	278	0.00
07/11 14:56	0.0000	0.0000	0.0000	279	0.00
07/11 15:00	1.1243	2.3654	2.7757	275	0.00
07/11 15:04	1.1979	2.2571	2.5982	271	0.00
07/11 15:08	1.2027	3.8646	2.7757	281	0.00
07/11 15:36	1.1483	2.3654	2.5982	263	0.00
07/11 15:40	1.2144	2.0089	2.3099	269	0.00
07/11 15:44	1.1930	1.8306	2.1546	271	0.00
07/11 15:48	1.2590	1.5097	1.8440	269	0.00
07/11 15:52	1.3707	1.3315	1.9327	261	0.00
07/11 15:56	1.2814	1.8680	1.8440	267	0.00
07/11 16:00	1.0037	1.0819	1.6887	217	0.00
07/11 16:04	1.0037	1.1176	1.7775	213	0.00
07/11 16:08	0.5484	1.2958	1.7331	207	0.00
07/11 16:12	0.8051	0.9749	1.6222	205	0.00
07/11 16:16	0.4090	0.7967	1.3782	200	0.00
07/11 16:20	0.1804	0.8323	1.5778	193	0.00
07/11 16:24	-0.3590	0.5471	1.1785	187	0.00
07/11 16:28	-0.2697	0.0123	1.1563	182	0.00
07/11 16:32	-0.3590	0.6184	0.8901	187	0.00
07/11 16:36	-0.2251	0.4758	1.0454	180	0.00
07/11 16:40	-0.2920	0.3332	0.7570	177	0.00
07/11 16:44	-0.2687	0.1549	0.6683	172	0.00
07/11 16:48	-0.1464	0.9393	0.4908	168	0.00
07/11 16:52	-0.1687	-0.1660	0.5574	163	0.00
07/11 16:56	-0.0241	-0.0234	0.2912	161	0.00
07/11 17:00	-0.2348	-0.0590	0.1803	164	0.00
07/11 17:04	-0.1687	0.0123	0.2912	158	0.00
07/11 17:08	-0.1911	-0.7008	0.2690	156	0.00
07/11 17:12	-0.1571	0.0836	0.0472	150	0.00
07/11 17:16	-0.5018	-0.4512	-0.0194	148	0.00
07/11 17:20	-0.1241	-0.4868	0.1359	141	0.00
07/11 17:24	-0.9348	-0.8077	-0.2412	133	0.00
07/11 17:28	-0.9571	-0.6295	-0.2634	131	0.00
07/11 17:32	-0.4464	-1.4851	-0.4187	126	0.00
07/11 17:36	-0.9571	-1.0216	-0.4852	118	0.00
07/11 17:40	-0.9571	-1.3069	-0.8845	118	0.00
07/11 17:44	-0.8454	-0.9860	-0.7958	114	0.00
07/11 17:48	-0.9124	-1.5564	-0.8180	110	0.00
07/11 17:52	-0.8008	-1.4495	-1.1285	105	0.00
07/11 17:56	-0.8678	-1.5921	-1.1507	98	0.00
07/11 18:00	-0.8008	-1.8060	-1.1729	83	0.00
07/11 18:04	-1.2678	-1.7704	-1.4613	82	0.00
07/11 18:08	-1.2008	-1.9486	-1.7053	80	0.00
07/11 18:36	-1.6493	-2.2338	-1.1285	78	0.00
07/11 18:40	-1.5823	-2.2695	-1.3060	58	0.00
07/11 18:44	-1.7163	-1.6634	-1.3282	55	0.00
07/11 18:48	-1.6047	-1.7704	-1.3060	53	0.00
07/11 18:52	-1.7833	-2.2338	-1.5278	51	0.00
07/11 18:56	-1.7386	-2.0556	-1.5278	47	0.00
07/11 19:00	-1.7163	-2.5191	-1.5278	44	0.00
07/11 19:04	-1.7163	-3.5174	-1.5722	41	0.00
07/11 19:08	-1.6047	-3.2321	-1.6165	37	0.00
07/11 19:12	-1.5153	-2.4121	-1.3947	29	0.00

07/11 19:16	-1.5377	-2.9113	-1.5278	20	0.00
07/11 19:20	-1.5153	-2.7686	-1.4834	18	0.00
07/11 19:24	-1.5153	-2.7686	-1.6166	16	0.00
07/11 19:28	-1.4707	-3.0539	-1.7053	13	0.00
07/11 19:32	-1.4930	-2.8756	-1.7053	13	0.00
07/11 19:36	-1.4930	-3.0182	-1.9271	11	0.00
07/11 19:40	-1.4930	-2.8400	-1.8384	11	0.00
07/11 19:44	-1.3367	-2.9826	-1.8384	10	0.00
07/11 19:48	-1.4930	-2.8043	-1.7718	9	0.00
07/11 19:52	-1.3814	-2.9113	-1.9715	9	0.00
07/11 19:56	-1.3367	-2.6617	-1.8827	8	0.00
07/11 20:00	-1.2697	-2.7686	-2.0602	6	0.00
07/11 20:04	-1.2697	-2.5547	-1.8384	5	0.00
07/11 20:08	-1.1804	-2.9469	-1.7940	5	0.00
07/11 20:12	-1.2474	-3.0182	-1.9049	4	0.00
07/11 20:16	-1.1134	-2.8400	-1.8384	4	0.00
07/11 20:20	-1.2027	-2.8043	-1.8384	3	0.00
07/11 20:24	-1.2027	-3.1965	-2.0380	1	0.00
07/11 20:28	-1.0018	-2.8756	-2.1268	2	0.00
07/11 20:32	-1.0687	-3.1252	-2.1268	1	0.00
07/11 20:36	-1.2474	-3.1608	-2.1933	0	0.00
07/11 20:40	-1.0687	-3.2321	-2.1046	0	0.00
07/11 20:44	-1.1357	-3.0895	-2.0824	0	0.00
07/11 20:48	-1.2474	-3.0539	-2.1046	0	0.00
07/11 20:52	-1.0911	-2.8756	-2.0158	0	0.00
07/11 20:56	-1.1357	-3.0182	-1.9937	0	0.00
07/11 21:00	-1.2474	-2.9826	-2.1933	0	0.00
07/11 21:04	-0.9794	-2.7330	-2.1268	0	0.00
07/11 21:08	-1.0464	-2.8756	-2.1268	0	0.00
07/11 21:36	-2.0513	-4.1235	-2.4373	0	0.00
07/11 21:40	-2.0736	-4.0878	-2.3042	0	0.00
07/11 21:44	-2.0066	-3.6956	-2.3486	0	0.00
07/11 21:48	-1.9843	-4.0165	-2.2155	0	0.00
07/11 21:52	-1.8949	-3.6243	-2.3486	0	0.00
07/11 21:56	-1.9396	-3.8026	-2.1489	0	0.00
07/11 22:00	-1.9396	-3.7313	-2.2155	0	0.00
07/11 22:04	-1.9173	-3.5887	-2.1711	0	0.00
07/11 22:08	-1.8280	-3.5530	-2.2820	0	0.00
07/11 22:12	-1.8503	-2.1982	-2.0824	0	0.00
07/11 22:16	-1.8949	-3.5530	-2.1711	0	0.00
07/11 22:20	-1.6493	-3.5174	-2.2155	0	0.00
07/11 22:24	-1.6047	-3.5530	-2.1711	0	0.00
07/11 22:28	-1.6047	-3.8382	-2.0602	0	0.00
07/11 22:32	-1.6047	0.0000	-2.2599	0	0.00
07/11 22:36	-1.5823	-3.5887	-2.1711	0	0.00
07/11 22:40	-1.6493	-3.1965	-2.0602	0	0.00
07/11 22:44	-1.4707	-3.4461	-2.0824	0	0.00
07/11 22:48	-1.4930	-3.0182	-2.0602	0	0.00
07/11 22:52	-1.5600	-3.3034	-2.0380	0	0.00
07/11 22:56	-1.3144	-3.1252	-1.9271	0	0.00
07/11 23:00	-1.5153	-3.4461	-1.9937	0	0.00
07/11 23:04	-1.5823	-3.3034	-2.0380	0	0.00
07/11 23:08	-1.4930	-3.5887	-2.0158	0	0.00
07/11 23:12	-1.3367	-3.3391	-2.0602	0	0.00
07/11 23:16	-1.5153	-3.3034	-2.0380	0	0.00
07/11 23:20	-1.2920	-3.3034	-2.0380	0	0.00
07/11 23:24	-1.3144	-3.2678	-1.9937	0	0.00
07/11 23:28	-1.3814	-3.1608	-1.9271	0	0.00
07/11 23:32	-1.4037	-3.3034	-1.7496	0	0.00
07/11 23:36	-1.2250	-3.3391	-1.9493	0	0.00

07/11 23:40	-1.3144	-2.8400	-1.8827	0	0.00
07/11 23:44	-1.1804	-3.0182	-1.8827	0	0.00
07/11 23:48	-1.1804	-3.1965	-1.9715	0	0.00
07/11 23:52	-1.1357	-2.9826	-1.9271	0	0.00
07/11 23:56	-1.2027	-2.8043	-1.8827	0	0.00
07/12 00:00	-1.1357	-3.3391	-1.7940	0	0.00
07/12 00:04	-1.2027	-2.9826	-1.7275	0	0.00
07/12 00:08	-1.0687	-2.9826	-1.8384	0	0.00
07/12 00:36	-2.0289	-3.7669	-2.3708	0	0.00
07/12 00:40	-2.0736	-3.3747	-2.3930	0	0.00
07/12 00:44	-1.9396	-4.0878	-2.3486	0	0.00
07/12 00:48	-1.8949	-3.6956	-2.2155	0	0.00
07/12 00:52	-1.8503	-4.3017	-2.3042	0	0.00
07/12 00:56	-1.8949	-3.6956	-2.0602	0	0.00
07/12 01:00	-1.8280	-4.1235	-2.1046	0	0.00
07/12 01:04	-1.6940	-1.5564	-2.2155	0	0.00
07/12 01:08	-1.6940	-2.5191	-2.0824	0	0.00
07/12 01:12	-1.7163	-3.5174	-2.0824	0	0.00
07/12 01:16	-1.5823	-3.4817	-2.1933	0	0.00
07/12 01:20	-1.5823	-3.1252	-2.1933	0	0.00
07/12 01:24	-1.5823	0.0000	-1.9937	0	0.00
07/12 01:28	-1.6493	-1.7704	-2.0824	0	0.00
07/12 01:32	-1.6270	-3.2678	-2.0380	0	0.00
07/12 01:36	-1.6493	-3.3034	-2.0158	0	0.00
07/12 01:40	-1.5823	-3.3391	-1.9271	0	0.00
07/12 01:44	-1.6047	-2.1625	-1.8827	0	0.00
07/12 01:48	-1.4707	0.0000	-1.9493	0	0.00
07/12 01:52	-1.3814	-3.0539	-1.9271	0	0.00
07/12 01:56	-1.3814	-2.8756	-1.9271	0	0.00
07/12 02:00	-1.3144	-3.1965	-1.9271	0	0.00
07/12 02:04	-1.3590	-4.0522	-2.1268	0	0.00
07/12 02:08	-1.3590	-2.9826	-1.9049	0	0.00
07/12 02:12	-1.3367	-3.2321	-2.0158	0	0.00
07/12 02:16	-1.2474	-3.2678	-1.8606	0	0.00
07/12 02:20	-1.4037	-0.7008	-1.9715	0	0.00
07/12 02:24	-1.2920	-2.6260	-1.9271	0	0.00
07/12 02:28	-1.3367	-2.9113	-2.1046	0	0.00
07/12 02:32	-1.1581	-3.0539	-1.8606	0	0.00
07/12 02:36	-1.2697	-3.1252	-1.9493	0	0.00
07/12 02:40	-1.0911	0.0000	-1.8384	0	0.00
07/12 02:44	-1.0687	-3.4817	-1.8384	0	0.00
07/12 02:48	-1.1357	-3.0539	-1.7496	0	0.00
07/12 02:52	-1.2250	-2.8756	-1.8827	0	0.00
07/12 02:56	-1.1581	-2.6260	-1.9049	0	0.00
07/12 03:00	-1.1357	-1.7347	-1.9049	0	0.00
07/12 03:04	-1.1804	-2.6617	-1.8162	0	0.00
07/12 03:08	-0.9348	1.3671	-1.8162	0	0.00
07/12 03:36	-2.1852	-3.4104	-2.4373	0	0.00
07/12 03:40	-1.9843	-2.1625	-2.2599	0	0.00
07/12 03:44	-2.0736	-3.3748	-2.3264	0	0.00
07/12 03:48	-1.9619	-3.6600	-2.2377	0	0.00
07/12 03:52	-1.9843	-3.0182	-2.1933	0	0.00
07/12 03:56	-1.7386	-3.2321	-2.2599	0	0.00
07/12 04:00	-1.8280	0.0000	-2.1711	0	0.00
07/12 04:04	-1.8503	-3.1252	-2.0824	0	0.00
07/12 04:08	-1.8503	-3.0539	-2.1489	0	0.00
07/12 04:12	-1.7833	-3.2321	-2.1933	0	0.00
07/12 04:16	-1.9396	-3.2321	-2.0380	0	0.00
07/12 04:20	-1.8503	-2.8400	-2.2599	0	0.00
07/12 04:24	-1.8280	-3.4817	-2.1268	0	0.00

07/12 04:28	-1.7386	-3.1608	-2.2155	0	0.00
07/12 04:32	-1.7610	-3.1252	-2.1046	0	0.00
07/12 04:36	-1.6493	-3.0182	-2.1933	0	0.00
07/12 04:40	-1.6047	-3.3034	-2.0602	0	0.00
07/12 04:44	-1.5823	-2.9113	-2.1268	0	0.00
07/12 04:48	-1.6047	-3.1608	-2.1933	0	0.00
07/12 04:52	-1.4930	-3.2321	-2.0824	0	0.00
07/12 04:56	-1.4484	-3.0895	-1.9937	0	0.00
07/12 05:00	-1.5377	-3.1965	-2.1711	0	0.00
07/12 05:04	-1.5153	-3.3034	-2.0824	0	0.00
07/12 05:08	-1.4484	-3.2321	-1.9937	0	0.00
07/12 05:12	-1.5600	-3.1252	-2.2155	0	0.00
07/12 05:16	-1.6047	-3.1965	-2.0158	0	0.00
07/12 05:20	-1.4707	-3.1608	-1.9493	0	0.00
07/12 05:24	-1.2474	-3.0895	-2.0824	0	0.00
07/12 05:28	-1.3367	-3.0539	-1.9937	0	0.00
07/12 05:32	-1.1357	-3.1252	-1.8162	0	0.00
07/12 05:36	-1.2251	-2.9826	-2.1046	0	0.00
07/12 05:40	-1.2474	-2.9469	-1.9049	0	0.00
07/12 05:44	-1.3144	-2.8756	-1.9271	0	0.00
07/12 05:48	-1.2027	-2.9469	-1.9493	0	0.00
07/12 05:52	-1.3144	-2.9113	-1.9049	0	0.00
07/12 05:56	-1.2027	-3.0182	-1.8827	0	0.00
07/12 06:00	-1.0911	-2.7330	-2.0158	0	0.00
07/12 06:04	-1.1134	-2.8043	-1.9715	0	0.00
07/12 06:08	-1.0911	-2.8400	-1.9049	0	0.00
07/12 06:36	-1.9843	-3.0895	-2.0602	0	0.00
07/12 06:40	-1.9843	-2.7686	-2.2599	6	0.00
07/12 06:44	-1.8503	-3.4104	-2.0824	9	0.00
07/12 06:48	-1.7610	-3.4104	-1.9715	9	0.00
07/12 06:52	-1.7386	-3.4817	-2.1046	12	0.00
07/12 06:56	-1.7386	-3.5530	-2.0824	14	0.00
07/12 07:00	-1.7610	-3.8382	-2.0158	14	0.00
07/12 07:04	-1.7163	-3.3034	-1.9937	17	0.00
07/12 07:08	-1.6047	-2.9469	-1.9049	20	0.00
07/12 07:12	-1.6940	-2.9469	-1.6831	22	0.00
07/12 07:16	-1.5823	-3.0182	-1.6166	24	0.00
07/12 07:20	-1.5377	-2.6277	-1.6387	28	0.00
07/12 07:24	-1.4260	-2.8043	-1.6609	31	0.00
07/12 07:28	-1.4930	-3.0182	-1.5722	32	0.00
07/12 07:32	-1.3814	-1.4851	-1.7053	36	0.00
07/12 07:36	-1.3814	-2.4834	-1.5500	38	0.00
07/12 07:40	-1.4037	-3.9096	-1.3282	41	0.00
07/12 07:44	-1.3367	-2.3332	-1.5278	44	0.00
07/12 07:48	-1.3590	-2.4121	-1.4159	45	0.00
07/12 07:52	-1.3590	-3.6600	-1.2616	48	0.00
07/12 07:56	-1.4260	-2.2695	-1.3060	52	0.00
07/12 08:00	-1.3144	-2.0556	-1.3060	56	0.00
07/12 08:04	-1.3814	-1.0000	-0.9954	60	0.00
07/12 08:08	-1.2250	-1.9843	-0.9954	64	0.00
07/12 08:12	-1.2474	-1.7347	-0.8623	69	0.00
07/12 08:16	-1.1134	-1.6634	-0.7292	71	0.00
07/12 08:20	-1.1357	-1.1999	-0.5739	73	0.00
07/12 08:24	-1.1357	-1.3782	-0.4187	77	0.00
07/12 08:28	-1.1357	-1.3069	-0.2856	79	0.00
07/12 08:32	-1.0687	-0.2619	-0.3299	87	0.00
07/12 08:36	-1.0064	-1.2712	-0.3077	95	0.00
07/12 08:40	-0.9794	-1.6277	-0.1968	95	0.00
07/12 08:44	-0.9348	-1.2712	-0.0194	100	0.00
07/12 08:48	-0.9348	-1.0216	-0.1081	105	0.00

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07/12 08:52	-0.9348	-0.6973	0.0915	108	0.00
07/12 08:56	-0.9124	-1.0573	0.0916	110	0.00
07/12 09:00	-0.9115	-0.9147	0.1359	121	0.00
07/12 09:04	-0.9561	-0.8434	0.0916	131	0.00
07/12 09:08	-1.0338	-0.7364	0.3577	132	0.00
07/12 09:36	-1.7610	-0.1660	0.7570	132	0.00
07/12 09:40	-0.5823	-0.5581	0.7349	172	0.00
07/12 09:44	-0.6940	-0.4155	0.9123	182	0.00
07/12 09:48	-0.6716	-0.5938	0.9567	186	0.00
07/12 09:52	-0.5823	-0.4758	1.2451	192	0.00
07/12 09:56	-0.4707	-0.9147	1.1563	190	0.00
07/12 10:00	-0.0047	-0.4868	1.2451	196	0.00
07/12 10:04	0.4037	-0.4155	1.2894	206	0.00
07/12 10:08	0.3590	0.0123	1.4447	216	0.00
07/12 10:12	0.2920	-0.9503	1.4891	227	0.00
07/12 10:16	0.3367	0.0123	1.6222	233	0.00
07/12 10:20	0.2697	0.1193	1.6222	237	0.00
07/12 10:24	0.5474	0.1549	1.4669	246	0.00
07/12 10:28	0.6144	0.1549	1.6444	244	0.00
07/12 10:32	1.3144	0.2262	1.6222	253	0.00
07/12 10:36	1.2027	1.1303	1.5335	260	0.00
07/12 10:40	1.2474	1.1549	1.5113	267	0.00
07/12 10:44	1.4037	2.1303	1.5556	271	0.00
07/12 10:48	1.2251	1.0123	1.2673	267	0.00
07/12 10:52	1.5474	2.1549	1.3560	271	0.00
07/12 10:56	1.2697	1.5471	1.5334	263	0.00
07/12 11:00	1.1581	1.5828	1.6000	267	0.00
07/12 11:04	2.0464	3.7610	1.9327	281	0.00
07/12 11:08	1.2251	1.6184	2.2211	267	0.00
07/12 11:12	1.0911	1.4384	2.1989	263	0.00
07/12 11:16	1.6251	2.7610	2.0380	271	0.00
07/12 11:20	1.7357	1.2975	1.9549	268	0.00
07/12 11:24	1.8464	2.5115	1.6387	270	0.00
07/12 11:28	1.9124	1.6897	1.7109	266	0.00
07/12 11:32	1.9571	1.3085	1.6565	259	0.00
07/12 11:36	1.7785	1.4401	1.7553	261	0.00

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EB06 Oarb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Light	Pump
07/11 14:37	0.0000	0.0000	0.0000	275	0.00
07/11 14:41	0.0000	0.0000	0.0000	275	0.00
07/11 14:45	0.0000	0.0000	0.0000	275	0.00
07/11 14:49	0.0000	0.0000	0.0000	280	0.00
07/11 14:53	0.0000	0.0000	0.0000	278	0.00
07/11 14:57	2.3864	1.8044	-0.0300	279	0.00
07/11 15:25	1.7514	2.1243	-0.0200	275	0.00
07/11 15:29	3.0213	2.2078	-0.0200	271	0.00
07/11 15:33	1.7514	1.7209	-0.0700	281	0.00
07/11 15:37	2.2710	2.1939	-0.0200	263	0.00
07/11 15:41	2.0401	1.5957	-0.0300	269	0.00
07/11 15:45	2.3287	1.6096	-0.0800	271	0.00
07/11 15:49	1.6360	2.3592	-0.1100	269	0.00
07/11 15:53	1.4628	1.7348	-0.0700	261	0.00
07/11 15:57	1.7124	2.1644	-0.0800	217	0.00
07/11 16:01	0.8279	1.4426	-0.0900	217	0.00
07/11 16:05	0.5393	1.1922	-0.1000	214	0.00
07/11 16:09	0.8856	1.1922	-0.0800	208	0.00
07/11 16:13	1.0010	1.0392	-0.1200	205	0.00
07/11 16:17	1.4051	1.3035	-0.1500	200	0.00
07/11 16:21	0.7702	1.1227	-0.0900	193	0.00
07/11 16:25	0.8856	1.1505	-0.0800	188	0.00
07/11 16:29	0.9433	1.3313	-0.0900	182	0.00
07/11 16:33	0.8279	1.0809	-0.0600	188	0.00
07/11 16:37	0.4238	0.9557	-0.0200	181	0.00
07/11 16:41	0.4815	1.0114	-0.0700	177	0.00
07/11 16:45	-0.4998	0.9140	-0.1000	172	0.00
07/11 16:49	0.0775	0.7749	-0.0700	168	0.00
07/11 16:53	-0.0380	0.8444	-0.1300	163	0.00
07/11 16:57	-0.0380	0.8027	-0.1300	162	0.00
07/11 17:01	0.1929	0.5105	-0.0900	164	0.00
07/11 17:05	0.5970	0.6775	-0.0700	158	0.00
07/11 17:09	0.4420	0.5801	-0.0700	156	0.00
07/11 17:13	0.1347	0.7192	-0.0200	150	0.00
07/11 17:17	-1.0193	0.4410	-0.0400	148	0.00
07/11 17:21	-1.0770	0.3218	-0.1000	141	0.00
07/11 17:25	-1.5388	0.2462	-0.1000	133	0.00
07/11 17:29	-1.1924	-0.3297	-0.0800	131	0.00
07/11 17:33	-1.4420	-0.1210	-0.0700	126	0.00
07/11 17:37	-1.1347	-0.1488	-0.1100	118	0.00
07/11 17:41	-1.7119	-0.1851	-0.0800	118	0.00
07/11 17:45	-1.7697	-0.1711	-0.1700	114	0.00
07/11 17:49	-1.8851	-0.3798	-0.1000	110	0.00
07/11 17:53	-1.3859	-0.3798	-0.1000	105	0.00
07/11 17:57	-0.9860	-0.3103	-0.0700	98	0.00
07/11 18:25	-1.4380	-0.7833	-0.1000	83	0.00
07/11 18:29	-1.6790	-0.6720	-0.1400	82	0.00
07/11 18:33	-1.6550	-0.7276	-0.0800	82	0.00
07/11 18:37	-1.4890	-0.7276	-0.0700	83	0.00
07/11 18:41	-1.3447	-0.5885	-0.0700	58	0.00
07/11 18:45	-1.6990	-0.4911	-0.1200	55	0.00
07/11 18:49	-1.8444	-0.7276	-0.0600	53	0.00
07/11 18:53	-1.3859	-0.8389	-0.0800	50	0.00
07/11 18:57	-1.7338	-0.8807	-0.0700	47	0.00
07/11 19:01	-1.5997	-0.9085	-0.1500	44	0.00
07/11 19:05	-0.3266	-1.1032	-0.1100	41	0.00

07/11 19:09	-1.0588	-0.6024	-0.1700	37	0.00
07/11 19:13	-2.6550	-0.7554	-0.1400	29	0.00
07/11 19:17	-2.5680	-0.6859	-0.1100	20	0.00
07/11 19:21	-2.3245	-1.2424	-0.0200	18	0.00
07/11 19:25	-1.9887	-0.6024	-0.0100	16	0.00
07/11 19:29	-1.9932	-0.7137	-0.0300	13	0.00
07/11 19:33	-1.2319	-1.1867	-0.1200	13	0.00
07/11 19:37	-1.8092	-1.4232	-0.1500	11	0.00
07/11 19:41	-2.4452	-0.4772	-0.1100	11	0.00
07/11 19:45	-3.1550	-1.0476	-0.0900	10	0.00
07/11 19:49	-2.4576	-1.4093	-0.1600	9	0.00
07/11 19:53	-2.9236	-1.1780	-0.0200	9	0.00
07/11 19:57	-2.3317	-1.1641	-0.0500	8	0.00
07/11 20:01	-1.4051	-1.5206	-0.1200	6	0.00
07/11 20:05	-2.6660	-1.0059	-0.1300	5	0.00
07/11 20:09	-1.9038	-1.2424	-0.0800	5	0.00
07/11 20:13	-1.3476	-1.1867	-0.0800	4	0.00
07/11 20:17	-1.4238	-0.7833	-0.0700	4	0.00
07/11 20:21	-1.2319	-1.2980	-0.0900	3	0.00
07/11 20:25	-2.5393	-2.2579	-0.0700	1	0.00
07/11 20:29	-1.4815	-1.4928	-0.0200	2	0.00
07/11 20:33	-1.6371	-1.0754	-0.0700	1	0.00
07/11 20:37	-2.6355	-1.4232	-0.0900	0	0.00
07/11 20:41	-3.7323	-1.7571	-0.0500	0	0.00
07/11 20:45	-0.7307	-0.5329	-0.0700	0	0.00
07/11 20:49	-1.0770	-1.6319	-0.1100	0	0.00
07/11 20:53	-1.5965	-1.9380	-0.1300	0	0.00
07/11 20:57	-1.5607	-1.9936	-0.0700	0	0.00
07/11 21:25	-0.9615	-1.5763	-0.1100	0	0.00
07/11 21:29	-0.8461	-1.4371	-0.0800	0	0.00
07/11 21:33	-3.2517	-1.3815	-0.1200	0	0.00
07/11 21:37	0.0000	-0.8250	-0.1000	0	0.00
07/11 21:41	-3.0599	-1.6458	-0.0900	0	0.00
07/11 21:45	-3.1753	-1.0059	-0.1300	0	0.00
07/11 21:49	0.0000	-1.0893	-0.1300	0	0.00
07/11 21:53	-2.1769	-1.6319	-0.1600	0	0.00
07/11 21:57	0.0000	-1.4650	-0.0600	0	0.00
07/11 22:01	0.0000	-1.8128	-0.1200	0	0.00
07/11 22:05	0.0000	-1.7432	-0.1000	0	0.00
07/11 22:09	-3.0786	-2.0214	-0.1300	0	0.00
07/11 22:13	0.0000	-2.0771	-0.0900	0	0.00
07/11 22:17	-1.8851	-2.0493	-0.1300	0	0.00
07/11 22:21	-0.4815	-1.2563	-0.0600	0	0.00
07/11 22:25	-2.7327	-1.3954	-0.0300	0	0.00
07/11 22:29	-3.0412	-1.2563	-0.0100	0	0.00
07/11 22:33	0.0000	-0.8389	-0.0300	0	0.00
07/11 22:37	-1.0775	-0.5189	-0.0500	0	0.00
07/11 22:41	-1.1352	-1.6597	-0.0900	0	0.00
07/11 22:45	-1.5965	-1.3537	-0.0900	0	0.00
07/11 22:49	0.0000	-0.5607	-0.0900	0	0.00
07/11 22:53	0.0000	-1.5345	-0.0900	0	0.00
07/11 22:57	0.0000	-1.9380	-0.1200	0	0.00
07/11 23:01	0.0000	-0.0181	-0.0700	0	0.00
07/11 23:05	0.0000	-2.2023	-0.1400	0	0.00
07/11 23:09	-1.7514	-2.1884	-0.1900	0	0.00
07/11 23:13	0.0000	-0.4355	-0.1100	0	0.00
07/11 23:17	0.0000	-0.5189	-0.1200	0	0.00
07/11 23:21	0.0000	-1.2563	-0.1700	0	0.00
07/11 23:25	0.0000	-0.5468	-0.0500	0	0.00
07/11 23:29	0.0000	-0.6998	-0.0100	0	0.00

07/11 23:33	-1.4810	-2.2023	-0.0900	0	0.00
07/11 23:37	-2.1160	-1.7154	-0.1000	0	0.00
07/11 23:41	-3.8477	-1.3537	-0.0600	0	0.00
07/11 23:45	-3.3859	-1.3676	-0.1000	0	0.00
07/11 23:49	-2.5778	-1.5902	-0.1000	0	0.00
07/11 23:53	-3.2705	-0.7610	-0.0900	0	0.00
07/11 23:57	-0.9038	-0.4911	-0.0700	0	0.00
07/12 00:25	-0.6729	-1.0198	-0.0700	0	0.00
07/12 00:29	-3.7900	-1.0615	-0.1100	0	0.00
07/12 00:33	-0.7124	-1.0754	-0.1500	0	0.00
07/12 00:37	0.0000	-1.3537	-0.1000	0	0.00
07/12 00:41	-1.4233	-1.3815	-0.0500	0	0.00
07/12 00:45	-0.0197	-1.8545	-0.1900	0	0.00
07/12 00:49	-2.7905	-2.3971	-0.0700	0	0.00
07/12 00:53	-1.7514	-1.7154	-0.1000	0	0.00
07/12 00:57	-2.1566	-0.8807	-0.1100	0	0.00
07/12 01:01	-2.6355	-2.4527	-0.1400	0	0.00
07/12 01:05	-1.2502	-0.7833	0.0300	0	0.00
07/12 01:09	-2.9818	-0.9641	-0.1400	0	0.00
07/12 01:13	-1.3672	-1.6458	-0.1400	0	0.00
07/12 01:17	-1.1347	-1.8823	-0.0700	0	0.00
07/12 01:21	-1.9246	-0.2129	-0.1000	0	0.00
07/12 01:25	-3.4436	-1.6875	-0.0800	0	0.00
07/12 01:29	-2.3485	-1.6597	-0.1400	0	0.00
07/12 01:33	-2.2908	-1.1867	-0.1300	0	0.00
07/12 01:37	-2.5201	-0.5746	-0.0800	0	0.00
07/12 01:41	-1.7696	-1.2145	-0.0300	0	0.00
07/12 01:45	-1.2127	-1.9936	-0.1000	0	0.00
07/12 01:49	-2.5018	-0.8946	-0.0900	0	0.00
07/12 01:53	-1.2319	-1.2285	-0.0700	0	0.00
07/12 01:57	-1.8669	-2.3414	-0.0700	0	0.00
07/12 02:01	-1.2319	-1.6736	-0.1000	0	0.00
07/12 02:05	0.0000	-1.1311	-0.0900	0	0.00
07/12 02:09	-0.4998	-0.2045	-0.1100	0	0.00
07/12 02:13	-3.5591	-0.0514	-0.1000	0	0.00
07/12 02:17	-1.8867	-0.0598	-0.1100	0	0.00
07/12 02:21	-2.7151	-1.4789	-0.1800	0	0.00
07/12 02:25	-3.9054	-0.1488	-0.1100	0	0.00
07/12 02:29	-1.2517	-2.9257	-0.1000	0	0.00
07/12 02:33	-0.5575	-1.5345	-0.0900	0	0.00
07/12 02:37	-3.1550	-1.3119	-0.0900	0	0.00
07/12 02:41	0.0000	-1.4232	-0.0200	0	0.00
07/12 02:45	0.0000	-1.7849	-0.0800	0	0.00
07/12 02:49	0.0000	-0.4216	-0.0700	0	0.00
07/12 02:53	0.0000	0.0000	-0.0700	0	0.00
07/12 02:57	0.0000	-0.6859	-0.1600	0	0.00
07/12 03:25	-1.4628	-0.9502	-0.0400	0	0.00
07/12 03:29	0.0000	-1.7571	-0.0500	0	0.00
07/12 03:33	0.0000	-1.5345	-0.1300	0	0.00
07/12 03:37	-1.5029	-1.6736	-0.0800	0	0.00
07/12 03:41	0.0000	-1.1450	-0.1300	0	0.00
07/12 03:45	0.0000	-1.6180	-0.1100	0	0.00
07/12 03:49	0.0000	-1.3397	-0.1000	0	0.00
07/12 03:53	-1.7526	-0.9224	-0.0700	0	0.00
07/12 03:57	0.0000	-1.4093	-0.1000	0	0.00
07/12 04:01	0.0000	-1.6875	-0.0800	0	0.00
07/12 04:05	0.0000	-1.8545	-0.0900	0	0.00
07/12 04:09	0.0000	-1.1311	-0.1200	0	0.00
07/12 04:13	0.0000	-1.5902	-0.1000	0	0.00
07/12 04:17	0.0000	-0.9363	-0.0800	0	0.00

07/12 04:21	-2.3469	-1.2285	-0.1000	0	0.00
07/12 04:25	-1.5965	-0.9780	-0.0900	0	0.00
07/12 04:29	-2.0583	-1.7015	-0.0700	0	0.00
07/12 04:33	-1.9824	-1.9519	-0.0700	0	0.00
07/12 04:37	-1.4233	-1.4510	-0.1100	0	0.00
07/12 04:41	-3.9070	-1.3676	-0.0700	0	0.00
07/12 04:45	-3.0973	-1.1728	-0.1000	0	0.00
07/12 04:49	-1.5981	-1.0476	-0.1000	0	0.00
07/12 04:53	-1.6184	-0.4216	-0.1400	0	0.00
07/12 04:57	-3.7526	-0.6859	-0.0900	0	0.00
07/12 05:01	-3.2908	-0.7833	-0.1000	0	0.00
07/12 05:05	-2.8087	-0.6720	-0.0800	0	0.00
07/12 05:09	0.0000	-0.2824	-0.0800	0	0.00
07/12 05:13	0.0000	-0.9363	-0.1000	0	0.00
07/12 05:17	-1.7120	-1.2285	-0.1200	0	0.00
07/12 05:21	-3.1368	-1.1589	-0.1400	0	0.00
07/12 05:25	-1.1940	-0.4633	-0.1300	0	0.00
07/12 05:29	0.0000	-1.1728	-0.1100	0	0.00
07/12 05:33	0.0000	-1.7571	-0.0500	0	0.00
07/12 05:37	0.0000	-2.7449	-0.0600	0	0.00
07/12 05:41	0.0000	-2.2023	-0.0500	0	0.00
07/12 05:45	0.0000	-2.5779	-0.0900	0	0.00
07/12 05:49	0.0000	-1.6458	-0.1300	0	0.00
07/12 05:53	0.0000	-2.2858	-0.1400	0	0.00
07/12 05:57	0.0000	-0.6859	-0.1300	0	0.00
07/12 06:25	-3.0802	-1.3815	-0.0200	0	0.00
07/12 06:29	-2.3485	-1.2841	-0.0300	0	0.00
07/12 06:33	-3.5014	-1.3397	-0.1100	0	0.00
07/12 06:37	-3.3859	-1.2006	-0.1000	0	0.00
07/12 06:41	-3.5591	-1.1728	-0.1200	6	0.00
07/12 06:45	-1.1347	-1.0059	-0.0700	9	0.00
07/12 06:49	-1.4628	-1.2424	-0.0800	9	0.00
07/12 06:53	-2.0006	-0.8807	-0.1100	12	0.00
07/12 06:57	-1.3679	-1.2424	-0.0800	14	0.00
07/12 07:01	-2.3751	-1.1032	-0.1100	14	0.00
07/12 07:05	-2.6122	-1.7154	-0.1500	17	0.00
07/12 07:09	-3.0667	-1.5763	-0.1100	20	0.00
07/12 07:13	-2.0358	-1.4510	-0.0700	22	0.00
07/12 07:17	-1.9766	-1.2145	-0.0900	24	0.00
07/12 07:21	-2.2381	-2.0075	-0.0600	28	0.00
07/12 07:25	-2.3011	-0.5468	-0.1100	31	0.00
07/12 07:29	-1.8926	-0.6302	-0.0900	32	0.00
07/12 07:33	-1.5031	-1.1450	-0.1000	36	0.00
07/12 07:37	-3.0225	-1.0893	-0.1400	38	0.00
07/12 07:41	-1.8732	0.2045	-0.1000	41	0.00
07/12 07:45	-2.9444	-1.0337	-0.0500	44	0.00
07/12 07:49	-2.5201	-1.0754	-0.0900	45	0.00
07/12 07:53	-1.5442	-0.6720	-0.1000	48	0.00
07/12 07:57	-1.6498	-0.0375	-0.0900	52	0.00
07/12 08:01	-1.3282	-0.6302	-0.1000	56	0.00
07/12 08:05	-1.4196	-0.0181	-0.0700	60	0.00
07/12 08:09	-1.1742	-0.2964	-0.0700	64	0.00
07/12 08:13	-2.3287	-0.3937	-0.0700	69	0.00
07/12 08:17	-1.2143	-1.4510	-0.0400	72	0.00
07/12 08:21	-1.0677	-0.9085	-0.0800	73	0.00
07/12 08:25	-1.0980	-0.8946	-0.1200	77	0.00
07/12 08:29	-1.0032	-0.5607	-0.0900	79	0.00
07/12 08:33	-0.0544	-0.0932	-0.1000	87	0.00
07/12 08:37	-1.2956	-0.6357	-0.1300	95	0.00
07/12 08:41	-1.3915	-0.2740	-0.1200	95	0.00

07/12 08:45	-1.4978	-0.0514	-0.1000	100	0.00
07/12 08:49	-1.4592	-0.8862	-0.1500	105	0.00
07/12 08:53	-1.3859	0.0523	-0.1300	108	0.00
07/12 08:57	-1.6542	0.0514	-0.0500	110	0.00
07/12 09:25	-0.8461	0.6331	-0.1100	131	0.00
07/12 09:29	-1.0583	0.6027	-0.0900	131	0.00
07/12 09:33	-1.9818	0.4549	-0.1100	132	0.00
07/12 09:37	-1.1192	0.4966	-0.0600	132	0.00
07/12 09:41	-0.9033	0.7610	-0.0800	172	0.00
07/12 09:45	-0.8655	0.7888	-0.0800	182	0.00
07/12 09:49	-0.4988	0.7192	-0.0600	186	0.00
07/12 09:53	-0.6456	1.0253	-0.0500	192	0.00
07/12 09:57	-0.5201	1.2618	-0.0600	190	0.00
07/12 10:01	0.1001	1.1783	-0.1100	196	0.00
07/12 10:05	0.3679	1.0253	-0.0700	206	0.00
07/12 10:09	0.7901	1.2479	-0.0900	216	0.00
07/12 10:13	1.8306	1.2896	-0.1000	227	0.00
07/12 10:17	1.6574	1.1644	-0.1500	233	0.00
07/12 10:21	1.3688	1.0948	-0.1100	238	0.00
07/12 10:25	1.9070	1.4566	-0.0800	246	0.00
07/12 10:29	1.9647	1.1644	-0.1100	244	0.00
07/12 10:33	1.1956	1.3313	-0.0700	253	0.00
07/12 10:37	1.9460	1.3731	-0.0500	260	0.00
07/12 10:41	1.3688	1.4287	-0.0100	267	0.00
07/12 10:45	2.3688	1.3035	-0.0800	271	0.00
07/12 10:49	1.0802	1.4287	-0.0700	267	0.00
07/12 10:53	2.1379	1.4287	-0.1300	271	0.00
07/12 10:57	1.9834	1.4844	-0.1100	263	0.00
07/12 11:01	1.8103	1.5957	-0.0900	267	0.00
07/12 11:05	2.4843	1.5818	-0.0700	281	0.00
07/12 11:09	1.9460	1.8600	-0.0600	267	0.00
07/12 11:13	1.9070	1.6791	-0.0900	263	0.00
07/12 11:17	2.8493	1.8322	-0.0400	271	0.00
07/12 11:21	1.5030	1.5957	-0.1000	268	0.00
07/12 11:25	2.4249	1.5818	-0.1100	270	0.00
07/12 11:29	1.0973	1.4143	-0.1300	266	0.00
07/12 11:33	0.2705	1.5122	-0.0600	259	0.00

EA07015C.ANA

EA07 Oarb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Light	Pump
07/12 11:40	0.0000	0.0000	0.0000	271	0.00
07/12 11:44	0.0000	0.0000	0.0000	265	0.00
07/12 11:48	0.0000	0.0000	0.0000	279	0.00
07/12 11:52	0.0000	0.0000	0.0000	280	0.00
07/12 11:56	0.0000	0.0000	0.0000	272	0.00
07/12 12:00	-0.9173	-0.2729	1.6887	272	0.00
07/12 12:04	-0.1182	-0.5582	1.0549	272	0.00
07/12 12:08	-0.1182	0.0123	1.1324	254	0.00
07/12 12:12	-0.7163	0.3689	1.1989	239	0.00
07/12 12:16	-0.8949	0.2976	1.1768	231	0.00
07/12 12:20	-0.8949	0.3332	1.3099	230	0.00
07/12 12:24	-0.8056	0.6541	1.0993	222	0.00
07/12 12:28	-0.6716	0.2263	1.1546	218	0.00
07/12 12:32	-0.7833	0.5115	1.0215	253	0.00
07/12 12:36	-0.6270	0.4759	1.0993	260	0.00
07/12 12:40	-0.6716	0.5472	1.0880	267	0.00
07/12 12:44	-0.5153	0.7611	1.3542	271	0.00
07/12 12:48	-0.6940	1.3316	1.5095	268	0.00
07/12 12:52	-0.5600	0.6541	1.5982	272	0.00
07/12 12:56	-0.6493	0.8681	1.0757	264	0.00
07/12 13:00	-0.6493	1.1533	1.5982	268	0.00
07/12 13:04	-0.6270	1.0107	1.0310	282	0.00
07/12 13:08	-0.4484	0.5115	1.7535	268	0.00
07/12 13:12	-0.5377	1.2603	1.6648	264	0.00
07/12 13:16	-0.5377	1.2603	1.0866	272	0.00
07/12 13:20	-0.4484	1.2603	1.0419	268	0.00
07/12 13:24	-0.4707	1.1890	1.7535	271	0.00
07/12 13:28	-0.4930	1.6882	1.7979	267	0.00
07/12 13:32	-0.5377	1.4386	1.0197	260	0.00
07/12 13:36	-0.4707	1.9021	1.0419	253	0.00
07/12 13:40	-0.3367	1.2603	1.0197	245	0.00
07/12 13:44	-0.4260	1.6169	1.0641	247	0.00
07/12 13:48	-0.4483	1.5099	1.0532	238	0.00
07/12 13:52	-0.2251	1.5812	1.1085	233	0.00
07/12 13:56	-0.2474	0.9037	1.0866	228	0.00
07/12 14:00	-0.2710	1.5099	1.6204	216	0.00

EB07015C.ANA

EB07 Oarb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Light	Pump
07/12 11:45	0.0000	0.0000	0.0000	271	0.00
07/12 11:49	0.0000	0.0000	0.0000	276	0.00
07/12 11:53	0.0000	0.0000	0.0000	280	0.00
07/12 11:57	0.0000	0.0000	0.0000	272	0.00
07/12 12:01	0.0000	0.0000	0.0000	272	0.00
07/12 12:05	1.4827	1.5261	-0.1400	272	0.00
07/12 12:09	1.8664	1.9296	-0.1400	254	0.00
07/12 12:13	1.9241	1.2896	-0.1300	239	0.00
07/12 12:17	1.9818	1.9435	-0.0200	231	0.00
07/12 12:21	0.6729	1.2495	-0.1100	230	0.00
07/12 12:25	1.4997	1.3592	-0.0500	222	0.00
07/12 12:29	1.3469	1.3592	-0.1300	218	0.00
07/12 12:33	1.0198	1.8322	-0.1300	253	0.00
07/12 12:37	1.7509	1.3592	-0.0700	260	0.00
07/12 12:41	1.8087	1.6235	-0.0700	267	0.00
07/12 12:45	1.5778	1.1243	-0.0700	271	0.00
07/12 12:49	1.2314	1.0269	-0.0500	268	0.00
07/12 12:53	1.3469	1.9435	-0.1300	272	0.00
07/12 12:57	1.3084	1.2913	-0.1200	264	0.00
07/12 13:01	1.0775	1.2356	-0.1100	268	0.00
07/12 13:05	1.8856	1.9296	-0.1000	282	0.00
07/12 13:09	1.1742	2.0687	-0.0800	268	0.00
07/12 13:13	1.4238	1.2078	-0.0800	264	0.00
07/12 13:17	1.0010	1.9574	-0.1200	272	0.00
07/12 13:21	0.8856	2.0826	-0.1200	268	0.00
07/12 13:25	0.8279	1.3191	-0.0900	271	0.00
07/12 13:29	1.3661	2.1800	-0.0900	267	0.00
07/12 13:33	1.4051	2.1104	-0.1000	260	0.00
07/12 13:37	0.9433	1.3469	-0.0800	253	0.00
07/12 13:41	0.6547	1.0965	-0.0400	245	0.00
07/12 13:45	0.7702	1.0409	-0.1300	247	0.00
07/12 13:49	0.9433	0.2774	-0.0400	238	0.00
07/12 13:53	0.5206	0.1382	-0.1200	233	0.00
07/12 13:57	0.7702	0.2217	-0.0400	228	0.00

Appendix 1D Data table for the Day 1 experiments on *Lophogorgia hebes* with sediment (EA10LO15C & EB10L15C) and without sediment (EA09L15C & EB09L15C), Charleston Harbor, SC, 15 m depth.

EA09L15C.ANA

EA09 Lheb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Lig Pum	
07/13 13:56	0.0000	0.0000	0.0000	164	0.00
07/13 14:00	0.0000	0.0000	0.0000	173	0.00
07/13 14:04	0.0000	0.0000	0.0000	182	0.00
07/13 14:08	0.0000	0.0000	0.0000	181	0.00
07/13 14:12	0.0000	0.0000	0.0000	180	0.00
07/13 14:16	-0.6938	-0.8565	-0.7764	177	0.00
07/13 14:20	-0.6286	-0.7207	-0.6828	173	0.00
07/13 14:24	-0.6472	-0.6257	-0.7647	176	0.00
07/13 14:28	-0.6752	-0.8836	-0.8700	174	0.00
07/13 14:32	-0.5913	-0.8700	-0.7530	177	0.00
07/13 14:36	-0.6472	-0.7886	-0.7764	174	0.00
07/13 14:40	-0.5540	-0.8022	-0.9168	167	0.00
07/13 14:44	-0.5446	-1.0193	-0.7881	168	0.00
07/13 14:48	-0.4887	-0.8565	-0.6828	164	0.00
07/13 14:52	-0.5726	-0.8429	-0.7998	160	0.00
07/13 15:20	-0.2742	-0.6528	-0.2968	154	0.00
07/13 15:24	-0.4048	-0.7071	-0.4840	153	0.00
07/13 15:28	-0.5167	-0.6528	-0.4840	154	0.00
07/13 15:32	-0.5260	-0.8565	-0.4138	150	0.00
07/13 15:36	-0.5819	-0.9243	-0.5658	157	0.00
07/13 15:40	-0.7498	-0.9108	-1.0454	153	0.00
07/13 15:44	-0.7684	-1.0058	-0.7998	152	0.00
07/13 15:48	-0.6659	-1.1008	-0.9051	150	0.00
07/13 15:52	-0.7125	-0.9379	-0.8934	152	0.00
07/13 15:56	-0.6472	-0.7750	-0.7881	150	0.00
07/13 16:00	-0.7032	-0.8972	-0.7998	147	0.00
07/13 16:04	-0.6286	-0.5985	-0.8115	144	0.00
07/13 16:08	-0.6472	-0.8836	-0.7179	142	0.00
07/13 16:12	-0.5726	-0.7614	-0.8466	140	0.00
07/13 16:16	-0.5446	-0.8565	-0.7530	142	0.00
07/13 16:20	-0.6192	-0.7071	-0.8115	137	0.00
07/13 16:24	-0.5260	-0.9515	-0.7062	140	0.00
07/13 16:28	-0.5353	-0.7071	-0.8232	136	0.00
07/13 16:32	-0.5540	-0.7207	-0.6828	134	0.00
07/13 16:36	-0.5167	-0.8293	-0.7179	130	0.00
07/13 16:40	-0.5073	-0.5985	-0.6828	127	0.00
07/13 16:44	-0.5540	-0.7886	-0.7647	126	0.00
07/13 16:48	-0.5167	-0.8429	-0.5775	123	0.00
07/13 16:52	-0.4234	-0.8293	-0.7413	119	0.00

105

07/13 16:56	-0.4794	-0.7750	-0.8232	116	0.00
07/13 17:00	-0.4234	-1.0736	-0.7062	113	0.00
07/13 17:04	-0.3768	-0.8836	-0.8115	109	0.00
07/13 17:08	-0.3768	-0.7479	-0.8934	106	0.00
07/13 17:12	-0.4234	-0.8700	-0.8115	103	0.00
07/13 17:16	-0.4141	-0.7614	-0.7881	102	0.00
07/13 17:20	-0.3768	-0.7207	-0.9635	98	0.00
07/13 17:24	-0.4421	-0.6800	-0.7764	94	0.00
07/13 17:28	-0.4327	-0.7614	-0.7179	90	0.00
07/13 17:32	-0.4234	-0.6936	-0.7296	88	0.00
07/13 17:36	-0.4141	-0.8700	-0.6828	84	0.00
07/13 17:40	-0.4141	-0.8836	-0.5542	81	0.00
07/13 17:44	-0.3675	-0.8157	-0.6945	78	0.00
07/13 17:48	-0.3768	-0.7886	-0.7296	73	0.00
07/13 17:52	-0.3675	-0.8157	-0.7413	70	0.00
07/13 18:20	-0.8151	-0.9650	-1.0805	53	0.00
07/13 18:24	-0.8057	-1.1008	-1.0805	52	0.00
07/13 18:28	-0.8337	-1.0872	-0.9752	49	0.00
07/13 18:32	-0.8151	-1.0736	-1.1390	48	0.00
07/13 18:36	-0.7778	-1.1008	-1.0454	46	0.00
07/13 18:40	-0.8151	-1.0058	-0.9402	44	0.00
07/13 18:44	-0.7218	-0.9379	-1.0805	41	0.00
07/13 18:48	-0.6845	-1.0736	-1.0805	38	0.00
07/13 18:52	-0.6286	-0.9379	-0.8583	37	0.00
07/13 18:56	-0.5260	-0.9515	-1.1039	33	0.00
07/13 19:00	-0.4794	-0.8972	-1.0103	31	0.00
07/13 19:04	-0.4887	-0.9379	-0.8700	28	0.00
07/13 19:08	-0.4048	-0.8022	-0.9051	26	0.00
07/13 19:12	-0.4327	-0.8565	-0.8934	24	0.00
07/13 19:16	-0.5073	-0.7071	-0.7764	22	0.00
07/13 19:20	-0.4794	-0.7750	-0.8232	20	0.00
07/13 19:24	-0.4327	-0.7886	-0.8232	18	0.00
07/13 19:28	-0.5167	-0.7207	-0.7530	17	0.00
07/13 19:32	-0.5353	-0.7207	-0.8583	15	0.00
07/13 19:36	-0.4327	-0.8157	-0.9168	14	0.00
07/13 19:40	-0.4607	-0.7614	-0.8232	12	0.00
07/13 19:44	-0.4887	-0.7886	-0.8934	11	0.00
07/13 19:48	-0.3768	-0.7343	-0.8466	10	0.00
07/13 19:52	-0.3488	-0.8293	-0.8466	8	0.00
07/13 19:56	-0.3861	-0.8293	-0.7296	8	0.00
07/13 20:00	-0.3488	-0.7750	-0.7647	6	0.00
07/13 20:04	-0.2649	-0.6936	-0.7413	5	0.00
07/13 20:08	-0.3768	-0.6800	-0.8817	4	0.00
07/13 20:12	-0.3954	-0.0420	-0.8115	4	0.00
07/13 20:16	-0.3488	-0.5171	-0.7881	3	0.00
07/13 20:20	-0.4048	-0.5850	-0.8817	2	0.00
07/13 20:24	-0.4607	-0.5443	-0.7647	1	0.00
07/13 20:28	-0.4327	-0.6528	-0.7179	1	0.00
07/13 20:32	-0.4048	-1.1279	-0.7764	0	0.00
07/13 20:36	-0.4421	-0.6257	-0.8115	0	0.00
07/13 20:40	-0.3861	-0.4357	-0.7881	0	0.00
07/13 20:44	-0.4048	-0.5171	-0.8232	0	0.00
07/13 20:48	-0.3395	-0.5985	-0.8115	0	0.00
07/13 20:52	-0.3488	-0.6257	-0.7764	0	0.00
07/13 21:20	-0.9456	-1.1415	-1.1507	0	0.00
07/13 21:24	-0.9643	-1.0872	-1.1273	0	0.00
07/13 21:28	-1.0016	-1.1144	-1.2677	0	0.00
07/13 21:32	-0.9270	-0.9786	-1.1624	0	0.00
07/13 21:36	-0.8990	-0.9515	-1.1156	0	0.00
07/13 21:40	-0.8524	-1.0193	-1.2560	0	0.00

07/13 21:44	-0.8990	-0.9786	-1.1507	0	0.00
07/13 21:48	-0.8337	-0.9922	-1.0571	0	0.00
07/13 21:52	-0.8430	-1.0193	-1.1858	0	0.00
07/13 21:56	-0.7964	-1.0193	-1.0220	0	0.00
07/13 22:00	-0.7778	-1.0058	-0.9285	0	0.00
07/13 22:04	-0.6379	-1.0329	-0.9051	0	0.00
07/13 22:08	-0.6006	-1.0601	-0.9752	0	0.00
07/13 22:12	-0.6472	-0.9786	-0.8466	0	0.00
07/13 22:16	-0.6192	-0.9379	-0.9051	0	0.00
07/13 22:20	-0.5913	-0.9515	-0.9986	0	0.00
07/13 22:24	-0.6006	-0.9786	-1.0337	0	0.00
07/13 22:28	-0.6752	-0.8022	-0.9869	0	0.00
07/13 22:32	-0.6286	-0.5171	-0.9869	0	0.00
07/13 22:36	-0.5353	-0.9107	-0.9635	0	0.00
07/13 22:40	-0.6006	-0.9922	-0.8583	0	0.00
07/13 22:44	-0.5726	-0.8972	-0.8466	0	0.00
07/13 22:48	-0.4794	-0.9379	-0.8934	0	0.00
07/13 22:52	-0.4327	-1.3587	-0.8700	0	0.00
07/13 22:56	-0.5167	-0.8972	-0.8232	0	0.00
07/13 23:00	-0.4327	-0.8429	-0.8466	0	0.00
07/13 23:04	-0.4421	-0.8157	-0.7998	0	0.00
07/13 23:08	-0.4141	-0.7750	-0.8349	0	0.00
07/13 23:12	-0.4421	-0.9379	-0.8700	0	0.00
07/13 23:16	-0.4234	-0.8972	-0.8349	0	0.00
07/13 23:20	-0.3954	-0.9108	-0.7764	0	0.00
07/13 23:24	-0.4141	-1.0058	-0.7998	0	0.00
07/13 23:28	-0.4421	-1.0329	-0.7764	0	0.00
07/13 23:32	-0.3768	-0.8565	-0.7647	0	0.00
07/13 23:36	-0.3488	-0.9650	-0.7764	0	0.00
07/13 23:40	-0.3488	-0.5035	-0.7764	0	0.00
07/13 23:44	-0.2929	-0.9243	-0.7764	0	0.00
07/13 23:48	-0.2556	-0.8700	-0.6594	0	0.00
07/13 23:52	-0.2276	-0.8700	-0.7296	0	0.00
07/14 00:20	-0.7871	-1.0872	-0.9636	0	0.00
07/14 00:24	-0.8151	-1.0601	-1.1039	0	0.00
07/14 00:28	-0.8151	-0.8022	-0.9635	0	0.00
07/14 00:32	-0.9176	-1.0465	-1.0922	0	0.00
07/14 00:36	-0.8803	-0.8429	-1.0922	0	0.00
07/14 00:40	-0.8244	-0.9786	-1.0922	0	0.00
07/14 00:44	-0.7871	-1.0329	-1.0454	0	0.00
07/14 00:48	-0.7591	-1.0601	-1.1156	0	0.00
07/14 00:52	-0.7218	-0.9379	-0.9636	0	0.00
07/14 00:56	-0.6845	-0.9922	-0.9051	0	0.00
07/14 01:00	-0.6752	-0.9107	-1.0688	0	0.00
07/14 01:04	-0.6286	-0.9650	-1.0337	0	0.00
07/14 01:08	-0.5726	-1.0058	-0.9285	0	0.00
07/14 01:12	-0.5353	-0.9243	-0.9402	0	0.00
07/14 01:16	-0.5446	-0.9243	-1.0454	0	0.00
07/14 01:20	-0.4980	-0.9108	-0.8115	0	0.00
07/14 01:24	-0.4887	-0.8293	-0.7881	0	0.00
07/14 01:28	-0.5073	-0.9107	-0.8115	0	0.00
07/14 01:32	-0.4607	-0.9515	-0.9285	0	0.00
07/14 01:36	-0.4421	-0.8836	-0.6828	0	0.00
07/14 01:40	-0.4234	-0.9108	-0.8700	0	0.00
07/14 01:44	-0.4421	-0.8836	-0.8817	0	0.00
07/14 01:48	-0.4794	-0.8836	-0.7764	0	0.00
07/14 01:52	-0.4421	-0.7750	-0.7062	0	0.00
07/14 01:56	-0.3675	-0.9108	-0.9285	0	0.00
07/14 02:00	-0.4141	0.0123	-0.7062	0	0.00
07/14 02:04	-0.4327	-0.9108	-0.7647	0	0.00

07/14 02:08	-0.3302	-0.9108	-0.8817	0	0.00
07/14 02:12	-0.3581	-0.9650	-0.8232	0	0.00
07/14 02:16	-0.4048	-0.8022	-0.6711	0	0.00
07/14 02:20	-0.3861	-1.8066	-0.7062	0	0.00
07/14 02:24	-0.3115	-0.7886	-0.6945	0	0.00
07/14 02:28	-0.3302	-0.8972	-0.6243	0	0.00
07/14 02:32	-0.3302	-0.8022	-0.7296	0	0.00
07/14 02:36	-0.3209	-0.7886	-0.7413	0	0.00
07/14 02:40	-0.2556	-0.7614	-0.6945	0	0.00
07/14 02:44	-0.2742	-0.8429	-0.6243	0	0.00
07/14 02:48	-0.2649	-0.7071	-0.6360	0	0.00
07/14 02:52	-0.2649	-0.8565	-0.6126	0	0.00
07/14 03:20	-0.7591	-0.9650	-0.9402	0	0.00
07/14 03:24	-0.7591	-1.1008	-1.0103	0	0.00
07/14 03:28	-0.7778	-1.1279	-0.9285	0	0.00
07/14 03:32	-0.7405	-1.1144	-1.1039	0	0.00
07/14 03:36	-0.7218	-1.0193	-1.0103	0	0.00
07/14 03:40	-0.7684	-1.0329	-1.0688	0	0.00
07/14 03:44	-0.7311	-0.8700	-1.1156	0	0.00
07/14 03:48	-0.7311	-0.8836	-1.0220	0	0.00
07/14 03:52	-0.7311	-0.8429	-0.9402	0	0.00
07/14 03:56	-0.6845	-1.0058	-1.0571	0	0.00
07/14 04:00	-0.6006	-0.8565	-0.9285	0	0.00
07/14 04:04	-0.6006	-0.8022	-0.9635	0	0.00
07/14 04:08	-0.5726	-0.9379	-0.9519	0	0.00
07/14 04:12	-0.5073	-1.0465	-0.9168	0	0.00
07/14 04:16	-0.4607	-0.8565	-0.9051	0	0.00
07/14 04:20	-0.4514	-0.9379	-0.8349	0	0.00
07/14 04:24	-0.4514	-0.7207	-0.8232	0	0.00
07/14 04:28	-0.4327	-0.9379	-0.8115	0	0.00
07/14 04:32	-0.4234	-0.7750	-0.8583	0	0.00
07/14 04:36	-0.4607	-0.7071	-0.8115	0	0.00
07/14 04:40	-0.4234	-0.8565	-0.8466	0	0.00
07/14 04:44	-0.3581	-1.0736	-0.7296	0	0.00
07/14 04:48	-0.3488	-0.6257	-0.6477	0	0.00
07/14 04:52	-0.3768	-0.8429	-0.7296	0	0.00
07/14 04:56	-0.3675	-1.0193	-0.7179	0	0.00
07/14 05:00	-0.3768	-0.5578	-0.7062	0	0.00
07/14 05:04	-0.4421	-0.7207	-0.7881	0	0.00
07/14 05:08	-0.3954	-0.9108	-0.9051	0	0.00
07/14 05:12	-0.4048	-0.8293	-0.7296	0	0.00
07/14 05:16	-0.3675	-0.7479	-0.7179	0	0.00
07/14 05:20	-0.3954	-1.0465	-0.8115	0	0.00
07/14 05:24	-0.3209	-0.8565	-0.7179	0	0.00
07/14 05:28	-0.3022	-0.7343	-0.5308	0	0.00
07/14 05:32	-0.2742	-0.8022	-0.5892	0	0.00
07/14 05:36	-0.3209	-0.5035	-0.6009	0	0.00
07/14 05:40	-0.2369	-0.8700	-0.6360	0	0.00
07/14 05:44	-0.2836	-0.8836	-0.6477	0	0.00
07/14 05:48	-0.2742	-0.8836	-0.7179	0	0.00
07/14 05:52	-0.3115	-0.7886	-0.7062	0	0.00
07/14 06:20	-0.7405	-0.8972	-0.7881	1	0.00
07/14 06:24	-0.7405	-0.8972	-0.7764	1	0.00
07/14 06:28	-0.7032	-0.8157	-1.0103	2	0.00
07/14 06:32	-0.7218	-0.9108	-0.9051	2	0.00
07/14 06:36	-0.6565	-0.8429	-0.8466	3	0.00
07/14 06:40	-0.6379	-0.9379	-1.0103	4	0.00
07/14 06:44	-0.6938	-0.8972	-0.9869	5	0.00
07/14 06:48	-0.7311	-1.0058	-0.8583	6	0.00
07/14 06:52	-0.5819	-1.0058	-0.9986	7	0.00

07/14 06:56	-0.5446	-0.8836	-0.8817	8	0.00
07/14 07:00	-0.7032	-0.8293	-0.8349	9	0.00
07/14 07:04	-0.4607	-0.8836	-0.8817	10	0.00
07/14 07:08	-0.4607	-0.8700	-0.8115	11	0.00
07/14 07:12	-0.6006	-0.8700	-0.7530	12	0.00
07/14 07:16	-0.5260	-0.9515	-0.7179	14	0.00
07/14 07:20	-0.3581	-0.9379	-0.7413	16	0.00
07/14 07:24	-0.5260	-0.7614	-0.7881	17	0.00
07/14 07:28	-0.5167	-0.8972	-0.7764	18	0.00
07/14 07:32	-0.3209	-0.7207	-0.7179	20	0.00
07/14 07:36	-0.3954	-0.8022	-0.7881	22	0.00
07/14 07:40	-0.4514	-0.8429	-0.7881	24	0.00
07/14 07:44	-0.4514	-0.8836	-0.6828	26	0.00
07/14 07:48	-0.3675	-0.6664	-0.5892	29	0.00
07/14 07:52	-0.4794	-0.8565	-0.7179	30	0.00
07/14 07:56	-0.4421	-0.7614	-0.6477	32	0.00
07/14 08:00	-0.5167	-0.6393	-0.5658	34	0.00
07/14 08:04	-0.4794	-0.7479	-0.7179	36	0.00
07/14 08:08	-0.5260	-0.8700	-0.7413	38	0.00
07/14 08:12	-0.5540	-0.8157	-0.5892	40	0.00
07/14 08:16	-0.5260	-0.8293	-0.6477	42	0.00
07/14 08:20	-0.4887	-0.9786	-0.5892	44	0.00
07/14 08:24	-0.4887	-0.5035	-0.4489	46	0.00
07/14 08:28	-0.4794	-0.8429	-0.5542	49	0.00
07/14 08:32	-0.4421	-0.8429	-0.4957	51	0.00
07/14 08:36	-0.4980	-0.7207	-0.6009	54	0.00
07/14 08:40	-0.4234	-0.7614	-0.6711	57	0.00
07/14 08:44	-0.4048	-1.1144	-0.5425	61	0.00
07/14 08:48	-0.3488	-0.7479	-0.5425	64	0.00
07/14 08:52	-0.4141	-0.5578	-0.5775	66	0.00
07/14 09:20	-0.5633	-0.6936	-0.7062	85	0.00
07/14 09:24	-0.6286	-0.8700	-0.6711	88	0.00
07/14 09:28	-0.6472	-1.0465	-0.6594	90	0.00
07/14 09:32	-0.6286	-0.8429	-0.6360	94	0.00
07/14 09:36	-0.6659	-0.7343	-0.6594	97	0.00
07/14 09:40	-0.6099	-0.8022	-0.5892	100	0.00
07/14 09:44	-0.5726	-0.7614	-0.6594	102	0.00
07/14 09:48	-0.4887	-0.7207	-0.5775	105	0.00
07/14 09:52	-0.4700	-0.7071	-0.4957	111	0.00
07/14 09:56	-0.4887	-0.8022	-0.6126	112	0.00
07/14 10:00	-0.4607	-0.7071	-0.6009	115	0.00
07/14 10:04	-0.4327	-0.5985	-0.5074	120	0.00
07/14 10:08	-0.4607	-0.6800	-0.5191	122	0.00
07/14 10:12	-0.4980	-0.5443	-0.5658	123	0.00
07/14 10:16	-0.3395	-0.5850	-0.4723	128	0.00
07/14 10:20	-0.3861	-0.4764	-0.5308	134	0.00
07/14 10:24	-0.3861	-0.6121	-0.4723	137	0.00
07/14 10:28	-0.2649	-0.5578	-0.5191	138	0.00
07/14 10:32	-0.2929	-0.5850	-0.4957	138	0.00
07/14 10:36	-0.2836	-0.5171	-0.4606	145	0.00
07/14 10:40	-0.2742	-0.5171	-0.2734	144	0.00
07/14 10:44	-0.2276	-0.5714	-0.4255	147	0.00
07/14 10:48	-0.2929	-0.5578	-0.4021	149	0.00
07/14 10:52	-0.1903	-0.5443	-0.4021	146	0.00
07/14 10:56	-0.3115	-0.4900	-0.4606	145	0.00
07/14 11:00	-0.2090	-0.0556	-0.4840	147	0.00
07/14 11:04	-0.2369	-0.3814	-0.3670	148	0.00
07/14 11:08	-0.2183	-0.4900	-0.4255	147	0.00
07/14 11:12	-0.1996	-0.4492	-0.2968	146	0.00
07/14 11:16	-0.0691	-0.5443	-0.2851	153	0.00

07/14 11:20	-0.1623	-1.0329	-0.3553	158	0.00
07/14 11:24	-0.1717	-0.5035	-0.3904	156	0.00
07/14 11:28	-0.1903	-0.2320	-0.2149	159	0.00
07/14 11:32	-0.1903	-0.6121	-0.3904	162	0.00
07/14 11:36	-0.1903	-0.3542	-0.2383	157	0.00
07/14 11:40	-0.2090	-0.4221	-0.2851	149	0.00
07/14 11:44	-0.1157	-0.4900	-0.3085	110	0.00
07/14 11:48	-0.1157	-0.2863	-0.4489	120	0.00
07/14 11:52	-0.1530	-0.3271	-0.3670	119	0.00
07/14 12:20	-0.5260	-0.5035	-0.4606	144	0.00
07/14 12:24	-0.4514	-0.5307	-0.4021	148	0.00
07/14 12:28	-0.4327	-0.5307	-0.4255	149	0.00
07/14 12:32	-0.4327	-0.6936	-0.4606	149	0.00

EB09L15C.ANA

EB09 Lheb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Lig Pum	
07/13 13:56	0.0000	0.0000	0.0000	280	0.00
07/13 14:00	0.0000	0.0000	0.0000	275	0.00
07/13 14:04	0.0000	0.0000	0.0000	275	0.00
07/13 14:08	0.0000	0.0000	0.0000	283	0.00
07/13 14:12	0.0000	0.0000	0.0000	279	0.00
07/13 14:16	0.0000	0.0000	-0.4265	282	0.00
07/13 14:20	0.0000	0.0000	-0.2027	274	0.00
07/13 14:24	0.0000	0.0000	0.0000	276	0.00
07/13 14:28	0.0000	0.0000	-1.4925	271	0.00
07/13 14:32	0.0000	0.0000	-2.6437	275	0.00
07/13 14:36	0.0000	0.0000	0.0000	269	0.00
07/13 14:40	0.0000	0.0000	0.0000	276	0.00
07/13 14:44	0.0000	0.0000	0.0000	268	0.00
07/13 14:48	0.0000	0.0000	-2.4731	265	0.00
07/13 14:52	0.0000	0.0000	-1.8016	260	0.00
07/13 14:56	0.0000	0.0000	-1.3752	266	0.00
07/13 15:00	0.0000	0.0000	-1.0554	263	0.00
07/13 15:04	0.0000	0.0000	-1.9828	258	0.00
07/13 15:08	0.0000	0.0000	-0.2453	250	0.00
07/13 15:12	0.0000	0.0000	0.0000	259	0.00
07/13 15:40	0.0000	0.0000	-0.7889	244	0.00
07/13 15:44	0.0000	0.0000	-0.7356	244	0.00
07/13 15:48	0.0000	0.0000	-0.7463	242	0.00
07/13 15:52	0.0000	0.0000	-0.7783	242	0.00
07/13 15:56	0.0000	0.0000	-0.9062	238	0.00
07/13 16:00	0.0000	0.0000	-0.7143	238	0.00
07/13 16:04	0.0000	0.0000	-0.7783	233	0.00
07/13 16:08	0.0000	0.0000	-0.8635	227	0.00
07/13 16:12	0.0000	0.0000	-0.8422	227	0.00
07/13 16:16	0.0000	0.0000	-0.8635	224	0.00
07/13 16:20	0.0000	0.0000	-0.7996	217	0.00
07/13 16:24	0.0000	0.0000	-0.8209	224	0.00
07/13 16:28	0.0000	0.0000	-0.6290	221	0.00
07/13 16:32	0.0000	0.0000	-0.7569	215	0.00
07/13 16:36	0.0000	0.0000	-0.6184	208	0.00
07/13 16:40	0.0000	0.0000	-0.7463	206	0.00
07/13 16:44	0.0000	0.0000	-0.8422	204	0.00
07/13 16:48	0.0000	0.0000	-0.8209	201	0.00
07/13 16:52	0.0000	0.0000	-0.7036	195	0.00
07/13 16:56	0.0000	0.0000	-0.7996	186	0.00
07/13 17:00	0.0000	0.0000	-0.6823	182	0.00
07/13 17:04	0.0000	0.0000	-0.6184	176	0.00
07/13 17:08	0.0000	0.0000	-0.7889	172	0.00
07/13 17:12	0.0000	0.0000	-0.8742	165	0.00
07/13 17:16	0.0000	0.0000	-0.7036	163	0.00
07/13 17:20	0.0000	0.0000	-0.6823	159	0.00
07/13 17:24	0.0000	0.0000	-0.6184	151	0.00
07/13 17:28	0.0000	0.0000	-0.7676	145	0.00
07/13 17:32	0.0000	0.0000	-0.6823	141	0.00
07/13 17:36	0.0000	0.0000	-0.7889	136	0.00
07/13 17:40	0.0000	0.0000	-0.8102	131	0.00
07/13 17:44	0.0000	0.0000	-0.8742	124	0.00
07/13 17:48	0.0000	0.0000	-0.6823	120	0.00
07/13 17:52	0.0000	0.0000	-0.8209	113	0.00
07/13 17:56	0.0000	0.0000	-0.7036	112	0.00
07/13 18:00	0.0000	0.0000	-0.8102	111	0.00

07/13 18:04	0.0000	0.0000	-0.7143	105	0.00
07/13 18:08	0.0000	0.0000	-0.7463	99	0.00
07/13 18:12	0.0000	0.0000	-0.6504	98	0.00
07/13 18:40	0.0000	0.0000	-0.7036	70	0.00
07/13 18:44	0.0000	0.0000	-0.5438	66	0.00
07/13 18:48	0.0000	0.0000	-0.5224	61	0.00
07/13 18:52	0.0000	0.0000	-0.7250	60	0.00
07/13 18:56	0.0000	0.0000	-0.7996	54	0.00
07/13 19:00	0.0000	0.0000	-0.9275	50	0.00
07/13 19:04	0.0000	0.0000	-1.2153	46	0.00
07/13 19:08	0.0000	0.0000	-1.3113	42	0.00
07/13 19:12	0.0000	0.0000	-1.0874	39	0.00
07/13 19:16	0.0000	0.0000	-1.3539	36	0.00
07/13 19:20	0.0000	0.0000	-1.1087	33	0.00
07/13 19:24	0.0000	0.0000	-0.9168	30	0.00
07/13 19:28	0.0000	0.0000	-0.8849	27	0.00
07/13 19:32	0.0000	0.0000	-0.8635	25	0.00
07/13 19:36	0.0000	0.0000	-0.8209	22	0.00
07/13 19:40	0.0000	0.0000	-0.8955	20	0.00
07/13 19:44	0.0000	0.0000	-0.8529	18	0.00
07/13 19:48	0.0000	0.0000	-1.0234	15	0.00
07/13 19:52	0.0000	0.0000	-1.0448	13	0.00
07/13 19:56	0.0000	0.0000	-0.8102	12	0.00
07/13 20:00	0.0000	0.0000	-0.8849	10	0.00
07/13 20:04	0.0000	0.0000	-0.9382	8	0.00
07/13 20:08	0.0000	0.0000	-1.0448	7	0.00
07/13 20:12	0.0000	0.0000	-0.8316	6	0.00
07/13 20:16	0.0000	0.0000	-0.8742	4	0.00
07/13 20:20	0.0000	0.0000	-0.6717	3	0.00
07/13 20:24	0.0000	0.0000	-0.5864	2	0.00
07/13 20:28	0.0000	0.0000	-0.5118	1	0.00
07/13 20:32	0.0000	0.0000	-0.8635	1	0.00
07/13 20:36	0.0000	0.0000	-0.6930	0	0.00
07/13 20:40	0.0000	0.0000	-0.7676	0	0.00
07/13 20:44	0.0000	0.0000	-0.9062	0	0.00
07/13 20:48	0.0000	0.0000	-0.7569	0	0.00
07/13 20:52	0.0000	0.0000	-0.7250	0	0.00
07/13 20:56	0.0000	0.0000	-0.5757	0	0.00
07/13 21:00	0.0000	0.0000	-0.8955	0	0.00
07/13 21:04	0.0000	0.0000	-0.4691	0	0.00
07/13 21:08	0.0000	0.0000	-1.0021	0	0.00
07/13 21:12	0.0000	0.0000	-0.6610	0	0.00
07/13 21:40	0.0000	0.0000	-1.0554	0	0.00
07/13 21:44	0.0000	0.0000	-1.3965	0	0.00
07/13 21:48	0.0000	0.0000	-1.0234	0	0.00
07/13 21:52	0.0000	0.0000	-1.1833	0	0.00
07/13 21:56	0.0000	0.0000	-1.1194	0	0.00
07/13 22:00	0.0000	0.0000	-0.6397	0	0.00
07/13 22:04	0.0000	0.0000	-1.0021	0	0.00
07/13 22:08	0.0000	0.0000	-1.0341	0	0.00
07/13 22:12	0.0000	0.0000	-0.7463	0	0.00
07/13 22:16	0.0000	0.0000	-0.6610	0	0.00
07/13 22:20	0.0000	0.0000	-0.9168	0	0.00
07/13 22:24	0.0000	0.0000	-0.1494	0	0.00
07/13 22:28	0.0000	0.0000	-0.5971	0	0.00
07/13 22:32	0.0000	0.0000	-1.2686	0	0.00
07/13 22:36	0.0000	0.0000	-1.3432	0	0.00
07/13 22:40	0.0000	0.0000	-1.3645	0	0.00
07/13 22:44	0.0000	0.0000	-1.9295	0	0.00
07/13 22:48	0.0000	0.0000	-1.5138	0	0.00

07/13 22:52	0.0000	0.0000	-0.7250	0	0.00
07/13 22:56	0.0000	0.0000	-0.4265	0	0.00
07/13 23:00	0.0000	0.0000	-0.6184	0	0.00
07/13 23:04	0.0000	0.0000	-0.2666	0	0.00
07/13 23:08	0.0000	0.0000	-0.0854	0	0.00
07/13 23:12	0.0000	0.0000	-0.8955	0	0.00
07/13 23:16	0.0000	0.0000	-1.0341	0	0.00
07/13 23:20	0.0000	0.0000	-0.2559	0	0.00
07/13 23:24	0.0000	0.0000	-0.6184	0	0.00
07/13 23:28	0.0000	0.0000	-1.1727	0	0.00
07/13 23:32	0.0000	0.0000	-0.6290	0	0.00
07/13 23:36	0.0000	0.0000	-0.6077	0	0.00
07/13 23:40	0.0000	0.0000	-0.8742	0	0.00
07/13 23:44	0.0000	0.0000	-1.2473	0	0.00
07/13 23:48	0.0000	0.0000	-1.3432	0	0.00
07/13 23:52	0.0000	0.0000	-0.9808	0	0.00
07/13 23:56	0.0000	0.0000	-1.2473	0	0.00
07/14 00:00	0.0000	0.0000	-1.3859	0	0.00
07/14 00:04	0.0000	0.0000	-0.9915	0	0.00
07/14 00:08	0.0000	0.0000	-0.3625	0	0.00
07/14 00:12	0.0000	0.0000	-0.1387	0	0.00
07/14 00:40	0.0000	0.0000	-0.2559	0	0.00
07/14 00:44	0.0000	0.0000	-0.5011	0	0.00
07/14 00:48	0.0000	0.0000	-1.0448	0	0.00
07/14 00:52	0.0000	0.0000	-0.2879	0	0.00
07/14 00:56	0.0000	0.0000	-0.8635	0	0.00
07/14 01:00	0.0000	0.0000	-1.5138	0	0.00
07/14 01:04	0.0000	0.0000	-0.6504	0	0.00
07/14 01:08	0.0000	0.0000	-0.6290	0	0.00
07/14 01:12	0.0000	0.0000	-1.2260	0	0.00
07/14 01:16	0.0000	0.0000	-0.4585	0	0.00
07/14 01:20	0.0000	0.0000	-0.4905	0	0.00
07/14 01:24	0.0000	0.0000	-0.2666	0	0.00
07/14 01:28	0.0000	0.0000	-1.5031	0	0.00
07/14 01:32	0.0000	0.0000	-0.7143	0	0.00
07/14 01:36	0.0000	0.0000	-1.5351	0	0.00
07/14 01:40	0.0000	0.0000	-1.7376	0	0.00
07/14 01:44	0.0000	0.0000	-2.5584	0	0.00
07/14 01:48	0.0000	0.0000	-1.2366	0	0.00
07/14 01:52	0.0000	0.0000	-1.8869	0	0.00
07/14 01:56	0.0000	0.0000	-0.7463	0	0.00
07/14 02:00	0.0000	0.0000	-0.4052	0	0.00
07/14 02:04	0.0000	0.0000	-0.4478	0	0.00
07/14 02:08	0.0000	0.0000	-0.3625	0	0.00
07/14 02:12	0.0000	0.0000	-0.7036	0	0.00
07/14 02:16	0.0000	0.0000	-1.0874	0	0.00
07/14 02:20	0.0000	0.0000	-1.7803	0	0.00
07/14 02:24	0.0000	0.0000	-1.1940	0	0.00
07/14 02:28	0.0000	0.0000	-0.7250	0	0.00
07/14 02:32	0.0000	0.0000	-0.6184	0	0.00
07/14 02:36	0.0000	0.0000	-0.9382	0	0.00
07/14 02:40	0.0000	0.0000	-1.0448	0	0.00
07/14 02:44	0.0000	0.0000	-0.6504	0	0.00
07/14 02:48	0.0000	0.0000	-1.5351	0	0.00
07/14 02:52	0.0000	0.0000	-1.3752	0	0.00
07/14 02:56	0.0000	0.0000	-1.1940	0	0.00
07/14 03:00	0.0000	0.0000	-0.3839	0	0.00
07/14 03:04	0.0000	0.0000	-0.9275	0	0.00
07/14 03:08	0.0000	0.0000	-0.5864	0	0.00
07/14 03:12	0.0000	0.0000	-0.5224	0	0.00

07/14 03:40	0.0000	0.0000	-2.8782	0	0.00
07/14 03:44	0.0000	0.0000	-2.0787	0	0.00
07/14 03:48	0.0000	0.0000	-2.1214	0	0.00
07/14 03:52	0.0000	0.0000	-1.7483	0	0.00
07/14 03:56	0.0000	0.0000	-1.5884	0	0.00
07/14 04:00	0.0000	0.0000	-1.2686	0	0.00
07/14 04:04	0.0000	0.0000	-1.5244	0	0.00
07/14 04:08	0.0000	0.0000	-1.6204	0	0.00
07/14 04:12	0.0000	0.0000	-1.8336	0	0.00
07/14 04:16	0.0000	0.0000	-1.9828	0	0.00
07/14 04:20	0.0000	0.0000	-0.8849	0	0.00
07/14 04:24	0.0000	0.0000	-0.2773	0	0.00
07/14 04:28	0.0000	0.0000	-0.1494	0	0.00
07/14 04:32	0.0000	0.0000	-0.3839	0	0.00
07/14 04:36	0.0000	0.0000	-0.3199	0	0.00
07/14 04:40	0.0000	0.0000	-0.7996	0	0.00
07/14 04:44	0.0000	0.0000	-1.0448	0	0.00
07/14 04:48	0.0000	0.0000	-1.4072	0	0.00
07/14 04:52	0.0000	0.0000	-0.9488	0	0.00
07/14 04:56	0.0000	0.0000	-1.4072	0	0.00
07/14 05:00	0.0000	0.0000	-1.1087	0	0.00
07/14 05:04	0.0000	0.0000	-1.2899	0	0.00
07/14 05:08	0.0000	0.0000	-0.9168	0	0.00
07/14 05:12	0.0000	0.0000	-1.2047	0	0.00
07/14 05:16	0.0000	0.0000	-0.8849	0	0.00
07/14 05:20	0.0000	0.0000	-0.7037	0	0.00
07/14 05:24	0.0000	0.0000	-0.8209	0	0.00
07/14 05:28	0.0000	0.0000	-0.4265	0	0.00
07/14 05:32	0.0000	0.0000	-0.4052	0	0.00
07/14 05:36	0.0000	0.0000	-0.3519	0	0.00
07/14 05:40	0.0000	0.0000	-0.6397	0	0.00
07/14 05:44	0.0000	0.0000	-0.6290	0	0.00
07/14 05:48	0.0000	0.0000	-0.7463	0	0.00
07/14 05:52	0.0000	0.0000	-0.2666	0	0.00
07/14 05:56	0.0000	0.0000	-0.2133	0	0.00
07/14 06:00	0.0000	0.0000	-0.0214	0	0.00
07/14 06:04	0.0000	0.0000	0.0000	0	0.00
07/14 06:08	0.0000	0.0000	-0.5544	0	0.00
07/14 06:12	0.0000	0.0000	-0.9488	0	0.00
07/14 06:40	0.0000	0.0000	-1.8123	6	0.00
07/14 06:44	0.0000	0.0000	-1.6524	7	0.00
07/14 06:48	0.0000	0.0000	-1.3645	9	0.00
07/14 06:52	0.0000	0.0000	-1.6204	11	0.00
07/14 06:56	0.0000	0.0000	-1.0661	12	0.00
07/14 07:00	0.0000	0.0000	-1.2473	14	0.00
07/14 07:04	0.0000	0.0000	-1.1620	16	0.00
07/14 07:08	0.0000	0.0000	-1.5884	18	0.00
07/14 07:12	0.0000	0.0000	-1.1940	20	0.00
07/14 07:16	0.0000	0.0000	-1.3326	22	0.00
07/14 07:20	0.0000	0.0000	-0.8102	25	0.00
07/14 07:24	0.0000	0.0000	-0.7783	27	0.00
07/14 07:28	0.0000	0.0000	-0.6717	29	0.00
07/14 07:32	0.0000	0.0000	-0.7569	32	0.00
07/14 07:36	0.0000	0.0000	-0.9275	35	0.00
07/14 07:40	0.0000	0.0000	-1.0874	39	0.00
07/14 07:44	0.0000	0.0000	-0.7676	42	0.00
07/14 07:48	0.0000	0.0000	-0.8209	45	0.00
07/14 07:52	0.0000	0.0000	-0.7783	49	0.00
07/14 07:56	0.0000	0.0000	-0.6930	51	0.00
07/14 08:00	0.0000	0.0000	-0.7356	55	0.00

07/14 08:04	0.0000	0.0000	-0.9382	57	0.00
07/14 08:08	0.0000	0.0000	-0.7783	60	0.00
07/14 08:12	0.0000	0.0000	-0.6717	64	0.00
07/14 08:16	0.0000	0.0000	-0.8316	67	0.00
07/14 08:20	0.0000	0.0000	-0.8316	70	0.00
07/14 08:24	0.0000	0.0000	-0.7036	73	0.00
07/14 08:28	0.0000	0.0000	-0.7143	78	0.00
07/14 08:32	0.0000	0.0000	-0.8635	83	0.00
07/14 08:36	0.0000	0.0000	-0.7143	87	0.00
07/14 08:40	0.0000	0.0000	-0.5331	92	0.00
07/14 08:44	0.0000	0.0000	-0.6930	97	0.00
07/14 08:48	0.0000	0.0000	-0.6077	102	0.00
07/14 08:52	0.0000	0.0000	-0.7036	103	0.00
07/14 08:56	0.0000	0.0000	-0.5224	106	0.00
07/14 09:00	0.0000	0.0000	-0.6397	110	0.00
07/14 09:04	0.0000	0.0000	-0.7463	113	0.00
07/14 09:08	0.0000	0.0000	-0.6930	119	0.00
07/14 09:12	0.0000	0.0000	-0.4691	125	0.00
07/14 09:40	0.0000	0.0000	-0.5224	160	0.00
07/14 09:44	0.0000	0.0000	-0.6184	161	0.00
07/14 09:48	0.0000	0.0000	-0.8209	170	0.00
07/14 09:52	0.0000	0.0000	-1.0128	176	0.00
07/14 09:56	0.0000	0.0000	-0.6823	180	0.00
07/14 10:00	0.0000	0.0000	-0.8102	183	0.00
07/14 10:04	0.0000	0.0000	-0.7676	191	0.00
07/14 10:08	0.0000	0.0000	-0.5651	197	0.00
07/14 10:12	0.0000	0.0000	-0.4052	199	0.00
07/14 10:16	0.0000	0.0000	-0.8316	206	0.00
07/14 10:20	0.0000	0.0000	-0.6717	215	0.00
07/14 10:24	0.0000	0.0000	-0.6184	216	0.00
07/14 10:28	0.0000	0.0000	-0.5224	221	0.00
07/14 10:32	0.0000	0.0000	-0.8102	222	0.00
07/14 10:36	0.0000	0.0000	-0.3732	231	0.00
07/14 10:40	0.0000	0.0000	-0.3412	229	0.00
07/14 10:44	0.0000	0.0000	-0.3945	234	0.00
07/14 10:48	0.0000	0.0000	-0.4691	239	0.00
07/14 10:52	0.0000	0.0000	0.0000	234	0.00
07/14 10:56	0.0000	0.0000	-0.1494	231	0.00
07/14 11:00	0.0000	0.0000	-0.1493	233	0.00
07/14 11:04	0.0000	0.0000	-0.0641	232	0.00
07/14 11:08	0.0000	0.0000	-0.0534	241	0.00
07/14 11:12	0.0000	0.0000	-0.5438	239	0.00
07/14 11:16	0.0000	0.0000	-0.3839	249	0.00
07/14 11:20	0.0000	0.0000	-0.1067	255	0.00
07/14 11:24	0.0000	0.0000	-0.4478	245	0.00
07/14 11:28	0.0000	0.0000	-0.2346	256	0.00
07/14 11:32	0.0000	0.0000	-0.4798	259	0.00
07/14 11:36	0.0000	0.0000	-0.7463	250	0.00
07/14 11:40	0.0000	0.0000	-0.6610	245	0.00
07/14 11:44	0.0000	0.0000	-0.2773	182	0.00
07/14 11:48	0.0000	0.0000	-0.3306	184	0.00
07/14 11:52	0.0000	0.0000	-0.3412	192	0.00
07/14 11:56	0.0000	0.0000	0.0000	210	0.00
07/14 12:00	0.0000	0.0000	-0.4905	211	0.00
07/14 12:04	0.0000	0.0000	-0.7250	210	0.00
07/14 12:08	0.0000	0.0000	-1.0341	223	0.00
07/14 12:12	0.0000	0.0000	-0.3092	218	0.00

EA10L15C.ANA

EA10 Lheb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Lig Pum	
07/14 12:44	0.0000	0.0000	0.0000	0	0.00
07/14 12:48	0.0000	0.0000	0.0000	0	0.00
07/14 12:52	0.0000	0.0000	0.0000	0	0.00
07/14 12:56	0.0000	0.0000	0.0000	0	0.00
07/14 13:00	0.0000	0.0000	0.0000	0	0.00
07/14 13:04	-0.6379	-0.7750	-0.6594	163	0.00
07/14 13:08	-0.5446	-0.3814	-0.5892	159	0.00
07/14 13:12	-0.4794	-0.7886	-0.7296	152	0.00
07/14 13:16	-0.5446	-0.6393	-0.6360	154	0.00
07/14 13:20	-0.4514	-0.7207	-0.6243	154	0.00
07/14 13:24	-0.4794	-0.6800	-0.7881	156	0.00
07/14 13:28	-0.4980	-1.0872	-0.6009	157	0.00
07/14 13:32	-0.4514	-0.6936	-0.4606	153	0.00
07/14 13:36	-0.3861	-0.6528	-0.4723	154	0.00
07/14 13:40	-0.4327	-0.7207	-0.5659	157	0.00
07/14 13:44	-0.3861	-0.6393	-0.3085	143	0.00
07/14 13:48	-0.3954	-0.6121	-0.5542	154	0.00
07/14 13:52	-0.4048	-0.6664	-0.5425	158	0.00
07/14 13:56	-0.3861	-0.8022	-0.5542	151	0.00
07/14 14:00	-0.3302	-0.7071	-0.5425	134	0.00
07/14 14:04	-0.3861	-0.7886	-0.6477	128	0.00
07/14 14:08	-0.3302	-0.7071	-0.6009	137	0.00
07/14 14:12	-0.3395	-0.7479	-0.6243	128	0.00
07/14 14:16	-0.2929	-0.6664	-0.6243	129	0.00
07/14 14:20	-0.3768	-0.6664	-0.5659	136	0.00
07/14 14:24	-0.2742	-0.6936	-0.4723	126	0.00
07/14 14:28	-0.3488	-0.6393	-0.6243	125	0.00
07/14 14:32	-0.3488	-0.7071	-0.6360	127	0.00
07/14 14:36	-0.3768	-0.7343	-0.5892	122	0.00
07/14 14:40	-0.3115	-0.5714	-0.5425	123	0.00
07/14 14:44	-0.3302	-0.6393	-0.5892	129	0.00
07/14 14:48	-0.3022	-0.6257	-0.4489	127	0.00
07/14 14:52	-0.3302	-0.5850	-0.6009	130	0.00
07/14 14:56	-3.1929	-5.0373	-2.9521	140	0.00

EB10L15C.ANA

EB10 Lheb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Lig Pum	
07/14 12:48	0.0000	0.0000	0.0000	0	0.00
07/14 12:52	0.0000	0.0000	0.0000	0	0.00
07/14 12:56	0.0000	0.0000	0.0000	0	0.00
07/14 13:00	0.0000	0.0000	0.0000	0	0.00
07/14 13:04	0.0000	0.0000	0.0000	0	0.00
07/14 13:08	0.0000	0.0000	-0.7996	252	0.00
07/14 13:12	0.0000	0.0000	0.0000	243	0.00
07/14 13:16	0.0000	0.0000	0.0000	241	0.00
07/14 13:20	0.0000	0.0000	0.0000	250	0.00
07/14 13:24	0.0000	0.0000	0.0000	249	0.00
07/14 13:28	0.0000	0.0000	0.0000	250	0.00
07/14 13:32	0.0000	0.0000	-0.5651	247	0.00
07/14 13:36	0.0000	0.0000	-0.4478	247	0.00
07/14 13:40	0.0000	0.0000	-0.4798	244	0.00
07/14 13:44	0.0000	0.0000	-0.4158	231	0.00
07/14 13:48	0.0000	0.0000	-0.4478	239	0.00
07/14 13:52	0.0000	0.0000	-0.3092	248	0.00
07/14 13:56	0.0000	0.0000	-0.4265	243	0.00
07/14 14:00	0.0000	0.0000	-0.3839	217	0.00
07/14 14:04	0.0000	0.0000	-0.5544	207	0.00
07/14 14:08	0.0000	0.0000	-0.5224	218	0.00
07/14 14:12	0.0000	0.0000	-0.5864	208	0.00
07/14 14:16	0.0000	0.0000	-0.4585	206	0.00
07/14 14:20	0.0000	0.0000	-0.5224	215	0.00
07/14 14:24	0.0000	0.0000	-0.5011	202	0.00
07/14 14:28	0.0000	0.0000	-0.4478	199	0.00
07/14 14:32	0.0000	0.0000	-0.4372	206	0.00
07/14 14:36	0.0000	0.0000	-0.4905	195	0.00
07/14 14:40	0.0000	0.0000	-0.4798	199	0.00
07/14 14:44	0.0000	0.0000	-0.3412	209	0.00
07/14 14:48	0.0000	0.0000	-0.4478	206	0.00
07/14 14:52	0.0000	0.0000	-0.5224	207	0.00
07/14 14:56	0.0000	0.0000	-0.5011	203	0.00

Appendix 1E Data table for the Day 2 experiments on *Lophogorgia hebes* with sediment (EA12LO15C & EB12L15C) and without sediment (EA11L15C & EB11L15C), Charleston Harbor, SC, 15 m depth.

EA11L15C.ANA

EA11 Lheb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Lig Pum	
07/14 15:08	0.0000	0.0000	0.0000	114	0.00
07/14 15:12	0.0000	0.0000	0.0000	112	0.00
07/14 15:16	9.9999	9.9999	9.9999	112	0.00
07/14 15:20	9.9999	9.9999	9.9999	109	0.00
07/14 15:24	9.9999	9.9999	9.9999	109	0.00
07/14 15:28	-0.4887	-0.5578	-0.4489	105	0.00
07/14 15:32	-0.5073	-0.5035	-0.7998	102	0.00
07/14 15:36	-0.5446	-0.3271	-0.6828	98	0.00
07/14 15:40	-0.5726	-0.5035	-0.7881	95	0.00
07/14 15:44	-0.4980	-0.6664	-0.6126	94	0.00
07/14 15:48	-0.5167	-0.5714	-0.8115	97	0.00
07/14 15:52	-0.5260	-0.5985	-0.4840	91	0.00
07/14 15:56	-0.4048	-0.7479	-0.5425	91	0.00
07/14 16:00	-0.4327	-0.6800	-0.6009	89	0.00
07/14 16:04	-0.4700	-0.6664	-0.6828	88	0.00
07/14 16:08	-0.5073	-0.5850	-0.6126	88	0.00
07/14 16:12	-0.4607	-0.6664	-0.6828	91	0.00
07/14 16:16	-0.5353	-0.6528	-0.7530	88	0.00
07/14 16:20	-0.4327	-0.4221	-0.6711	85	0.00
07/14 16:24	-0.3861	-0.5578	-0.7764	84	0.00
07/14 16:28	-0.4048	-0.3814	-0.6828	85	0.00
07/14 16:32	-0.4141	-0.4492	-0.6360	84	0.00
07/14 16:36	-0.3488	-0.3949	-0.6009	82	0.00
07/14 16:40	-0.3675	-0.6528	-0.5659	81	0.00
07/14 16:44	-0.3488	-0.5035	-0.5074	72	0.00
07/14 16:48	-0.3209	-0.6664	-0.5658	73	0.00
07/14 16:52	-0.3582	-0.5307	-0.6594	76	0.00
07/14 16:56	-0.3768	-0.5850	-0.6126	74	0.00
07/14 17:00	-0.3488	-0.5443	-0.7530	68	0.00
07/14 17:04	-0.4141	-0.0420	-0.6477	66	0.00
07/14 17:08	-0.4234	-0.5985	-0.6360	66	0.00
07/14 17:12	-0.3302	-0.5985	-0.6477	65	0.00
07/14 17:16	-0.3022	-0.5171	-0.6828	64	0.00
07/14 17:20	-0.3581	-0.4492	-0.5775	61	0.00
07/14 17:24	-0.3022	-1.0736	-0.5892	61	0.00
07/14 17:28	-0.2836	-0.5035	-0.5775	58	0.00
07/14 17:32	-0.2929	-0.5307	-0.4606	56	0.00
07/14 17:36	-0.3488	-0.3542	-0.5892	55	0.00
07/14 17:40	-0.2929	-0.7071	-0.6126	55	0.00
07/14 17:44	-0.3115	-0.5443	-0.6243	53	0.00
07/14 17:48	-0.3488	-0.6257	-0.6477	56	0.00
07/14 17:52	-0.3954	-0.6121	-0.6594	54	0.00
07/14 18:00	-0.5633	-0.7207	-0.5425	41	0.00
07/14 18:04	-0.6006	-0.6393	-0.6126	40	0.00
07/14 18:08	-0.6192	-0.6800	-0.7296	37	0.00
07/14 18:12	-0.6845	-0.7750	-0.8466	36	0.00
07/14 18:16	-0.6752	-0.6528	-0.8466	34	0.00
07/14 18:20	-0.5913	-0.6393	-0.9635	31	0.00
07/14 18:24	-0.6099	-0.6936	-0.6945	30	0.00
07/14 18:28	-0.6752	-0.7750	-0.7647	28	0.00
07/14 18:32	-0.5260	-0.7343	-0.7413	26	0.00
07/14 18:36	-0.5353	-0.9650	-0.7062	25	0.00
07/14 18:40	-0.6379	-0.8293	-0.6828	23	0.00
07/14 18:44	-0.5726	-0.7343	-0.9752	22	0.00
07/14 18:48	-0.4421	-0.7750	-0.8583	20	0.00
07/14 18:52	-0.4980	-0.8293	-0.8232	18	0.00

07/14 19:16	-0.4514	-0.6800	-0.8583	17	0.00
07/14 19:20	-0.4234	-0.7614	-0.7998	16	0.00
07/14 19:24	-0.4514	-0.7886	-0.7062	14	0.00
07/14 19:28	-0.4421	-0.6664	-0.7647	13	0.00
07/14 19:32	-0.5073	-0.6528	-0.6828	12	0.00
07/14 19:36	-0.4234	-0.6936	-0.7413	11	0.00
07/14 19:40	-0.4607	-0.6800	-0.8232	10	0.00
07/14 19:44	-0.4700	-0.7886	-0.7764	9	0.00
07/14 19:48	-0.4607	-0.7207	-0.6945	8	0.00
07/14 19:52	-0.4327	-0.7343	-0.7413	7	0.00
07/14 19:56	-0.4421	-0.7479	-0.7998	6	0.00
07/14 20:00	-0.3861	-0.6936	-0.6360	5	0.00
07/14 20:04	-0.2929	-0.7479	-0.7881	4	0.00
07/14 20:08	-0.4141	-0.7750	-0.8934	3	0.00
07/14 20:12	-0.3581	-0.7207	-0.7530	3	0.00
07/14 20:16	-0.4327	-0.7886	-0.7296	2	0.00
07/14 20:20	-0.3954	-0.7071	-0.7881	2	0.00
07/14 20:24	-0.4421	-0.6121	-0.6009	1	0.00
07/14 20:28	-0.3675	-0.6800	-0.5074	1	0.00
07/14 20:32	-0.3768	-0.6528	-0.8349	0	0.00
07/14 20:36	-0.3395	-0.7071	-0.6477	0	0.00
07/14 20:40	-0.3115	-0.7343	-0.5542	0	0.00
07/14 20:44	-0.3395	-0.7886	-0.6828	0	0.00
07/14 20:48	-0.3209	-0.6936	-0.7062	0	0.00
07/14 20:52	-0.3302	-0.7479	-0.5308	0	0.00
07/14 21:20	-0.7591	-0.8293	-0.8232	0	0.00
07/14 21:24	-0.6472	-0.8157	-0.8349	0	0.00
07/14 21:28	-0.6752	-0.8700	-0.8700	0	0.00
07/14 21:32	-0.7125	-0.8022	-0.8466	0	0.00
07/14 21:36	-0.6845	-0.8293	-0.8466	0	0.00
07/14 21:40	-0.6752	-0.8836	-0.9402	0	0.00
07/14 21:44	-0.8151	-0.6393	-0.8583	0	0.00
07/14 21:48	-0.6938	-0.8700	-0.7413	0	0.00
07/14 21:52	-0.7311	-0.9786	-0.9519	0	0.00
07/14 21:56	-0.7778	-0.8836	-0.8583	0	0.00
07/14 22:00	-0.6752	-0.8293	-0.7764	0	0.00
07/14 22:04	-0.6006	-1.0193	-0.8466	0	0.00
07/14 22:08	-0.6006	-0.8972	-0.8700	0	0.00
07/14 22:12	-0.6006	-0.7750	-0.8115	0	0.00
07/14 22:16	-0.4887	-0.7343	-0.8466	0	0.00
07/14 22:20	-0.5073	-0.8429	-0.8583	0	0.00
07/14 22:24	-0.5260	-0.7886	-0.7881	0	0.00
07/14 22:28	-0.5260	-0.7207	-0.8700	0	0.00
07/14 22:32	-0.4700	-0.8293	-0.7530	0	0.00
07/14 22:36	-0.5073	-0.8429	-0.7998	0	0.00
07/14 22:40	-0.4421	-0.8022	-0.6360	0	0.00
07/14 22:44	-0.4607	-0.7479	-0.8349	0	0.00
07/14 22:48	-0.4234	-0.7886	-0.7062	0	0.00
07/14 22:52	-0.3488	-0.7343	-0.7530	0	0.00
07/14 22:56	-0.3861	-0.8022	-0.6360	0	0.00
07/14 23:00	-0.4607	-0.7750	-0.7764	0	0.00
07/14 23:04	-0.3768	-0.7886	-0.6126	0	0.00
07/14 23:08	-0.4048	-0.7071	-0.6360	0	0.00
07/14 23:12	-0.4327	-0.6800	-0.6828	0	0.00
07/14 23:16	-0.4141	-0.7207	-0.7530	0	0.00
07/14 23:20	-0.3582	-0.6393	-0.7296	0	0.00
07/14 23:24	-0.3488	-0.7071	-0.7413	0	0.00
07/14 23:28	-0.2929	-0.7614	-0.6594	0	0.00
07/14 23:32	-0.2742	-0.7614	-0.7062	0	0.00
07/14 23:36	-0.2183	-0.6800	-0.5659	0	0.00

07/14 23:40	-0.2649	-0.7886	-0.5892	0	0.00
07/14 23:44	-0.2369	-0.7479	-0.5775	0	0.00
07/14 23:48	-0.3115	-0.7479	-0.7062	0	0.00
07/14 23:52	-0.2929	-0.8022	-0.5425	0	0.00
07/15 00:20	-0.6752	-0.8022	-0.8583	0	0.00
07/15 00:24	-0.5726	-0.8293	-0.7998	0	0.00
07/15 00:28	-0.6099	-0.9786	-0.9051	0	0.00
07/15 00:32	-0.6286	-0.8429	-0.9051	0	0.00
07/15 00:36	-0.7032	-0.9379	-0.9285	0	0.00
07/15 00:40	-0.6565	-0.6257	-0.8700	0	0.00
07/15 00:44	-0.7032	-0.8700	-0.8115	0	0.00
07/15 00:48	-0.7032	-0.6800	-0.9051	0	0.00
07/15 00:52	-0.6006	-0.8293	-0.8934	0	0.00
07/15 00:56	-0.6099	-0.7750	-0.7413	0	0.00
07/15 01:00	-0.4887	-1.2230	-1.0337	0	0.00
07/15 01:04	-0.5167	-0.8972	-0.9635	0	0.00
07/15 01:08	-0.4887	-0.9515	-0.7764	0	0.00
07/15 01:12	-0.4887	-0.8836	-0.7881	0	0.00
07/15 01:16	-0.4700	-0.8429	-0.8700	0	0.00
07/15 01:20	-0.4700	-0.7614	-0.5892	0	0.00
07/15 01:24	-0.4607	-0.7886	-0.7413	0	0.00
07/15 01:28	-0.4234	-0.8565	-0.7764	0	0.00
07/15 01:32	-0.4794	-0.7071	-0.7998	0	0.00
07/15 01:36	-0.4048	-0.8836	-0.8115	0	0.00
07/15 01:40	-0.4327	-0.8022	-0.7647	0	0.00
07/15 01:44	-0.4048	-0.6936	-0.7296	0	0.00
07/15 01:48	-0.4048	-0.6800	-0.6828	0	0.00
07/15 01:52	-0.2929	-0.8293	-0.6477	0	0.00
07/15 01:56	-0.3302	-0.6393	-0.5425	0	0.00
07/15 02:00	-0.3302	-0.7614	-0.6360	0	0.00
07/15 02:04	-0.2836	-0.8293	-0.5892	0	0.00
07/15 02:08	-0.3022	-0.7614	-0.6828	0	0.00
07/15 02:12	-0.3115	-0.7479	-0.5775	0	0.00
07/15 02:16	-0.2929	-0.7750	-0.7530	0	0.00
07/15 02:20	-0.2836	-0.7343	-0.7413	0	0.00
07/15 02:24	-0.2649	-0.6664	-0.7530	0	0.00
07/15 02:28	-0.2183	-0.7207	-0.5892	0	0.00
07/15 02:32	-0.2929	-0.6936	-0.6945	0	0.00
07/15 02:36	-0.1996	-0.6664	-0.6126	0	0.00
07/15 02:40	-0.2369	-0.6393	-0.5308	0	0.00
07/15 02:44	-0.2463	-0.7614	-0.4138	0	0.00
07/15 02:48	-0.2369	-0.7479	-0.5425	0	0.00
07/15 02:52	-0.1344	-0.6800	-0.4606	0	0.00
07/15 03:20	-0.6099	-0.8293	-0.8232	0	0.00
07/15 03:24	-0.6192	-0.8972	-0.8115	0	0.00
07/15 03:28	-0.6472	-0.7479	-0.6828	0	0.00
07/15 03:32	-0.6006	-1.0601	-0.9051	0	0.00
07/15 03:36	-0.6379	-0.8972	-0.8817	0	0.00
07/15 03:40	-0.6192	-1.0329	-0.9051	0	0.00
07/15 03:44	-0.5540	-0.9650	-0.7881	0	0.00
07/15 03:48	-0.5819	-1.0193	-0.8817	0	0.00
07/15 03:52	-0.5633	-0.7614	-0.9986	0	0.00
07/15 03:56	-0.5073	-0.6393	-0.8700	0	0.00
07/15 04:00	-0.4794	-0.7614	-0.8115	0	0.00
07/15 04:04	-0.4887	-0.7614	-0.9986	0	0.00
07/15 04:08	-0.4234	-0.9108	-0.8700	0	0.00
07/15 04:12	-0.4141	-0.8836	-0.6711	0	0.00
07/15 04:16	-0.3861	-1.0872	-0.6711	0	0.00
07/15 04:20	-0.3861	-0.8429	-0.8115	0	0.00
07/15 04:24	-0.3488	-0.8700	-0.6009	0	0.00

07/15 04:28	-0.3675	-0.7886	-0.7179	0	0.00
07/15 04:32	-0.3488	-0.8700	-0.6945	0	0.00
07/15 04:36	-0.3022	-0.8429	-0.7413	0	0.00
07/15 04:40	-0.3209	-0.7479	-0.4957	0	0.00
07/15 04:44	-0.3115	-0.7479	-0.6126	0	0.00
07/15 04:48	-0.2556	-0.7750	-0.7179	0	0.00
07/15 04:52	-0.2929	-0.7479	-0.6009	0	0.00
07/15 04:56	-0.3115	-0.7614	-0.7179	0	0.00
07/15 05:00	-0.2556	-0.8565	-0.7764	0	0.00
07/15 05:04	-0.2090	-0.8022	-0.7530	0	0.00
07/15 05:08	-0.2742	-0.7750	-0.5892	0	0.00
07/15 05:12	-0.2556	-0.7750	-0.7530	0	0.00
07/15 05:16	-0.2649	-0.7479	-0.6243	0	0.00
07/15 05:20	-0.2556	-0.8022	-0.5659	0	0.00
07/15 05:24	-0.3209	-0.8022	-0.6828	0	0.00
07/15 05:28	-0.3302	-0.6800	-0.5658	0	0.00
07/15 05:32	-0.2742	-0.6936	-0.6243	0	0.00
07/15 05:36	-0.2369	-0.7750	-0.6009	0	0.00
07/15 05:40	-0.2742	-0.7071	-0.5775	0	0.00
07/15 05:44	-0.2183	-0.6393	-0.5074	0	0.00
07/15 05:48	-0.1903	-0.7750	-0.6477	0	0.00
07/15 05:52	-0.1717	-0.8022	-0.4723	0	0.00
07/15 06:20	-0.6192	-0.8293	-0.6477	1	0.00
07/15 06:24	-0.6472	-0.6936	-0.8232	1	0.00
07/15 06:28	-0.6192	-0.7886	-0.8817	1	0.00
07/15 06:32	-0.6845	-0.8700	-0.8466	2	0.00
07/15 06:36	-0.5633	-0.9243	-0.8934	3	0.00
07/15 06:40	-0.6379	-0.7886	-1.0103	3	0.00
07/15 06:44	-0.6379	-0.8293	-0.9285	4	0.00
07/15 06:48	-0.5913	-0.8157	-0.8466	5	0.00
07/15 06:52	-0.4794	-0.8022	-0.9168	6	0.00
07/15 06:56	-0.5913	-0.7614	-0.7881	7	0.00
07/15 07:00	-0.5446	-0.7479	-0.7296	8	0.00
07/15 07:04	-0.4514	-0.8565	-0.7179	10	0.00
07/15 07:08	-0.4234	-0.6800	-0.7062	11	0.00
07/15 07:12	-0.4607	-0.7479	-0.6594	12	0.00
07/15 07:16	-0.4327	-0.7479	-0.6711	13	0.00
07/15 07:20	-0.3209	-0.8157	-0.7764	14	0.00
07/15 07:24	-0.4234	-0.6936	-0.8817	16	0.00
07/15 07:28	-0.4700	-0.8565	-0.7296	16	0.00
07/15 07:32	-0.4141	-0.6800	-0.7179	18	0.00
07/15 07:36	-0.3768	-0.6528	-0.8349	19	0.00
07/15 07:40	-0.4234	-0.6393	-0.6828	20	0.00
07/15 07:44	-0.3581	-0.6800	-0.5659	22	0.00
07/15 07:48	-0.3581	-0.6393	-0.6828	24	0.00
07/15 07:52	-0.3581	-0.5442	-0.6009	26	0.00
07/15 07:56	-0.3302	-0.7750	-0.6243	29	0.00
07/15 08:00	-0.3115	-0.7479	-0.6243	30	0.00
07/15 08:04	-0.3302	-0.7343	-0.5892	30	0.00
07/15 08:08	-0.2556	-0.6664	-0.5659	32	0.00
07/15 08:12	-0.2742	-0.7750	-0.5425	34	0.00
07/15 08:16	-0.3395	-0.5443	-0.5542	36	0.00
07/15 08:20	-0.3395	-0.6393	-0.5658	38	0.00
07/15 08:24	-0.3488	-0.5035	-0.5191	40	0.00
07/15 08:28	-0.3302	-0.6257	-0.5191	43	0.00
07/15 08:32	-0.3768	-0.6800	-0.6009	46	0.00
07/15 08:36	-0.2742	-0.6528	-0.6009	49	0.00
07/15 08:40	-0.2463	-0.5443	-0.5074	52	0.00
07/15 08:44	-0.2276	-0.5985	-0.5775	54	0.00
07/15 08:48	-0.2556	-0.5171	-0.5775	56	0.00

07/15 08:52	-0.1717	-0.5035	-0.5425	58	0.00
07/15 09:20	-0.5446	-0.6257	-0.5074	75	0.00
07/15 09:24	-0.3861	-0.5035	-0.5658	81	0.00
07/15 09:28	-0.4607	-0.5578	-0.5658	82	0.00
07/15 09:32	-0.4141	-0.4221	-0.5308	86	0.00
07/15 09:36	-0.4607	-0.5035	-0.5659	87	0.00
07/15 09:40	-0.4048	-0.4085	-0.5892	93	0.00
07/15 09:44	-0.4327	-0.5307	-0.5775	97	0.00
07/15 09:48	-0.4141	-0.5714	-0.5542	102	0.00
07/15 09:52	-0.4141	-0.7886	-0.5892	102	0.00
07/15 09:56	-0.3209	-0.4900	-0.5892	105	0.00
07/15 10:00	-0.3115	-0.6121	-0.5191	106	0.00
07/15 10:04	-0.3861	-0.5307	-0.5074	113	0.00
07/15 10:08	-0.2929	-0.3814	-0.5775	109	0.00
07/15 10:12	-0.2836	-0.3406	-0.4723	109	0.00
07/15 10:16	-0.3395	-0.4628	-0.4840	106	0.00
07/15 10:20	-0.2929	-0.3949	-0.5658	91	0.00
07/15 10:24	-0.2556	-0.3678	-0.5658	76	0.00
07/15 10:28	-0.3115	-0.4628	-0.4489	88	0.00
07/15 10:32	-0.3582	-0.4764	-0.4372	88	0.00
07/15 10:36	-0.2369	-0.4764	-0.4606	92	0.00
07/15 10:40	-0.3115	-0.4764	-0.4606	96	0.00
07/15 10:44	-0.2556	-0.4492	-0.3436	103	0.00
07/15 10:48	-0.2369	-0.5171	-0.5074	96	0.00
07/15 10:52	-0.1903	-0.5578	-0.5191	99	0.00
07/15 10:56	-0.2836	-0.4492	-0.4957	111	0.00
07/15 11:00	-0.2836	-0.4221	-0.4021	116	0.00
07/15 11:04	-0.2463	-0.4628	-0.6243	119	0.00
07/15 11:08	-0.2556	-0.3949	-0.3670	119	0.00
07/15 11:12	-0.2183	-0.1913	-0.3319	124	0.00
07/15 11:16	-0.2276	-0.3678	-0.3202	129	0.00
07/15 11:20	-0.1623	-0.3542	-0.3436	125	0.00
07/15 11:24	-0.2276	-0.2320	-0.1798	128	0.00
07/15 11:28	-0.2369	-0.2320	-0.3787	127	0.00
07/15 11:32	-0.1996	-0.4085	-0.4489	124	0.00
07/15 11:36	-0.1623	-0.2999	-0.3553	122	0.00
07/15 11:40	-0.1623	-0.4085	-0.3085	121	0.00
07/15 11:44	-0.1344	-0.3814	-0.3202	121	0.00
07/15 11:48	-0.0784	-0.4085	-0.4021	121	0.00
07/15 11:52	-0.1344	-0.1235	-0.2851	130	0.00
07/15 12:20	-0.3115	-0.2456	-0.3670	143	0.00
07/15 12:24	-0.3768	-0.4221	-0.4372	140	0.00
07/15 12:28	-0.3581	-0.3542	-0.2968	136	0.00
07/15 12:32	-0.2649	-0.3542	-0.3202	137	0.00
07/15 12:36	-0.2742	-0.2863	-0.3319	138	0.00
07/15 12:40	-0.3302	-0.3271	-0.3553	134	0.00

EB11L15C.ANA

EB11 Lheb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Lig Pum	
07/14 15:24	0.0000	0.0000	0.0000	177	0.00
07/14 15:28	0.0000	0.0000	0.0000	172	0.00
07/14 15:32	0.0000	0.0000	0.0000	167	0.00
07/14 15:36	0.0000	0.0000	0.0000	158	0.00
07/14 15:40	0.0000	0.0000	0.0000	154	0.00
07/14 15:44	0.0000	0.0000	-0.6184	152	0.00
07/14 15:48	0.0000	0.0000	-0.6077	157	0.00
07/14 15:52	0.0000	0.0000	-0.5118	147	0.00
07/14 15:56	0.0000	0.0000	-0.4691	146	0.00
07/14 16:00	0.0000	0.0000	-0.5224	145	0.00
07/14 16:04	0.0000	0.0000	-0.6290	138	0.00
07/14 16:08	0.0000	0.0000	-0.6504	141	0.00
07/14 16:12	0.0000	0.0000	-0.6930	145	0.00
07/14 16:16	0.0000	0.0000	-0.6077	139	0.00
07/14 16:20	0.0000	0.0000	-0.7356	138	0.00
07/14 16:24	0.0000	0.0000	-0.6610	134	0.00
07/14 16:28	0.0000	0.0000	-0.5118	134	0.00
07/14 16:32	0.0000	0.0000	-0.5864	135	0.00
07/14 16:36	0.0000	0.0000	-0.7143	131	0.00
07/14 16:40	0.0000	0.0000	-0.5864	129	0.00
07/14 16:44	0.0000	0.0000	-0.6397	115	0.00
07/14 16:48	0.0000	0.0000	-0.7036	117	0.00
07/14 16:52	0.0000	0.0000	-0.5971	122	0.00
07/14 16:56	0.0000	0.0000	-0.5331	118	0.00
07/14 17:00	0.0000	0.0000	-0.6397	110	0.00
07/14 17:04	0.0000	0.0000	-0.6184	107	0.00
07/14 17:08	0.0000	0.0000	-0.6290	108	0.00
07/14 17:12	0.0000	0.0000	-0.6077	104	0.00
07/14 17:16	0.0000	0.0000	-0.6610	101	0.00
07/14 17:20	0.0000	0.0000	-0.5864	99	0.00
07/14 17:24	0.0000	0.0000	-0.5118	99	0.00
07/14 17:28	0.0000	0.0000	-0.5224	94	0.00
07/14 17:32	0.0000	0.0000	-0.5438	90	0.00
07/14 17:36	0.0000	0.0000	-0.5224	88	0.00
07/14 17:40	0.0000	0.0000	-0.5544	88	0.00
07/14 17:44	0.0000	0.0000	-0.6717	89	0.00
07/14 17:48	0.0000	0.0000	-0.6184	89	0.00
07/14 17:52	0.0000	0.0000	-0.6077	88	0.00
07/14 17:56	0.0000	0.0000	-0.5757	88	0.00
07/14 18:00	0.0000	0.0000	-0.5331	84	0.00
07/14 18:04	0.0000	0.0000	-0.5118	82	0.00
07/14 18:08	0.0000	0.0000	-0.6823	78	0.00
07/14 18:12	0.0000	0.0000	-0.5438	73	0.00
07/14 18:40	0.0000	0.0000	-0.5971	50	0.00
07/14 18:44	0.0000	0.0000	-0.6077	48	0.00
07/14 18:48	0.0000	0.0000	-0.5757	45	0.00
07/14 18:52	0.0000	0.0000	-0.7676	42	0.00
07/14 18:56	0.0000	0.0000	-0.6717	40	0.00
07/14 19:00	0.0000	0.0000	-0.7889	38	0.00
07/14 19:04	0.0000	0.0000	-0.8102	34	0.00
07/14 19:08	0.0000	0.0000	-0.7676	32	0.00
07/14 19:12	0.0000	0.0000	-0.7250	29	0.00
07/14 19:16	0.0000	0.0000	-0.7356	28	0.00
07/14 19:20	0.0000	0.0000	-0.6504	26	0.00
07/14 19:24	0.0000	0.0000	-0.6930	24	0.00
07/14 19:28	0.0000	0.0000	-0.7036	20	0.00

125

07/14 19:32	0.0000	0.0000	-0.6610	19	0.00
07/14 19:36	0.0000	0.0000	-0.7037	18	0.00
07/14 19:40	0.0000	0.0000	-0.6397	16	0.00
07/14 19:44	0.0000	0.0000	-0.6504	14	0.00
07/14 19:48	0.0000	0.0000	-0.5971	13	0.00
07/14 19:52	0.0000	0.0000	-0.6397	11	0.00
07/14 19:56	0.0000	0.0000	-0.5544	10	0.00
07/14 20:00	0.0000	0.0000	-0.6504	8	0.00
07/14 20:04	0.0000	0.0000	-0.5118	7	0.00
07/14 20:08	0.0000	0.0000	-0.5331	6	0.00
07/14 20:12	0.0000	0.0000	-0.5331	4	0.00
07/14 20:16	0.0000	0.0000	-0.5331	3	0.00
07/14 20:20	0.0000	0.0000	-0.5757	2	0.00
07/14 20:24	0.0000	0.0000	-0.6397	2	0.00
07/14 20:28	0.0000	0.0000	-0.5864	1	0.00
07/14 20:32	0.0000	0.0000	-0.5544	0	0.00
07/14 20:36	0.0000	0.0000	-0.6397	0	0.00
07/14 20:40	0.0000	0.0000	-0.5757	0	0.00
07/14 20:44	0.0000	0.0000	-0.6290	0	0.00
07/14 20:48	0.0000	0.0000	-0.6610	0	0.00
07/14 20:52	0.0000	0.0000	-0.5971	0	0.00
07/14 20:56	0.0000	0.0000	-0.5544	0	0.00
07/14 21:00	0.0000	0.0000	-0.6290	0	0.00
07/14 21:04	0.0000	0.0000	-0.5438	0	0.00
07/14 21:08	0.0000	0.0000	-0.4905	0	0.00
07/14 21:12	0.0000	0.0000	-0.5971	0	0.00
07/14 21:40	0.0000	0.0000	-0.6823	0	0.00
07/14 21:44	0.0000	0.0000	-0.7356	0	0.00
07/14 21:48	0.0000	0.0000	-0.6930	0	0.00
07/14 21:52	0.0000	0.0000	-0.6504	0	0.00
07/14 21:56	0.0000	0.0000	-0.8209	0	0.00
07/14 22:00	0.0000	0.0000	-0.7676	0	0.00
07/14 22:04	0.0000	0.0000	-0.8529	0	0.00
07/14 22:08	0.0000	0.0000	-0.9382	0	0.00
07/14 22:12	0.0000	0.0000	-0.8529	0	0.00
07/14 22:16	0.0000	0.0000	-0.7463	0	0.00
07/14 22:20	0.0000	0.0000	-0.6290	0	0.00
07/14 22:24	0.0000	0.0000	-0.5757	0	0.00
07/14 22:28	0.0000	0.0000	-0.5331	0	0.00
07/14 22:32	0.0000	0.0000	-0.6397	0	0.00
07/14 22:36	0.0000	0.0000	-0.6504	0	0.00
07/14 22:40	0.0000	0.0000	-0.7676	0	0.00
07/14 22:44	0.0000	0.0000	-0.7143	0	0.00
07/14 22:48	0.0000	0.0000	-0.7036	0	0.00
07/14 22:52	0.0000	0.0000	-0.8102	0	0.00
07/14 22:56	0.0000	0.0000	-0.7036	0	0.00
07/14 23:00	0.0000	0.0000	-0.6504	0	0.00
07/14 23:04	0.0000	0.0000	-0.7569	0	0.00
07/14 23:08	0.0000	0.0000	-0.6823	0	0.00
07/14 23:12	0.0000	0.0000	-0.6717	0	0.00
07/14 23:16	0.0000	0.0000	-0.7356	0	0.00
07/14 23:20	0.0000	0.0000	-0.7250	0	0.00
07/14 23:24	0.0000	0.0000	-0.6397	0	0.00
07/14 23:28	0.0000	0.0000	-0.6823	0	0.00
07/14 23:32	0.0000	0.0000	-0.6290	0	0.00
07/14 23:36	0.0000	0.0000	-0.5651	0	0.00
07/14 23:40	0.0000	0.0000	-0.5651	0	0.00
07/14 23:44	0.0000	0.0000	-0.6184	0	0.00
07/14 23:48	0.0000	0.0000	-0.5757	0	0.00
07/14 23:52	0.0000	0.0000	-0.6077	0	0.00

07/14 23:56	0.0000	0.0000	-0.6290	0	0.00
07/15 00:00	0.0000	0.0000	-0.5971	0	0.00
07/15 00:04	0.0000	0.0000	-0.5757	0	0.00
07/15 00:08	0.0000	0.0000	-0.5864	0	0.00
07/15 00:12	0.0000	0.0000	-0.5544	0	0.00
07/15 00:40	0.0000	0.0000	-0.6823	0	0.00
07/15 00:44	0.0000	0.0000	-0.6077	0	0.00
07/15 00:48	0.0000	0.0000	-0.7250	0	0.00
07/15 00:52	0.0000	0.0000	-0.6930	0	0.00
07/15 00:56	0.0000	0.0000	-0.6610	0	0.00
07/15 01:00	0.0000	0.0000	-0.6930	0	0.00
07/15 01:04	0.0000	0.0000	-0.6823	0	0.00
07/15 01:08	0.0000	0.0000	-0.6077	0	0.00
07/15 01:12	0.0000	0.0000	-0.6504	0	0.00
07/15 01:16	0.0000	0.0000	-0.7250	0	0.00
07/15 01:20	0.0000	0.0000	-0.6610	0	0.00
07/15 01:24	0.0000	0.0000	-0.6717	0	0.00
07/15 01:28	0.0000	0.0000	-0.6610	0	0.00
07/15 01:32	0.0000	0.0000	-0.6610	0	0.00
07/15 01:36	0.0000	0.0000	-0.6397	0	0.00
07/15 01:40	0.0000	0.0000	-0.6184	0	0.00
07/15 01:44	0.0000	0.0000	-0.6397	0	0.00
07/15 01:48	0.0000	0.0000	-0.6290	0	0.00
07/15 01:52	0.0000	0.0000	-0.6077	0	0.00
07/15 01:56	0.0000	0.0000	-0.5971	0	0.00
07/15 02:00	0.0000	0.0000	-0.5331	0	0.00
07/15 02:04	0.0000	0.0000	-0.6077	0	0.00
07/15 02:08	0.0000	0.0000	-0.5971	0	0.00
07/15 02:12	0.0000	0.0000	-0.5651	0	0.00
07/15 02:16	0.0000	0.0000	-0.6184	0	0.00
07/15 02:20	0.0000	0.0000	-0.7356	0	0.00
07/15 02:24	0.0000	0.0000	-0.5544	0	0.00
07/15 02:28	0.0000	0.0000	-0.5757	0	0.00
07/15 02:32	0.0000	0.0000	-0.5438	0	0.00
07/15 02:36	0.0000	0.0000	-0.6290	0	0.00
07/15 02:40	0.0000	0.0000	-0.4372	0	0.00
07/15 02:44	0.0000	0.0000	-0.5438	0	0.00
07/15 02:48	0.0000	0.0000	-0.5011	0	0.00
07/15 02:52	0.0000	0.0000	-0.5224	0	0.00
07/15 02:56	0.0000	0.0000	-0.5118	0	0.00
07/15 03:00	0.0000	0.0000	-0.6397	0	0.00
07/15 03:04	0.0000	0.0000	-0.6504	0	0.00
07/15 03:08	0.0000	0.0000	-0.6823	0	0.00
07/15 03:12	0.0000	0.0000	-0.6290	0	0.00
07/15 03:40	0.0000	0.0000	-0.6610	0	0.00
07/15 03:44	0.0000	0.0000	-0.5224	0	0.00
07/15 03:48	0.0000	0.0000	-0.5864	0	0.00
07/15 03:52	0.0000	0.0000	-0.5118	0	0.00
07/15 03:56	0.0000	0.0000	-0.5118	0	0.00
07/15 04:00	0.0000	0.0000	-0.5971	0	0.00
07/15 04:04	0.0000	0.0000	-0.6397	0	0.00
07/15 04:08	0.0000	0.0000	-0.6610	0	0.00
07/15 04:12	0.0000	0.0000	-0.5971	0	0.00
07/15 04:16	0.0000	0.0000	-0.7143	0	0.00
07/15 04:20	0.0000	0.0000	-0.5544	0	0.00
07/15 04:24	0.0000	0.0000	-0.6823	0	0.00
07/15 04:28	0.0000	0.0000	-0.5224	0	0.00
07/15 04:32	0.0000	0.0000	-0.6717	0	0.00
07/15 04:36	0.0000	0.0000	-0.5864	0	0.00
07/15 04:40	0.0000	0.0000	-0.6504	0	0.00

07/15 04:44	0.0000	0.0000	-0.4691	0	0.00
07/15 04:48	0.0000	0.0000	-0.6717	0	0.00
07/15 04:52	0.0000	0.0000	-0.5651	0	0.00
07/15 04:56	0.0000	0.0000	-0.5011	0	0.00
07/15 05:00	0.0000	0.0000	-0.4478	0	0.00
07/15 05:04	0.0000	0.0000	-0.5864	0	0.00
07/15 05:08	0.0000	0.0000	-0.4585	0	0.00
07/15 05:12	0.0000	0.0000	-0.5544	0	0.00
07/15 05:16	0.0000	0.0000	-0.5757	0	0.00
07/15 05:20	0.0000	0.0000	-0.5011	0	0.00
07/15 05:24	0.0000	0.0000	-0.5011	0	0.00
07/15 05:28	0.0000	0.0000	-0.5971	0	0.00
07/15 05:32	0.0000	0.0000	-0.5651	0	0.00
07/15 05:36	0.0000	0.0000	-0.5331	0	0.00
07/15 05:40	0.0000	0.0000	-0.6290	0	0.00
07/15 05:44	0.0000	0.0000	-0.5651	0	0.00
07/15 05:48	0.0000	0.0000	-0.6717	0	0.00
07/15 05:52	0.0000	0.0000	-0.5438	0	0.00
07/15 05:56	0.0000	0.0000	-0.5757	0	0.00
07/15 06:00	0.0000	0.0000	-0.4691	0	0.00
07/15 06:04	0.0000	0.0000	-0.5544	0	0.00
07/15 06:08	0.0000	0.0000	-0.3732	0	0.00
07/15 06:12	0.0000	0.0000	-0.5011	0	0.00
07/15 06:40	0.0000	0.0000	-0.5438	5	0.00
07/15 06:44	0.0000	0.0000	-0.5331	6	0.00
07/15 06:48	0.0000	0.0000	-0.5331	8	0.00
07/15 06:52	0.0000	0.0000	-0.5544	10	0.00
07/15 06:56	0.0000	0.0000	-0.5438	11	0.00
07/15 07:00	0.0000	0.0000	-0.5331	13	0.00
07/15 07:04	0.0000	0.0000	-0.4691	15	0.00
07/15 07:08	0.0000	0.0000	-0.4905	17	0.00
07/15 07:12	0.0000	0.0000	-0.5757	19	0.00
07/15 07:16	0.0000	0.0000	-0.6504	21	0.00
07/15 07:20	0.0000	0.0000	-0.5971	23	0.00
07/15 07:24	0.0000	0.0000	-0.5971	25	0.00
07/15 07:28	0.0000	0.0000	-0.6184	26	0.00
07/15 07:32	0.0000	0.0000	-0.4691	29	0.00
07/15 07:36	0.0000	0.0000	-0.4158	31	0.00
07/15 07:40	0.0000	0.0000	-0.5224	32	0.00
07/15 07:44	0.0000	0.0000	-0.5971	36	0.00
07/15 07:48	0.0000	0.0000	-0.4798	38	0.00
07/15 07:52	0.0000	0.0000	-0.5544	41	0.00
07/15 07:56	0.0000	0.0000	-0.5864	47	0.00
07/15 08:00	0.0000	0.0000	-0.5438	48	0.00
07/15 08:04	0.0000	0.0000	-0.4478	48	0.00
07/15 08:08	0.0000	0.0000	-0.5331	51	0.00
07/15 08:12	0.0000	0.0000	-0.4905	54	0.00
07/15 08:16	0.0000	0.0000	-0.5757	56	0.00
07/15 08:20	0.0000	0.0000	-0.4905	60	0.00
07/15 08:24	0.0000	0.0000	-0.5544	63	0.00
07/15 08:28	0.0000	0.0000	-0.4265	68	0.00
07/15 08:32	0.0000	0.0000	-0.4798	73	0.00
07/15 08:36	0.0000	0.0000	-0.3732	78	0.00
07/15 08:40	0.0000	0.0000	-0.4585	81	0.00
07/15 08:44	0.0000	0.0000	-0.4052	86	0.00
07/15 08:48	0.0000	0.0000	-0.5118	88	0.00
07/15 08:52	0.0000	0.0000	-0.4905	92	0.00
07/15 08:56	0.0000	0.0000	-0.4158	96	0.00
07/15 09:00	0.0000	0.0000	-0.4585	98	0.00
07/15 09:04	0.0000	0.0000	-0.4585	108	0.00

07/15 09:08	0.0000	0.0000	-0.5113	112	0.00
07/15 09:12	0.0000	0.0000	-0.3945	115	0.00
07/15 09:40	0.0000	0.0000	-0.4905	147	0.00
07/15 09:44	0.0000	0.0000	-0.4265	155	0.00
07/15 09:48	0.0000	0.0000	-0.5544	162	0.00
07/15 09:52	0.0000	0.0000	-0.5438	167	0.00
07/15 09:56	0.0000	0.0000	-0.5544	168	0.00
07/15 10:00	0.0000	0.0000	-0.4478	171	0.00
07/15 10:04	0.0000	0.0000	-0.5011	174	0.00
07/15 10:08	0.0000	0.0000	-0.4478	177	0.00
07/15 10:12	0.0000	0.0000	-0.3839	173	0.00
07/15 10:16	0.0000	0.0000	-0.4372	171	0.00
07/15 10:20	0.0000	0.0000	-0.5011	145	0.00
07/15 10:24	0.0000	0.0000	-0.5118	119	0.00
07/15 10:28	0.0000	0.0000	-0.4158	140	0.00
07/15 10:32	0.0000	0.0000	-0.5118	142	0.00
07/15 10:36	0.0000	0.0000	-0.3412	147	0.00
07/15 10:40	0.0000	0.0000	-0.3625	153	0.00
07/15 10:44	0.0000	0.0000	-0.3732	164	0.00
07/15 10:48	0.0000	0.0000	-0.4158	153	0.00
07/15 10:52	0.0000	0.0000	-0.3625	154	0.00
07/15 10:56	0.0000	0.0000	-0.5011	172	0.00
07/15 11:00	0.0000	0.0000	-0.5118	181	0.00
07/15 11:04	0.0000	0.0000	-0.5331	188	0.00
07/15 11:08	0.0000	0.0000	-0.5651	198	0.00
07/15 11:12	0.0000	0.0000	-0.5331	196	0.00
07/15 11:16	0.0000	0.0000	-0.4585	207	0.00
07/15 11:20	0.0000	0.0000	-0.4478	203	0.00
07/15 11:24	0.0000	0.0000	-0.4798	203	0.00
07/15 11:28	0.0000	0.0000	-0.3412	203	0.00
07/15 11:32	0.0000	0.0000	-0.3732	191	0.00
07/15 11:36	0.0000	0.0000	-0.3519	198	0.00
07/15 11:40	0.0000	0.0000	-0.3839	190	0.00
07/15 11:44	0.0000	0.0000	-0.3199	196	0.00
07/15 11:48	0.0000	0.0000	-0.3945	193	0.00
07/15 11:52	0.0000	0.0000	-0.4478	208	0.00
07/15 11:56	0.0000	0.0000	-0.4158	207	0.00
07/15 12:00	0.0000	0.0000	-0.3839	210	0.00
07/15 12:04	0.0000	0.0000	-0.3519	221	0.00
07/15 12:08	0.0000	0.0000	-0.3412	214	0.00
07/15 12:12	0.0000	0.0000	-0.3519	224	0.00
07/15 12:40	0.0000	0.0000	-0.3945	215	0.00

EA12L15C.ANA

EA12 Lheb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

MO DAY TIME	OXY1	OXY2	OXY3	Lig Pum	
07/15 12:52	0.0000	0.0000	0.0000	0	0.00
07/15 12:56	0.0000	0.0000	0.0000	0	0.00
07/15 13:00	0.0000	0.0000	0.0000	0	0.00
07/15 13:04	0.0000	0.0000	0.0000	0	0.00
07/15 13:08	0.0000	0.0000	0.0000	0	0.00
07/15 13:12	-0.5073	-0.5035	-0.4138	136	0.00
07/15 13:16	-0.4421	-0.5171	-0.4372	137	0.00
07/15 13:20	-0.5073	-0.4764	-0.4255	136	0.00
07/15 13:24	-0.3954	-0.4900	-0.3436	134	0.00
07/15 13:28	-0.3675	-0.4628	-0.4138	145	0.00
07/15 13:32	-0.3675	-0.4492	-0.4957	158	0.00
07/15 13:36	-0.3302	-0.4085	-0.4021	157	0.00
07/15 13:40	-0.2929	-0.5985	-0.4489	162	0.00
07/15 13:44	-0.3302	-0.3949	-0.4372	158	0.00
07/15 13:48	-0.3675	-0.4221	-0.4021	174	0.00
07/15 13:52	-0.3488	-0.5443	-0.2617	176	0.00
07/15 13:56	-0.3115	-0.5935	-0.3787	172	0.00
07/15 14:00	-0.3395	-0.2456	-0.3085	174	0.00
07/15 14:04	-0.3115	-0.5442	-0.2734	175	0.00
07/15 14:08	-0.2929	-0.3949	-0.2851	172	0.00
07/15 14:12	-0.2649	-0.3949	-0.2617	177	0.00
07/15 14:16	-0.3022	-0.3542	-0.2734	179	0.00
07/15 14:20	-0.2463	-0.5850	-0.2266	183	0.00
07/15 14:24	-0.2742	-0.3542	-0.3670	178	0.00
07/15 14:28	-0.2649	-0.4900	-0.2851	172	0.00
07/15 14:32	-0.2556	-0.4900	-0.3670	184	0.00
07/15 14:36	-0.2183	-0.3406	-0.4723	185	0.00
07/15 14:40	-0.1903	-0.4085	-0.4021	179	0.00
07/15 14:44	-0.1996	-0.4628	-0.2968	170	0.00
07/15 14:48	-0.2090	-0.4628	-0.4021	173	0.00
07/15 14:52	-0.1437	-0.4221	-0.3787	174	0.00
07/15 14:56	-0.2463	-0.5171	-0.2032	176	0.00

EB12L15C.ANA

EB12 Lheb 15meters Cha

The units of calculation for oxygen flux are ug O2/biomass/20-min

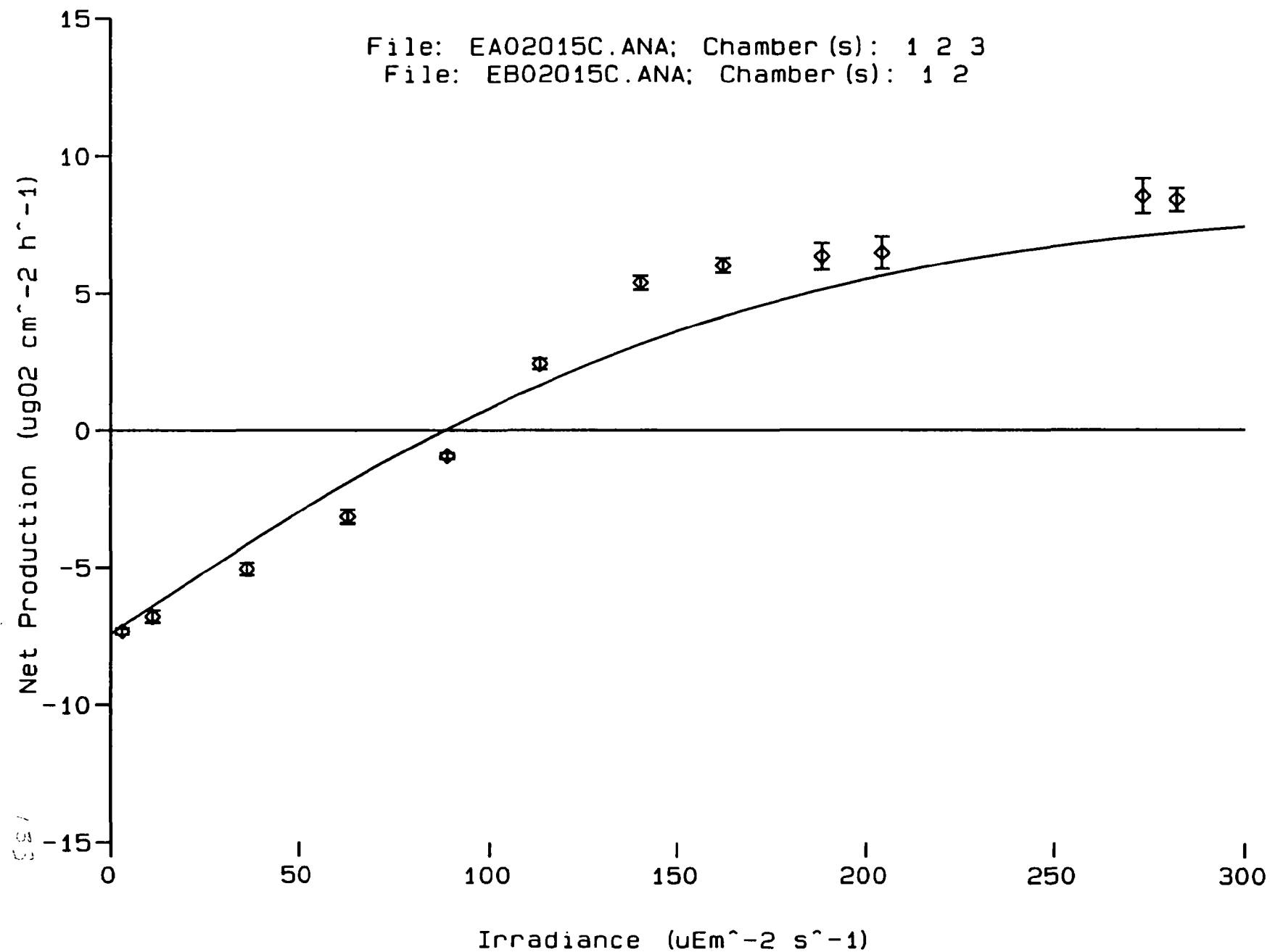
MO DAY TIME	OXY1	OXY2	OXY3	Lig Pum	
07/15 12:52	0.0000	0.0000	0.0000	0	0.00
07/15 12:56	0.0000	0.0000	0.0000	0	0.00
07/15 13:00	0.0000	0.0000	0.0000	0	0.00
07/15 13:04	0.0000	0.0000	0.0000	0	0.00
07/15 13:08	0.0000	0.0000	0.0000	0	0.00
07/15 13:12	0.0000	0.0000	-0.5011	222	0.00
07/15 13:16	0.0000	0.0000	-0.5011	221	0.00
07/15 13:20	0.0000	0.0000	-0.5118	214	0.00
07/15 13:24	0.0000	0.0000	-0.4265	211	0.00
07/15 13:28	0.0000	0.0000	-0.4905	234	0.00
07/15 13:32	0.0000	0.0000	-0.4158	250	0.00
07/15 13:36	0.0000	0.0000	-0.4372	257	0.00
07/15 13:40	0.0000	0.0000	-0.3732	264	0.00
07/15 13:44	0.0000	0.0000	-0.3839	256	0.00
07/15 13:48	0.0000	0.0000	-0.3412	270	0.00
07/15 13:52	0.0000	0.0000	-0.3839	273	0.00
07/15 13:56	0.0000	0.0000	-0.3519	274	0.00
07/15 14:00	0.0000	0.0000	-0.3519	278	0.00
07/15 14:04	0.0000	0.0000	-0.3519	275	0.00
07/15 14:08	0.0000	0.0000	-0.3839	278	0.00
07/15 14:12	0.0000	0.0000	-0.3945	277	0.00
07/15 14:16	0.0000	0.0000	-0.3519	288	0.00
07/15 14:20	0.0000	0.0000	-0.3092	286	0.00
07/15 14:24	0.0000	0.0000	-0.3199	277	0.00
07/15 14:28	0.0000	0.0000	-0.2986	275	0.00
07/15 14:32	0.0000	0.0000	-0.2453	282	0.00
07/15 14:36	0.0000	0.0000	-0.3199	285	0.00
07/15 14:40	0.0000	0.0000	-0.3945	287	0.00
07/15 14:44	0.0000	0.0000	-0.3839	276	0.00
07/15 14:48	0.0000	0.0000	-0.3839	280	0.00
07/15 14:52	0.0000	0.0000	-0.4158	279	0.00
07/15 14:56	0.0000	0.0000	-0.3092	279	0.00

Appendix 2A Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for Day 1 *Oculina arbuscula* colonies (N=5; files, EA02O15C & EB02O15C) before the application of sediment.

In situ Net Photosynthesis vs. Irradiance

File: EA02015C.ANA; Chamber(s): 1 2 3

File: EB02015C.ANA; Chamber(s): 1 2



EA02015C.ANA

Pooled Data for Chambers: 1 2 3

EB02015C.ANA

Pooled Data for Chambers: 1 2

Biomass Units : cm^{-2}
Max Light Intensity : 300
Light Interval : 25 μ Einsteins $\text{m}^{-2} \text{s}^{-1}$
Net O2 Flux Units : $\mu\text{g O}_2 \text{cm}^{-2} \text{h}^{-1}$

TABLE 1. Net O2 Flux Data for the P vs. I curve.

Group No.	Light Bin Interval	Mean Light Value	Net O2 Flux	S.E.	N	Gross Production
1	> 0 , 0	0	-7.33	0.11	607	0.00
2	> 0 , 25	11	-6.79	0.21	149	0.53
3	> 25 , 50	36	-5.07	0.22	102	2.26
4	> 50 , 75	63	-3.15	0.25	51	4.17
5	> 75 , 100	89	-0.94	0.10	92	6.39
6	> 100 , 125	113	2.42	0.19	67	9.75
7	> 125 , 150	140	5.39	0.25	90	12.71
8	> 150 , 175	162	6.02	0.27	85	13.35
9	> 175 , 200	188	6.35	0.48	28	13.68
10	> 200 , 225	204	6.48	0.58	20	13.80
*11	> 225 , 250				0	
12	> 250 , 275	273	8.54	0.64	22	15.86
13	> 275 , 300	282	8.41	0.43	47	15.73

* Starred groups are those with an N of fewer than 3. These value are subsequently dropped from further analysis.

For plot legibility, the oxygen flux value at the zero light intensity. (Group No. 1, nocturnal respiration) is plotted offset by 1% from the vertical axis.

Max. Light for Neg. O2 Flux: 200
Min. Light for Pos. O2 Flux: 50
Estimate of Pmax Gross Prod: 15.86
Estimate of I sub k : 150
Estimated Respiration : -7.33
Estimated Chi Square Fit : 0 Percent

TABLE 2. Production vs. Light Intensity Curve Characteristics

Name	Metric Unit	Mean	S.E.	N	90% C.I. (From-To)	95% C.I. (From-To)	95% C.I. (From-To)
r *	(ugO2/b/h)	-7.41	0.00	0	-7.41	-7.41	-7.41
r **	(ugO2/b/h)	-7.33	0.11	607	-7.51	-7.15	-7.11
p net max *	(ugO2/b/h)	8.38	1.90	0	5.25	11.50	4.65
p net max **	(ugO2/b/h)	8.54	0.64	22	7.49	9.59	7.29
p gross max *	(ugO2/b/h)	15.79	1.90	0	12.66	18.92	12.06
p gross max **	(ugO2/b/h)	15.86	0.64	22	14.81	16.91	14.61
I sub c	(uE/m2/s)	81	9	3	67	96	64
I sub k	(uE/m2/s)	255	53	9	240	269	237
alpha (ugO2/b/h/uE/m2/s)		0.09	0.01	0	0.08	0.11	0.07

Chi Square 0.48

Degrees of freedom: 9

* Computed

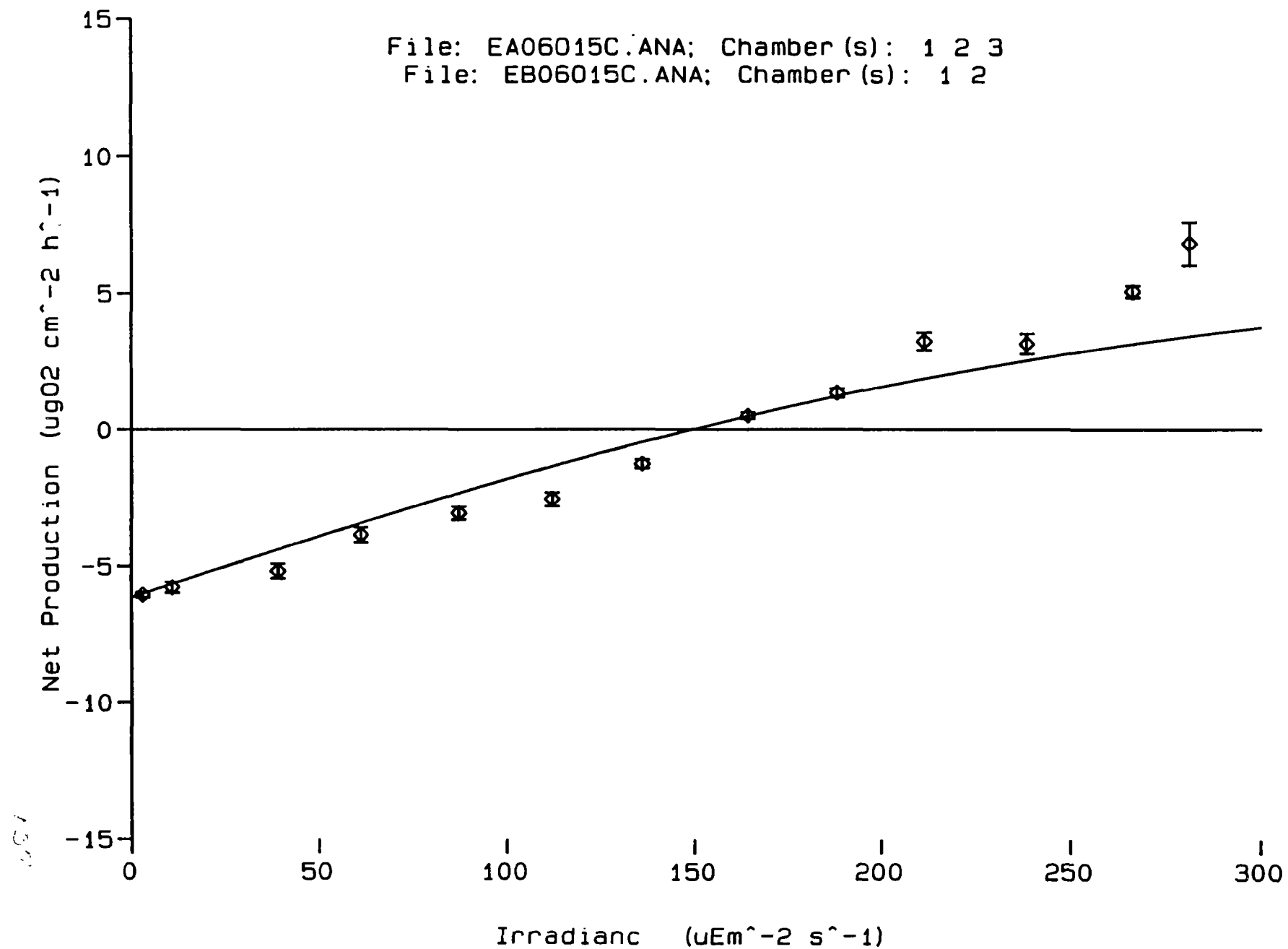
** Measured

Appendix 2B Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for Day 2 *Oculina arbuscula* colonies (N=5; files, EA04O15C & EB04O15C) before the application of sediment.

In situ Net Photosynthesis vs. Irradiance

File: EA06015C.ANA; Chamber(s): 1 2 3

File: EB06015C.ANA; Chamber(s): 1 2



EA04015C.ANA

Pooled Data for Chambers: 1 2 3

EB04015C.ANA

Pooled Data for Chambers: 1 2

Biomass Units : cm^{-2}
Max Light Intensity : 300
Light Interval : 25 μ Einsteins $\text{m}^{-2} \text{s}^{-1}$
Net O2 Flux Units : $\mu\text{g O}_2 \text{cm}^{-2} \text{h}^{-1}$

TABLE 1. Net O2 Flux Data for the P vs. I curve.

Group No.	Light Bin Interval	Mean Light Value	Net O2 Flux	S.E.	N	Gross Production
1	> 0 , 0	0	-6.83	0.11	599	0.00
2	> 0 , 25	10	-6.18	0.20	158	0.65
3	> 25 , 50	39	-4.73	0.26	69	2.10
4	> 50 , 75	61	-3.03	0.24	55	3.80
5	> 75 , 100	89	-2.72	0.22	55	4.11
6	> 100 , 125	113	-2.51	0.23	49	4.32
7	> 125 , 150	135	-2.03	0.24	36	4.80
8	> 150 , 175	163	-0.47	0.10	45	6.36
9	> 175 , 200	190	1.61	0.16	68	8.44
10	> 200 , 225	213	4.98	0.25	82	11.81
11	> 225 , 250	238	5.53	0.31	58	12.36
12	> 250 , 275	265	6.85	0.33	65	13.67
13	> 275 , 300	282	8.40	0.39	55	15.23

* Starred groups are those with an N of fewer than 3. These value are subsequently dropped from further analysis.

For plot legibility, the oxygen flux value at the zero light intensity. (Group No. 1, nocturnal respiration) is plotted offset by 1% from the vertical axis.

Max. Light for Neg. O2 Flux: 200
Min. Light for Pos. O2 Flux: 50
Estimate of Pmax Gross Prod: 15.23
Estimate of I sub k : 285
Estimated Respiration : -6.83
Estimated Chi Square Fit : 0 Percent

TABLE 2. Production vs. Light Intensity Curve Characteristics

Name	Metric Unit	Mean	S.E.	N	90% C.I. (From-To)	95% C.I. (From-To)	95% C.I. (From-To)	95% C.I. (From-To)
r *	(ugO2/b/h)	-6.88	0.00	0	-6.88	-6.88	-6.88	-6.88
r **	(ugO2/b/h)	-6.83	0.11	599	-7.01	-6.65	-7.04	-6.62
p net max *	(ugO2/b/h)	8.30	3.95	0	1.81	14.79	0.57	16.04
p net max **	(ugO2/b/h)	8.40	0.39	55	7.76	9.05	7.63	9.18
p gross max *	(ugO2/b/h)	15.18	3.95	0	8.69	21.67	7.44	22.91
p gross max **	(ugO2/b/h)	15.23	0.39	55	14.58	15.88	14.46	16.01
I sub c	(uE/m2/s)	143	13	3	122	164	118	168
I sub k	(uE/m2/s)	459	202	9	438	479	434	483
alpha (ugO2/b/h/uE/m2/s)		0.05	0.00	0	0.04	0.05	0.04	0.06

Chi Square 1.00
Degrees of freedom: 10

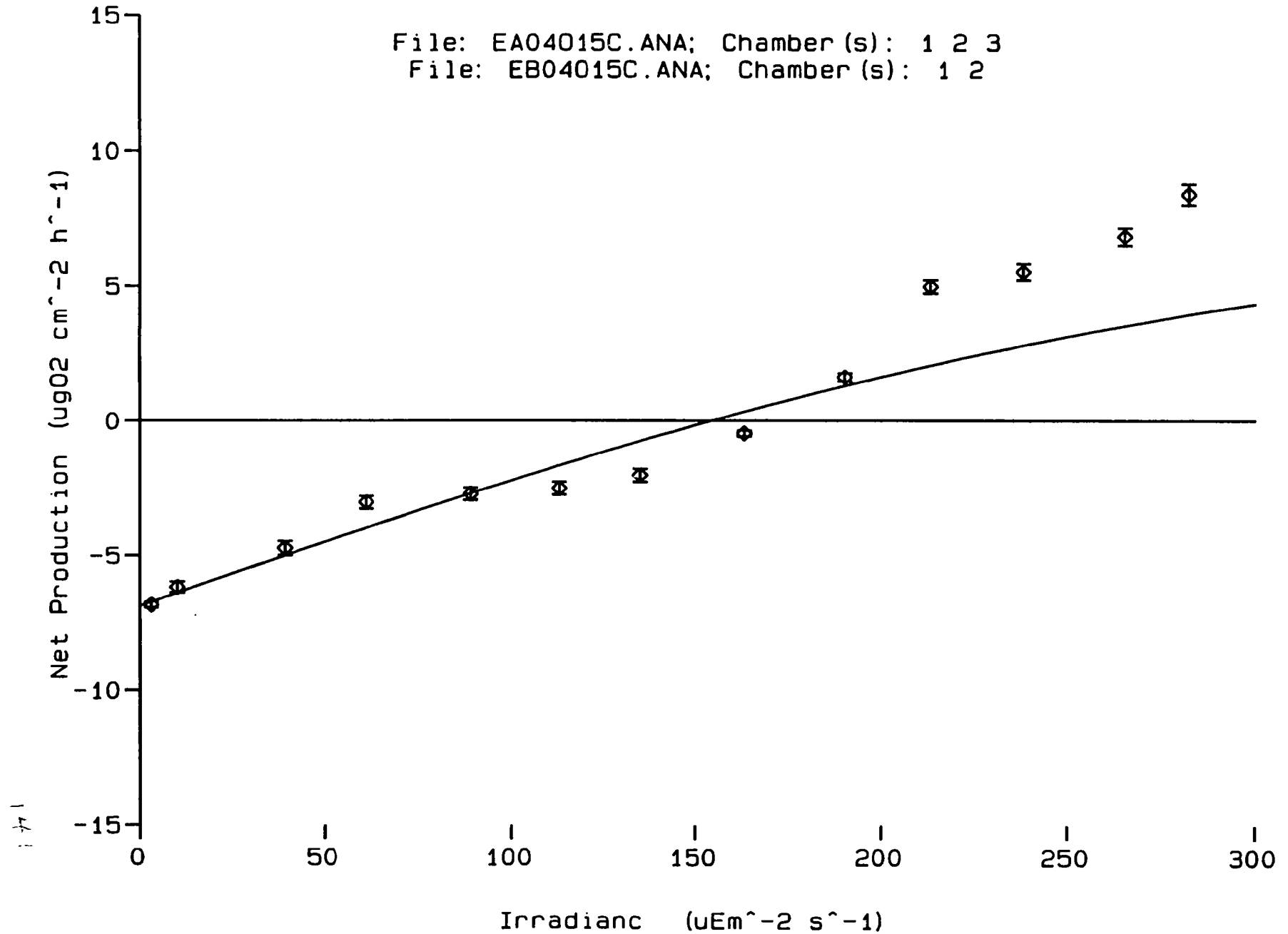
* Computed
** Measured

Appendix 2C Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for Day 3 *Oculina arbuscula* colonies (N=5; files, EA06O15C & EB06O15C) before the application of sediment.

In situ Net Photosynthesis vs. Irradiance

File: EA04015C.ANA; Chamber(s): 1 2 3

File: EB04015C.ANA; Chamber(s): 1 2



EA06015C.ANA

Pooled Data for Chambers: 1 2 3

EB06015C.ANA

Pooled Data for Chambers: 1 2

Biomass Units : cm^{-2}
Max Light Intensity : 300
Light Interval : 25 μ Einsteins $\text{m}^{-2} \text{s}^{-1}$
Net O2 Flux Units : $\mu\text{g O}_2 \text{cm}^{-2} \text{h}^{-1}$

TABLE 1. Net O2 Flux Data for the P vs. I curve.

Group No.	Light Bin Interval	Mean Light Value	Net O2 Flux	S.E.	N	Gross Production
1	> 0 , 0	0	-6.05	0.10	583	0.00
2	> 0 , 25	11	-5.78	0.20	150	0.27
3	> 25 , 50	39	-5.18	0.27	71	0.87
4	> 50 , 75	61	-3.86	0.27	53	2.19
5	> 75 , 100	87	-3.06	0.24	55	3.00
6	> 100 , 125	112	-2.55	0.25	43	3.51
7	> 125 , 150	136	-1.25	0.17	47	4.80
8	> 150 , 175	164	0.52	0.12	40	6.58
9	> 175 , 200	188	1.36	0.15	60	7.41
10	> 200 , 225	211	3.25	0.33	31	9.30
11	> 225 , 250	238	3.16	0.37	24	9.21
12	> 250 , 275	266	5.08	0.21	116	11.13
13	> 275 , 300	281	6.83	0.79	12	12.88

* Starred groups are those with an N of fewer than 3. These value are subsequently dropped from further analysis.

For plot legibility, the oxygen flux value at the zero light intensity. (Group No. 1, nocturnal respiration) is plotted offset by 1% from the vertical axis.

Max. Light for Neg. O2 Flux: 200
Min. Light for Pos. O2 Flux: 50
Estimate of Pmax Gross Prod: 12.88
Estimate of I sub k : 260
Estimated Respiration : -6.05
Estimated Chi Square Fit : 0 Percent

TABLE 2. Production vs. Light Intensity Curve Characteristics

Name	Metric Unit	Mean	S.E.	N	90% C.I.(From-To)	95% C.I.(From-To)	95% C.I.(From-To)	95% C.I.(From-To)
r *	(ugO2/b/h)	-6.15	0.00	0	-6.15	-6.15	-6.15	-6.15
r **	(ugO2/b/h)	-6.05	0.10	583	-6.22	-5.88	-6.25	-5.85
p net max *	(ugO2/b/h)	6.26	2.86	0	1.56	10.97	0.66	11.87
p net max **	(ugO2/b/h)	6.83	0.79	12	5.53	8.12	5.28	8.37
p gross max *	(ugO2/b/h)	12.41	2.86	0	7.71	17.12	6.81	18.02
p gross max **	(ugO2/b/h)	12.88	0.79	12	11.58	14.18	11.34	14.43
I sub c	(uE/m2/s)	136	13	3	115	157	111	161
I sub k	(uE/m2/s)	410	156	9	389	431	385	435
alpha (ugO2/b/h/uE/m2/s)		0.05	0.00	0	0.04	0.05	0.04	0.05
Chi Square		0.45						
Degrees of freedom:		10						

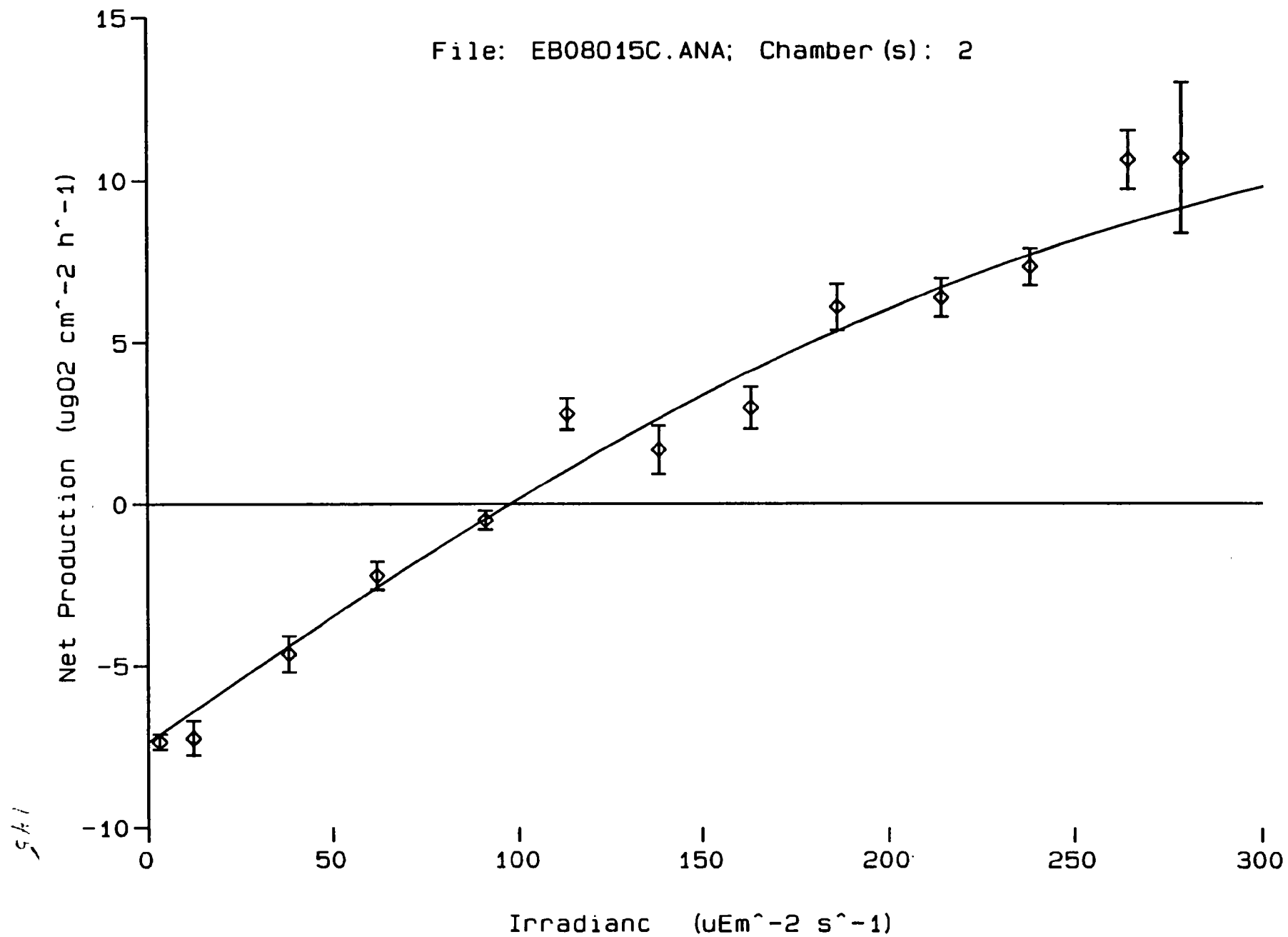
* Computed

** Measured

Appendix 2D Pooled production vs. light intensity curves and their photosynthetic oxygen flux characteristics for the long-term control *Oculina arbuscula* colonies (N=3; files, EB08O15C, EB09O15C, & EB10O15C) before the application of sediment.

In situ Net Photosynthesis vs. Irradiance

File: EB08015C.ANA; Chamber (s): 2



Pooled Data for Chambers: 2

Biomass Units : cm^{-2}
 Max Light Intensity : 300
 Light Interval : 25 μ Einsteins $\text{m}^{-2} \text{s}^{-1}$
 Net O2 Flux Units : $\mu\text{g O}_2 \text{cm}^{-2} \text{h}^{-1}$

TABLE 1. Net O2 Flux Data for the P vs. I curve.

Group No.	Light Bin Interval	Mean Light Value	Net O2 Flux	S.E.	N	Gross Production
1	> 0 , 0	0	-7.35	0.24	127	0.00
2	> 0 , 25	12	-7.24	0.53	27	0.11
3	> 25 , 50	38	-4.64	0.56	16	2.71
4	> 50 , 75	62	-2.22	0.43	13	5.13
5	> 75 , 100	91	-0.50	0.29	7	6.85
6	> 100 , 125	113	2.79	0.48	13	10.14
7	> 125 , 150	138	1.68	0.75	4	9.03
8	> 150 , 175	163	2.97	0.65	8	10.32
9	> 175 , 200	186	6.09	0.71	13	13.44
10	> 200 , 225	214	6.38	0.60	19	13.73
11	> 225 , 250	238	7.34	0.56	24	14.69
12	> 250 , 275	264	10.64	0.90	14	17.99
13	> 275 , 300	278	10.69	2.31	3	18.04

* Starred groups are those with an N of fewer than 3. These value are subsequently dropped from further analysis.

For plot legibility, the oxygen flux value at the zero light intensity. (Group No. 1, nocturnal respiration) is plotted offset by 1% from the vertical axis.

Max. Light for Neg. O2 Flux: 200
 Min. Light for Pos. O2 Flux: 50
 Estimate of Pmax Gross Prod: 18.04
 Estimate of I sub k : 200
 Estimated Respiration : -7.35
 Estimated Chi Square Fit : 0 Percent

T LE 2. Production vs. Light Intensity Curve Characteristics

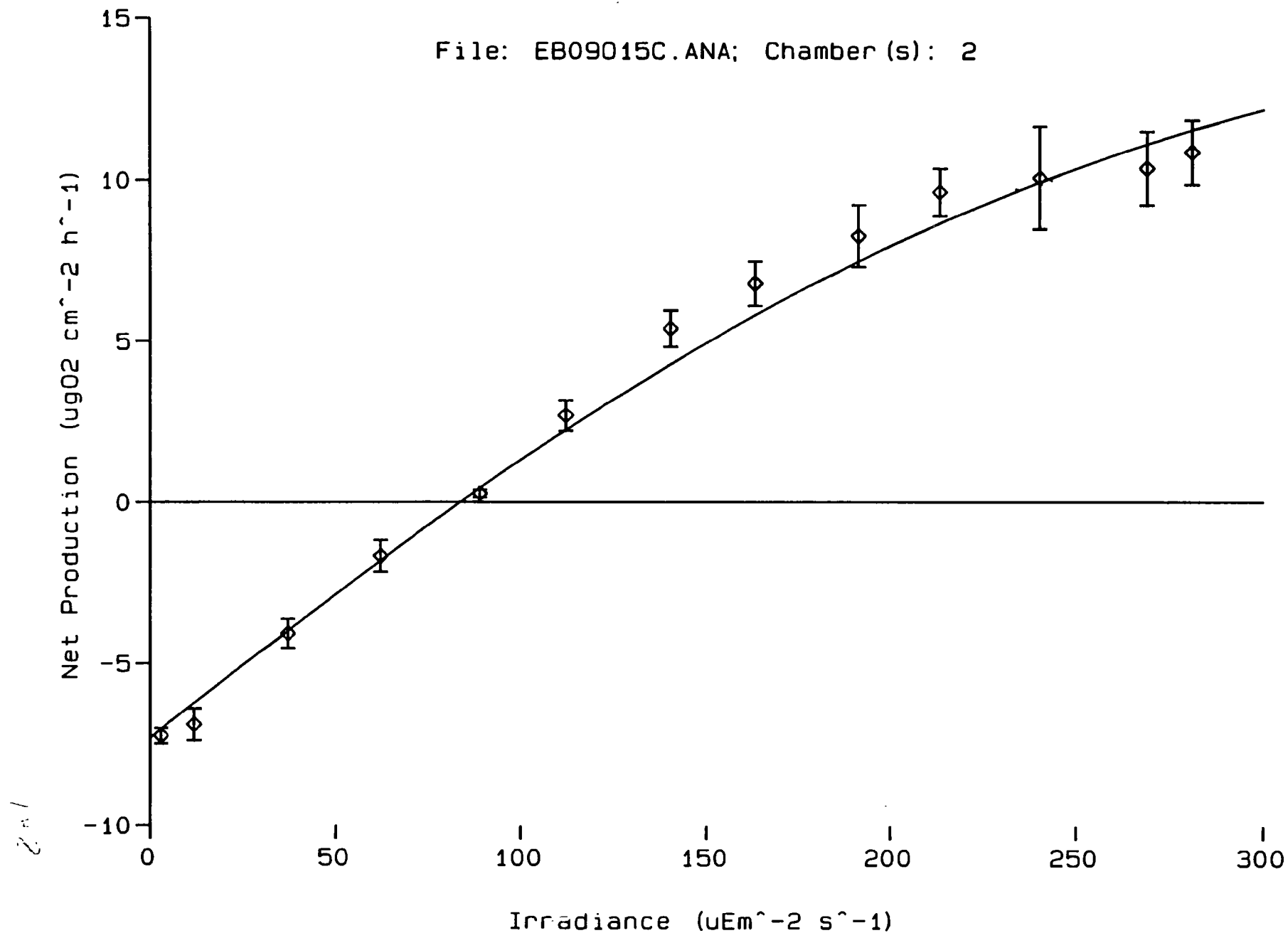
Name	Metric Unit	Mean	S.E.	N	90% C.I.(From-To)	95% C.I.(From-To)	95% C.I.(From-To)
r *	(ugO2/b/h)	-7.37	0.00	0	-7.37	-7.37	-7.37
r **	(ugO2/b/h)	-7.35	0.24	127	-7.75	-6.95	-7.82
p net max *	(ugO2/b/h)	9.69	2.08	0	6.27	13.11	5.62
p net max **	(ugO2/b/h)	10.69	2.31	3	6.89	14.49	6.16
p gross max *	(ugO2/b/h)	17.06	2.08	0	13.64	20.48	12.99
p gross max **	(ugO2/b/h)	18.04	2.31	3	14.24	21.85	13.51
I sub c	(uE/m2/s)	88	8	3	76	101	73
I sub k	(uE/m2/s)	293	62	9	280	305	278
alpha (ugO2/b/h/uE/m2/s)		0.08	0.01	0	0.07	0.09	0.07

Chi Square 0.43
Degrees of freedom: 10

* Computed
** Measured

In situ Net Photosynthesis vs. Irradiance

File: EB09015C.ANA; Chamber (s): 2



Pooled Data for Chambers: 2

Biomass Units : cm^{-2}
 Max Light Intensity : 300
 Light Interval : 25 μ Einsteins $\text{m}^{-2} \text{s}^{-1}$
 Net O2 Flux Units : $\mu\text{g O}_2 \text{cm}^{-2} \text{h}^{-1}$

TABLE 1. Net O2 Flux Data for the P vs. I curve.

Group No.	Light Bin Interval	Mean Light Value	Net O2 Flux	S.E.	N	Gross Production
1	> 0 , 0	0	-7.25	0.24	128	0.00
2	> 0 , 25	12	-6.90	0.50	29	0.35
3	> 25 , 50	37	-4.07	0.45	21	3.17
4	> 50 , 75	62	-1.67	0.49	8	5.57
5	> 75 , 100	89	0.26	0.12	20	7.51
6	> 100 , 125	112	2.69	0.47	13	9.93
7	> 125 , 150	140	5.39	0.56	18	12.63
8	> 150 , 175	163	6.79	0.70	15	14.03
9	> 175 , 200	191	8.26	0.96	10	15.51
10	> 200 , 225	213	9.62	0.73	19	16.86
11	> 225 , 250	240	10.07	1.59	5	17.31
12	> 250 , 275	269	10.37	1.14	9	17.61
13	> 275 , 300	281	10.85	0.99	12	18.10

* Starred groups are those with an N of fewer than 3. These value are subsequently dropped from further analysis.

For plot legibility, the oxygen flux value at the zero light intensity. (Group No. 1, nocturnal respiration) is plotted offset by 1% from the vertical axis.

Max. Light for Neg. O2 Flux: 200
 Min. Light for Pos. O2 Flux: 50
 Estimate of Pmax Gross Prod: 18.10
 Estimate of I sub k : 175
 Estimated Respiration : -7.25
 Estimated Chi Square Fit : 0 Percent

LE 2. Production vs. Light Intensity Curve Characteristics

Lo Upper

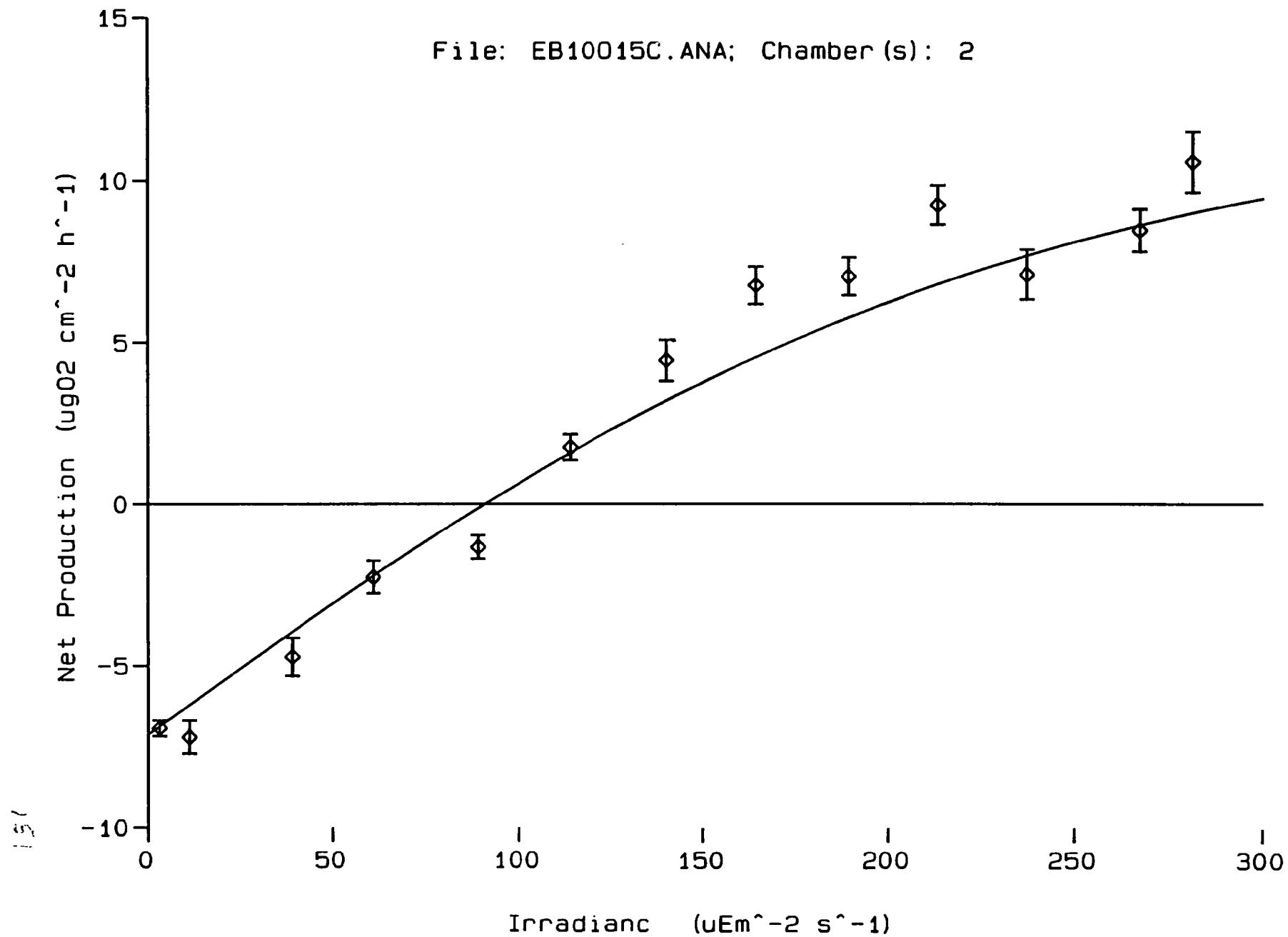
Name	Metric Unit	Mean	S.E.	N	90% C.I. (From-To)	95% C.I. (From-To)	95% C.I. (From-To)	95% C.I. (From-To)
r *	(ugO2/b/h)	-7.31	0.00	0	-7.31	-7.31	-7.31	-7.31
r **	(ugO2/b/h)	-7.25	0.24	128	-7.64	-6.85	-7.71	-6.78
p net max *	(ugO2/b/h)	11.65	2.22	0	8.00	15.31	7.30	16.01
p net max **	(ugO2/b/h)	10.85	0.99	12	9.22	12.49	8.91	12.80
p gross max *	(ugO2/b/h)	18.96	2.22	0	15.31	22.62	14.61	23.32
p gross max **	(ugO2/b/h)	18.10	0.99	12	16.47	19.73	16.15	20.05
I sub c	(uE/m2/s)	77	6	3	67	87	65	89
I sub k	(uE/m2/s)	278	58	9	268	288	266	290
alpha (ugO2/b/h/uE/m2/s)		0.09	0.01	0	0.09	0.10	0.08	0.11

Chi Square 0.23
Degrees of freedom: 10

* Computed
** Measured

In situ Net Photosynthesis vs. Irradiance

File: EB10015C.ANA; Chamber(s): 2



EB10015C.ANA

Pooled Data for Chambers: 2

Biomass Units : cm^{-2}
Max Light Intensity : 300
Light Interval : 25 μ Einsteins $\text{m}^{-2} \text{s}^{-1}$
Net O2 Flux Units : $\mu\text{g O}_2 \text{cm}^{-2} \text{h}^{-1}$

TABLE 1. Net O2 Flux Data for the P vs. I curve.

Group No.	Light Bin Interval	Mean Light Value	Net O2 Flux	S.E.	N	Gross Production
1	> 0 , 0	0	-6.93	0.24	126	0.00
2	> 0 , 25	11	-7.20	0.51	29	-0.27
3	> 25 , 50	39	-4.72	0.58	15	2.21
4	> 50 , 75	61	-2.25	0.50	10	4.68
5	> 75 , 100	89	-1.33	0.36	11	5.60
6	> 100 , 125	114	1.76	0.40	12	8.69
7	> 125 , 150	140	4.46	0.64	12	11.39
8	> 150 , 175	164	6.78	0.58	21	13.71
9	> 175 , 200	189	7.05	0.58	22	13.98
10	> 200 , 225	213	9.25	0.60	27	16.18
11	> 225 , 250	237	7.11	0.77	13	14.04
12	> 250 , 275	267	8.48	0.65	21	15.41
13	> 275 , 300	281	10.58	0.94	13	17.51

* Starred groups are those with an N of fewer than 3. These value are subsequently dropped from further analysis.

For plot legibility, the oxygen flux value at the zero light intensity. (Group No. 1, nocturnal respiration) is plotted offset by 1% from the vertical axis.

Max. Light for Neg. O2 Flux: 200
Min. Light for Pos. O2 Flux: 50
Estimate of Pmax Gross Prod: 17.51
Estimate of I sub k : 200
Estimated Respiration : -6.93
Estimated Chi Square Fit : 10 Percent

T LE 2. Production vs. Light Intensity Curve Characteristics

Name	Metric Unit	Mean	S.E.	N	90% C.I. (From-To)	95% C.I. (From-To)	95% C.I. (From-To)
r *	(ugO2/b/h)	-7.12	0.00	0	-7.12	-7.12	-7.12
r **	(ugO2/b/h)	-6.93	0.24	126	-7.32	-6.54	-7.39
p net max *	(ugO2/b/h)	12.31	3.06	0	7.28	17.34	6.32
p net max **	(ugO2/b/h)	10.58	0.94	13	9.04	12.13	8.74
p gross max *	(ugO2/b/h)	19.43	3.06	0	14.40	24.46	13.44
p gross max **	(ugO2/b/h)	17.51	0.94	13	15.97	19.06	15.67
I sub c	(uE/m2/s)	87	10	3	71	102	68
I sub k	(uE/m2/s)	323	93	9	307	339	304
alpha (ugO2/b/h/uE/m2/s)		0.08	0.01	0	0.07	0.09	0.07

Chi Square 0.36

Degrees of freedom: 10

* Computed

** Measured

Appendix 3A Total suspended solids, settleable solids, and turbidity of water samples from the Charleston Harbor ODMS experimental site 07/10/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Oculina arbuscula*. The PM sample is the background ambient water sediment load.

SPECIFIED ANALYSIS DATA REPORT

** PROJECT NO. 92-0734 SAMPLE NO. 70551 SAMPLE TYPE: SURFACEWA PROG ELEM: ODMO COLLECTED BY: P MURPHY **
** SOURCE: CHARLESTON ODMOS CITY: CHARLESTON ST: SC **
** STATION ID: CDS-1 COLLECTION START: 07/10/92 1100 STOP: 00/00/00 **
**

RESULTS	UNITS	PARAMETER
8.0	MG/L	TOTAL SUSPENDED SOLIDS
0.1U	ML/L	SETTLABLE SOLIDS
2.2	NTU	TURBIDITY

FOOTNOTES

*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

EPA-REGION IV ESD, ATHENS, GA.

08/05/92

SPECIFIED ANALYSIS DATA REPORT

** PROJECT NO. 92-0734 SAMPLE NO. 70552 SAMPLE TYPE: SURFACEWA PROG ELEM: ODMO COLLECTED BY: P MURPHY **
** SOURCE: CHARLESTON ODMOS CITY: CHARLESTON ST: SC **
** STATION ID: CCS-1 COLLECTION START: 07/10/92 1400 STOP: 00/00/00 **
**

RESULTS	UNITS	PARAMETER
5.2	MG/L	TOTAL SUSPENDED SOLIDS
0.1U	ML/L	SETTLEABLE SOLIDS
0.7	NTU	TURBIDITY

FOOTNOTES

*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM

Appendix 3B Total suspended solids, settleable solids, and turbidity of water samples from the Charleston Harbor ODMS experimental site 07/11/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Oculina arbuscula*. The PM sample is the background ambient water sediment load.

SPECIFIED ANALYSIS DATA REPORT

*** **
** PROJECT NO. 92-0734 SAMPLE NO. 70553 SAMPLE TYPE: SURFACEWA PROG ELEM: ODMO COLLECTED BY: P MURPHY **
** SOURCE: CHARLESTON ODMDS CITY: CHARLESTON ST: SC **
** STATION ID: CDS-2 COLLECTION START: 07/11/92 1050 STOP: 00/00/00 **
*** **

RESULTS	UNITS	PARAMETER
250	MG/L	TOTAL SUSPENDED SOLIDS
4.0	ML/L	SETTLEABLE SOLIDS
66	NTU	TURBIDITY

FOOTNOTES

*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

EPA-REGION IV ESD, ATHENS, GA.

08/05/92

SPECIFIED ANALYSIS DATA REPORT

** PROJECT NO. 92-0734 SAMPLE NO. 70554 SAMPLE TYPE: SURFACEWA PROG ELEM: ODMO COLLECTED BY: P MURPHY **
** SOURCE: CHARLESTON ODMDS CITY: CHARLESTON ST: SC **
** STATION ID: CCS-2 COLLECTION START: 07/11/92 1436 STOP: 00/00/00 **
**

RESULTS	UNITS	PARAMETER
4U	MG/L	TOTAL SUSPENDED SOLIDS
0.1U	ML/L	SETTLABLE SOLIDS
0.7	NTU	TURBIDITY

FOOTNOTES

*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND / 'SIS MANAGEMENT SYSTEM

Appendix 3C Total suspended solids, settleable solids, and turbidity of water samples from the Charleston Harbor ODMS experimental site 07/12/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Oculina arbuscula*. The PM sample is the background ambient water sediment load.

EPA-REGION IV ESD, ATHENS, GA.

08/05/92

SPECIFIED ANALYSIS DATA REPORT

** PROJECT NO. 92-0734 SAMPLE NO. 70555 SAMPLE TYPE: SURFACEWA PROG ELEM: ODMO COLLECTED BY: P MURPHY **
** SOURCE: CHARLESTON ODMDS CITY: CHARLESTON ST: SC **
** STATION ID: CDS-3 COLLECTION START: 07/12/92 1045 STOP: 00/00/00 **
**

RESULTS	UNITS	PARAMETER
150	MG/L	TOTAL SUSPENDED SOLIDS
1.4	ML/L	SETTLABLE SOLIDS
30	NTU	TURBIDITY

FOOTNOTES

*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND / 'SIS MANAGEMENT SYSTEM

EPA-REGION IV ESD, ATHENS, GA.

08/05/92

SPECIFIED ANALYSIS DATA REPORT

** PROJECT NO. 92-0734 SAMPLE NO. 70556 SAMPLE TYPE: SURFACEWA PROG ELEM: ODMO COLLECTED BY: P MURPHY **
** SOURCE: CHARLESTON ODMOS CITY: CHARLESTON ST: SC **
** STATION ID: CCS-3 COLLECTION START: 07/12/92 1400 STOP: 00/00/00 **
**

RESULTS	UNITS	PARAMETER
	4U MG/L	TOTAL SUSPENDED SOLIDS
	0.1U ML/L	SETTLABLE SOLIDS
	0.7 NTU	TURBIDITY

FOOTNOTES

*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM

Appendix 3D Total suspended solids, settleable solids, and turbidity of water samples from the Charleston Harbor ODMS experimental site 07/14/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Lophogorgia hebes*. The PM sample is the background ambient water sediment load.

SPECIFIED ANALYSIS DATA REPORT

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*** ** ** ** **  
** PROJECT NO. 92-0734 SAMPLE NO. 70557 SAMPLE TYPE: SURFACEWA PROG ELEM: ODMD COLLECTED BY: P MURPHY **  
** SOURCE: CHARLESTON ODMS CITY: CHARLESTON ST: SC **  
** STATION ID: CDS-4 COLLECTION START: 07/14/92 1142 STOP: 00/00/00 **  
** ** ** **
```

RESULTS	UNITS	PARAMETER
210	MG/L	TOTAL SUSPENDED SOLIDS
0.9	ML/L	SETTLEABLE SOLIDS
48	NTU	TURBIDITY

FOOTNOTES

*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

EPA-REGION IV ESD, ATHENS, GA.

08/05/92

SPECIFIED ANALYSIS DATA REPORT

** PROJECT NO. 92-0734 SAMPLE NO. 70558 SAMPLE TYPE: SURFACEWA PROG ELEM: ODMO COLLECTED BY: P MURPHY **
** SOURCE: CHARLESTON ODMOS CITY: CHARLESTON ST: SC **
** STATION ID: CCS-4 COLLECTION START: 07/14/92 1500 STOP: 00/00/00 **
**

RESULTS	UNITS	PARAMETER
	4U MG/L	TOTAL SUSPENDED SOLIDS
	0.1U ML/L	SETTLABLE SOLIDS
	0.2 NTU	TURBIDITY

FOOTNOTES

*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

Appendix 3E Total suspended solids, settleable solids, and turbidity of water samples from the Charleston Harbor ODMS experimental site 07/10/92. The AM sample is the concentration of sediments collected *in situ* during a barge dump on the experimental site and placed in the *in situ* experimental chambers containing specimens of *Lophogorgia hebes*. The PM sample is the background ambient water sediment load.

SPECIFIED ANALYSIS DATA REPORT

** PROJECT NO. 92-0734 SAMPLE NO. 70559 SAMPLE TYPE: SURFACEWA PROG ELEM: ODMO COLLECTED BY: P MURPHY **
** SOURCE: CHARLESTON ODMOS CITY: CHARLESTON ST: SC **
** STATION ID: CDS-5 COLLECTION START: 07/15/92 1150 STOP: 00/00/00 **

RESULTS UNITS PARAMETER
100 MG/L TOTAL SUSPENDED SOLIDS
1.2 ML/L SETTLEABLE SOLIDS
15 NTU TURBIDITY

FOOTNOTES

*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

EPA-REGION IV ESD, ATHENS, GA.

08/05/92

SPECIFIED ANALYSIS DATA REPORT

** PROJECT NO. 92-0734 SAMPLE NO. 70560 SAMPLE TYPE: SURFACEWA PROG ELEM: ODMO COLLECTED BY: P MURPHY **
** SOURCE: CHARLESTON ODMDS CITY: CHARLESTON ST: SC **
** STATION ID: CCS-5 COLLECTION START: 07/16/92 1100 STOP: 00/00/00 **
**

RESULTS	UNITS	PARAMETER
4U	MG/L	TOTAL SUSPENDED SOLIDS
0.1U	ML/L	SETTLEABLE SOLIDS
0.4	NTU	TURBIDITY

FOOTNOTES

*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

168

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