Your ref
Our ref 214487/(HY/2011/09)/M45/630/B 3 0 1 0 0

BY HAND

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For the attention of Mr LO Kam Wah, Alfred

23 July 2019

Dear Sir

Contract No. HY/2011/09
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill

Submission under EM&A Manual (Section 16.5) - Final EM&A Report

On behalf of HyD/Major Works Project Management Office (Special Duties) (the Permit Holder) of the Environmental Permit (EP-352/2009/D), I submit herewith three hard copies and one electronic copy (two hard copies and one electronic copy to EPD Wanchai, one hard copy to EPD Quarry Bay) of the Final EM&A Report as per Section 16.5 of the updated EM&A Manual.

I confirm that this submission package has been certified by Environmental Team Leader and verified by Independent Environmental Checker.

Yours faithfully

Mark Ching
SRE / Supervising Officer's Representative

cc	HyD/MW(SD)	-	Mr Y C Lam	w/e – CD only
	EPD	-	Mr Alfred Lo	w/e – One hard copy
	AFCD	-	Mr Y M Mak	w/e – By e-mail
	ENPO	-	Mr Y H Hui	w/e – One hard copy and one CD
	IEC	-	Mr Ray Yan	w/o – By fax only
	Arup	-	Mr Eric Chan	w/e – CD only

Response required : No, thank you
Date required : -
Attachments : Yes

WYY/mw

RAMBOLL

Ref.: HYDHZMBEEM00_0_7584L.19.doc

17 July 2019

By Fax (3767 5922) and By Post

ARUP
Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon

Attention: Mr. Michael Chan / Mr. Mark Ching

Dear Sirs,

Re: Agreement No. CE 48/2011 (EP)
Environmental Project Office for the
HZMB Hong Kong Link Road, HZMB Hong Kong Boundary Crossing Facilities, and Tuen Mun-Chek Lap Kok Link – Investigation

Contract No. HY/2011/09 HZMB Hong Kong Link Road - Section between HKSAR Boundary and Scenic Hill
Final EM&A Report

Reference is made to the Environmental Team's submission of the Final EM&A Report certified by the ET Leader and provided to us via e-mail on 16 July 2019.

We are pleased to inform you that we have no adverse comments on the captioned submission.

Thank you very much for your attention and please feel free to contact the undersigned should you require further information.

Yours sincerely,
For and on behalf of
Ramboll Hong Kong Limited

Ray Yan
Independent Environmental Checker
HZMB HKLR

c.c.

HyD	Mr. Cheng Pan	(By Fax: 3188 6614)
HyD	Mr. David Chan	(By Fax: 3188 6614)
ARUP	Mr. Eric Chan	(By Fax: 2268 3970)
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Dragages -China Harbour-VSL JV

Contract HY/2011/09

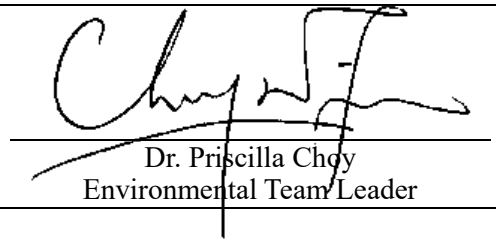
Hong Kong-Zhuhai-Macao Bridge

Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Final EM&A Report

(Version 3.0)

Certified By



Dr. Priscilla Choy
Environmental Team Leader

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties

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EXECUTIVE SUMMARY

Introduction

1. This is the Final Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for "Contract No. HY/2011/09 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill" (hereinafter called the "Contract"). This report documents the findings of Construction Phrase EM&A Works of the Contract.

2. The construction commencement of this Contract was on 22nd February 2013.

3. As the Construction Phase EM&A Programme under HY/2011/09 have been terminated since 24th October 2018 as per EPD's letter to SOR (EPD's ref.: "( ) in AX(2) to EP771/E1/099" dated 30 November 2018), no impact monitoring (air quality, construction noise, water quality and dolphin) and weekly site audit was carried out starting from 24th October 2018.

4. The Construction activities undertaken in the construction period were:

   a) Viaduct Works (P0 – P115):
      - Bore Pilling
      - Construction of Pile Cap
      - Construction of Column
      - SOP (Segment on pile)
      - Segment Erection
      - Concreting
      - Grouting
      - E&M Works
      - Landscape Works

   b) Land – Portion A:
      - Construction of Sloping Seawall
      - Landscape Works
      - Utilities Diversion
      - Road Diversion
      - Road Reinstatement

   c) Land – Portion C:
      - Utilities Diversion
      - Road Diversion
      - Road Reinstatement

   d) Works Area 3:

- Storage Area

e) Works Area 4:

- Storage Area
- Plant Fabrication

f) Works Area 7:

- Storage Area
- Plant Fabrication

Environmental Monitoring works

5. Environmental monitoring for the Contract was performed regularly as stipulated in the updated EM&A Manual and the monitoring results were checked and reviewed. Site Inspections/Audits were conducted once per week. The archeological site inspection were conducted every three months. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

6. Summary of the non-compliance of the construction phrase of this Contract is tabulated in **Table I**.

Table I Summary Table for Non-compliance Recorded Due to the Contract

Environmental Monitoring	Parameter	No. of Exceedance		No. of Exceedance related to the Construction Activities of this Contract		Total No. of Exceedance related to the Construction Activities of this Contract
		Action Level	Limit Level	Action Level	Limit Level	
Air Quality	1-hr TSP	2	1	0	0	0
	24-hr TSP	7	0	0	0	0
Noise	$L_{eq(30min)}$	1	0	1	0	1
Water Quality	Dissolved Oxygen (DO) (Surface & Middle)	24	15	0	0	0
	Dissolved Oxygen (DO) (Bottom)	47	23	0	0	0
	Turbidity	47	120	0	0	0
	Suspended Solids (SS)	330	223	0	0	0
Underwater Noise	RMS sound pressure level re 1μPa	0	0	0	0	0
Dolphin Monitoring	Line-transect Vessel Surveys	3	1	0	0	0

1-hour TSP Monitoring

7. All 1-hour TSP monitoring was conducted as scheduled in the Contract.

8. No Action/Limit Level exceedances was recorded for 1-hour TSP monitoring due to the Contract throughout the whole Contract.

24-hour TSP Monitoring

9. All 24-hour TSP monitoring was conducted as scheduled in the Contract.

10. No Action/Limit Level exceedances was recorded for 24-hour TSP monitoring due to the Contract throughout the whole Contract.

Construction Noise

11. All construction noise monitoring was conducted as scheduled in the Contract.

12. 1 Action Level exceedance in construction noise was recorded for the complaints received throughout the construction period due to loading/unloading of metal plates and oxygen-acetylene set. The Contractor was required to implement noise mitigation measures to rectify the problem and was recommended to strengthen their site supervision and provide training for the workers regularly to increase awareness of their environmental responsibilities to minimize the noise impact to the nearby residents.

13. No Limit Level exceedance in construction noise was recorded due to the Contract throughout the whole Contract.

Water Quality

14. All water quality monitoring was conducted as scheduled in the Contract.

15. No Action/Limit Level exceedance for dissolved oxygen, turbidity and suspended solid was recorded due to the Contract throughout the whole Contract.

Dolphin

16. All dolphin-related monitoring was conducted as scheduled in the Contract. No Action/Limit Level exceedance for dolphin was recorded due to the Contract throughout the whole Contract.

Complaint Log

17. 24 environmental complaints were received since the commencement of the Contract. In addition, no case of complaint was logged since 5 May 2017. Details of the complaints are shown in **Appendix E**.

Notification of Summons and Successful Prosecutions

18. One successful prosecution was received by subcontractor throughout the whole Contract. Details of the successful prosecutions are shown in **Appendix F**.

Conclusion

19. The EM&A programme were found to be effective in monitoring impacts arising from the Contract. The findings of the environmental monitoring program suggest that no adverse impacts on sensitive receivers at the designated monitoring locations were brought about by the Contract.

20. In conclusion, the Contract was environmentally acceptable in terms of air quality, noise levels, water quality, dolphin, cultural heritage and landscape and visual.

21. Post-construction monitoring for water quality was carried out after the termination of Construction Phase EM&A Programme as per EPD's letter to SOR (EPD's ref.: "( ) in AX(2) to EP771/E1/099" dated 30 November 2018) according to the updated EM&A Manual. Details of the Post-construction water quality monitoring is provided in the report as shown in **Appendix H**.

22. In addition, post-construction dolphin monitoring has also been started after completion of construction according to updated EM&A Manual, Section 10.7.1, and the corresponding reports will be submitted separately.

1 INTRODUCTION

1.1 Cinotech Consultants Limited (Cinotech) was appointed by Dragages -China Harbour-VSL JV (hereinafter called "the Contractor") as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the Contract No. HY/2011/09 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill" (hereinafter called the "Contract") in accordance with EP Conditions 2.1.

Background

1.2 The proposed Hong Kong - Zhuhai - Macao Bridge Hong Kong Link Road (HKLR) is 12km long connecting the Hong Kong-Zhuhai-Macao Bridge (HZMB) at the HKSAR Boundary with the Hong Kong Boundary Crossing Facilities (HKBCF) situated at the north eastern waters of the Hong Kong International Airport, opening a new and direct connection route between Hong Kong, Macao and the Western Pearl River Delta.

1.3 The HKLR comprises a 9.4km long viaduct section from the HKSAR boundary to Scenic Hill on the Airport Island; a 1km tunnel section to the reclamation formed along the east coast of the Airport Island and a 1.6km long at-grade road section on the reclamation connecting to the HKBCF. The tunnel section of HKLR will pass under Scenic Hill, Airport Road and Airport Railway to minimize the environmental and visual impacts to Tung Chung residents.

1.4 An application (No ESB-110/2003) for an Environmental Impact Assessment (EIA) Study Brief under Section 5(1) of the Environmental Impact Assessment Ordinance (EIAO) was submitted by Highways Department (the Project Proponent) on 8 October 2003 with a Project Profile (No. No. PP-201/2003) for the Hong Kong - Zhuhai - Macao Bridge Hong Kong Section and North Lantau Highway Connection. The Hong Kong - Zhuhai - Macao Bridge Hong Kong Section and North Lantau Highway Connection has subsequently been renamed as HKLR. EPD issued an EIA Study Brief (No: ESB-110/2003) in November 2003 to the Project Proponent to carry out an EIA study.

1.5 An EIA Study (Reg. No. AEIAR-144/2009) has been undertaken to provide information on nature and extent of environmental impacts arising from the construction and operation of HKLR. The Environmental Permit was issued on 4 November 2009 (Permit No. EP-352/2009). Pursuant to Section 13 of the EIAO, the Director of Environmental Protection amends the Environmental Permit (No. EP-352/2009) based on the Application No. VEP-339/2011 and the environmental Permit (Permit No. EP-352/2009/A) was issued on 9 November 2011 for HKLR to the Highways Department as the Permit Holder. Subsequently, the Director of Environmental Protection amends the Environmental Permits (No. EP-352/2009/A, EP-352/2009/B, EP-352/2009/C) based on the Application No. VEP-409/2013, VEP-411/2013 and VEP-459/2014 respectively. The environmental Permit (Permit No. EP-352/2009/D) was then issued on 22 December 2014.

1.6 **Figure 1a-d** shows the layout of the Contract and the scope of the Contract works comprises the following major items:

- a dual 3-lane carriageway in the form of viaduct from the HKSAR boundary (connecting with the HZMB Main Bridge) to the Scenic Hill (connecting with the tunnel under separate Contract No. HY/2011/03), of approximately 9.4km in

length with a hard shoulder for each bound of carriageway and a utilities trough on the outer edge of each bound of viaducts;

- a grade-separated turnaround facility located near San Shek Wan, composed of sliproads in the form of viaduct with single-lane carriageway bifurcated from the HKLR mainline with an elevated junction above the mainline;
- provision of ancillary facilities including, but not limited to, meteorological enhancement measures including the provisioning of anemometers and modification of the wind profiler station at hillside of Sha Lo Wan, provisioning of a compensatory marine radar, and provisioning of security systems; and
- associated civil, structural, geotechnical, marine, environmental protection, landscaping, drainage and highways electrical and mechanical (E&M) works, street lightings, traffic aids and sign gantries, marine navigational aids, ship impact protection system, water mains and fire hydrants, lightning protection system, structural health monitoring and maintenance management system (SHM&MMS), supervisory control and data acquisition (SCADA) system, as well as operation and maintenance provisions of viaducts, provisioning of facilities for installation of traffic control and surveillance system (TCSS), provisioning of facilities for installation of telecommunication cables/equipments and reprovisioning works of affected existing facilities/utilities.

Contract Organisation

1.7 Different parties with different levels of involvement in the Contract organization include:

- Supervising Officer's Representative (SOR) – Ove Arup & Partners Hong Kong Limited (ARUP)
- Contractor –Dragages -China Harbour-VSL JV (DCVJV)
- Environmental Team (ET) – Cinotech Consultants Ltd. (Cinotech)

1.8 The proposed project organization and lines of communication with respect to the on-site environmental management structure are shown in **Figure 2**. The key personnel contact names and numbers are summarized in **Table 1.1.**

Table 1.1 Key Contacts of the Contract

Party	Position	Position	Phone No.	Fax No.
SOR (ARUP)	CRE	Mr. Michael Chan	3767 5803	3767 5922
		Mr. Dennis Leung	3767 5801	
ENPO/IEC (Ramboll Hong Kong Limited)	Environmental Project Office Leader	Mr. Y. H Hui	3465 2888	3465 2899
	Independent Environmental Checker	Mr. Antony Wong (before 1 January 2019	3465 2888	3465 2899
		Mr. Ray Yan (with effect from 1 January 2019)	3465 2836	
Contractor	Project Director	Mr. W.K Poon	3121 6638	3121 6688

(DCVJV)	Environmental Officer	Mr. CHU Chung Sing	3121 6672	
	24-hour Hotline	--	6898 6161	--
ET (Cinotech)	Environmental Team Leader	Dr. Priscilla Choy	2151 2089	3107 1388

1.9 Ramboll Hong Kong Limited is employed by the Highways Department as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO) for the Project.

Summary of EM&A Requirements

1.10 The updated EM&A Manual designated locations for the ET to monitor environmental impacts in terms of air quality, noise levels, water quality, dolphin, cultural heritage and landscape and visual. In accordance with the letter issued by ENPO (ref.: HYDHZMBEEM00_0_0424L.12) to EPD dated 17 October 2012 regarding the "Proposed EM&A Monitoring Stations for Contract No. HY/2011/03 and Contract No. HY/2011/09 for HZMB HKLR", the site area and monitoring locations for this Contract are depicted in **Figures 1-6**.

1.11 Monitoring works/equipment were conducted/calibrated regularly in accordance with the updated EM&A Manual. Copies of calibration certificates are attached in the appendices of the Monthly Reports.

1.12 The environmental quality performance limits, i.e. Action and Limit Levels were derived from the baseline monitoring results. Should the measured environmental quality parameters exceed the Action/Limit Level, the respective action plans would be implemented. The Action/Limit Levels for each environmental parameter are given in **Appendix A**.

1.13 Relevant mitigation measures as recommended in the project EIA report have been stipulated in the updated EM&A Manual for the Contractor to implement. A list of mitigation measures is given in **Appendix C**.

Purpose of the report

1.14 This is the Final EM&A report which summarizes the finding of all construction phrase EM&A Works for the Contract conducted between February 2013 and November 2018.

2 AIR QUALITY MONITORING

Monitoring Requirements

2.1 In accordance with the EM&A Manual, impact 1-hour TSP and 24-hour TSP monitoring were conducted to monitor the air quality for the Contract. **Appendix A** shows the established Action/Limit Levels for the air quality monitoring works.

2.2 Impact 1-hour TSP monitoring was conducted for at least three times every 6 days, while impact 24-hour TSP monitoring was conducted for at least once every 6 days at 2 air quality monitoring stations.

Monitoring Location

2.3 Impact air quality monitoring was conducted at the 2 monitoring stations under the Contract, as shown in **Figure 3**. **Table 2.1** describes the locations of the air quality monitoring stations.

Table 2.1 Location for Air Quality Monitoring Locations

Monitoring Stations	Location
AMS1	Sha Lo Wan
AMS4	San Tau

Monitoring Equipment

2.4 **Table 2.2** summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates could be found in the monthly report.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make
HVS Sampler	TISCH Model: TE-5170
Calibrator	TISCH Model: TE-5025A
Wind Anemometer	DAVIS Model: Vantage Vantage PRO2 6152CUK

Monitoring Parameters, Frequency and Duration

2.5 **Table 2.3** summarizes the monitoring parameters and frequencies of impact dust monitoring during the course of the Contract activities.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hr TSP	Three times / 6 days
24-hr TSP	Once / 6 days

2.6 The 1-hr TSP and 24-hr TSP monitoring programme for all monitoring stations was completed on 22 October 2018.

Monitoring Methodology and QA/QC Procedure

1-hour and 24-hour TSP Air Quality Monitoring

Instrumentation

2.7 High Volume Samplers (HVS) completed with appropriate sampling inlets were employed for air quality monitoring. Each sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

HVS Installation

2.8 The following guidelines were adopted during the installation of HVS:

- Sufficient support was provided to secure the sampler against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.
- Airflow around the sampler was unrestricted.
- The samplers were more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.
- Permission must be obtained to set up the samples and to obtain access to the monitoring stations; and
- A secured supply of electricity is needed to operate the samplers.

Filters Preparation

2.9 Filter paper of size 8" X 10" was used. A HOKLAS accredited laboratory, ETS – Testconsult Limited (ETS), was responsible for the preparation of 24-hr conditioned and pre-weighed filter papers for Cinotech's monitoring team.

2.10 All filters, which were prepared by ETS, were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±5%. A convenient working RH was 40%.

2.11 ETS has comprehensive quality assurance and quality control programmes.

Operating/Analytical Procedures

2.12 Operating/analytical procedures for the air quality monitoring were highlighted as follows:

- Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 m^3/min. and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
- The power supply was checked to ensure the sampler worked properly.
- On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air quality monitoring station.
- The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- The shelter lid was closed and secured with the aluminum strip.
- The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- After sampling, the filter was removed and sent to the ETS for weighing. The elapsed time was also recorded.
- Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%. Weighing results were returned to Cinotech for further analysis of TSP concentrations collected by each filter.

Maintenance/Calibration

2.13 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- All HVS were calibrated (five point calibration) using Calibration Kit prior to the commencement of the baseline monitoring and thereafter at bi-monthly intervals.

Results and Observations

2.14 Impact air quality monitoring was conducted at designated locations and the monitoring locations agreed by the IEC and Engineer during the construction period between February 2013 and October 2018.

2.15 The graphical presentation for impact air quality monitoring over the Contract period is shown in **Appendix B**.

2.16 The wind data during the impact monitoring were reported in the Monthly EM&A Reports.

2.17 2 Action Level and 1 Limit Level exceedance were recorded for 1-hr TSP during the whole contract period. 7 Action Level exceedance were recorded for 24-hr TSP during the whole contract period. All Air quality exceedance were considered not due to the Contract.

Event and Action Plan

2.18 Should non-compliance of the criteria occur, action in accordance with the Action Plan in **Appendix D** shall be carried out.

3 NOISE MONITORING

Monitoring Requirements

3.1 In accordance with EM&A Manual, two noise monitoring stations, namely NMS1 and NMS4 were selected for impact monitoring for the Contract. Impact noise monitoring was conducted for at least once per week during the construction phase of the Contract. **Appendix A** shows the established Action and Limit Levels for the noise monitoring works.

Monitoring Location

3.2 Impact noise monitoring was conducted at the 2 monitoring stations under the Contract, as shown in **Figure 3**. **Table 3.1** describes the locations of the noise monitoring stations.

Table 3.1 Location for Noise Monitoring Stations

Monitoring Stations	Location
NMS1	Sha Lo Wan
NMS4	San Tau

Monitoring Equipment

3.3 **Table 3.2** summarizes the noise monitoring equipment. Copies of calibration certificates could be found in the monthly report.

Table 3.2 Noise Monitoring Equipment

Equipment	Model and Make
Integrating Sound Level Meter	SVAN977
Calibrator	SV 30A

Monitoring Parameters, Frequency and Duration

3.4 **Table 3.3** summarizes the monitoring parameters, frequency and total duration of monitoring.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency
NMS1 NMS4	L_{10}(30 min.) dB(A) L_{90}(30 min.) dB(A) L_{eq}(30 min.) dB(A) (as six consecutive $L_{eq,\ 5min}$ readings)	0700-1900 hrs on normal weekdays	Once per week

Monitoring Methodology and QA/QC Procedures

- The microphone head of the sound level meter was positioned 1m exterior of the noise sensitive facade and lowered sufficiently so that the building's external wall acts as a reflecting surface.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - time measurement : L_{eq}(30 min.) dB(A) (as six consecutive $L_{eq, 5min}$ readings) during non-restricted hours (i.e. 0700-1900 hrs on normal weekdays)

- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- During the monitoring period, the L_{eq}, L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused temporarily during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible and observation was recorded when intrusive noise was not avoided.
- Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

Maintenance and Calibration

3.5 The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.

3.6 The sound level meter and calibrator were checked and calibrated at yearly intervals.

3.7 Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

Results and Observations

3.8 Impact noise monitoring was conducted at designated locations and the monitoring locations agreed by the IEC and Engineer during the construction period between February 2013 and October 2018.

3.9 1 Action Level exceedance was recorded for the complaints received throughout the construction period due to loading/unloading of metal plates and oxygen-acetylene set. The Contractor was required to implement noise mitigation measures to rectify the

problem and was recommended to strengthen their site supervision and provide training for the workers regularly to increase awareness of their environmental responsibilities to minimize the noise impact to the nearby residents.

3.10 The graphical presentation for impact noise monitoring over the contract period is shown in **Appendix B**.

3.11 The construction noise monitoring programme for all monitoring stations was completed on 23 October 2018.

Event and Action Plan

3.12 Should non-compliance of the criteria occur, action in accordance with the Action Plan in **Appendix D** shall be carried out.

4 WATER QUALITY MONITORING

Monitoring Requirements

4.1 According to EM&A Manual, impact water quality monitoring shall be carried out three days per week during the construction period. The interval between two sets of monitoring will not be less than 36 hours.

4.2 Replicate in-situ measurements and samples collected from each independent sampling event shall be collected to ensure a robust statistically interpretable database.

4.3 Impact water quality monitoring was conducted two times per monitoring day during mid ebb (within ± 1.75 hours of the predicted time) and mid flood tides (within ± 1.75 hours of the predicted time) at three depths (i.e. 1m below surface, mid-depth and 1m above seabed, except where the water depth less than 6m, mid-depth station may be omitted. Should the water depth be less than 3m, only the mid-depth station was monitored) Dissolved oxygen, Suspended solids (SS), turbidity, pH, salinity and temperature were monitored in accordance with the requirements set out in the EM&A Manual.

4.4 The proposal for changing Action and Limit Levels for water quality monitoring was submitted to EPD on 15 March 2013. No objection was received from EPD according to the letter (ref. (10) in Ax(3) to EP2/G/A/129pt.4) dated 25 March 2013. Therefore, the updated Action and Limit Levels for water quality monitoring was used for comparison starting from 25 March 2013.

4.5 **Appendix A** shows the established Action/Limit Levels for the water quality monitoring works.

Monitoring Locations

4.6 Impact water quality monitoring was conducted at 14 monitoring stations under the Contract which are summarized in **Table 4.1**. The monitoring station is also shown in **Figure 4**.

4.7 The Proposal for Change of Marine Water Quality Monitoring Station was submitted to EPD on 12 July 2017. No objection was received from EPD according to the letter (ref. (22) in Ax(4) to EP2/G/A/129pt.4) dated 28 July 2017. Therefore, the updated Water Quality Monitoring Station was used for water quality monitoring starting from 31 July 2017.

Table 4.1 Location for Marine Water Quality Monitoring Locations

Monitoring Stations	Coordinates	
	Easting	Northing
IS1	803474	815060
IS2	804851	815715
IS3	806502	815743
IS4	807008	816986
CS1	801784	812711
CS2	805849	818780
CS2(A)#	805232	818606

Monitoring Stations	Coordinates	
	Easting	Northing
SR1	803126	812379
SR2	807856	816953
SR3	810525	816456
SR6	805837	821818
ST1	802677	816006
ST2	804055	818840
ST3	800667	810126
SRA	809872	817152

#Alternative station for CS2 starting from 31st July 2017, after the approval of the Proposal for Change of Marine Water Quality Monitoring Station by EPD on 28th July 2017.

Monitoring Equipment

Instrumentation

4.8 A multi-parameter meters (Model YSI 6820-C-M) were used to measure DO, turbidity, salinity, pH and temperature.

Dissolved Oxygen (DO) and Temperature Measuring Equipment

4.9 The instrument for measuring dissolved oxygen and temperature was portable and weatherproof complete with cable, sensor, comprehensive operation manuals and use DC power source. It was capable of measuring:

- a dissolved oxygen level in the range of 0-20 mg/L and 0-200% saturation; and
- a temperature of 0-45 degree Celsius.

4.10 It has a membrane electrode with automatic temperature compensation complete with a cable.

4.11 Sufficient stocks of spare electrodes and cables were available for replacement where necessary.

4.12 Salinity compensation was built-in in the DO equipment.

Turbidity

4.13 Turbidity was measured in situ by the nephelometric method. The instrument was portable and weatherproof using a DC power source complete with cable, sensor and comprehensive operation manuals. The equipment was capable of measuring turbidity between 0-1000 NTU. The probe cable was not less than 25m in length. The meter was calibrated in order to establish the relationship between NTU units and the levels of suspended solids. The turbidity measurement was carried out on split water sample collected from the same depths of suspended solids samples.

Sampler

4.14 A water sampler, consisting of a transparent PVC or glass cylinder of a capacity of not less than two litres which can be effectively sealed with cups at both ends was used. The water sampler has a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler was at the selected water depth.

Water Depth Detector

4.15 A portable, battery-operated echo sounder was used for the determination of water depth at each designated monitoring station.

pH

4.16 The instrument was consisting of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It was readable to 0.1pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 were used for calibration of the instrument before and after use.

Salinity

4.17 A portable salinometer capable of recording salinity within the range of 0-40 ppt was used for salinity measurements.

Monitoring Position Equipment

4.18 A hand held Differential Global Positioning System (DGPS) was used during water quality monitoring to ensure the monitoring vessel is at the correct location before taking measurements.

Sample Container and Storage

4.19 Following collection, water samples for laboratory analysis were stored in high density polythene bottles (250ml/1L) with no preservatives added, packed in ice (cooled to 4°C without being frozen) and kept in dark during both on-site temporary storage and shipment to the testing laboratory. The samples were delivered to the laboratory as soon as possible and the laboratory determination works were started within 24 hours after collection of the water samples. Sufficient volume of samples was collected to achieve the detection limit.

Calibration of In Situ Instruments

4.20 All in situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring programme. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter was carried out before measurement at each monitoring event.

4.21 For the on site calibration of field equipment (Multi-parameter Water Quality System),

the BS 1427:2009, "Guide to on-site test methods for the analysis of waters" was observed.

4.22 Sufficient stocks of spare parts were maintained for replacements when necessary. Backup monitoring equipment was also being made available so that monitoring can proceed uninterrupted even when some equipment was under maintenance, calibration, etc.

4.23 The equipment used for impact water quality monitoring is shown in **Table 4.2**. All the monitoring equipment complied with the requirements set out in the EM&A Manual.

Table 4.2 Water Quality Monitoring Equipment

Equipment	Model and Make
Sonar Water Depth Detector	Garmin Fishfinder 140
Monitoring Position Equipment	KODEN DGPS (KGP913MKIID, GA-08 & BA-03)
Multi-parameter Water Quality System	YSI EXO
Water Sampler	Kahlsico Water-Bottle Model 135DW 150

Monitoring Parameters, Frequency

4.24 **Table 4.3** summarizes the monitoring parameters, monitoring period and frequencies of the water quality monitoring.

Table 4.3 Water Quality Monitoring Parameters and Frequency

Monitoring Stations	Parameters, unit	Depth	Frequency
IS1, IS2, IS3 IS4, CS1, CS2 / CS2(A), SR1, SR2, SR3, SR6, ST1, ST2, ST3, SRA	• Temperature(°C) • pH(pH unit) • turbidity (NTU) • water depth (m) • salinity (ppt) • dissolved oxygen (DO) (mg/L and % of saturation) • suspended solids (SS) (mg/L)	• 3 water depths: 1m below sea surface, mid-depth and 1m above sea bed. • If the water depth is less than 3m, mid-depth sampling only. • If water depth less than 6m, mid-depth may be omitted.	• Impact monitoring: 3 days per week, at mid-flood and mid-ebb tides during the construction period of the Contract

4.25 Monitoring location/position, time, water depth, sampling depth, pH, salinity, DO saturation, water temperature, tidal stages, weather conditions and any special phenomena or work underway nearby were recorded.

Monitoring Methodology

Instrumentation

4.26 A multi-parameter meters (Model YSI 6820-C-M) were used to measure DO, turbidity, salinity, pH and temperature.

Operating/Analytical Procedures

4.27 The monitoring stations were accessed by the guide of a hand-held Differential Global Positioning System (DGPS) during water quality monitoring in accordance with the EM&A Manual. The depth of the monitoring location was measured using depth meter in order to determine the sampling depths. Afterwards, the probes of the in-situ measurement equipment were lowered to the predetermined depths (1 m below water surface, mid-depth and 1 m above seabed) and the measurements were carried out accordingly.

4.28 At each measurement, two consecutive measurements of DO concentration, DO saturation, salinity, turbidity, pH and temperature were taken. The probes were retrieved out of the water after the first measurement and then re-deployed for the second measurement. Where the difference in the value between the first and second readings of each set was more than 25% of the value of the first reading, the reading was discarded and further readings were taken.

4.29 Water sampler was lowered into the water to the required depths of sampling. Upon reaching the pre-determined depth, a messenger to activate the sampler was then released to travel down the wire. The water sample was sealed within the sampler before retrieving. At each station, water samples at three depths (1 m below water surface, mid-depth and 1 m above seabed) were collected accordingly. Water samples were stored in a cool box and kept at less than 4°C but without frozen and sent to the laboratory as soon as possible. In addition, field information as described in Section 4.25 was also recorded.

Laboratory Analytical Methods

4.30 The testing of all parameters was conducted by CMA Testing and Certification Laboratories (HOKLAS Registration No.004) and comprehensive quality assurance and control procedures in place in order to ensure quality and consistency in results. The testing method, reporting limit and detection limit are provided in **Table 4.4**.

Table 4.4 Methods for Laboratory Analysis for Water Samples

Determinant	Instrumentation	Analytical Method	Detection Limit
Suspended Solid (SS)	Weighing	APHA 21e 2540D	0.5 mg/L

QA/QC Requirements

Decontamination Procedures

4.31 Water sampling equipment used during the course of the monitoring programme was decontaminated by manual washing and rinsed clean seawater/distilled water after each sampling event. All disposal equipment was discarded after sampling.

Sampling Management and Supervision

4.32 All sampling bottles were labelled with the sample I.D (including the indication of

sampling station and tidal stage e.g. IS1_me_a), laboratory number and sampling date. Water samples were dispatched to the testing laboratory for analysis as soon as possible after the sampling. All samples were stored in a cool box and kept at less than 4°C but without frozen. All water samples were handled under chain of custody protocols and relinquished to the laboratory representatives at locations specified by the laboratory.

4.33 The laboratory determination works were started within 24 hours after collection of the water samples.

Quality Control Measures for Sample Testing

4.34 The samples testing were performed by CMA Testing and Certification Laboratories.

4.35 The following quality control programme was performed by the CMA Testing and Certification Laboratories for every batch of 20 samples:

- ✧ One set of quality control (QC) samples.

Maintenance and Calibration

4.36 All in situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring programme.

Results and Observations

4.37 The monitoring results and graphical presentation of water quality at the monitoring stations is shown in **Appendix B.** The monitoring data and the Quality Control reports for the laboratory analysis could be found in the monthly reports.

4.38 A total of 24 Action Level exceedances and 15 Limit Level exceedances for Dissolved Oxygen (Surface & Middle), 47 Action Level exceedances and 23 Limit Level exceedances for Dissolved Oxygen (Bottom), 47 Action Level exceedances and 120 Limit Level exceedances for Turbidity and 330 Action Level exceedances and 223 Limit Level exceedances for Suspended Solids were recorded during the construction period of the Contract. The summary of exceedance is attached in **Appendix G**.

4.39 According to the ET's investigation, no direct evidence demonstrated the exceedances of Action/Limit level for water monitoring parameters were caused by the Contract during the construction period.

4.40 The impact marine water quality monitoring programme for all monitoring stations was completed on 23 October 2018.

Event and Action Plan

4.41 Should non-compliance of the criteria occur, action in accordance with the Action Plan in **Appendix D** shall be carried out.

5 DOLPHIN-RELATED MONITORING

Monitoring Requirements

5.1 According to Section 10 of the EM&A Manual, four kinds of ecological monitoring works are required during the construction phase, namely dolphin monitoring, construction-phase underwater noise monitoring, dolphin behavior monitoring and land-based dolphin behavior and movement monitoring. The 30 days of construction-phase underwater noise monitoring, dolphin behavior monitoring and land-based dolphin behavior and movement monitoring were completed in July 2013.

5.2 The monitoring work shall be undertaken by suitably qualified specialist(s), (i.e. dolphin specialist and bio-acoustician), who shall have sufficient (at least 5-10 years) relevant post-graduate experience and publication in the respective aspects. They should be approved by Agriculture, Fisheries and Conservation Department (AFCD) and Environmental Protection Department (EPD).

Dolphin Monitoring (Line-transect Vessel Survey)

Monitoring Requirements

5.3 According to EM&A Manual Section 10.3.2, a dolphin monitoring programme should be set up to verify the predictions of impacts and to ensure that there are no unforeseen impacts on the dolphin population during construction phase.

5.4 Following the requirement in the EM&A Manual Section 10.4.1, the dolphin monitoring should adopt line-transect vessel survey method, and cover the following line-transect survey areas as in AFCD annual marine mammal monitoring programme.

Monitoring Location

5.5 For this contract, dolphin monitoring will be carried out in the West Lantau (WL) along the line transect. The co-ordinates of all transect lines are shown in **Table 5.1** and the transect line layout in West Lantau Survey Areas are shown in **Figure 7**.

Table 5.1 Co-ordinates of transect lines in WL survey area

Line No.		Easting	Northing	Line No.		Easting	Northing
1	Start Point	803750	818500	7	Start Point	800200	810450
1	End Point	803750	815500	7	End Point	801400	810450
2	Start Point	803750	815500	8	Start Point	801300	809450
2	End Point	802940	815500	8	End Point	799750	809450
3	Start Point	802550	814500	9	Start Point	799400	808450
3	End Point	803700	814500	9	End Point	801430	808450
4	Start Point	803120	813600	10	Start Point	801500	807450
4	End Point	801640	813600	10	End Point	799600	807450

Line No.		Easting	Northing	Line No.		Easting	Northing
5	Start Point	801100	812450	11	Start Point	800300	806500
5	End Point	802900	812450	11	End Point	801750	806500
6	Start Point	802400	811500	12	Start Point	801760	805450
6	End Point	800660	811500	12	End Point	800700	805450

Monitoring Frequency

5.6 Dolphin transect survey was carried out at least twice a month (i.e. complete all the transect lines of West Lantau survey area twice per month) throughout the construction period.

Monitoring Results and Observations

5.7 Detailed monitoring methodology and results can be found in the monthly EM&A report.

5.8 A total of 3 Action Level exceedance and 1 Limit Level exceedance were recorded during the construction phrase of the Contract. The summary of exceedance is attached in **Appendix G**.

5.9 According to the ET's investigation, no direct evidence demonstrated the exceedances of Action/Limit level for dolphin were caused by the Contract during the construction period. No adverse impact on Chinese white dolphins was noticeable from general observations

Construction-phase Underwater Noise Monitoring

Monitoring Requirements

5.10 According to EM&A Manual Section 10.3.3 and 10.4.2, construction-phase underwater noise monitoring has to be carried out to verify the assessment outcome in the EIA and to collect field data of this construction activity. The actual underwater noise level of bored piling was monitored during the pile construction in the waters to the west of the Airport for HKLR.

5.11 Following the requirement in the EM&A Manual Section 10.6.2, construction-phase underwater noise monitoring was constructed for 10 days from the start of the bored piling activities for the first three pier sites during the bored piling process in the first three sits in the waters to the west of Airport.

Monitoring Location

5.12 The equipment was positioned at an appropriate and safe distance from a barge (about 100m away from the center of the pier) where the piling work was carried out at the pier site to monitor the underwater noise during the bored piling activities. After anchoring, the boat would drift within the radius of the anchor (about 5m), which was unavoidable.

5.13 The approximate locations of the monitoring stations are depicted in **Figure 5**. The co-

ordinates of the monitoring station are shown in **Table 5.2**.

Table 5.2 Co-ordinates of underwater noise monitoring stations

Pier No.	Station	Easting	Northing
48	R1	806141	815885
52	R2	806390	816056

5.14 Due to programme change, the first two piers were changed to P48 and P52 instead of P20, P47 or P49 proposed in the methodology statement. While the location of impact monitoring has changed, the position of the station remained around 100m away from the piers as proposed. The change in monitoring location would not affect comparison against Action and Limit level.

Monitoring Equipment

5.15 PAM004, a proprietary product of Sea Mammal Research Unit (SMRU), was adopted for impact underwater noise monitoring. It is the same equipment used in baseline monitoring. While this is different from the system proposed in the method statement, the difference in sensitivity and pre-amplifier gain will not affect the monitoring results. Therefore, this still allows compatible comparison of the measurement.

Monitoring Methodology

5.16 The data recorded by PAM004 were transmitted to a receiving station on a boat via cable. The data were viewed on a laptop computer in real time by an operator from Cinotech who has been well trained and technically supported by SMRU for the operation.

5.17 The RMS sound pressure level re 1μPa were checked against the Action Level and Limit Level (170 and 180 dB re 1μPa respectively).

Monitoring Results

5.18 Detailed monitoring methodology and results can be found in the monthly EM&A report. No Action/Limit Level exceedance was recorded. The graphical presentation of underwater noise monitoring is shown in **Appendix B**.

Dolphin Behaviour Monitoring (Acoustic)

Monitoring Requirements

5.19 According to EM&A Manual Section 10.3.4, acoustic behavior and movement of Chinese White Dolphin near the bored piling sites should be monitored during bridge construction.

Monitoring Location

5.20 The dedicated acoustic surveys with calibrated hydrophone deployment were conducted in the western side of Lantau Island during the construction phase. The research vessel followed a predefined route for systematic search effort in West Lantau waters to cover

the HKLR alignment in Northwest and West Lantau waters (in particular the area near the first three bored piling sites), where dolphins will be potentially disturbed by the bored piling works.

5.21 The EARs were deployed at two locations: 1) near the bridge alignment (N22°17.222, E113°53.016), about 500 m from the first three bored piling sites (Site B2), and 2) at a less disturbed site away from the bridge alignment as control site, off Fan Lau (N22°11.827, 113°50.648; Site B1). EAR B2 was in water depth 4 m, and EAR B1 in 7 m.

Monitoring Results

5.22 Detailed monitoring methodology and results can be found in the monthly EM&A report.

Land-based Dolphin Behaviour and Movement Monitoring

Monitoring Requirements

5.23 According to EM&A Manual Section 10.3.5, land-based theodolite tracking has to be carry out to study dolphin behaviour near bored piling work site, and examine their north-south movement across the bridge alignment during after bridge construction.

5.24 Following the requirement in the EM&A Manual Section 10.4.3 and 10.6.3, the monitoring should be conducted at the three pier sites for 30 days from the start of bored piling activities in the waters to the west of Airport.

Monitoring Location

5.25 A theodolite tracking station was set up in Sham Wat located along the northwest coast of Lantau Island (22º16.10' N. and 113º52.32' E) as depicted in **Figure 6**.

Monitoring Frequency

5.26 Thirty days of monitoring would be carried out during the construction phase.

Monitoring Results

5.27 Detailed monitoring methodology and results can be found in the monthly EM&A report.

Additional Land-based Dolphin Behaviour and Movement Monitoring

5.28 A total of 64 days of additional monitoring according to the Proposal for Land-based Dolphin Behaviour and Movement Monitoring had been completed in August 2016.

Land-based Dolphin Behaviour and Movement Monitoring after bridge construction

5.29 According to Section 10 of approved EIA Report, EM&A Manual and Section 2 of approved Proposal for Land-based Dolphin Behavior and Movement Monitoring submitted on 24 January 2013 and approved by the authority on 5 February 2013, land-based theodolite tracking to study dolphin behaviour near bored piling work site, and

examine their north-south movement across the bridge alignment shall be conducted before, during and after bridge construction. Summary of the requirements of land-based dolphin monitoring is shown in **Table 5.3**:

Table 5.3 Summary of Land-based of Dolphin Behaviour and Movement Monitoring Requirements

EIA	EM&A Manual	Approved Monitoring Proposal
Requirement for Land-based of dolphin behaviour and movement monitoring		
• Land-based theodolite tracking to study dolphin behaviour near bored piling work site, and examine their north-south movement across the bridge alignment before, during and after bridge construction.	• Land-based theodolite tracking to study dolphin behaviour near bored piling work site, and examine their north-south movement across the bridge alignment **before, during and after bridge construction.** • The behaviour near the bored piling sites and north-south movement across the bridge alignment of CWD should be monitored in the waters to the west of Airport.	• Dolphin behaviour in response to bored piling works and movement near the bored piling sites should be monitored **at the first three pier sites for 30 days from the start of bored piling activities** in the waters to the west of Airport. However, the number of monitoring days is not well specified for the baseline period. • Therefore, reference to the requirements in the Tuen Mun – Chek Lap Kok Link (TMCLKL) EM&A Manual was made, in which **30 days of theodolite tracking before(i) and 30 days of theodolite tracking from the start of bored piling activities(ii)** will be conducted under the present study in order to maintain overall consistency of EM&A Programs for the Hong Kong-Zhuhai-Macao Bridge (HZMB) development.
Frequency		
Baseline		
• Not specified	• Baseline for dolphin north-south movement across the bridge alignment shall be established prior to the commencement of works and agreed with AFCD.	• 30 consecutive days (with 5-6 hours on each survey day). • It should be noted that every attempt will be made to conduct the monitoring in favorable weather conditions (Beaufort Sea State 3 or below; good visibility of 2km or above).
Impact		
• Not specified	• Dolphin behavior in	• 30 consecutive days (with 5-6

(i) Baseline Monitoring Frequency for Theodolite Tracking
(ii) Impact Monitoring Frequency for Theodolite Tracking

EIA	EM&A Manual	Approved Monitoring Proposal
	response to bored piling and movement near the bored piling sites will be monitored at the three pier sites for 30 days from the start of bored piling activities in the waters to the west of Airport.	hours on each survey day). • It should be noted that every attempt will be made to conduct the monitoring in favorable weather conditions (Beaufort Sea State 3 or below; good visibility of 2km or above). • In the proposal, the dolphin specialist has also proposed an additional 64 days of monitoring (twice per month, with 5-6 hours on each survey day) throughout the construction period to examine the impact of bridge construction on north-south movement of CWD across the bridge alignment.
Post-construction		
• Not specified	• Not specified	Not specified

Construction Program and Monitoring Period

Construction Program

5.30 The major construction programme of the Contract is provided in **Table 5.4**.

Table 5.4 Major Construction Program for Contract No. HY/ 2011/09

Description	Period
Commencement of the Contract	May 2012
Construction Commencement	February 2013
Piling	April 2013 – September 2015
Pile Cap and Piers	December 2013 – May 2016
Deck Segment Erection	March 2015 – June 2017

5.31 Based on the construction programme in Section 5.30, Land-based theodolite monitoring after bridge construction has been conducted twice per month from September 2016 to August 2018. A total of 48 days of monitoring was carried out after the impact monitoring completion. Summary of Land-based dolphin behavior and movement monitoring across the bridge alignment before, during and after bridge construction are presented in **Table 5.5**.

Table 5.5 Summary of Land-based dolphin behavior and movement monitoring across the bridge alignment before, during and after bridge construction

Land-based dolphin behavior and movement monitoring	Monitoring Period	Monitoring Details
Baseline (before bridge construction)	Dec 2012 – Jan 2013	i) 30 consecutive days before bridge construction (i.e. before start of bored piling activities)
Impact (during bridge construction)	Mar 2013 – Aug 2016	i) 30 days from the start of bored piling activities in the waters to the west of Airport; and ii) 64 days (twice per month) throughout the bridge construction period (Remark: the pile cap and pier construction under Contract HY/2011/09 were completed in May 2016)
Post-construction (after bridge construction)	Sept 2016 – August 2018	i) 48 days (twice per month) after completion of bored piling activities

5.32 The Land-based Dolphin Behavior and Movement Monitoring for "baseline", "impact" and "after bridge construction" have been conducted by the same dolphin specialist using consistent monitoring methodology and result analysis.

5.33 Details of Land-based dolphin behavior and movement monitoring after bridge construction are presented in the separate Final Report of Land-based Monitoring on North-South Movement of Chinese White Dolphins in West Lantau Waters After Bridge Construction.

5.34 All Land-based Dolphin Behaviour and Movement Monitoring have been completed under Contract No. HY/2011/09 and had fulfilled the requirements stated in the EM&A Manual.

6 ENVIRONMENTAL SITE INSPECTION

Site Audits

6.1 Site audit provided a direct means to trigger and enforce the specified environmental protection and pollution control measures. The ET undertook site audits routinely to ensure that appropriate environmental protection and pollution mitigation measures are properly implemented. Additionally, the ET was responsible for defining the scope of the inspections, detailing any deficiencies that are identified, and reporting any necessary action or mitigation measures that were implemented as a result of the audit.

6.2 Site audits were carried out by ET on weekly basis in construction phase to monitor the timely implementation of proper environmental management practices and mitigation measures in the Contract site. The area of inspection included the general environmental conditions in the vicinity of site, pollution control and mitigation measure within the site, and also review the environmental conditions outside the site area which are likely to be affected, directly or indirectly, by the site activities.

6.3 The implementation of the environmental mitigation measures and environmental complaint handling procedures were also checked.

6.4 According to EP condition 4.7 and EM&A Manual, periodic monitoring (every three months) of construction works shall be conducted to ensure the avoidance of any impacts on Sha Lo Wan (West) Archaeological Site. Access to Sha Lo Wan (West) Archaeological site for works areas and storage of construction equipment is not allowed. No access to Sha Lo Wan (West) Archaeological site for works areas and storage of construction equipment was observed. The detailed results and observations were recorded in the monthly EM&A report.

Implementation Status of Environmental Mitigation Measures

6.5 The mitigation measures detailed in the Environmental Permit, the Manual and in the EIA report were implemented throughout the whole contract period. A summary of the EMIS is provided in **Appendix C**.

6.6 Regular marine travel route for marine vessels were implemented properly in accordance with the submitted plan and relevant records were kept properly.

6.7 Acoustic decoupling measures for the stationary equipment (generators, winch generators and air compressors) mounted on boards were adopted according to EP Condition 3.7 and EM&A Manual, Section 10.2.18.

6.8 Dolphin exclusion zone and dolphin watching plan according to EM&A Manual, Section 10.2.12 and EP Condition 3.5 was implemented by DCVJV's trained dolphin watcher.

6.9 Spill kits and booms are ready on site for the event of accidental spillage of oil or other hazardous chemicals from construction activities including vessels operating for the Contract.

6.10 No non-compliance was recorded during the site inspection throughout the construction period. Observations and recommendations recorded during the site inspections were summarized in each of the Monthly EM&A Reports.

Solid and Liquid Waste Management Status

6.11 The Contractor was advised to minimize the wastes generated through the recycling or reusing. All mitigation measures stipulated in approved waste management plan were fully implemented.

6.12 The amount of wastes generated by the activities of the Contract was shown in the Monthly EM&A Reports.

7 NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS)

Summary of Exceedances

Air Quality

7.1 2 Action Level and 1 Limit Level exceedance were recorded for 1-hr TSP during the whole contract period. 7 Action Level exceedance were recorded for 24-hr TSP during the whole contract period.

Construction Noise

7.2 1 Action Level exceedance was recorded for the complaints received throughout the construction period due to loading/unloading of metal plates and oxygen-acetylene set.

Water Quality

7.3 A total of 24 Action Level exceedances and 15 Limit Level exceedances for Dissolved Oxygen (Surface & Middle), 47 Action Level exceedances and 23 Limit Level exceedances for Dissolved Oxygen (Bottom), 47 Action Level exceedances and 120 Limit Level exceedances for Turbidity and 330 Action Level exceedances and 223 Limit Level exceedances for Suspended Solids were recorded during the construction period of the Contract.

Dolphin Monitoring (Line-transect Vessel Survey)

7.4 A total of 3 Action Level exceedance and 1 Limit Level exceedance were recorded during the construction phrase of the Contract.

7.5 However, no Action/Limit Level exceedances was recorded for air quality, water quality and dolphin monitoring due to the Contract throughout the whole Contract.

7.6 Only one Action Level exceedance was recorded in construction noise due to the complaint. It was temporary and short-term comparing to the whole construction period. No Limit Level exceedances was recorded for construction noise due to the Contract throughout the whole Contract. In addition, no Action exceedances and complaint in construction noise was recorded since April, 2013.

Review of the Reasons for and the Implications of Non-compliance

7.7 The summary of exceedance is attached in **Appendix G**. The details of each exceedance were attached in the Monthly EM&A Reports.

7.8 There was no non-compliance from the site audits in the reporting period. The observations and recommendations made in each individual site audit session were attached in the Monthly EM&A Reports.

Summary of Environmental Complaint

7.9 24 environmental complaints were received since the commencement of the Contract. In addition, no case of complaint was logged since 5 May 2017. The Complaint Log is attached in **Appendix E**.

Summary of Notification of Summons and Successful Prosecution

7.10 There was only one prosecution or notification of summons received since the Contract commencement. Summary of successful prosecution as attached in **Appendix F**.

8 REVIEW OF ENVIRONMENTAL MONITORING RESULTS

Weather Conditions

8.1 The weather during monitoring sessions is shown in **Appendix I**.

8.2 The detail of weather conditions for each individual monitoring session was presented in the Monthly EM&A Report.

Influencing Factors on the Monitoring Results

8.3 During the reporting period, the major dust and noise source identified at the designated monitoring stations were as follows:

Table 8.1 Major Dust Sources during the Monitoring in the Reporting Period

Monitoring Station	Major Dust Source
AMS1	Exhaust from marine traffic
AMS4	N/A

Table 8.2 Major Noise Sources during the Monitoring in the Reporting Period

Monitoring Station	Major Noise Source
NMS1	Air traffic & marine traffic noise
NMS4	Air traffic & marine traffic noise

Comparison of EM&A results with EIA predictions / Baseline Data / Post-construction Monitoring Data

8.4 The EM&A data was compared with the EIA predictions, baseline data and post-construction monitoring data and summarized in the following table.

Table 8.3 Comparison of 1-hr TSP Data with EIA predictions and Baseline Monitoring Results

Station	Predicted 1-hr TSP conc. in EIA		Reporting Period (Feb 2013 to Oct 2018), µg/m3	Baseline (October 2011), µg/m3
	Unmitigated Scenario , µg/m^3	Mitigated Scenario , µg/m^3		
AMS1 – Sha Lo Wan	Not Predicted in EIA Report		0 – 354.3	67.6 – 353.5
AMS4 – San Tau			0 – 341.1	55.7 – 264.6

Remark: The 1-hr TSP results which exceed the criteria are excluded in the comparison as all exceedances were not due to the Contract works after investigation.

Table 8.4 Comparison of 24-hr TSP Data with EIA predictions and Baseline Monitoring Results

Station	Predicted 24-hr TSP conc. in EIA		Reporting Period (Feb 2013 to Oct 2018), µg/m3	Baseline (October 2011), µg/m3
	Unmitigated Scenario , µg/m^3	Mitigated Scenario , µg/m^3		
AMS1 – Sha Lo Wan	Not Predicted in EIA Report		5 – 164.3	39.0 – 87.8
AMS4 – San Tau			0.2 – 167.9	33.5 – 124.0

Remark: The 24-hr TSP results which exceed the criteria are excluded in the comparison as all exceedances were not due to the Contract works after investigation.

Table 8.5 Comparison of Noise Monitoring Data with EIA predictions and Baseline Monitoring Results

Station	Predicted Construction Noise Levels during Normal Working Hour in EIA		Reporting Period (Feb 2013 to Oct 2018), $L_{eq\ (30min)}$ dB(A)	Baseline (October to November 2011)
	Unmitigated Scenario, $L_{eq\ (30min)}$ dB(A)	Mitigated Scenario, $L_{eq\ (30min)}$ dB(A)		Daytime, $L_{eq\ (30min)}$ dB(A)
NMS1 – Sha Lo Wan	74 - 80	72	54 – 75	48.9 – 77.2
NMS4 – San Tau	Not Predicted in EIA Report		49 – 69	49.1 – 70.9

Table 8.6a Comparison of Baseline, Impact and Post-construction Water Quality Monitoring Results (Dissolved Oxygen (Surface & Middle), Mid Ebb Tide)

Station(s)	Baseline (October to November 2011)		Impact (Feb 2013 to Oct 2018)		Post-construction (Oct to Nov 2018)	
	Dissolved Oxygen (Surface & Middle), mg/L					
	Min	Max	Min	Max	Min	Max
CS1	5.5	9.6	3.7	10.6	6.4	7.3
CS2	5.0	9.3	3.9	9.3	6.6	7.3
IS1	5.4	9.4	3.9	11.1	6.6	7.4
IS2	5.4	9.2	4.4	11	6.4	7.6
IS3	5.9	9.2	3.4	11.9	6.5	7.4
IS4	4.6	8.2	3.9	10.6	6.3	7.2
SR1	5.4	10.5	4.9	11.1	6.2	7.2
SR2	6.1	9.1	4.6	11.6	6.0	7.9
SR3	6.0	8.1	5.1	11.8	6.5	7.7
SR6	3.9	8.3	3.8	11.4	6.2	7.1
SRA	4.0	7.4	4	11.4	6.6	7.1
ST1	5.5	9.1	4.8	10.5	6.5	7.4
ST2	4.2	9.3	4.2	10.8	6.5	7.1
ST3	5.4	10.1	4.5	11.9	6.4	7.3

Table 8.6b Comparison of Baseline, Impact and Post-construction Water Quality Monitoring Results (Dissolved Oxygen (Bottom), Mid Ebb Tide)

Station(s)	Baseline (October to November 2011)		Impact (Feb 2013 to Oct 2018)		Post-construction (Oct to Nov 2018)	
	Dissolved Oxygen (Bottom), mg/L					
	Min	Max	Min	Max	Min	Max
CS1	5.4	9.3	1.3	10	6.2	6.7
CS2	3.9	7.2	1.7	8.8	6.3	7.0
IS1	5.4	9.0	1.6	9.9	6.4	7.0
IS2	5.4	8.9	2.0	10.3	6.1	7.1
IS3	5.8	8.7	2.8	10.1	6.4	7.2
IS4	3.7	7.2	2.1	10.1	--	--
SR1	6.7	6.7	5.0	6.7	--	--
SR2	-	-	--	--	--	--
SR3	-	-	7.3	7.3	6.4	7.2
SR6	3.1	7.4	2.6	10.1	5.9	6.9
SRA	3.9	7.7	3.9	10.9	6.4	6.8
ST1	5.4	8.6	3.5	9.8	6.3	6.9
ST2	3.5	7.2	3.5	9.7	6.2	6.8
ST3	5.4	9.1	3.5	10.0	6.2	6.7

Remark: " - " means the water depth of station less than 3m and therefore only the mid-depth was monitored.

Table 8.6c Comparison of Baseline, Impact and Post-construction Water Quality Monitoring Results (Turbidity, Mid Ebb Tide)

Station(s)	Baseline (October to November 2011)		Impact (Feb 2013 to Oct 2018)		Post-construction (Oct to Nov 2018)	
	Turbidity, NTU (depth average)					
	Min	Max	Min	Max	Min	Max
CS1	4.7	78.1	0.9	78.1	2.2	24.4
CS2	5.6	26.8	1.4	28.6	2.9	9.5
IS1	5.1	41.7	1.2	59.4	3.0	11.4
IS2	6.7	24.0	1.4	72.1	3.0	10.8
IS3	9.6	29.1	1.0	29.1	2.0	15.4
IS4	7.1	26.7	1.2	27.1	2.5	10.8
SR1	4.6	38.6	0.5	38.6	1.1	8.2
SR2	3.9	23.5	0.8	26.3	3.4	9.6
SR3	4.6	65.7	0.6	65.7	1.7	9.3
SR6	6.1	37.0	0.9	85.6	1.8	17.7
SRA	6.0	15.9	0.9	26.5	3.2	15.8
ST1	6.2	27.8	1.3	192.3	3.3	12.9
ST2	8.7	33.8	1.5	163.4	3.0	16.4
ST3	5.1	157.6	1.5	157.6	2.2	24.4

Table 8.6d Comparison of Baseline, Impact and Post-construction Water Quality Monitoring Results (Suspended Solids, Mid Ebb Tide)

Station(s)	Baseline (October to November 2011)		Impact (Feb 2013 to Oct 2018)		Post-construction (Oct to Nov 2018)	
	Suspended Solids (mg/L), depth average					
	Min	Max	Min	Max	Min	Max
CS1	7.4	24.2	1.4	54.2	5.5	16.3
CS2	7.0	18.3	1.5	65.5	6.0	13.1
IS1	6.3	19.5	0.8	89.5	6.5	11.8
IS2	5.3	20.1	1.1	66.9	5.8	11.1
IS3	10.0	28.3	1.4	51.5	6.1	13.2
IS4	9.3	24.3	1.2	58.7	6.0	21.5
SR1	6.5	39.5	1.1	45.6	3.0	17.1
SR2	7.0	53.0	0.6	85.4	5.7	16.1
SR3	6.7	31.0	1.4	48.8	5.6	14.3
SR6	7.4	18.3	1.5	83.5	4.1	14.4
SRA	3.5	17.3	1.2	50.4	6.6	13.3
ST1	7.0	25.5	1.3	166.8	5.5	13.1
ST2	4.3	16.8	1.0	137.2	5.5	17.6
ST3	6.0	31.0	1.2	56	5.5	16.3

Table 8.6e Comparison of Baseline, Impact and Post-construction Water Quality Monitoring Results (Dissolved Oxygen (Surface & Middle), Mid Flood Tide)

Station(s)	Baseline (October to November 2011)		Impact (Feb 2013 to Oct 2018)		Post-construction (Oct to Nov 2018)	
	Dissolved Oxygen (Surface & Middle), mg/L					
	Min	Max	Min	Max	Min	Max
CS1	5.4	7.5	4	11.2	6.4	7.7
CS2	4.6	9.7	4.1	11.1	6.4	8.1
IS1	5.4	7.7	3.7	12.8	6.5	7.4
IS2	5.5	7.6	4.7	12.5	6.5	7.6
IS3	6.2	7.5	4.7	11.8	6.2	7.6
IS4	4.3	11.2	4.3	12.2	6.3	7.5
SR1	3.5	7.9	3.5	13.3	6.3	7.1
SR2	6.1	7.6	4.0	11.8	6.1	7.4
SR3	6.2	7.3	3.7	12	6.1	7.5
SR6	4.6	9.4	4.5	13.7	6.3	7.6
SRA	4.0	7.7	4	11.8	6.1	7.8
ST1	5.6	7.5	5.1	11.6	6.4	7.3
ST2	4.4	9.2	4.4	12.8	6.4	7.7
ST3	4.9	7.6	3.8	11.8	6.4	7.9

Table 8.6f Comparison of Baseline, Impact and Post-construction Water Quality Monitoring Results (Dissolved Oxygen (Bottom), Mid Flood Tide)

Station(s)	Baseline (October to November 2011)		Impact (Feb 2013 to Oct 2018)		Post-construction (Oct to Nov 2018)	
	Dissolved Oxygen (Bottom), mg/L					
	Min	Max	Min	Max	Min	Max
CS1	5.4	7.3	1.5	10.1	6.1	7.0
CS2	4.2	8.2	2.5	9.6	6.2	7.6
IS1	5.4	7.5	1.3	10	6.3	6.9
IS2	5.6	7.8	1.9	10.6	6.3	7.2
IS3	6.0	8.0	4.3	11.1	6.1	7.6
IS4	4.3	9.5	4.3	10.6	6.2	7.3
SR1	3.6	3.6	3.6	3.6	--	--
SR2	--	--	--	--	--	--
SR3	6.2	6.2	6.2	6.2	--	--
SR6	3.9	7.2	3.7	12.6	6.1	7.4
SRA	3.8	7.1	3.8	10.1	5.9	7.8
ST1	5.5	7.5	3.9	10	6.3	7.1
ST2	3.8	7.4	3.8	10.1	6.3	7.4
ST3	4.6	7.6	3.4	9.8	6.3	7.1

Remark: " - " means the water depth of station less than 3m and therefore only the mid-depth was monitored.

Table 8.6g Comparison of Baseline, Impact and Post-construction Water Quality Monitoring Results (Turbidity, Mid Flood Tide)

Station(s)	Baseline (October to November 2011)		Impact (Feb 2013 to Oct 2018)		Post-construction (Oct to Nov 2018)	
	Turbidity, NTU (depth-average)					
	Min	Max	Min	Max	Min	Max
CS1	4.5	52.2	0.7	52.2	5.5	18.8
CS2	6.9	36.9	1.5	60.7	2.9	21.9
IS1	5.8	99.3	1.2	99.3	5.0	25.8
IS2	7.0	39.4	1.2	69.0	4.3	27.3
IS3	7.8	29.4	1.0	31.1	3.8	17.1
IS4	9.1	29.2	1.0	31.6	3.8	14.8
SR1	5.7	37.2	0.3	58.2	4.1	21.8
SR2	8.0	22.9	1.0	27.4	4.6	12.4
SR3	7.7	19.7	0.5	24.8	3.9	12.3
SR6	7.3	45.7	0.9	94.3	1.5	13.5
SRA	7.9	14.4	1.1	26.8	2.2	12.9
ST1	6.4	34.7	1.9	197.8	6.3	26.4
ST2	7.7	33.6	1.3	156.0	4.8	22.6
ST3	4.4	146.3	0.6	146.3	2.9	24.5

Table 8.6h Comparison of Baseline, Impact and Post-construction Water Quality Monitoring Results (Suspended Solids, Mid Flood Tide)

Station(s)	Baseline (October to November 2011)		Impact (Feb 2013 to Oct 2018)		Post-construction (Oct to Nov 2018)	
	Suspended Solids (mg/L), depth-average					
	Min	Max	Min	Max	Min	Max
CS1	7.6	40.5	1.0	58.5	6.4	14.9
CS2	9.4	23.3	1.0	85.8	6.2	14.9
IS1	8.9	25.7	1.6	82.5	5.4	12.7
IS2	9.3	21.3	4.7	12.5	6.3	32.4
IS3	7.8	28.5	1.6	115.4	7.1	18.2
IS4	8.6	20.3	1.1	70.8	6.1	14.1
SR1	8.4	31.5	3.5	13.3	6.7	18.5
SR2	8.5	32.5	1.4	64.8	6.9	14.1
SR3	7.6	28.0	3.7	12	7.9	22.4
SR6	5.5	24.0	0.6	62.2	6.3	22.4
SRA	6.5	15.3	1.4	47.2	7.7	21.1
ST1	7.6	20.0	1.6	187	8.5	25.4
ST2	7.7	23.0	1.2	182.3	6.0	17.0
ST3	8.2	43.3	1.7	62	5.7	13.1

8.5 The environmental impacts caused by the Contract during the Construction phase were generally in line with the predictions in EIA report as no significant environmental impacts arisen from the actual construction activities of the Contract with the implementation of the recommended mitigation measures based on the following:

Air Quality

According to the approved EIA Report, there are no prediction of 1-hr and 24-hr TSP concentrations at AMS1 and AMS4 under mitigated scenario and unmitigated scenario.

Therefore, the impact dust data was compared with the baseline monitoring data only to justify the validity of EIA predictions.

1-hour TSP concentration recorded at AMS1 during the impact monitoring period (February 2013 to October 2018) were generally close to the baseline monitoring data recorded in October 2011.

For 1-hour TSP concentration recorded at AMS4, less than 1% of the data was higher than the maximum 1-hour TSP concentration recorded during the baseline monitoring period (i.e. 264.6μg/m^3).

For 24-hour TSP concentration at AMS1, less than 11% of the data was higher than the maximum 24-hour TSP concentration recorded during the baseline monitoring period (i.e. 87.8μg/m^3).

For 24-hour TSP concentration at AMS4, less than 3% of the data was higher than the maximum 24-hour TSP concentration recorded during the baseline monitoring period (i.e. 124.0μg/m^3).

Therefore, the majority of impact dust monitoring data throughout the construction period were lower than or within the range of baseline 1-hour TSP and 24-hour TSP monitoring data.

In addition, no Action/Limit Level exceedances was recorded for 1-hour and 24-hour TSP monitoring due to the Contract throughout the whole Contract. All exceedances recorded were not due to the Contract works after investigation. The details of each exceedance were attached in the relevant Monthly EM&A Reports.

The situation was in-line with EIA predictions which states that no residual dust impacts are expected with the adoption of appropriate dust mitigation measures, which will be implemented during the construction phase.

Construction Noise

One Action Level exceedance in construction noise was recorded for the complaints received at the early stage throughout the construction period. It was temporary and short-term comparing to the whole construction period. No Limit Level exceedances was recorded due to the Contract throughout the whole Contract. In addition, no Action exceedances and complaint in construction noise was recorded since April, 2013. The situation was in line with EIA predictions which states that residual impacts are not anticipated with good site practices, quiet plant and proper mitigation measures.

Water Quality

The impact water quality monitoring data obtained was in-line with the EIA prediction as no Action/Limit Level exceedance for dissolved oxygen, turbidity and suspended solid was considered due to the Contract.

Dolphin

It is stated in the EIA report that the cumulative impact to Chinese White Dolphin in terms of disturbance, noise, marine traffic is considered to be minimal and the impact is considered to be low, and no residual impact is expected. As no Action/Limit Level exceedance for dolphin-related monitoring was recorded due to the Contract throughout the Construction period, the situation was in-line with EIA predictions.

8.6 In addition, no significant trend of deterioration of the environment was observed from the graphical presentation of all environmental monitoring results for air quality, construction noise and water quality.

8.7 With the environmental monitoring and site inspection to directly ensure the timely implementation of mitigation measures during the Contract, the environmental performance of the Contract was generally acceptable based on the reasons stated in Section 8.5.

9 COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

Validity of EIA Predictions

9.1 It is predicted in the EIA Report that with the implementation of the recommended mitigation measures, there would be no unacceptable or residual air quality, noise, water quality environmental impacts arising from the contract-related construction works.

9.2 There is no major environmental deficiency in terms of dolphin, cultural heritage and landscape and visual was recorded during the site inspections throughout the construction period.

9.3 Throughout the entire construction period, no non-conformance of implementation of environmental mitigation measures was identified in weekly site inspections and no Action/Limit Level exceedances was recorded for air quality, water quality and dolphin monitoring due to the Contract throughout the whole Contract. Only one Action Level exceedance was recorded in construction noise and one successful prosecution was received by the subcontractor on 20 October 2014 in the reporting period. No case of complaint was logged since 5 May 2017. These demonstrate no significant environmental impacts arisen from the actual construction activities of the Contract with the implementation of the recommended mitigation measures which are in-line with the EIA predictions.

Comments on Overall EM&A Programme

9.4 The EM&A programme requires construction phase monitoring for air quality monitoring, construction noise monitoring, water quality monitoring, dolphin-related monitoring, weekly environmental site inspection, bi-weekly monitoring for Landscape and Visual Impact and periodic inspection (every three months) to the Sha Lo Wan (West) Archaeological Site. Timely implementation of mitigation measures was carried out according to the environmental monitoring data obtained during the Contract. The weekly site inspections were effective to ensure the implementation and efficiency of the mitigation measures. In addition, the recommendations made by the auditors of the ET could continuously improve the house keeping of the Contractor and maintain good site cleaning and tidiness. As a result, environmental nuisance to the public could be reduced to a minimal.

9.5 Therefore, the overall performance of the monitoring methodology adopted and environmental management system in this Contract was effective.

Overall EM&A Data

9.6 Impact air quality, construction noise, water quality and dolphin monitoring were conducted at the designated monitoring stations in accordance with the updated EM&A Manual.

1-hour TSP Monitoring

9.7 All 1-hour TSP monitoring was conducted as scheduled in the Contract.

9.8 No Action/Limit Level exceedances was recorded for 1-hour TSP monitoring due to the Contract throughout the whole Contract.

24-hour TSP Monitoring

9.9 All 24-hour TSP monitoring was conducted as scheduled in the Contract.

9.10 No Action/Limit Level exceedances was recorded for 24-hour TSP monitoring due to the Contract throughout the whole Contract.

Construction Noise

9.11 All construction noise monitoring was conducted as scheduled in the Contract.

9.12 1 Action Level exceedance in construction noise was recorded for the complaints received throughout the construction period due to loading/unloading of metal plates and oxygen-acetylene set. The Contractor was required to implement noise mitigation measures to rectify the problem and was recommended to strengthen their site supervision and provide training for the workers regularly to increase awareness of their environmental responsibilities to minimize the noise impact to the nearby residents.

9.13 No Limit Level exceedance in construction noise was recorded due to the Contract throughout the whole Contract.

Water Quality

9.14 All water quality monitoring was conducted as scheduled in the Contract.

9.15 No Action/Limit Level exceedance for dissolved oxygen, turbidity and suspended solid was recorded due to the Contract throughout the whole Contract.

Dolphin

9.16 All dolphin-related monitoring was conducted as scheduled in the Contract.

9.17 No Action/Limit Level exceedance for dolphin monitoring was recorded due to the Contract throughout the whole Contract.

Recommendations and Conclusions

9.18 The construction phase EM&A programme for the Contract commenced in February 2013 and was terminated since 24th October 2018 as per EPD's letter to SOR (EPD's ref.: "( ) in AX(2) to EP771/E1/099" dated 30 November 2018), following substantial completion of the major works.

9.19 The EM&A programme was found to be effective in monitoring impacts arising from the Contract. The findings of the environmental monitoring program suggest that no adverse impacts on sensitive receivers were brought about by the Contract. In conclusion the Contract was environmentally acceptable in terms of air quality, noise

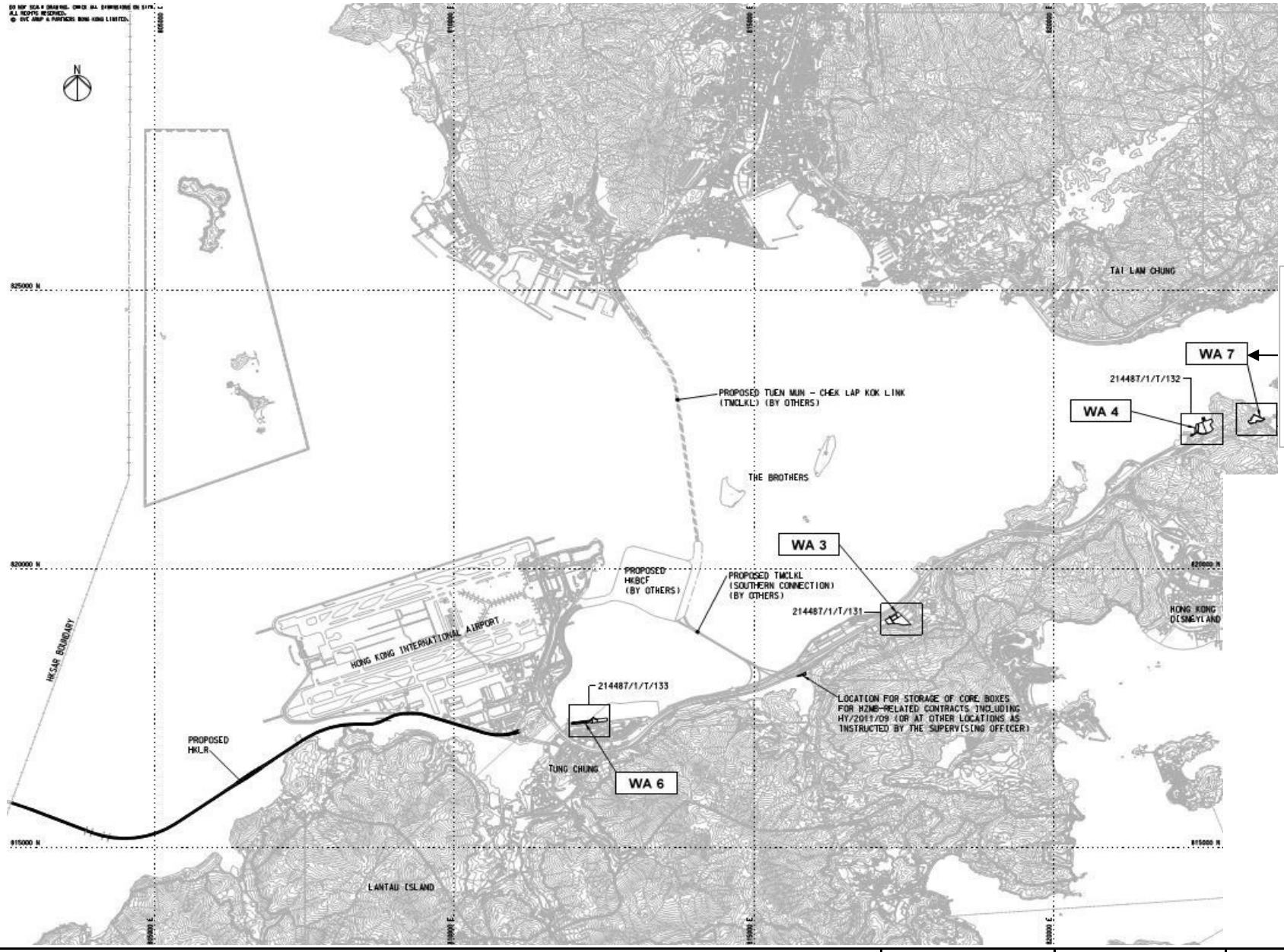
levels, water quality, dolphin, cultural heritage and landscape and visual.

9.20 With the success of the overall EM&A programme, the deterioration of the environment caused by the Contract was cost-effectively identified and necessary prompt effective mitigation measures were implemented to avoid any unacceptable impacts.

9.21 Post-construction monitoring for water quality was carried out after the termination of Construction Phase EM&A Programme as per EPD's letter to SOR (EPD's ref.: "( ) in AX(2) to EP771/E1/099" dated 30 November 2018) according to updated EM&A Manual. Details of the Post-construction water quality monitoring is provided in the report as shown in **Appendix H**.

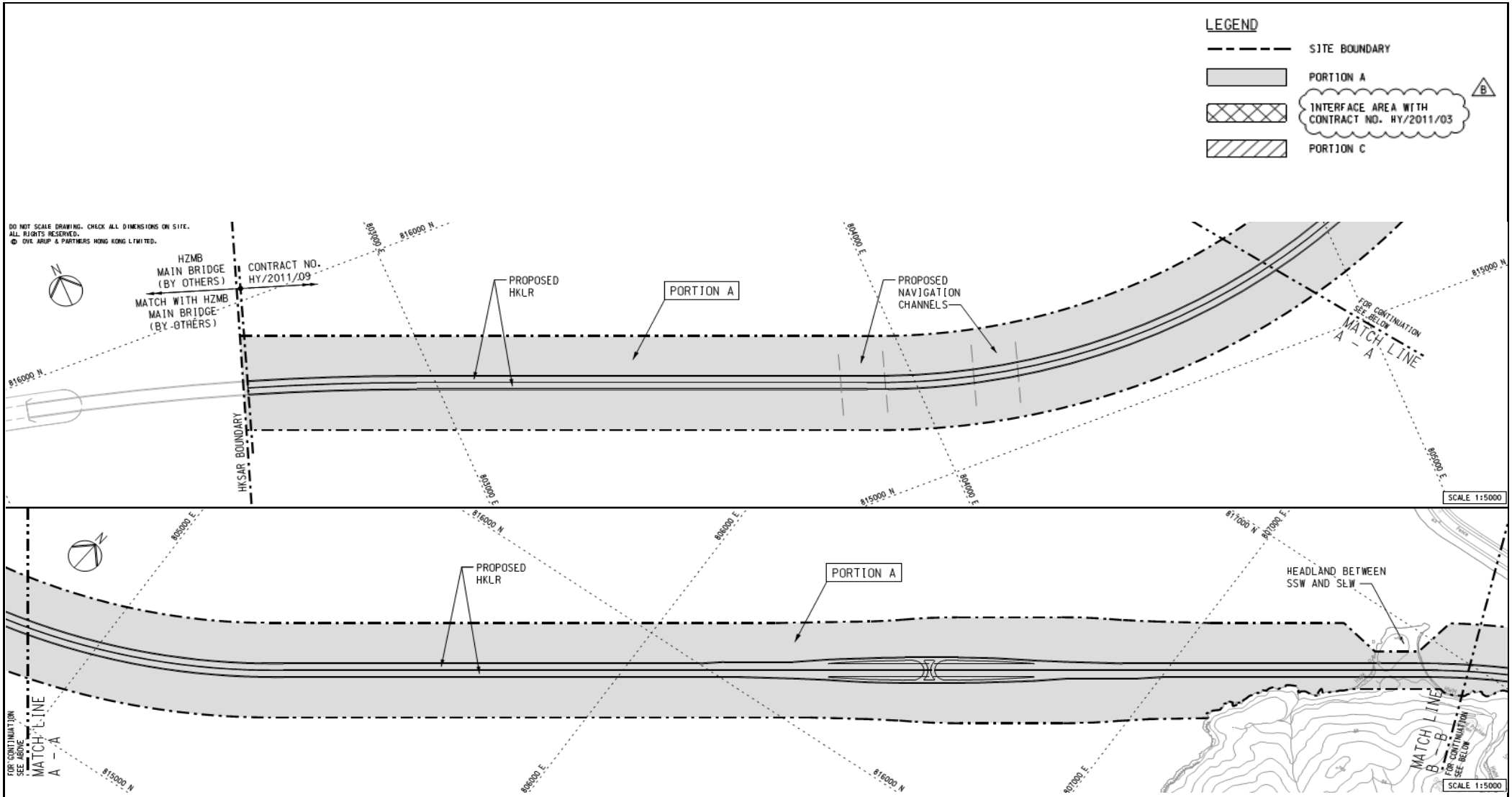
9.22 In addition, post-construction dolphin monitoring has also been started after completion of construction according to updated EM&A Manual, Section 10.7.1, and the corresponding reports will be submitted separately.

FIGURES



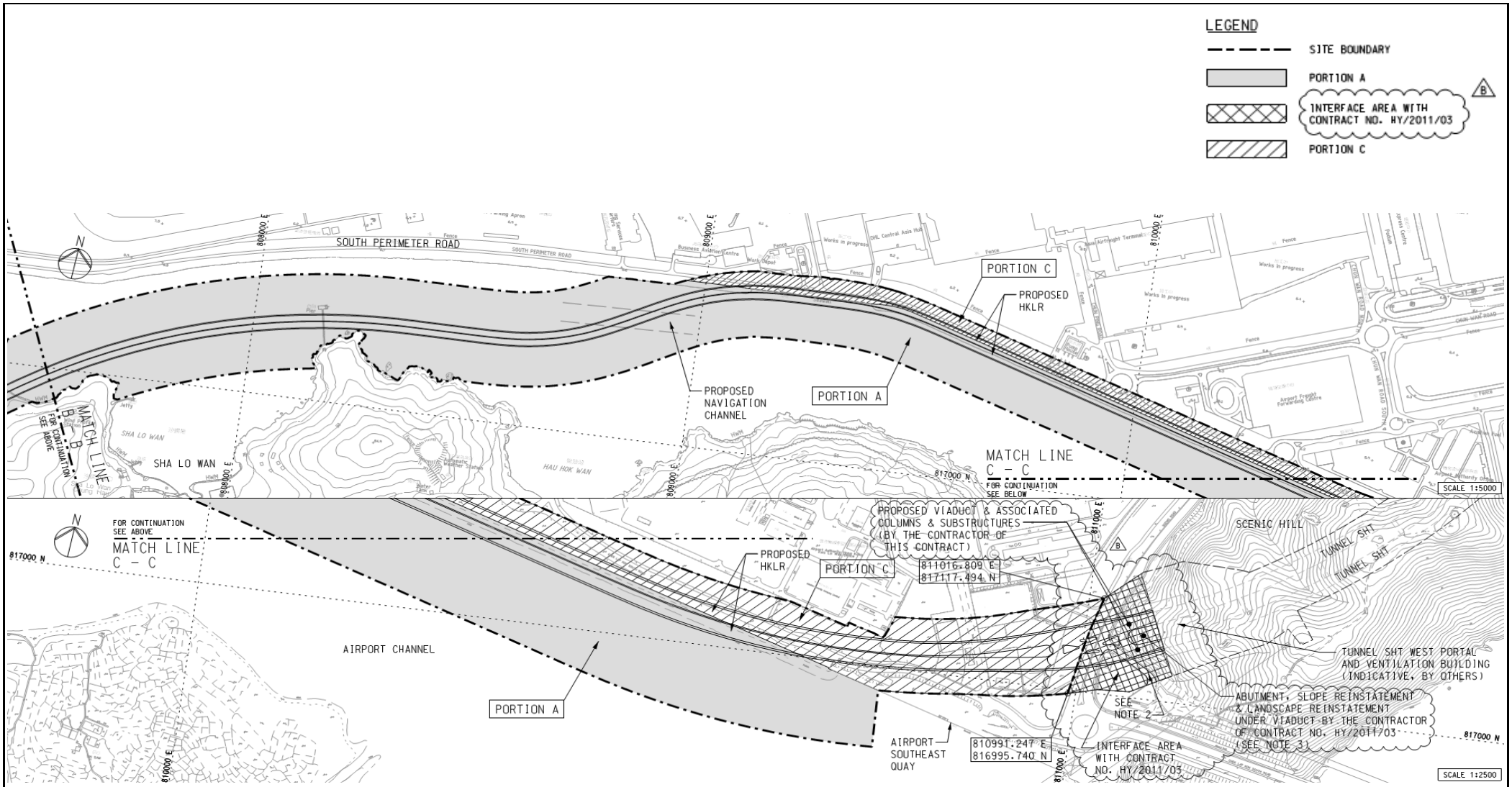
Handed over on 30 June 2016. Reinstatement works were conducted after the site was handed over and completed in March 2018.

Title	Scale	Proposa	
Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Site Layout Plan (WA3, WA4, WA6 and WA7)	N.T.S	No. MA12014	CINOTECH
	Date Aug-18	Figure 1a	



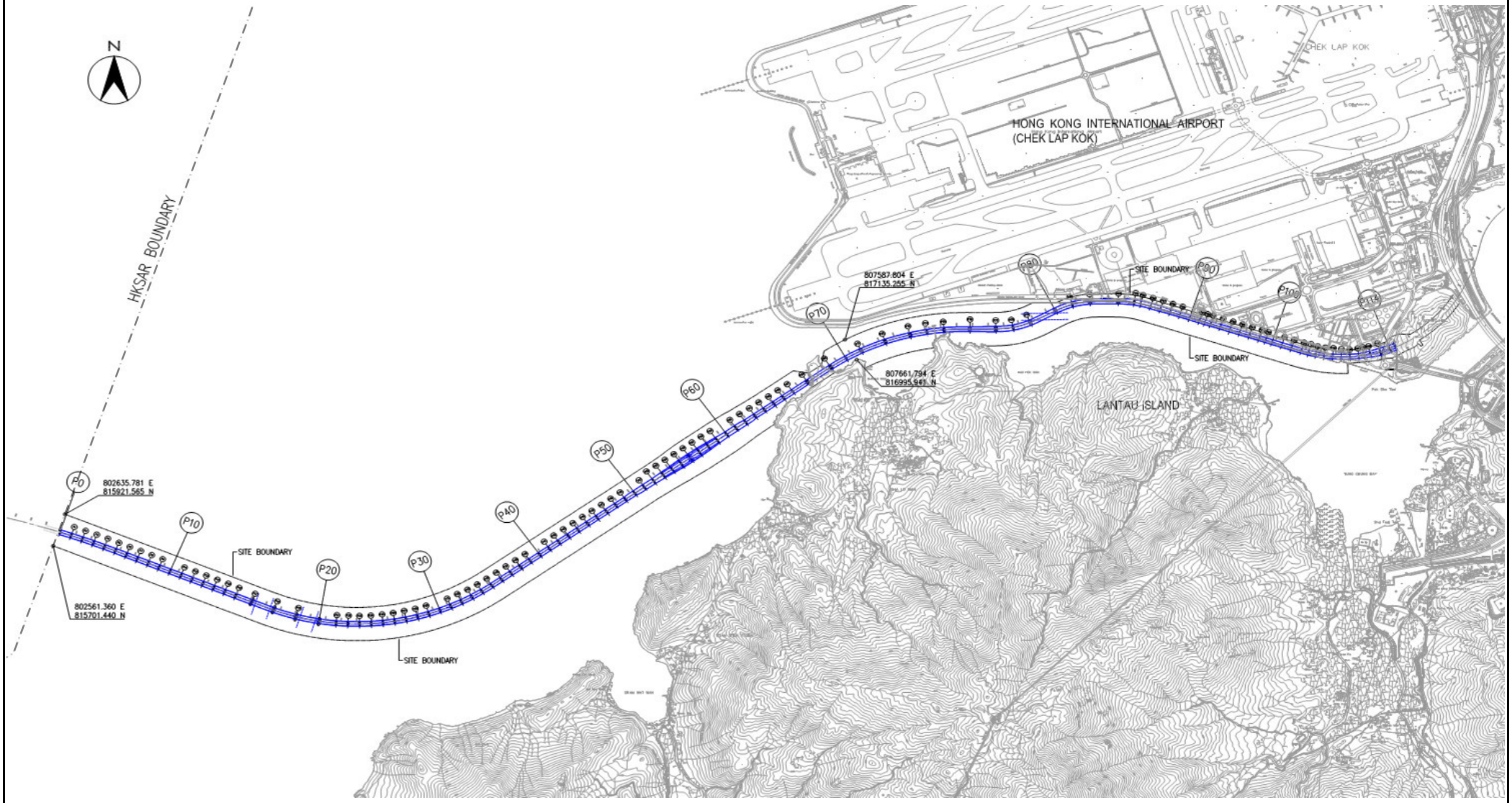
Title	Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Site Layout Plan (Portion A)	Scale: N.T.S Date: Oct-15	Proposa No.: MA12014 Figure: 1b

CINOTECH



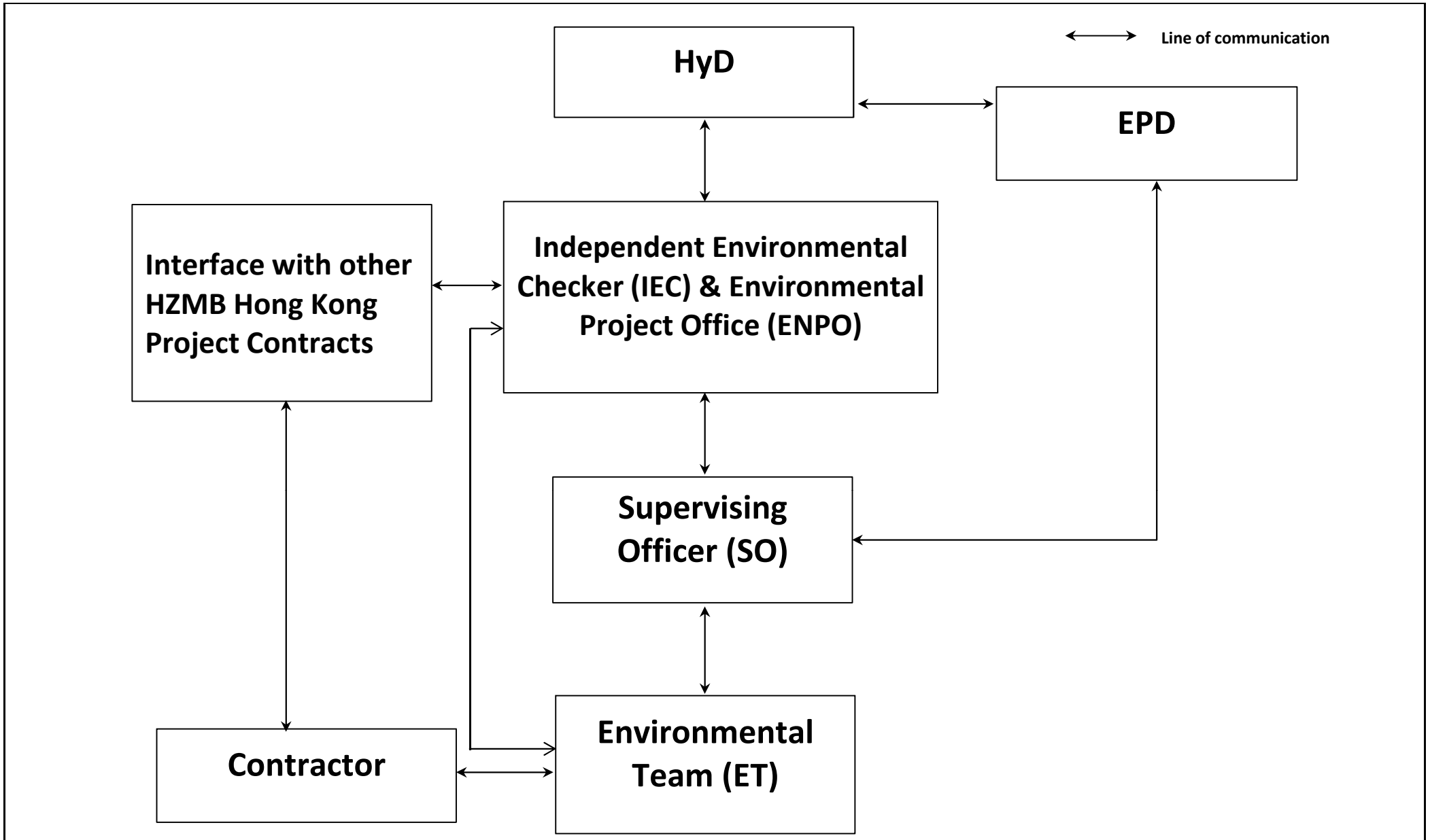
Title	Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Site Layout Plan (Portion A and C)	Scale N.T.S	Proposa No. MA12014
		Date 五月-13	Figure 1c

CINOTECH

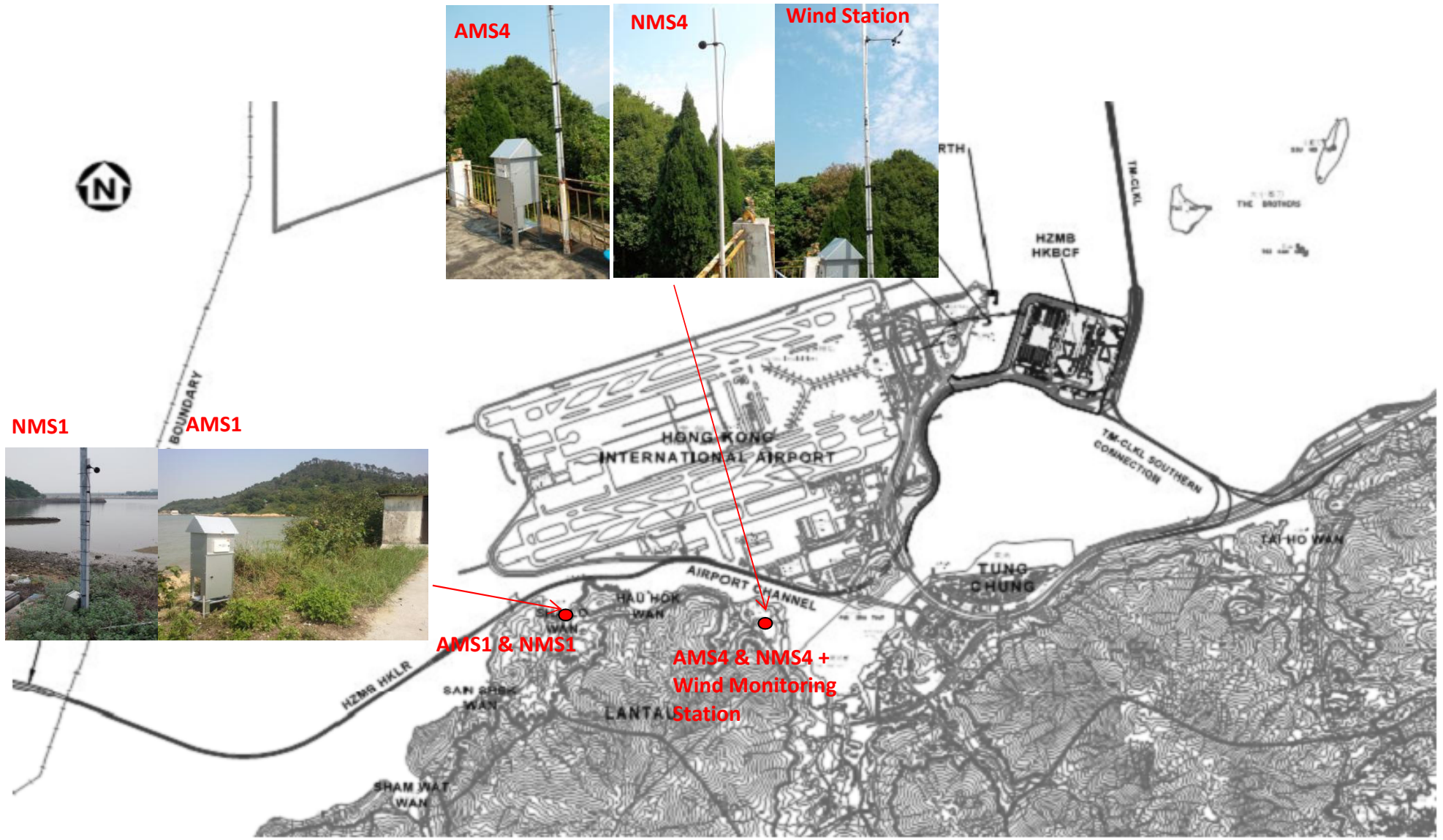


Title	Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Site Layout Plan (Pier(s) Site)	Scale: N.T.S Date: Feb-13	Proposa No. MA12014 Figure: 1d

CINOTECH

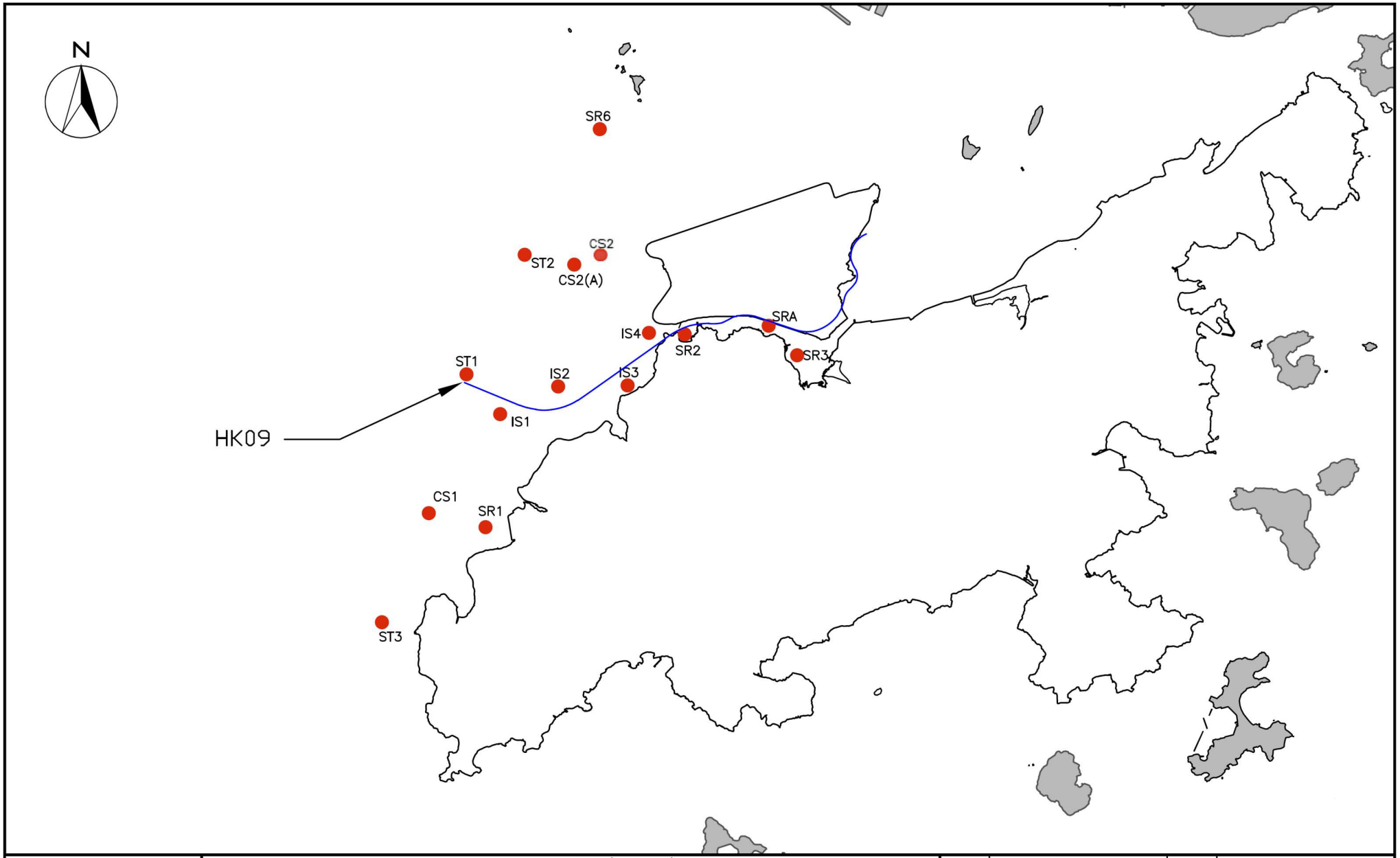


Title	Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Project Organisation for Environmental Works	Scale N.T.S Date Feb-13	Proposa No. MA12014 Figure 2	CINOTECH



Title	Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Locations of Air Quality and Noise Monitoring Stations	Scale: N.T.S Date: Feb-13	Proposa No. MA12014 Figure: 3

CINOTECH



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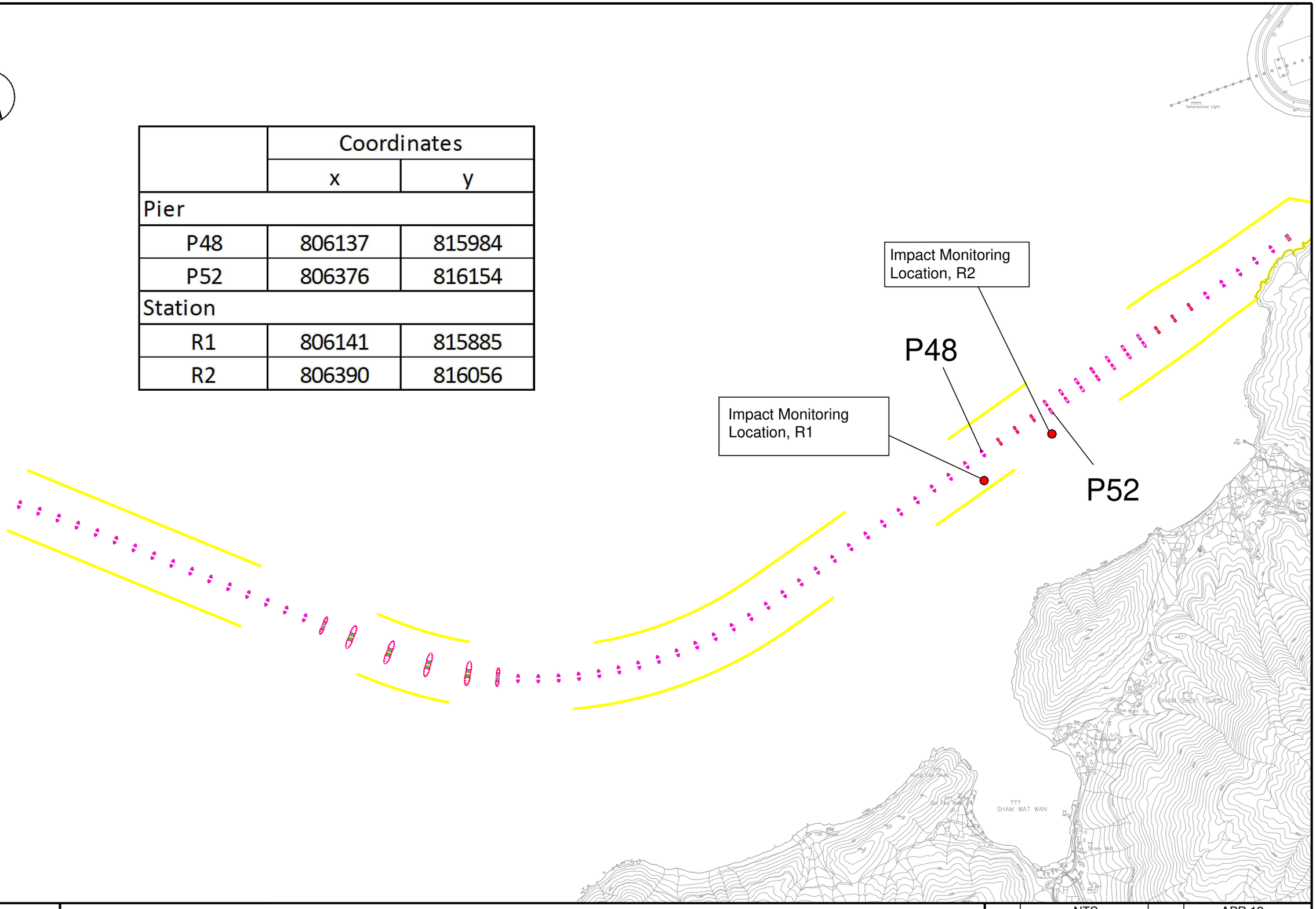
Contract No. HY/2011/09
Hong Kong–Zhuhai–Macao Bridge Hong Kong Link Road – Section Between HKSAR Boundary and Scenic Hill

Locations of Marine Water Quality Monitoring Stations

SCALE	N.T.S	DATE	JUNE 2019
CHECK	IT	DRAWN	NL
PROJECT NO.	MA12014	FIGURE NO. 4	REV –

N

	Coordinates	
	x	y
Pier		
P48	806137	815984
P52	806376	816154
Station		
R1	806141	815885
R2	806390	816056

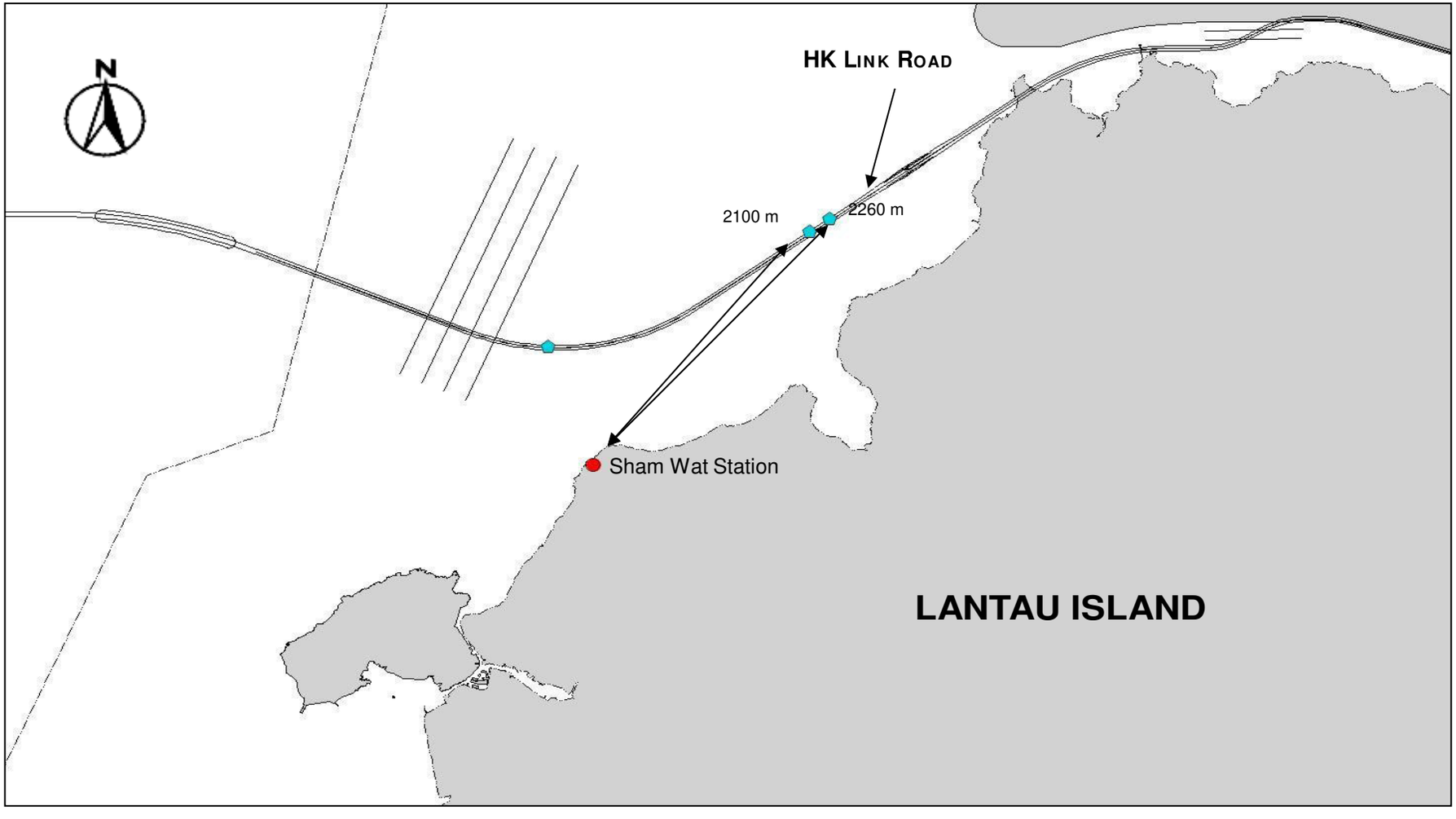


CINOTECH
Cinotech Consultants Limited

Contract No. HY/2011/09 Hong Kong Link Road - Section between HKSAR Boundary & Scenic Hill

Location of Underwater Noise Monitoring Stations

SCALE	NTS	DATE	APR 13
CHECK	KL	DRAWN	BC
JOB No.	MA12014	DRAWING No. 5	REV -



Title	Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Location of Land-based Dolphin Behaviour and Movement Monitoring Station	Scale: N.T.S Date: Apr-13	Project No.: MA12014 Figure: 6

CINOTECH

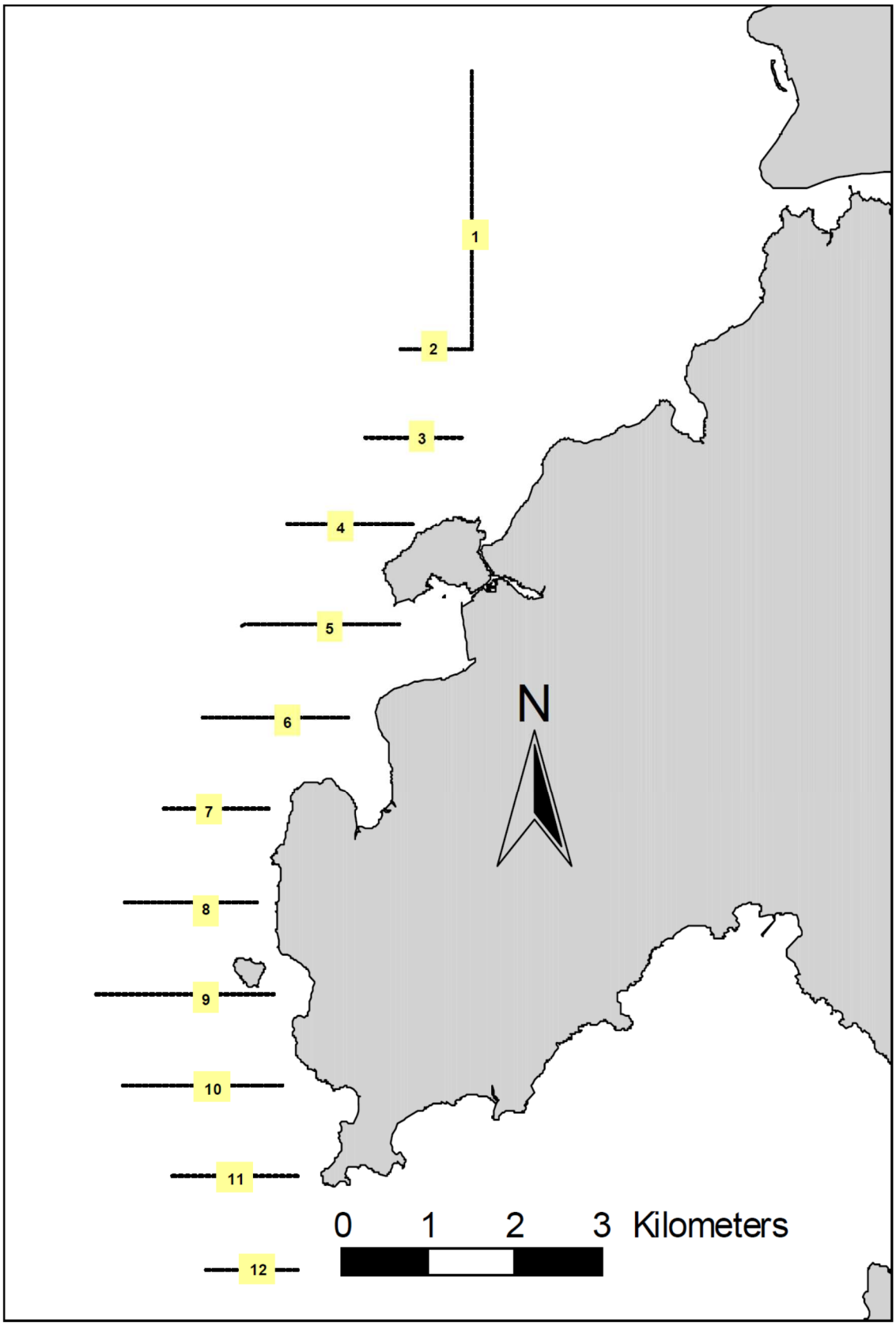


Figure 7 – Transect Line Layout in West Lantau Survey Areas

APPENDIX A
ACTION AND LIMIT LEVELS

Appendix A - Action and Limit Levels

Table A-1 Action and Limit Levels for 1-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
AMS1	381	500
AMS4	352	

Table A-2 Action and Limit Levels for 24-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
AMS1	170	260
AMS4	171	

Table A-3 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A) *

Noted: If works are to be carried during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.
(*) reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

Table A-4 Action and Limit Levels for Underwater Construction Noise

Action Level	Limit Level
170 dB re 1µPa	180 dB re 1µPa

Table A-5 Action and Limit Levels for Water Quality

Parameter (unit)	Water Depth	Action Level	Limit Level
Dissolved Oxygen (mg/L) (surface, middle, bottom)	Surface and Middle	***5.0***	***4.2*** except 5 for FCZ
	Bottom	***4.7***	***3.6***
Turbidity (NTU)	Depth average	***27.5*** and 120% of upstream control station's turbidity at the same tide of the same day	***47.0*** and 130% of turbidity at the upstream control station at the same tide of same day
Suspended Solids (mg/L)	Depth average	***23.5*** and 120% of upstream control station's SS at the same tide of the same day	***34.4*** and 130% of SS at the upstream control station at the same tide of same day and 10mg/L for WSD Seawater Intakes

Note:
(1) Depth-averaged is calculated by taking the arithmetic means of reading of all three depths
(2) For DO, non-compliance of the water quality limit occurs when monitoring result is lower that the limit.
(3) For SS & turbidity non-compliance of the water quality limits occur when monitoring result is higher than the limits.
(4) All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.
(5) The 1%-ile of baseline data for dissolved oxygen (surface and middle) and dissolved oxygen (bottom) are 4.2mg/L and 3.6mg/L respectively.

Table A-6 Action and Limit Levels for Dolphin Line Transect Monitoring

	West Lantau
Action Level	STG < 60% of baseline & ANI <60% of baseline
Limit Level	STG < 45% of baseline & ANI <45% of baseline

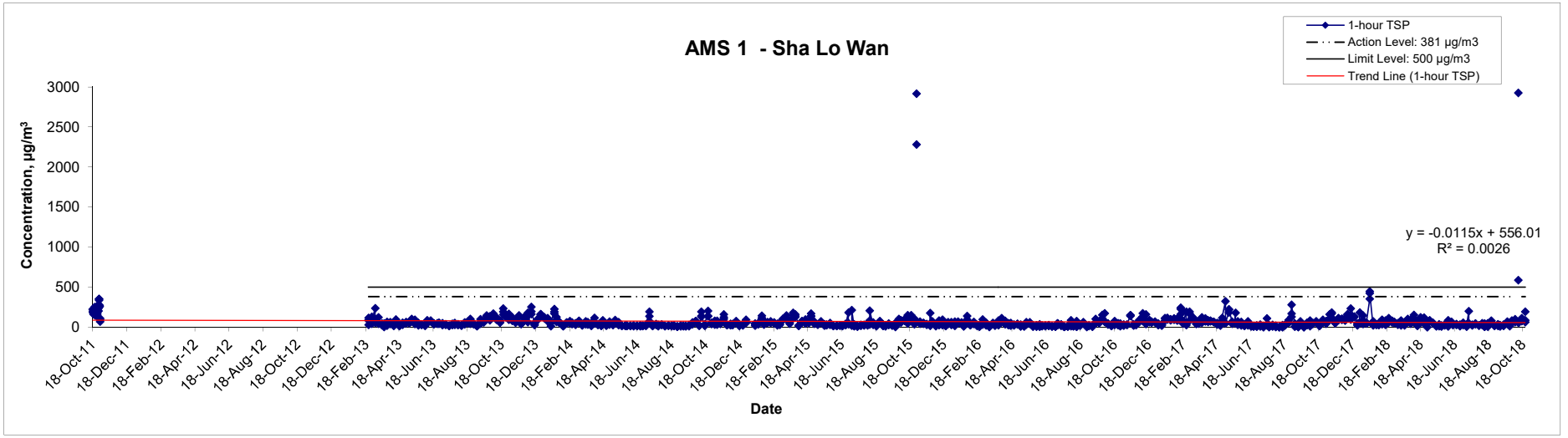
Derived Value of Action Level (AL) and Limit Level (LL):

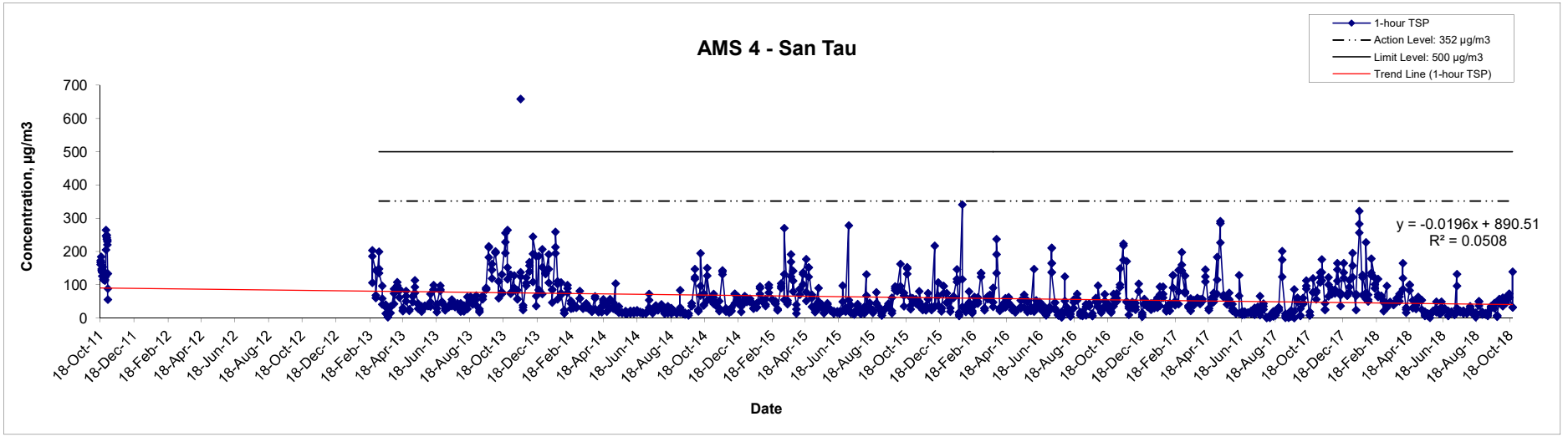
	West Lantau
Action Level	STG < 9.8 & ANI <36.3
Limit Level	STG < 7.4 & ANI <27.2

Remarks:
1. STG means quarterly encounter rate of number of dolphin sightings
2. ANI means quarterly encounter rate of total number of dolphins
3. Baseline value: 16.4 for ER (STG) and 60.5 for ER (ANI)

APPENDIX B
GRAPHICAL PRESENTATION OF AIR QUALITY, CONSTRUCTION NOISE, UNDERWATER CONSTRUCTION NOISE AND WATER QUALITY OVER THE CONTRACT PERIOD

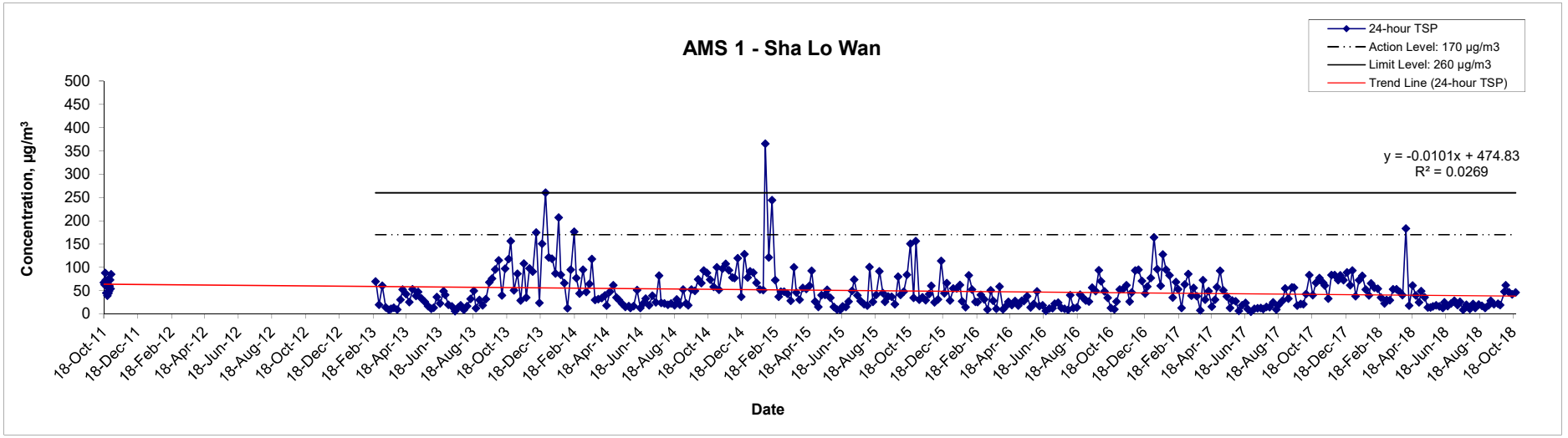
1-hour TSP Concentration Levels

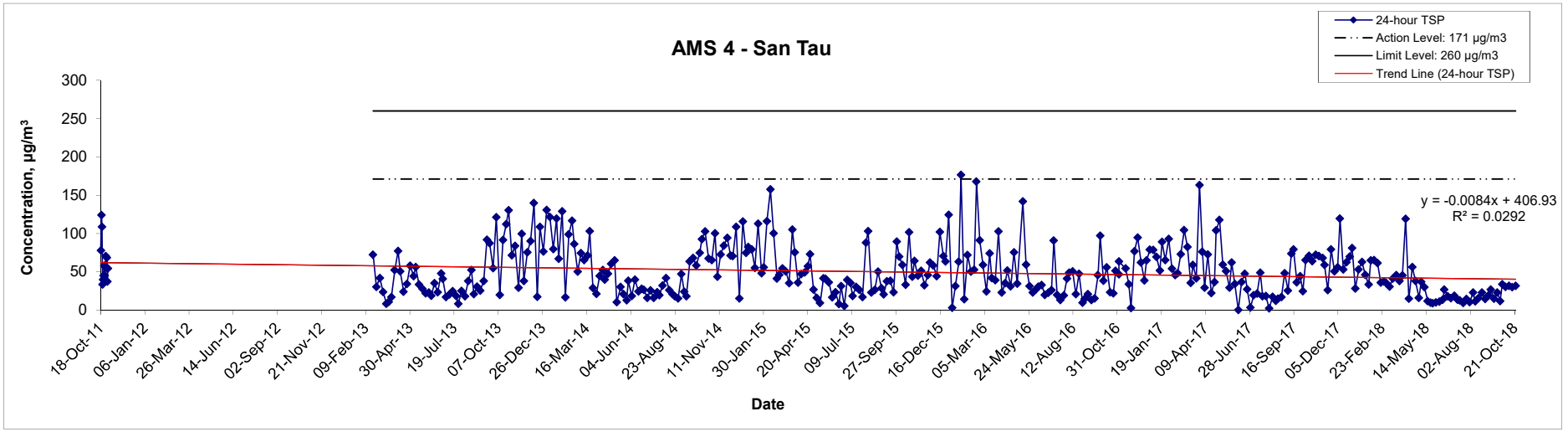




Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of 1-hour TSP Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
		Date Jan 19	Appendix B	

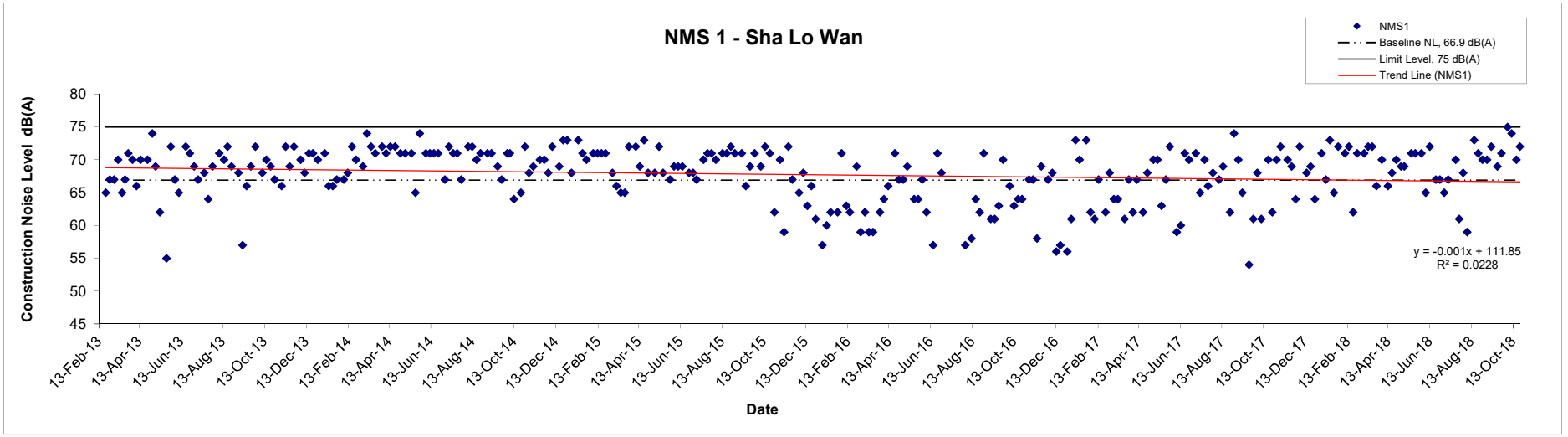
24-hour TSP Concentration Levels

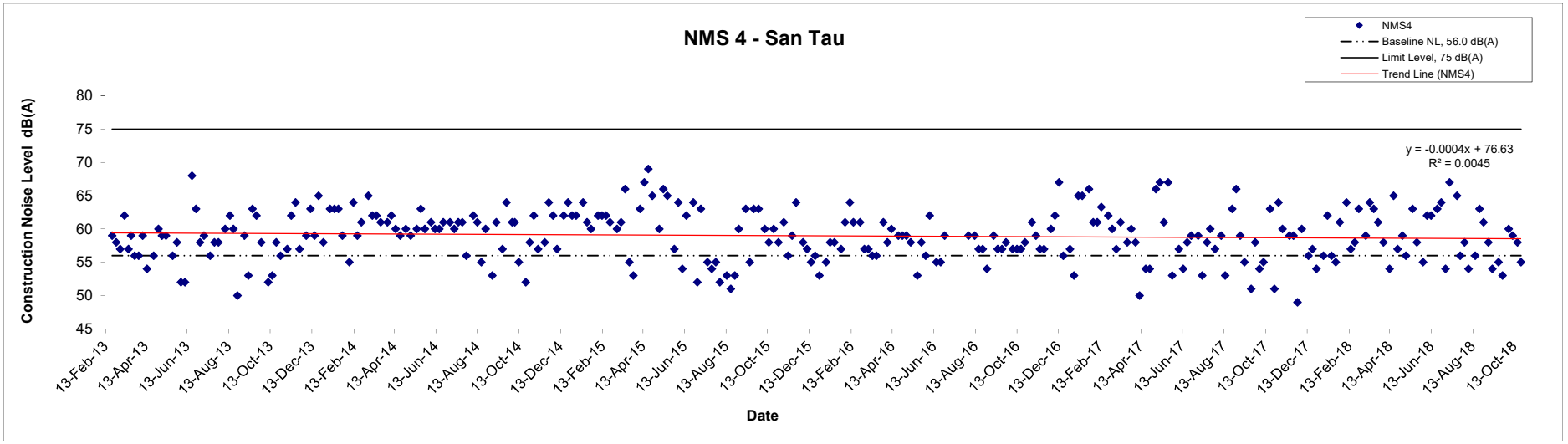




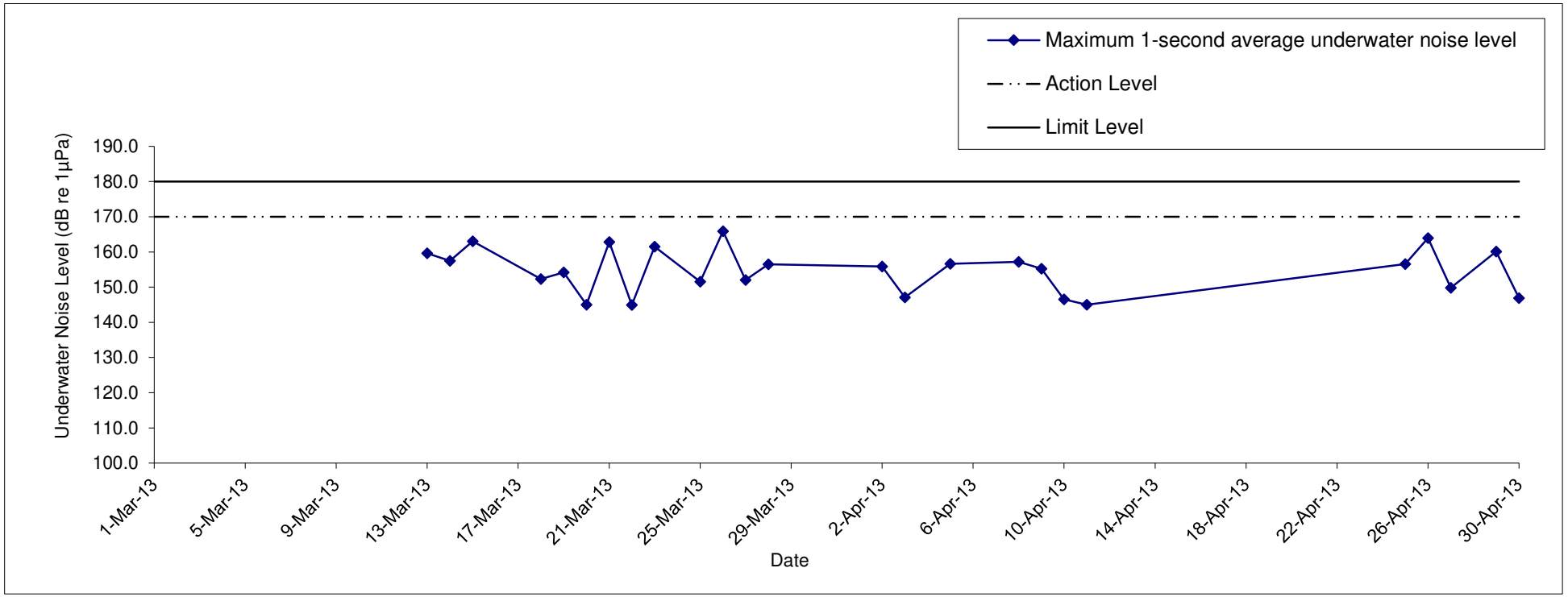
Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
		Date Jan 19	Appendix B	

Noise Levels





Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
		Date Jan 19	Appendix B	



Fequency: 70 Hz - 125 kHz

Title	Scale	Project No.
Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Construction Underwater Noise Monitoring Results	N.T.S	MA12014
	Date: Apr13	Appendix: B

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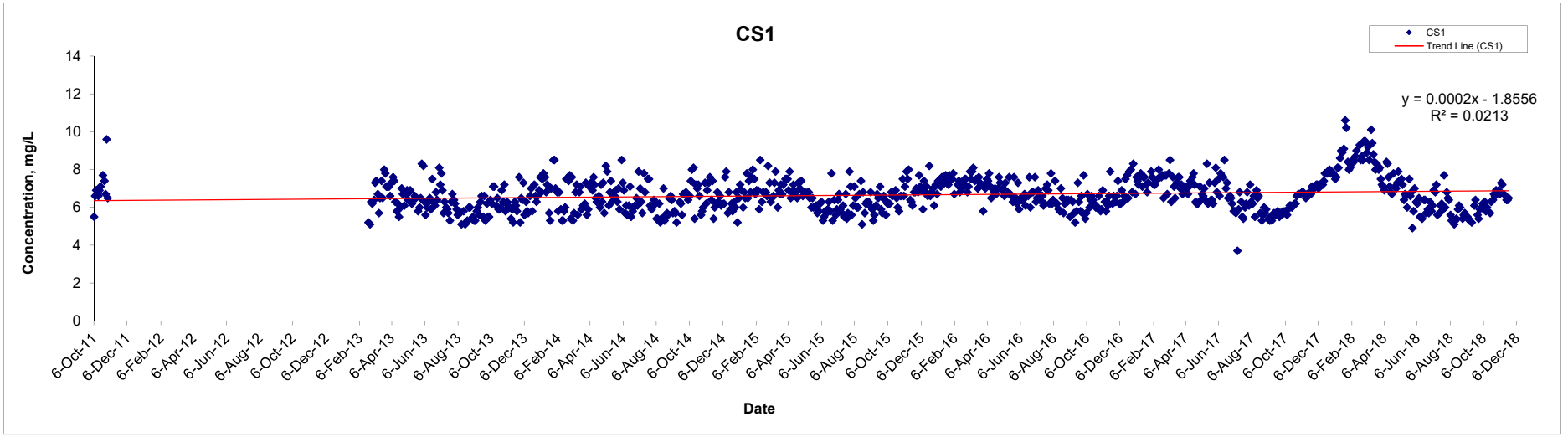
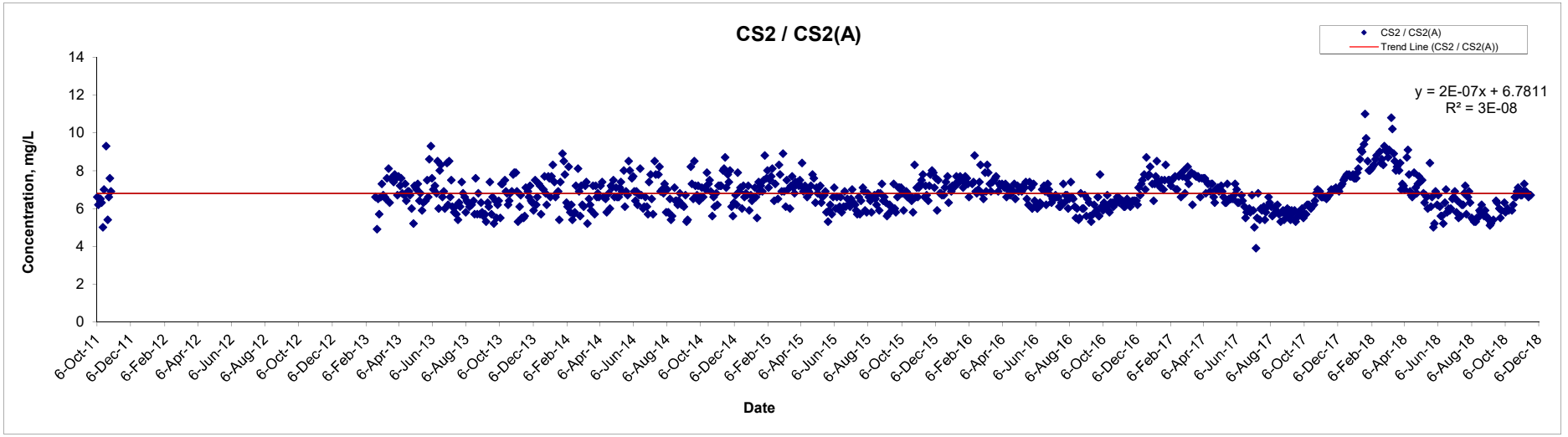
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



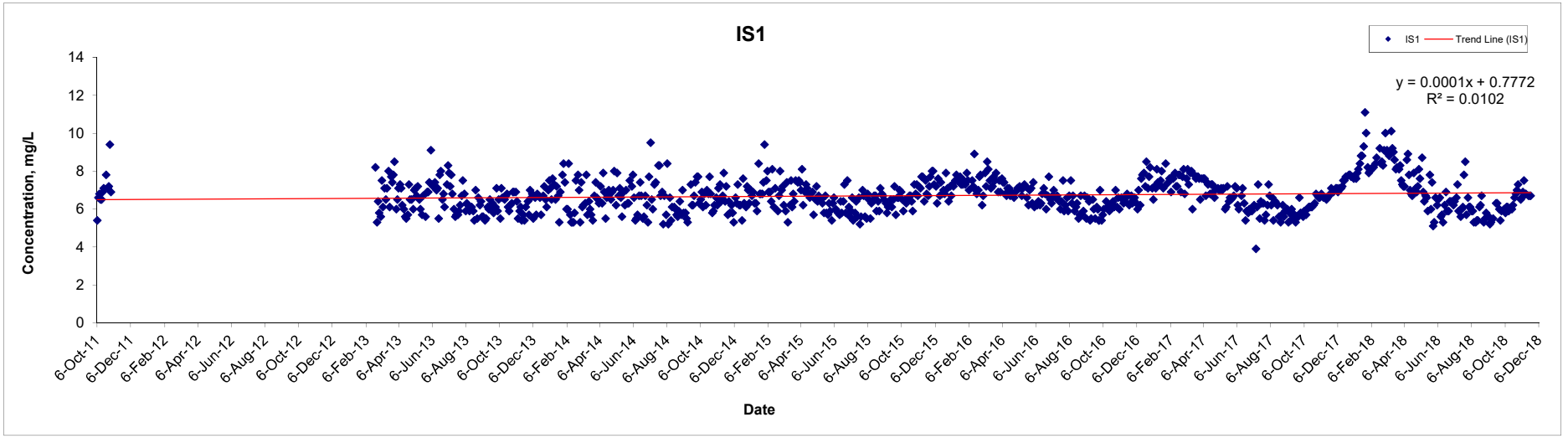


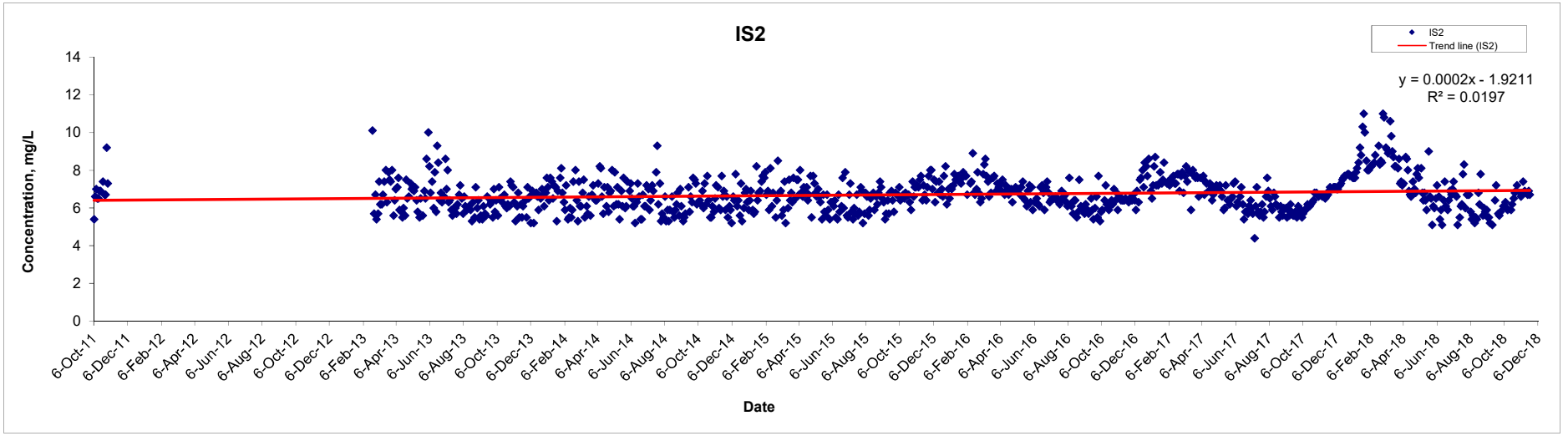
Remark:CS2(A) is the alternative station for CS2 starting from 31st July 2017, after the approval of the Proposal for Change of Marine Water Quality Monitoring Station by EPD on 28th July 2017.

Title		Scale	Project No.
	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill	N.T.S	MA12014
	Graphical Presentation of Water Quality Monitoring Results	Date: Jan 19	Appendix: B

CINOTECH

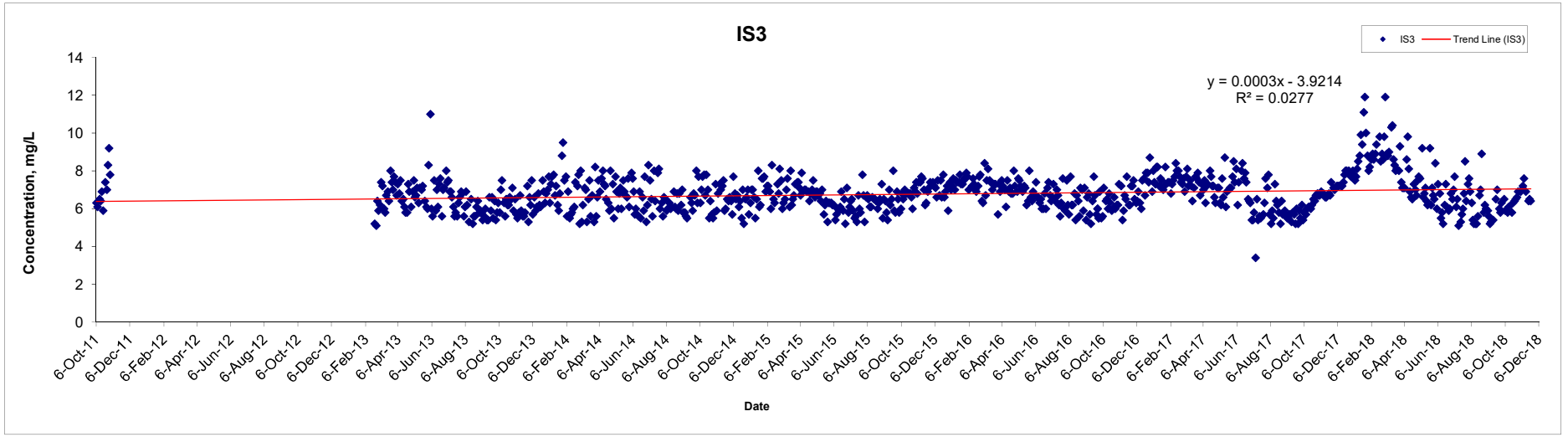
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide

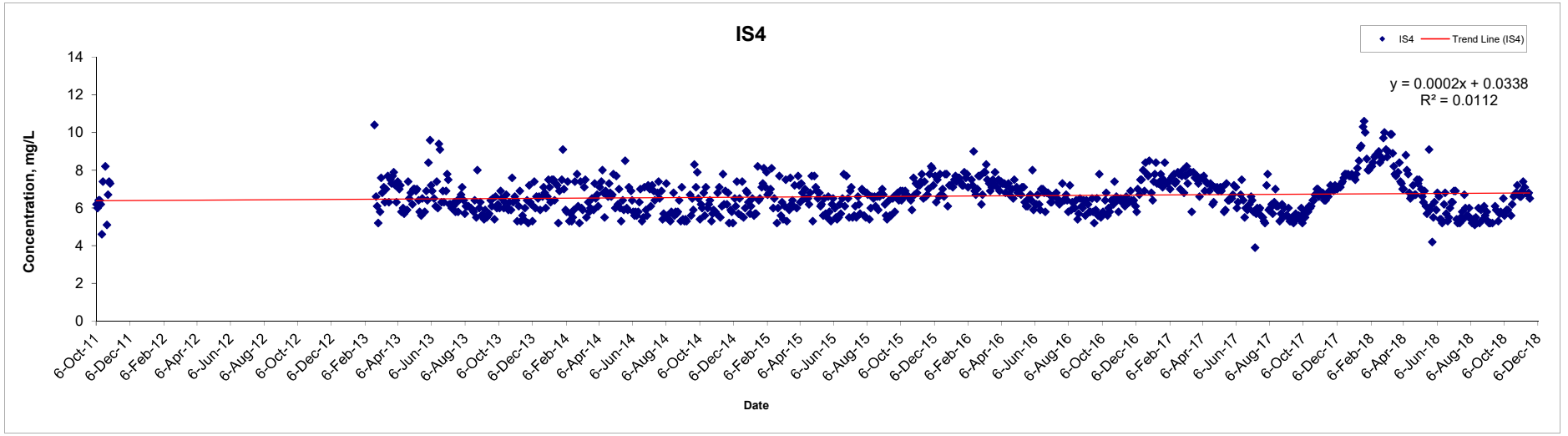




Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S Date Jan 19	Project No. MA12014 Appendix B	CINOTECH

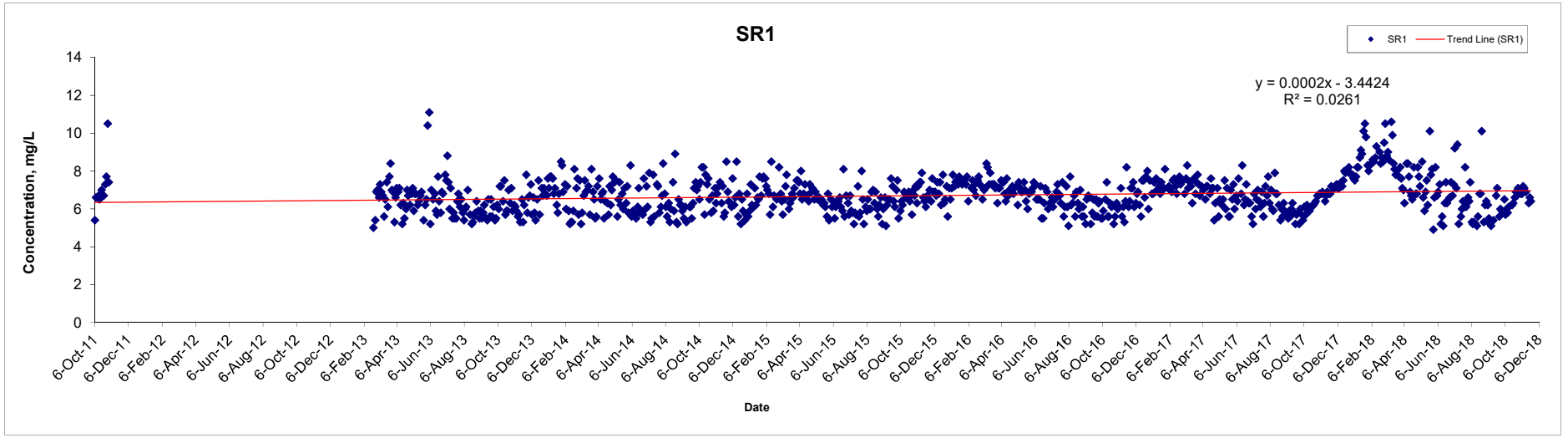
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide

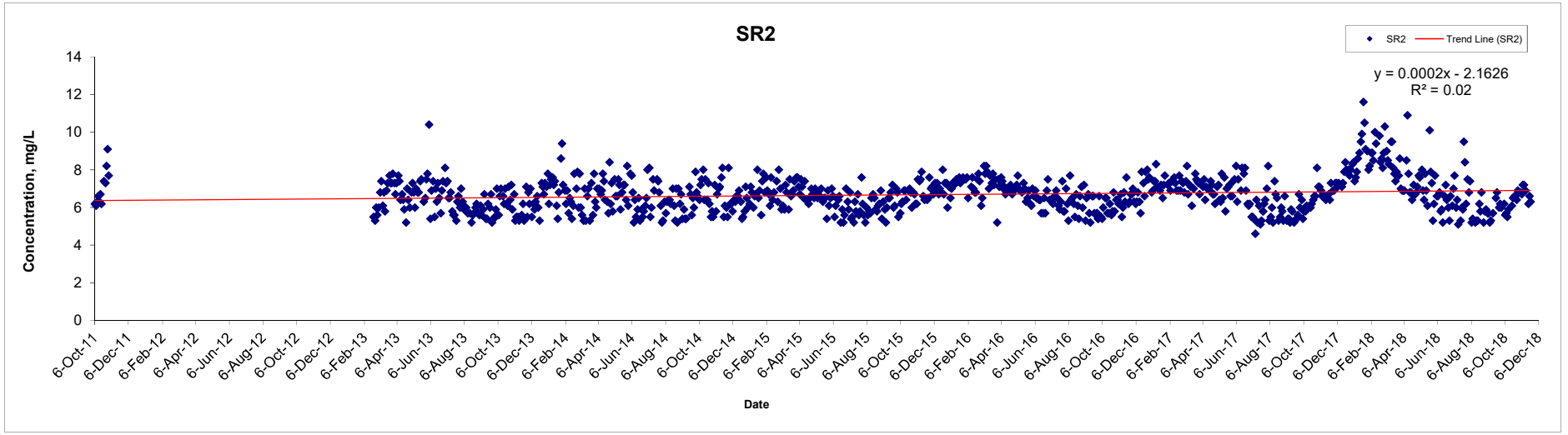




Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S Date Jan 19	Project No. MA12014 Appendix B	CINOTECH

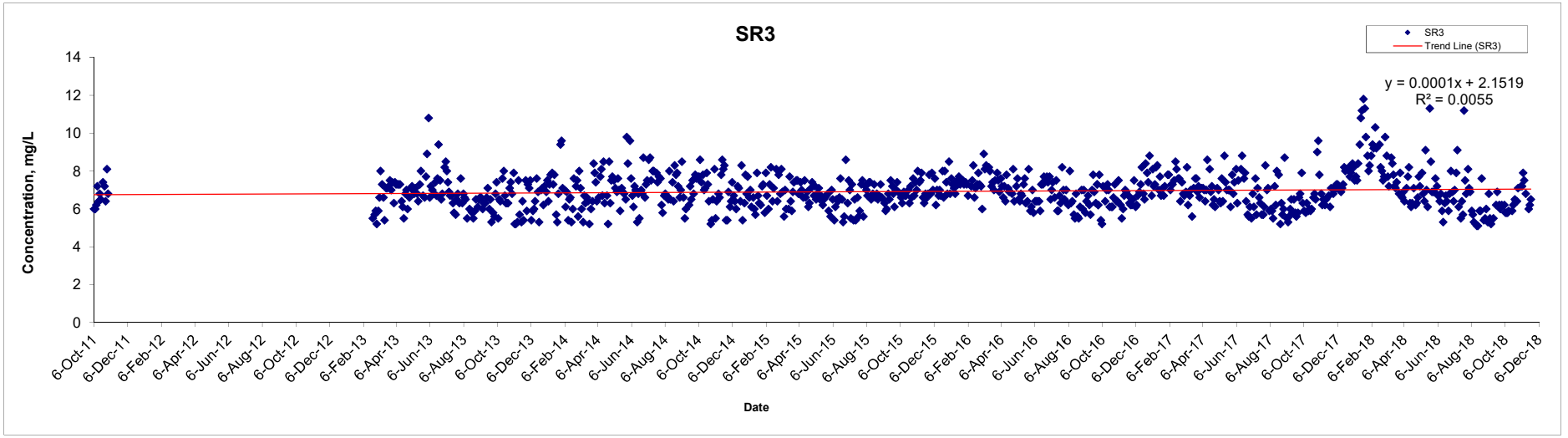
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide

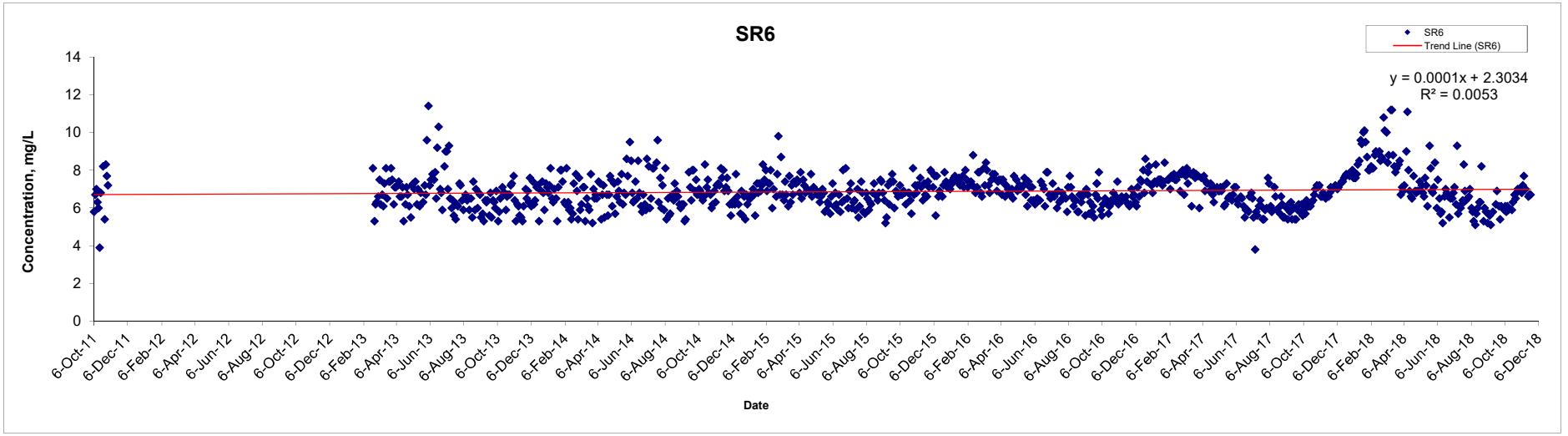




Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
		Date Jan 19	Appendix B	

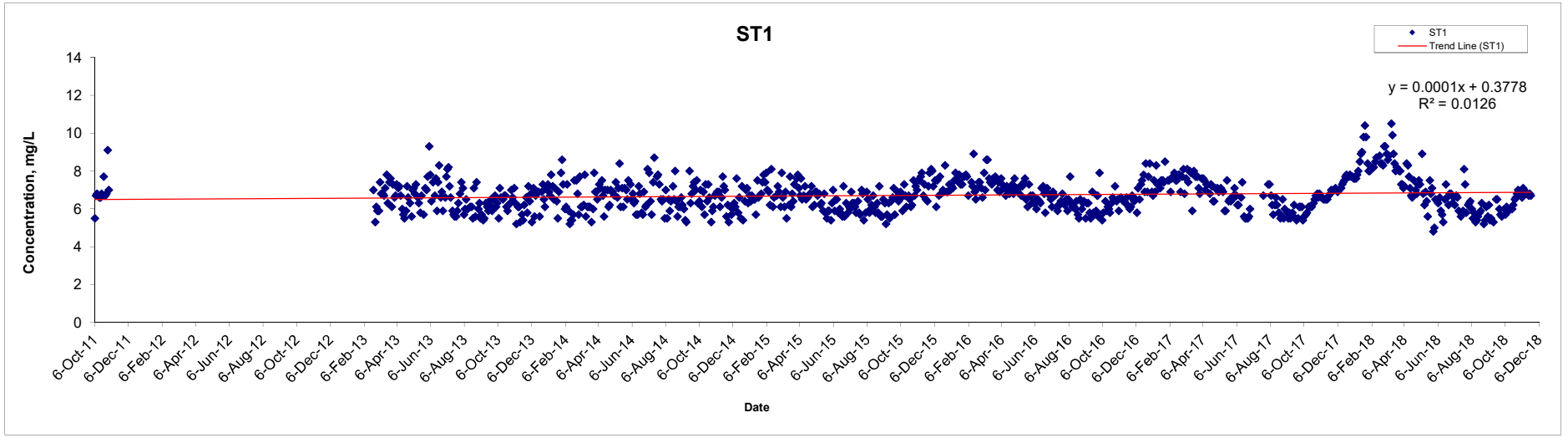
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide

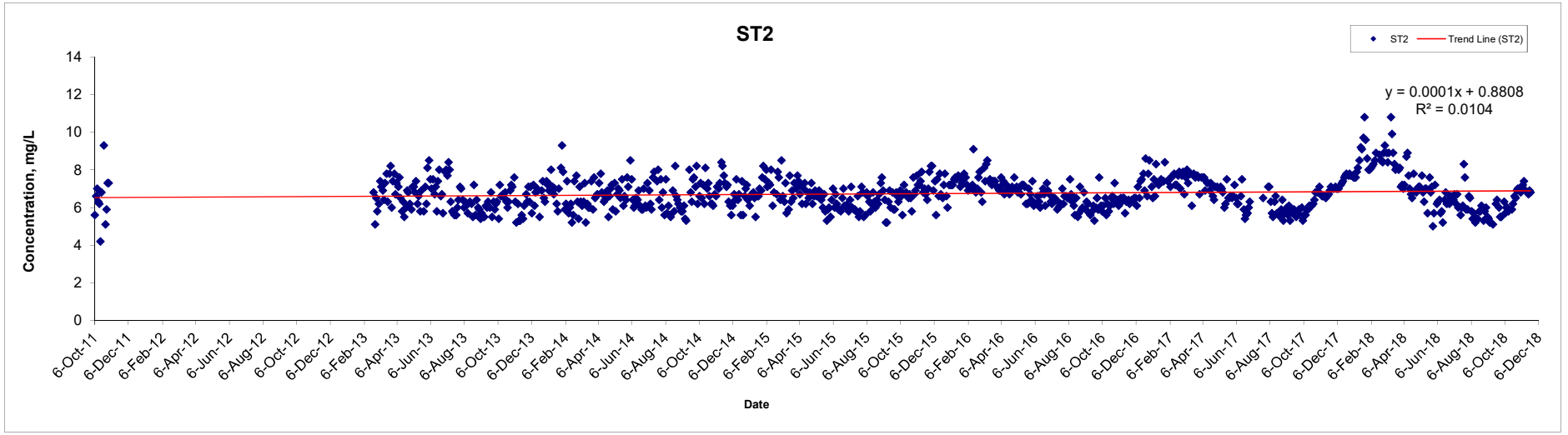




Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S Date Jan 19	Project No. MA12014 Appendix B	CINOTECH

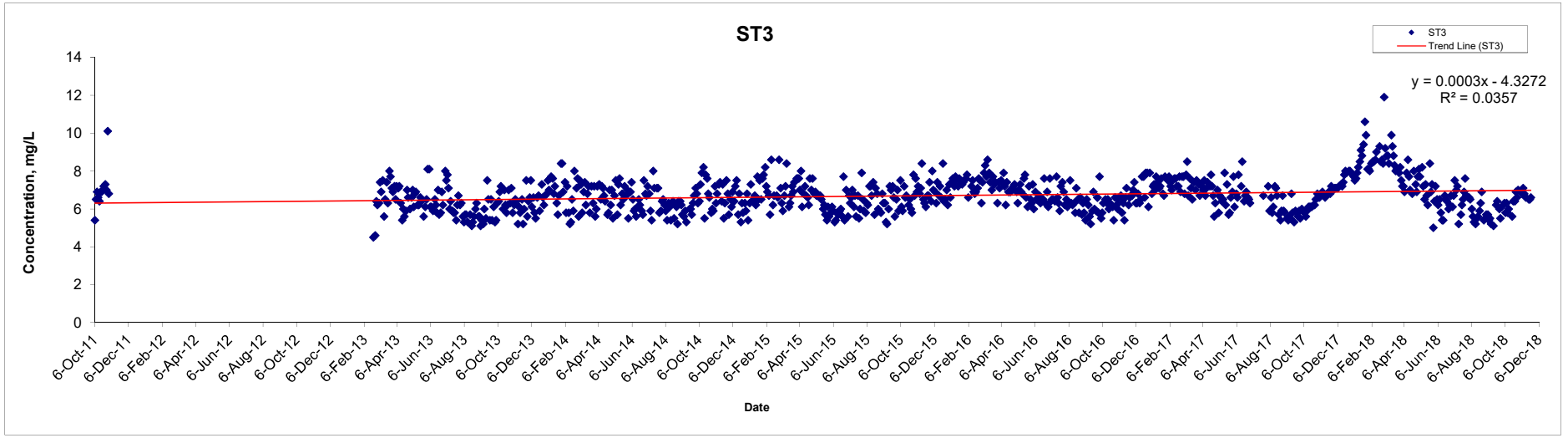
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide

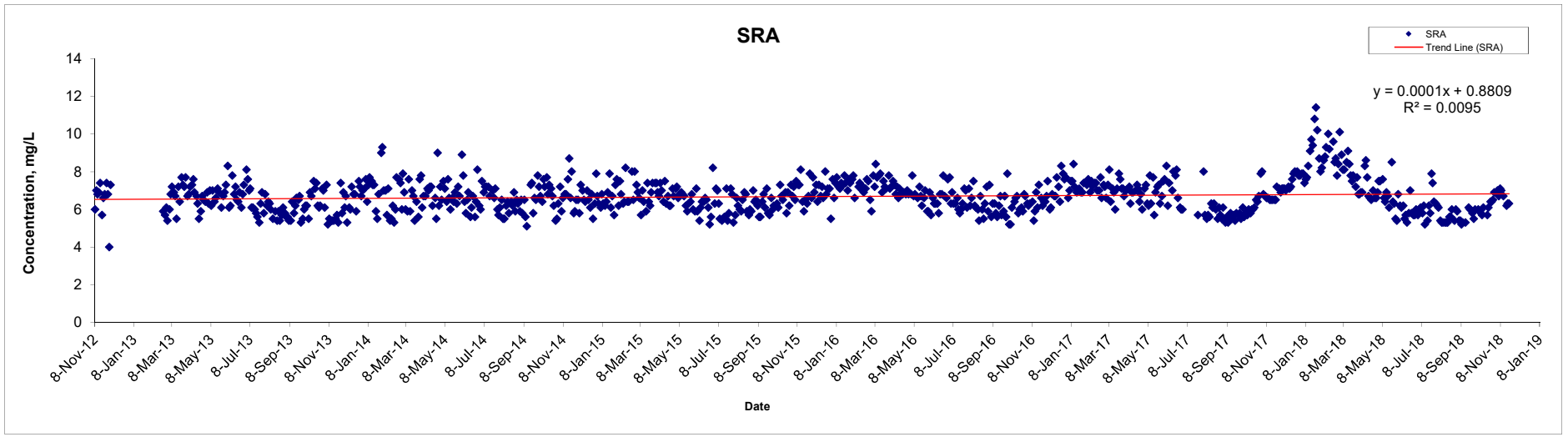




Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S Date Jan 19	Project No. MA12014 Appendix B	CINOTECH

Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide





Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
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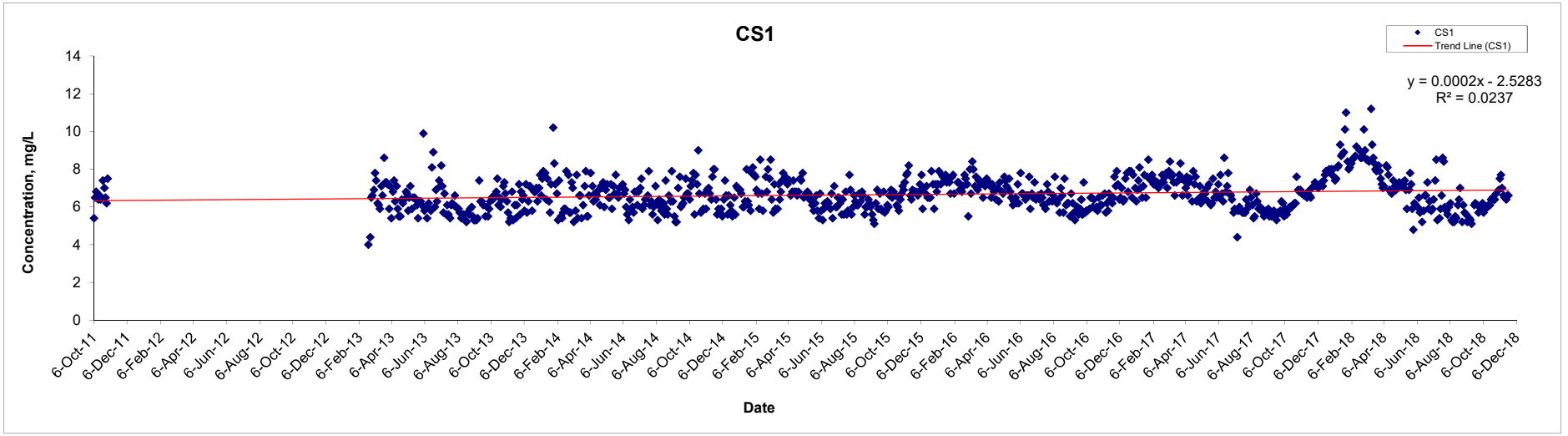
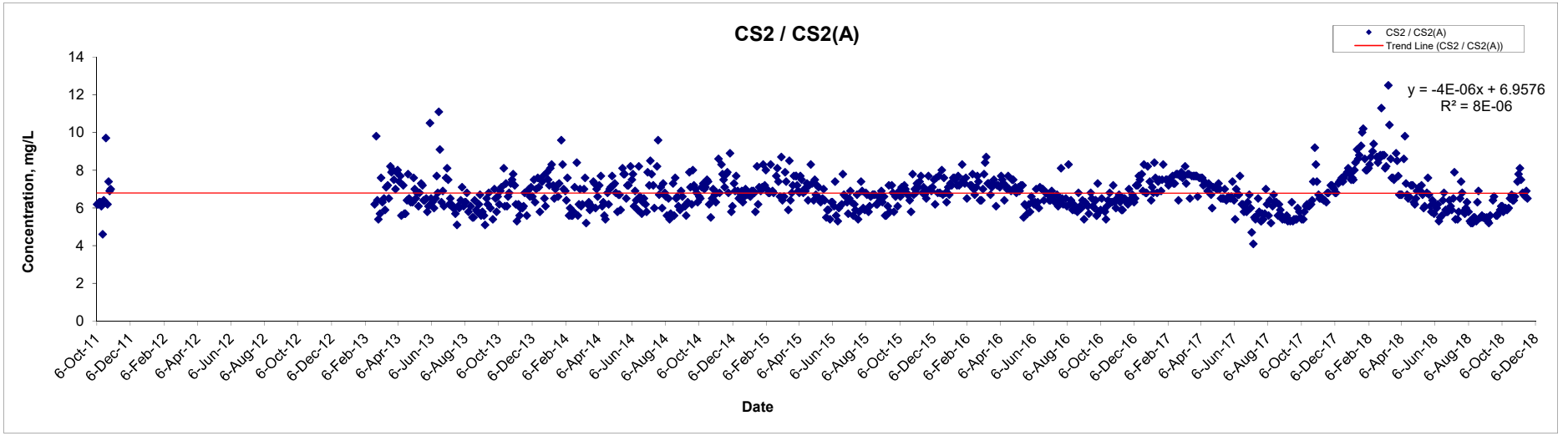
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide





Remark:CS2(A) is the alternative station for CS2 starting from 31st July 2017, after the approval of the Proposal for Change of Marine Water Quality Monitoring Station by EPD on 28th July 2017.

Title		Scale	Project No.
Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill		N.T.S	MA12014
Graphical Presentation of Water Quality Monitoring Results		Date: Jan 19	Appendix: B

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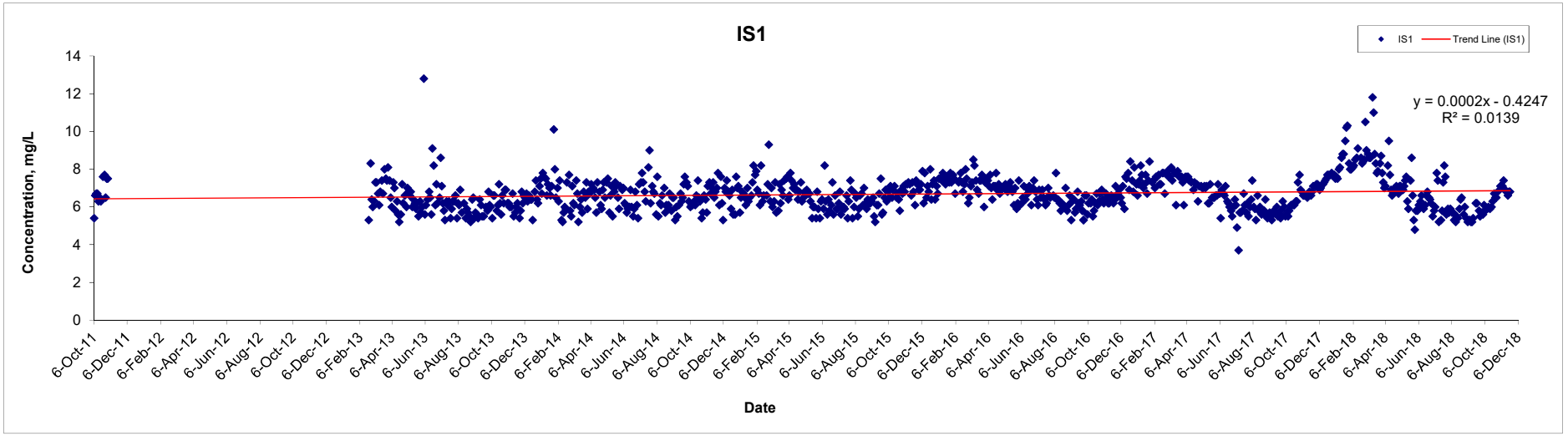
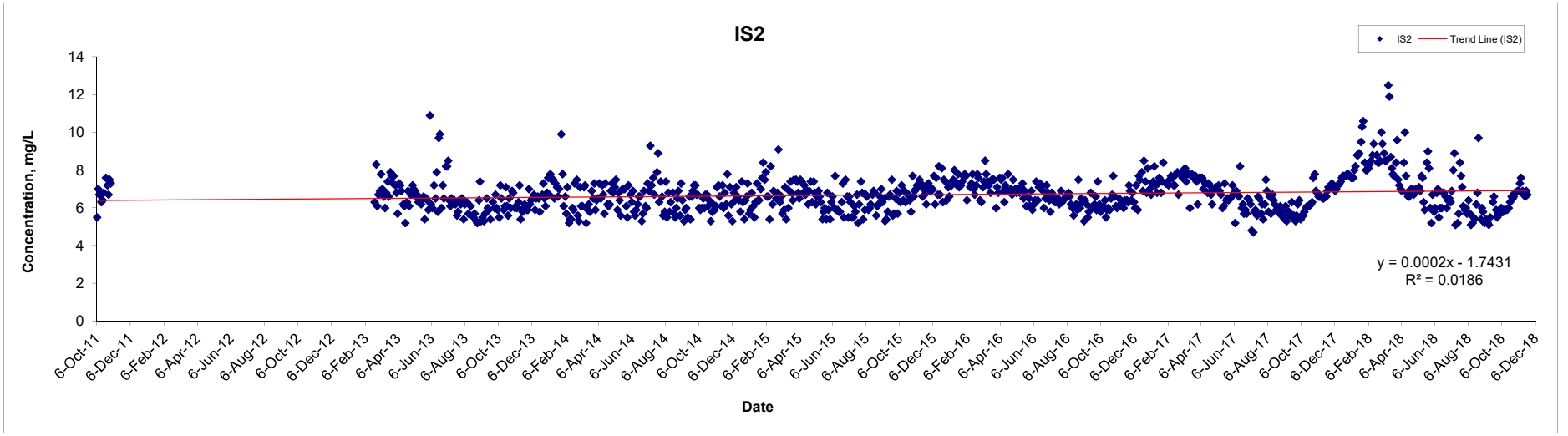
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide





Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S Date Jan 19	Project No. MA12014 Appendix B	CINOTECH

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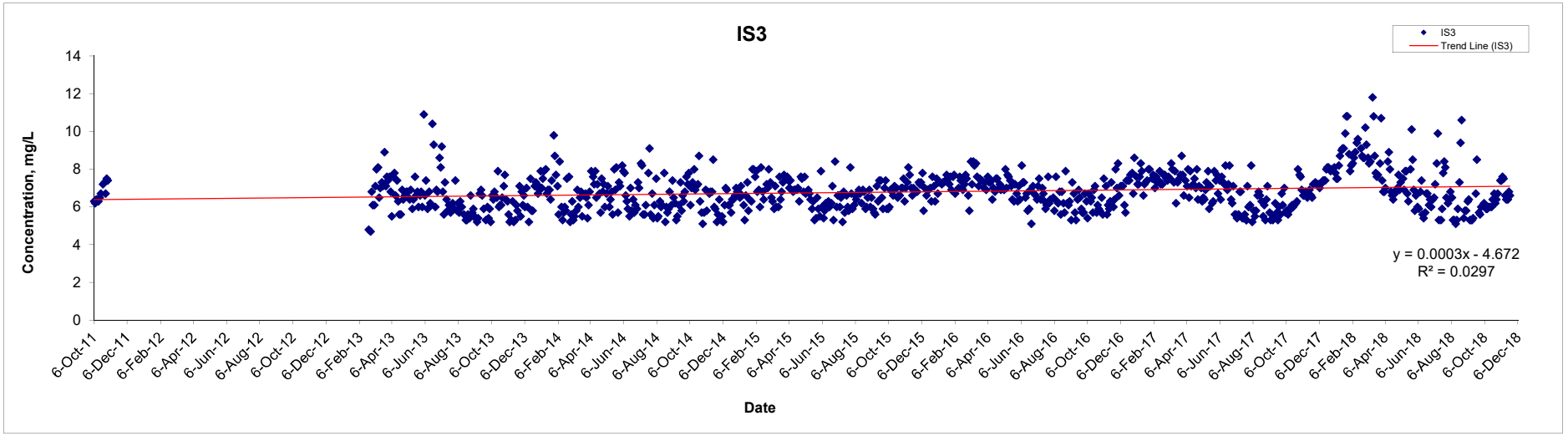

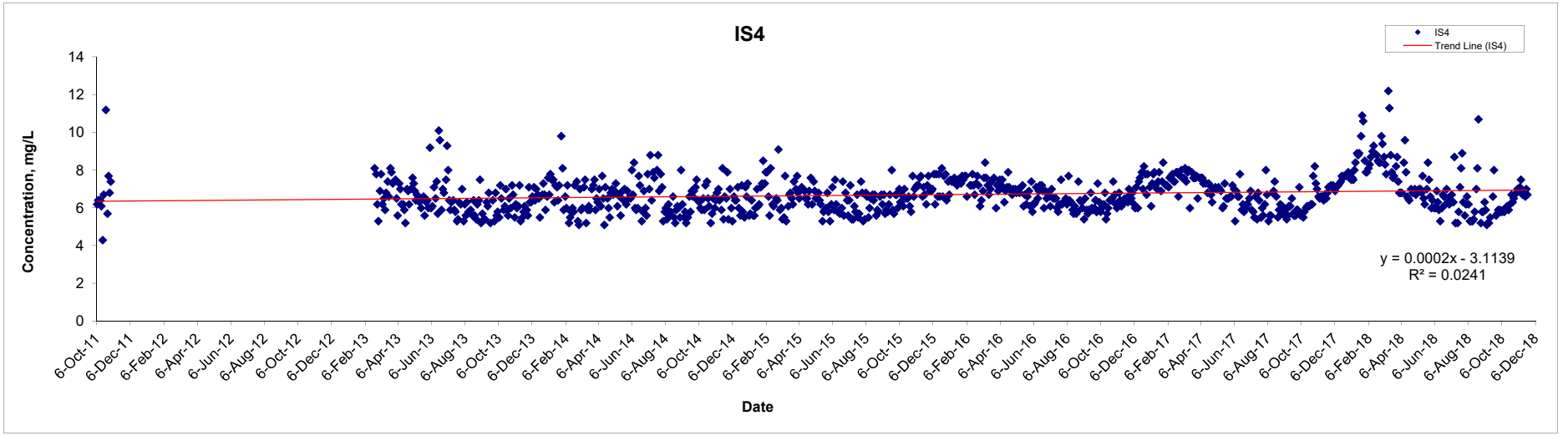

Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
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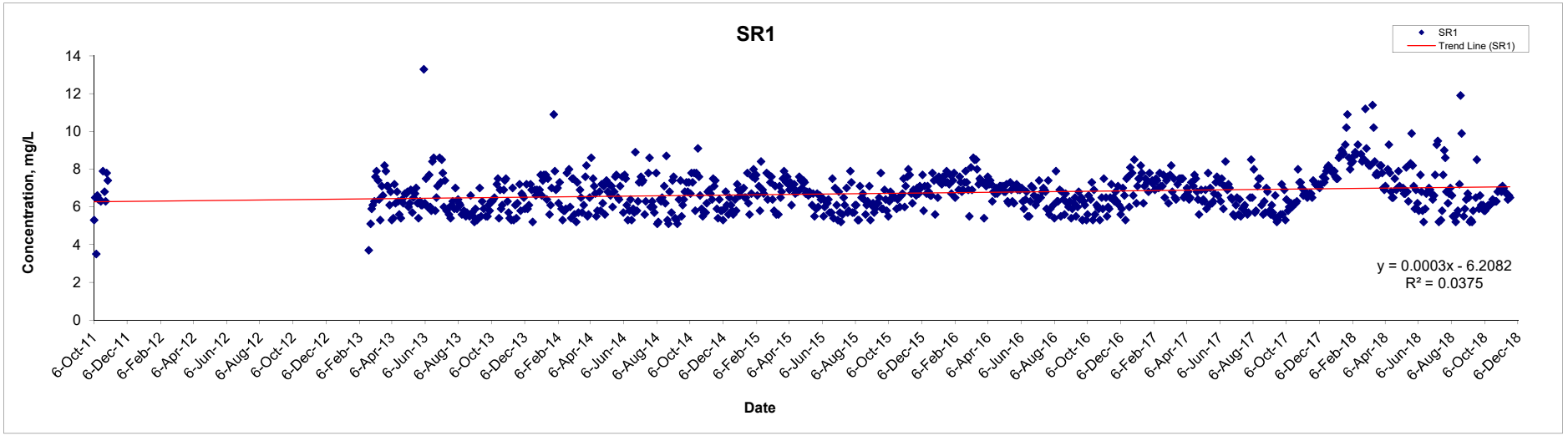
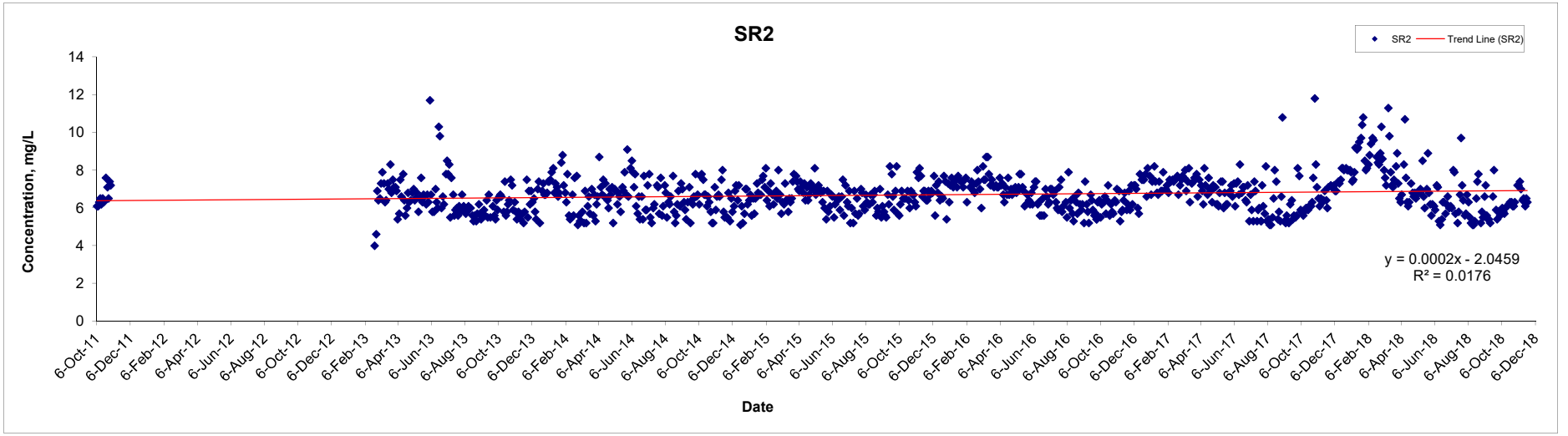
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide





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		Date Jan 19	Appendix B	

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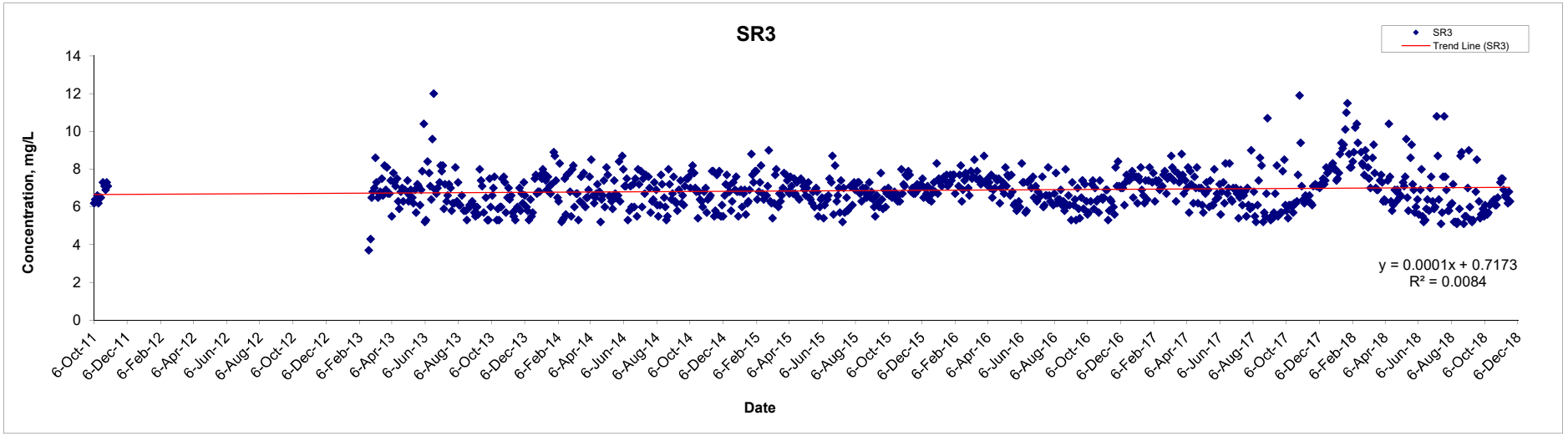

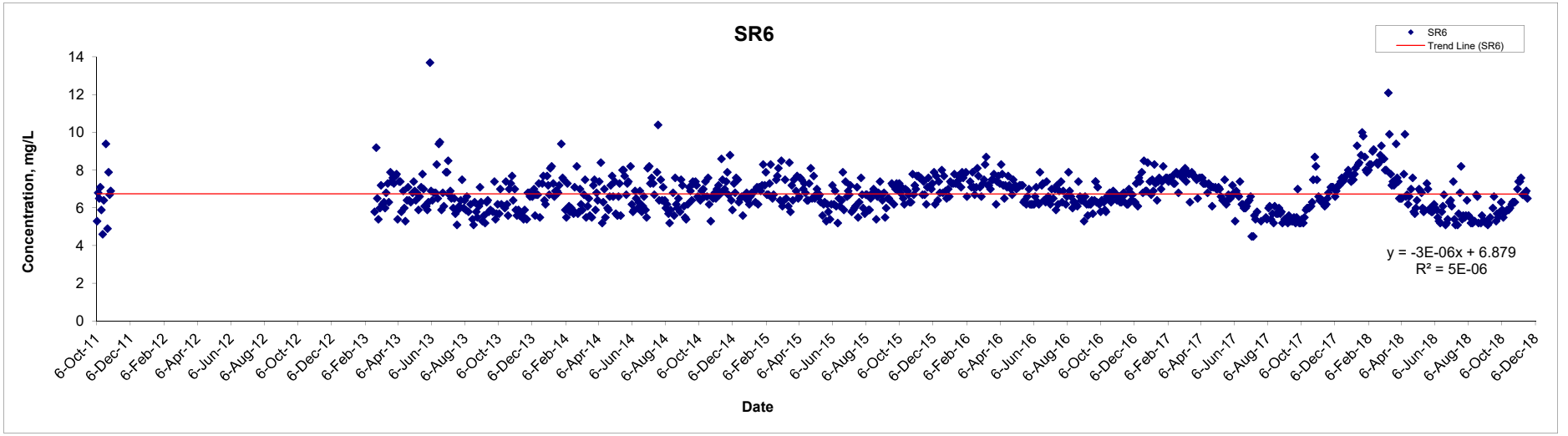

Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
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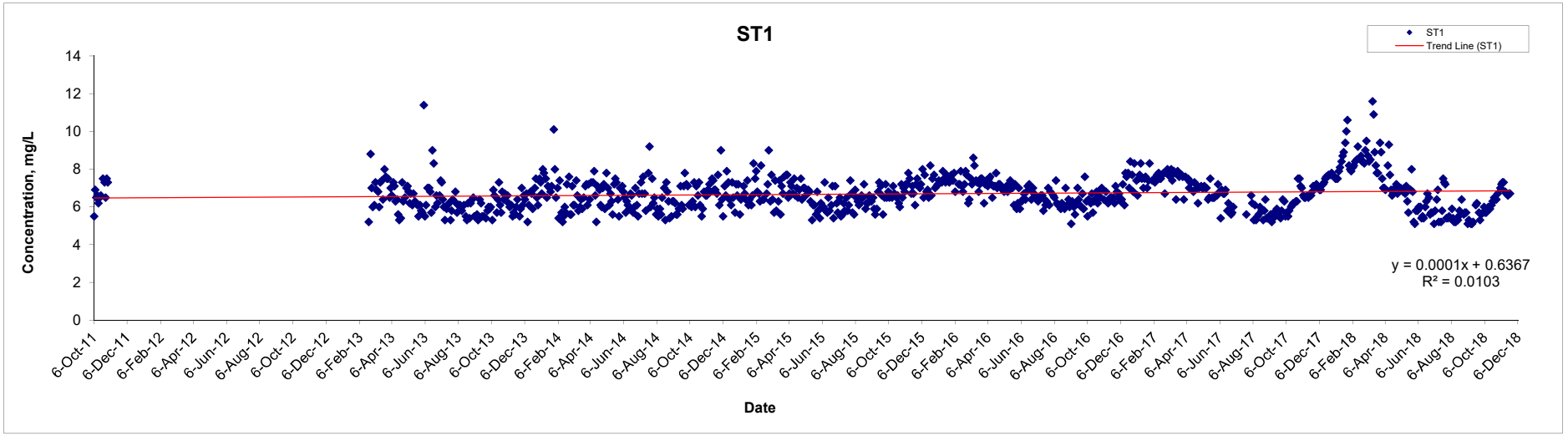
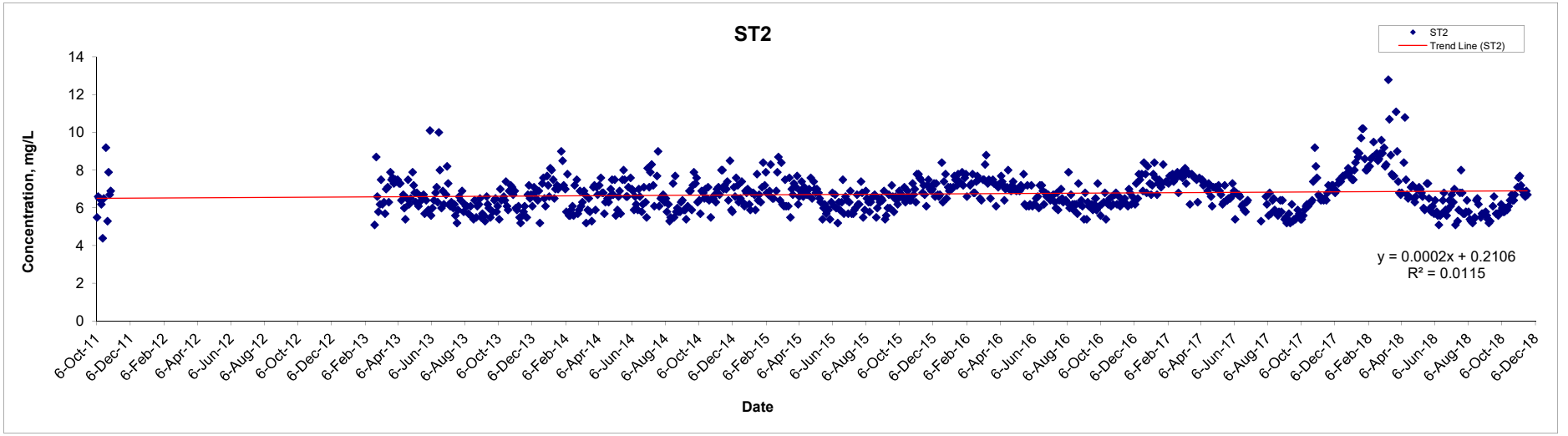
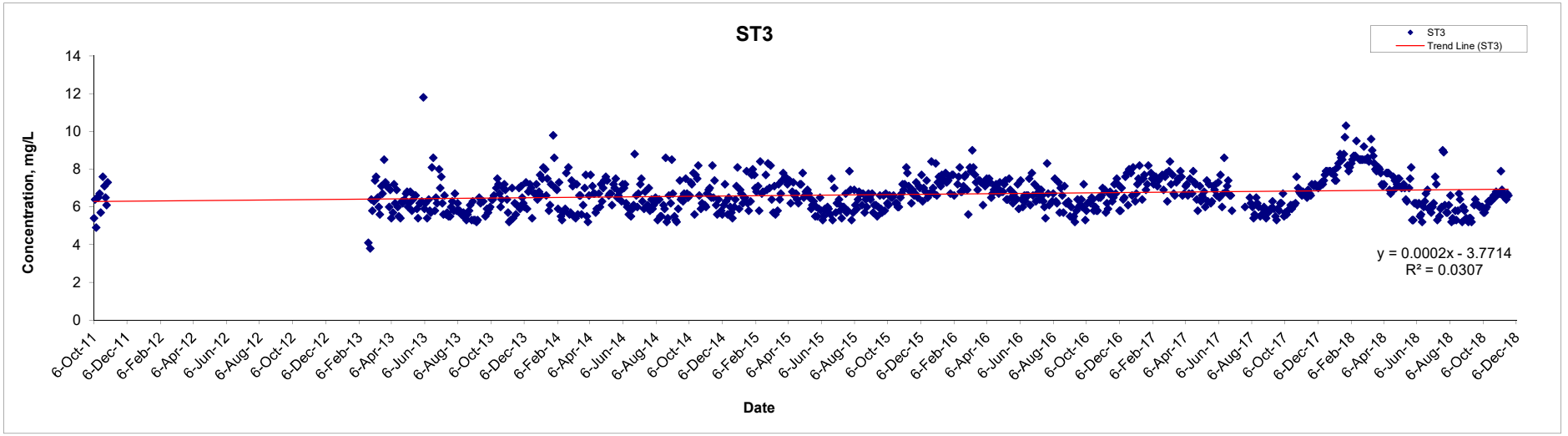
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide

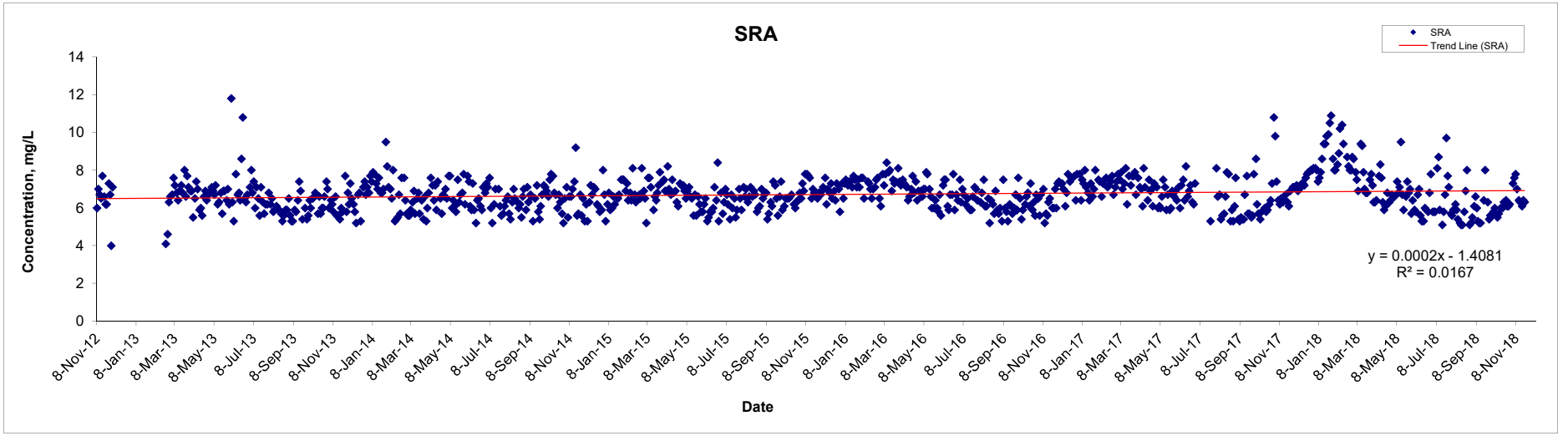




Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S Date Jan 19	Project No. MA12014 Appendix B	CINOTECH

Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide





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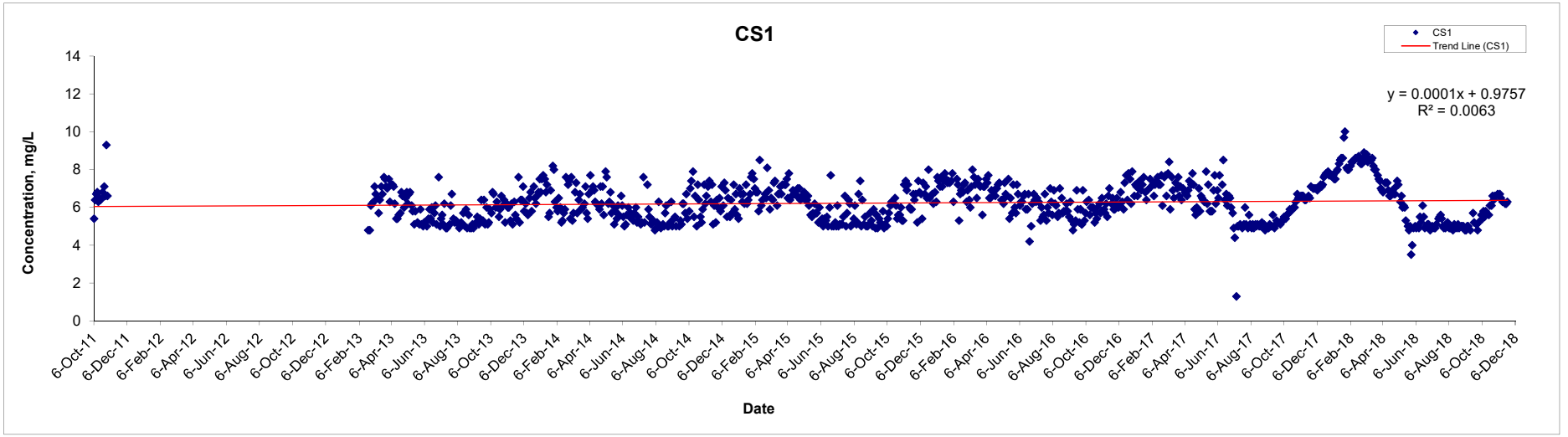
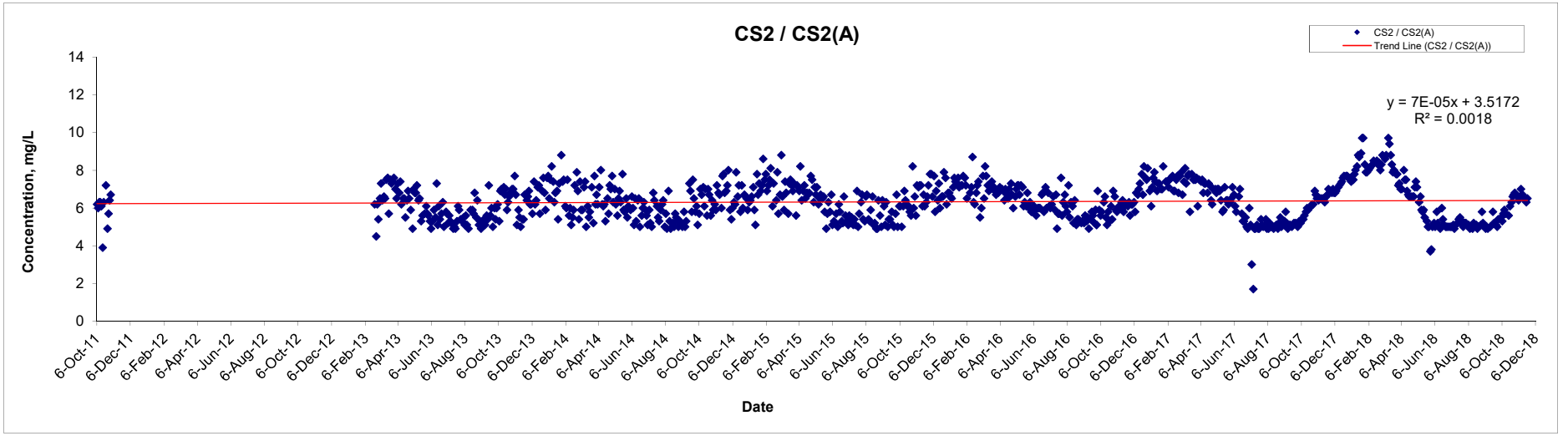
Dissolved Oxygen (Bottom) at Mid-Ebb Tide





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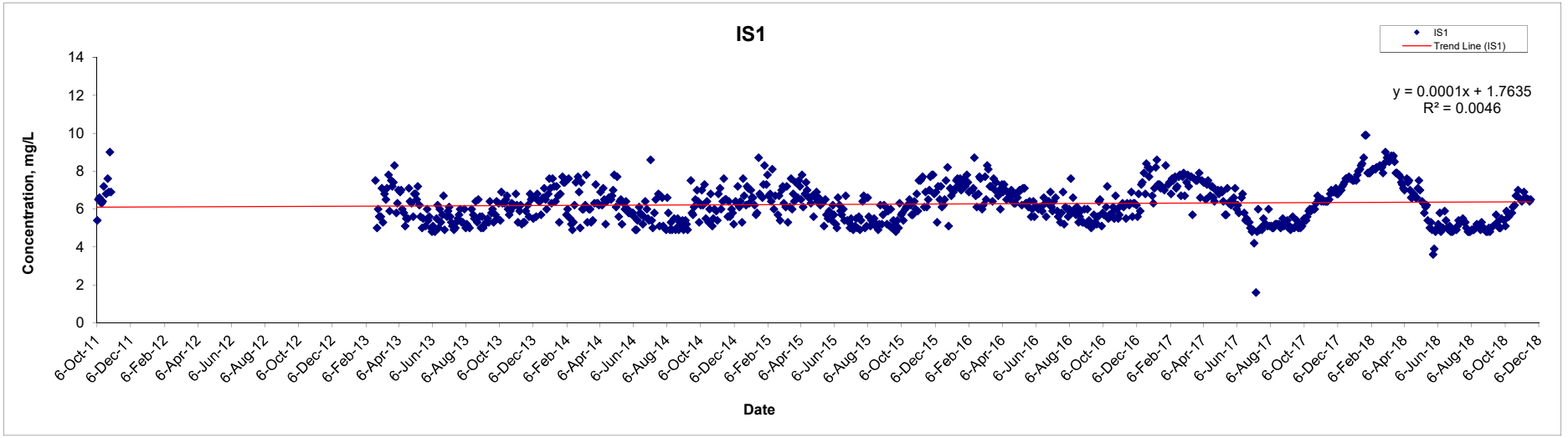
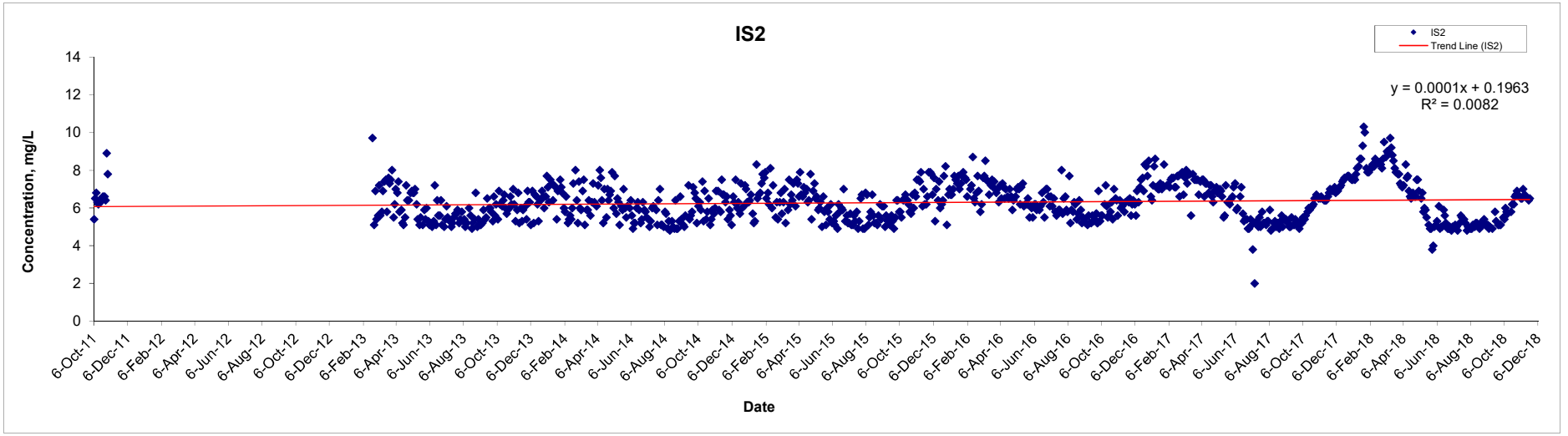
Dissolved Oxygen (Bottom) at Mid-Ebb Tide





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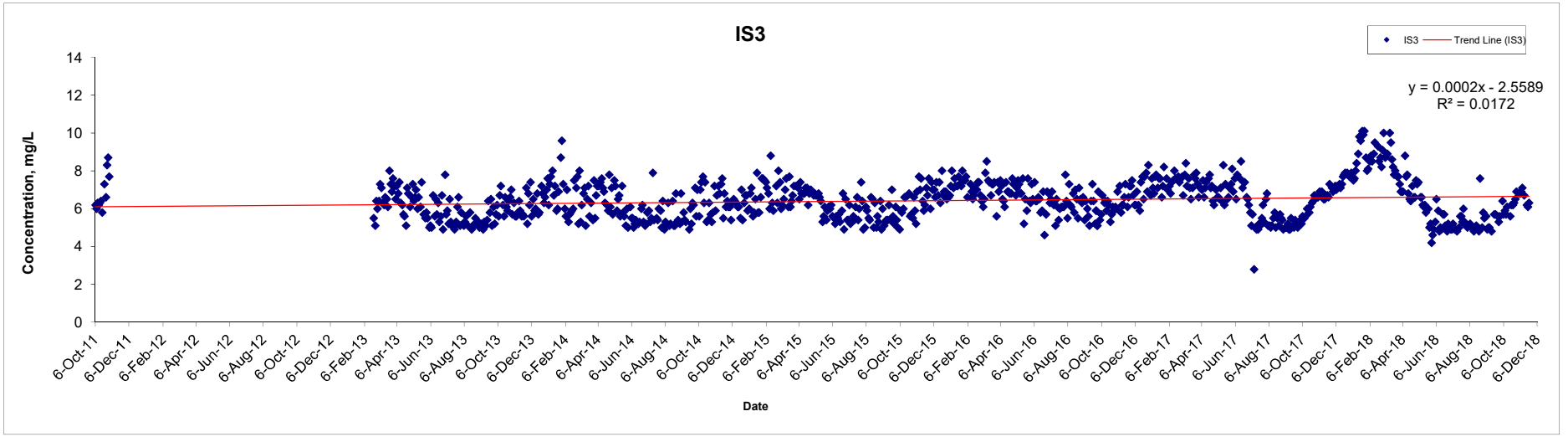
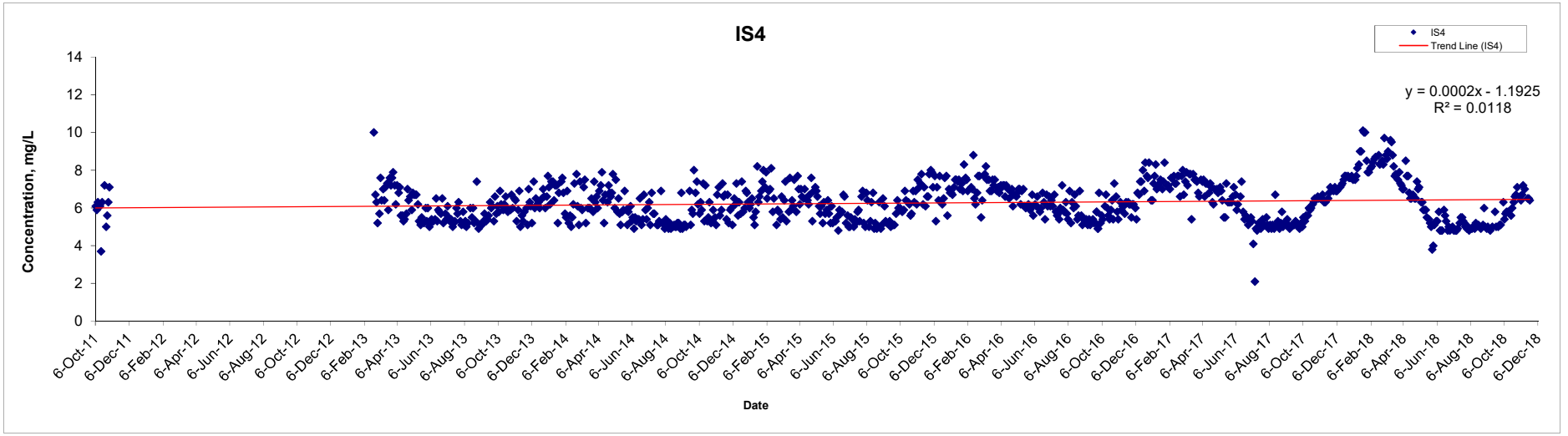
Dissolved Oxygen (Bottom) at Mid-Ebb Tide





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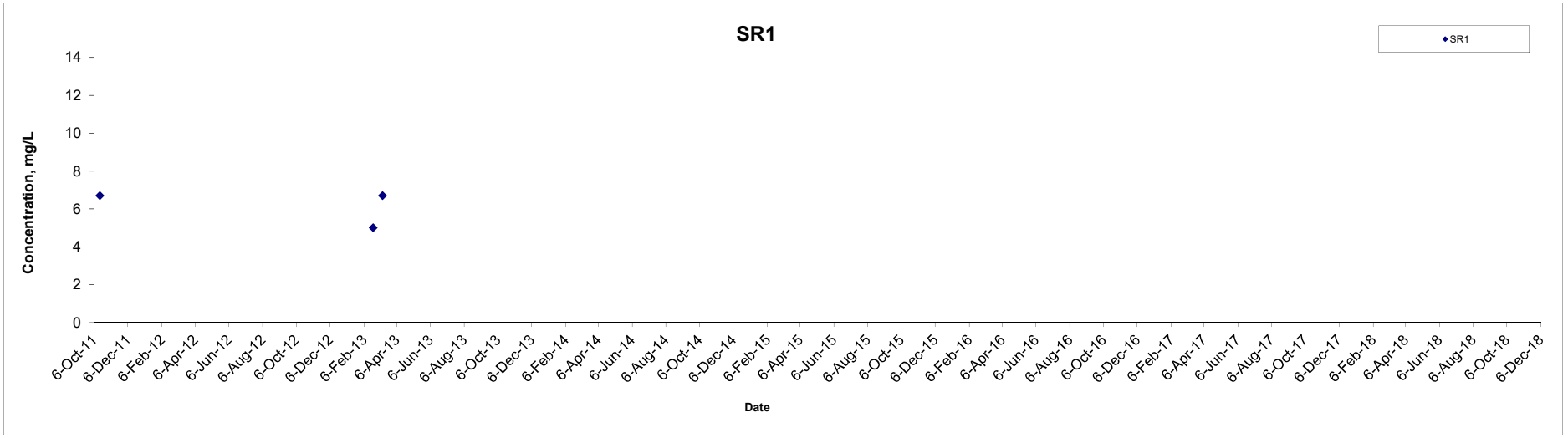
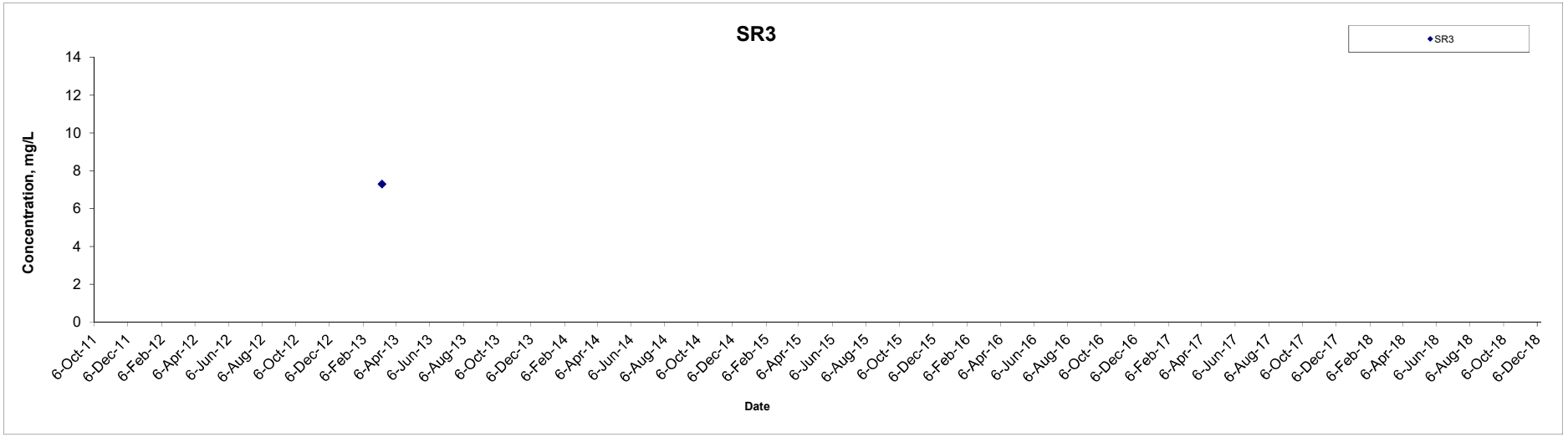
Dissolved Oxygen (Bottom) at Mid-Ebb Tide





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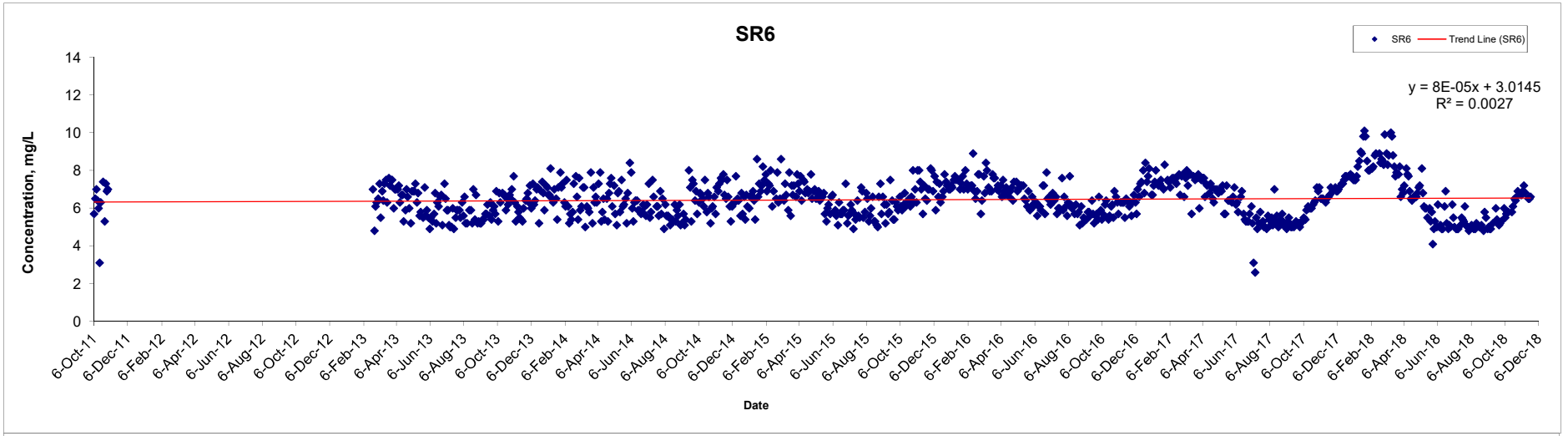

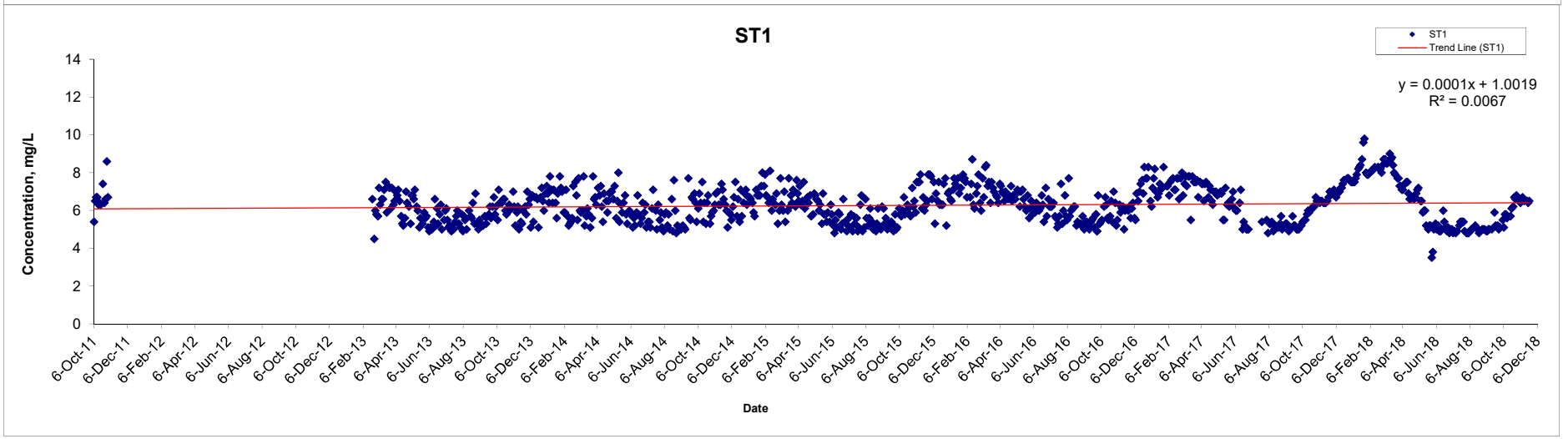

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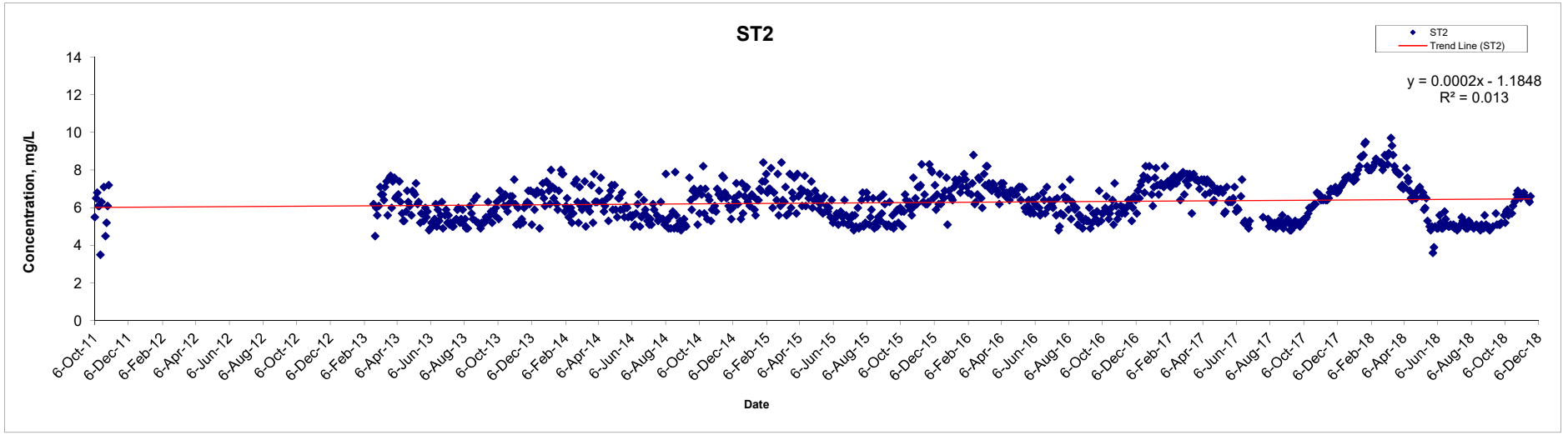

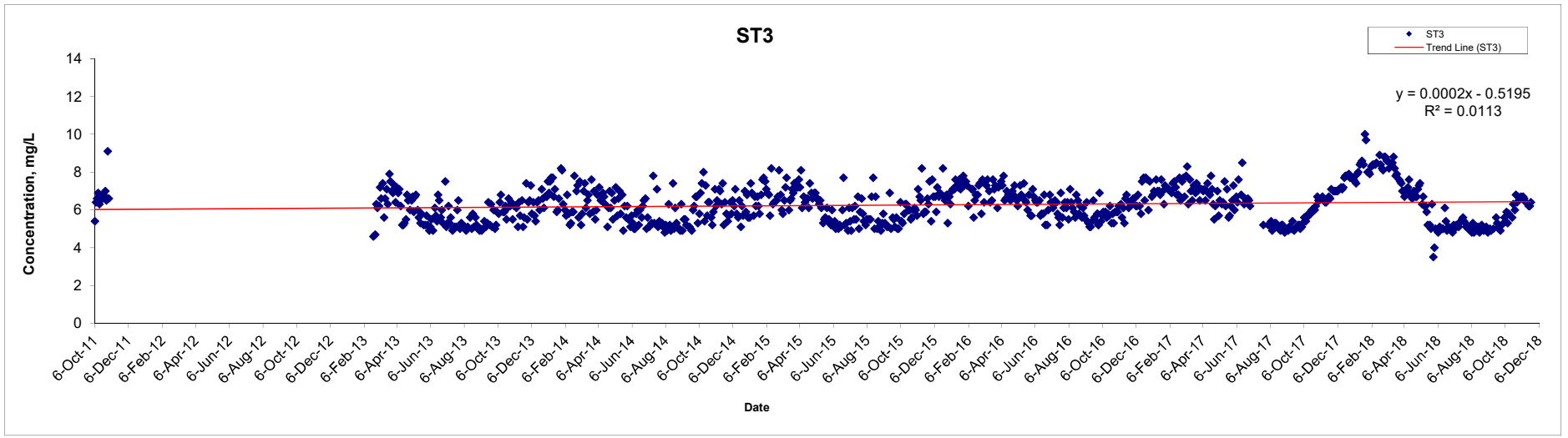

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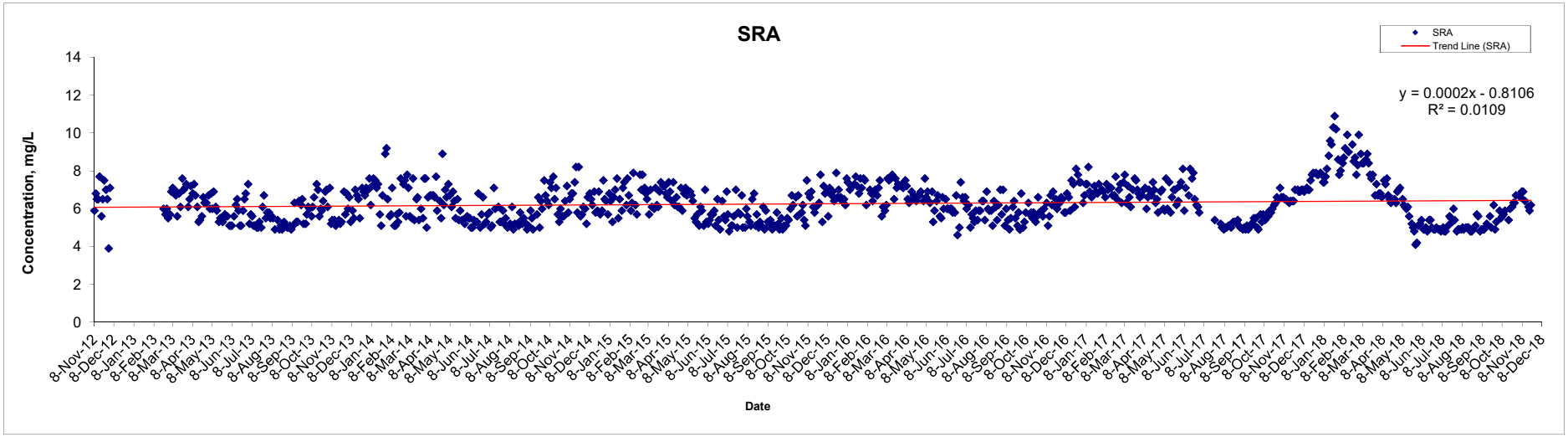

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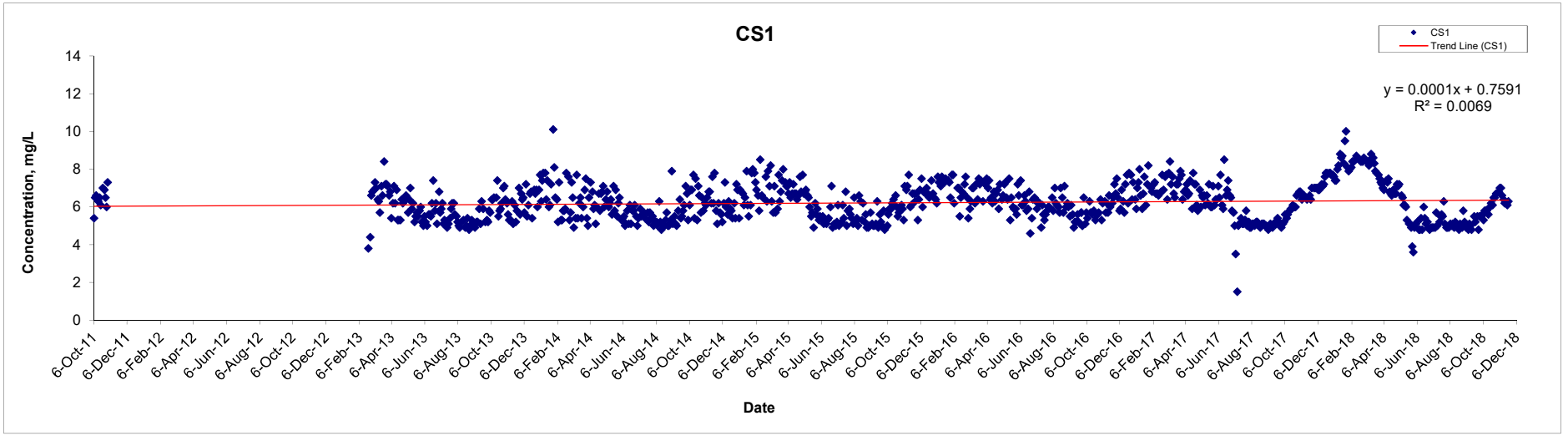
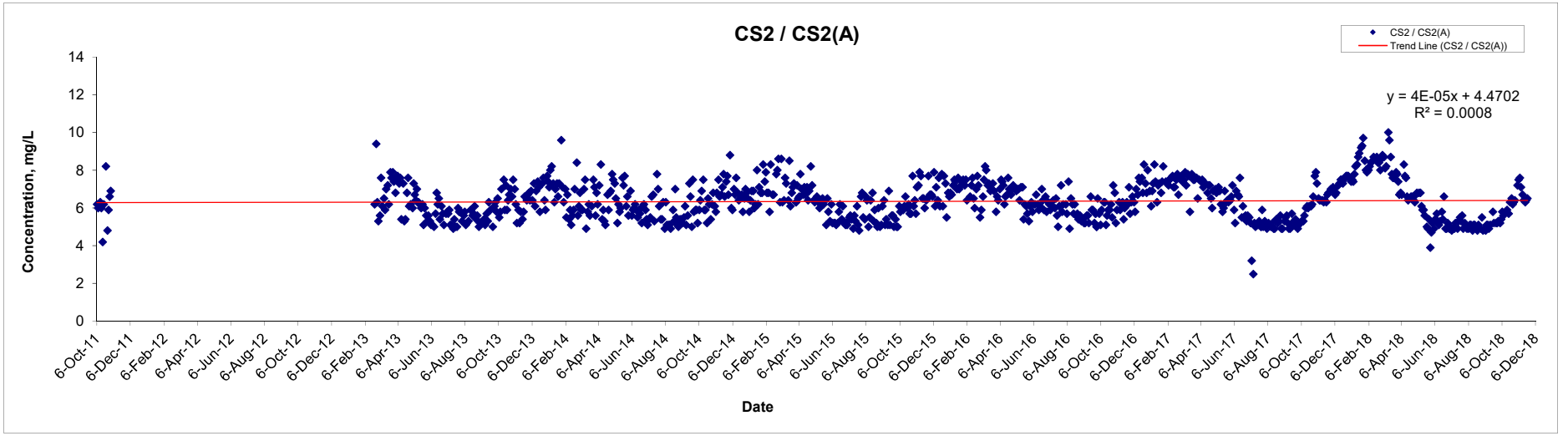
Dissolved Oxygen (Bottom) at Mid-Flood Tide





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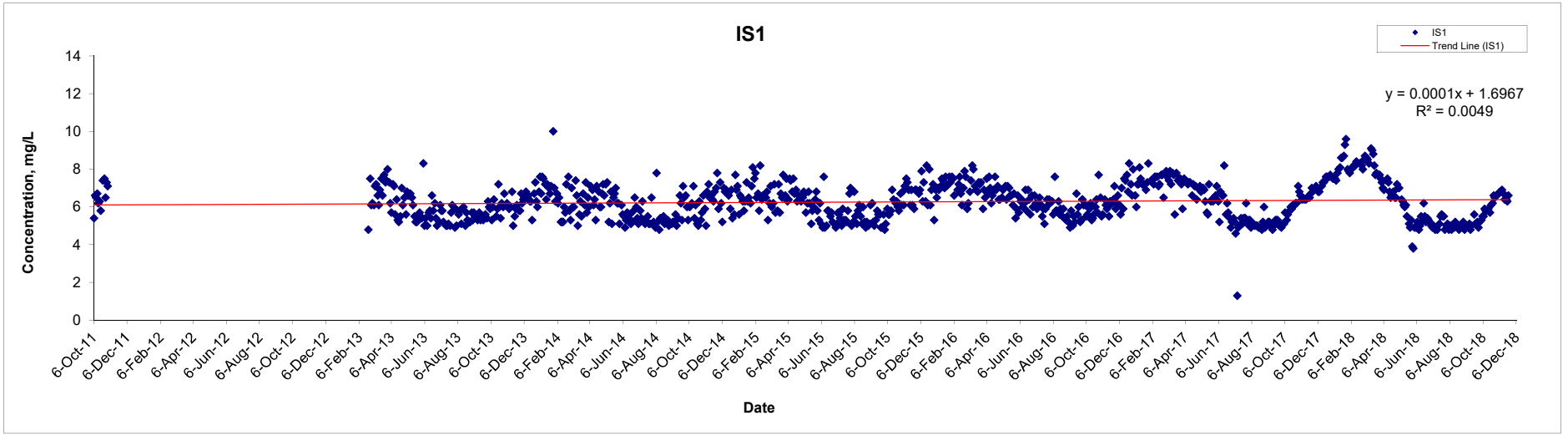

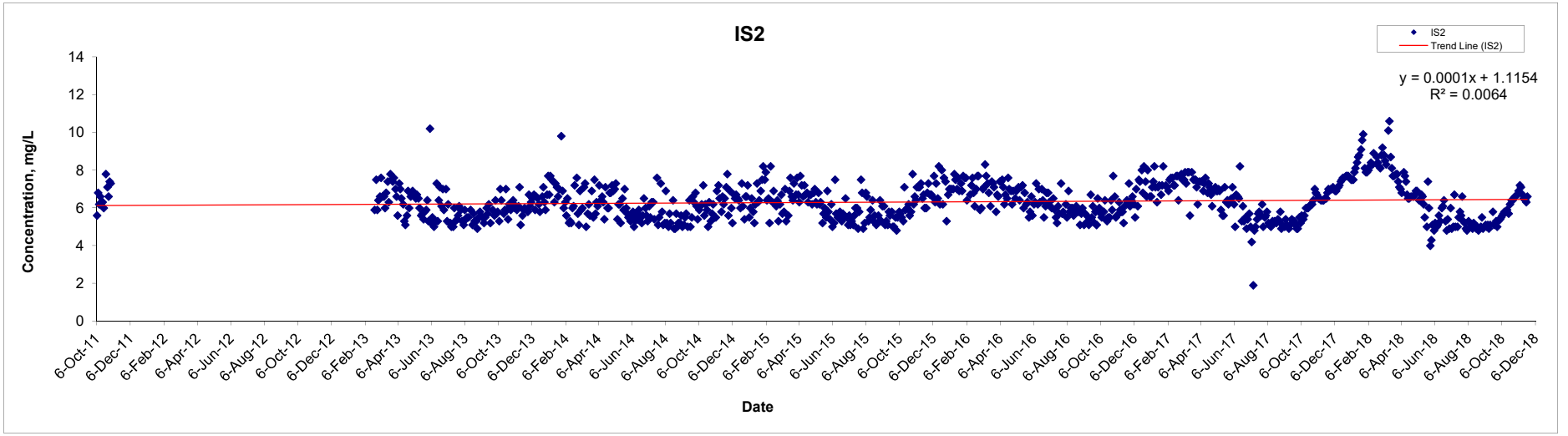

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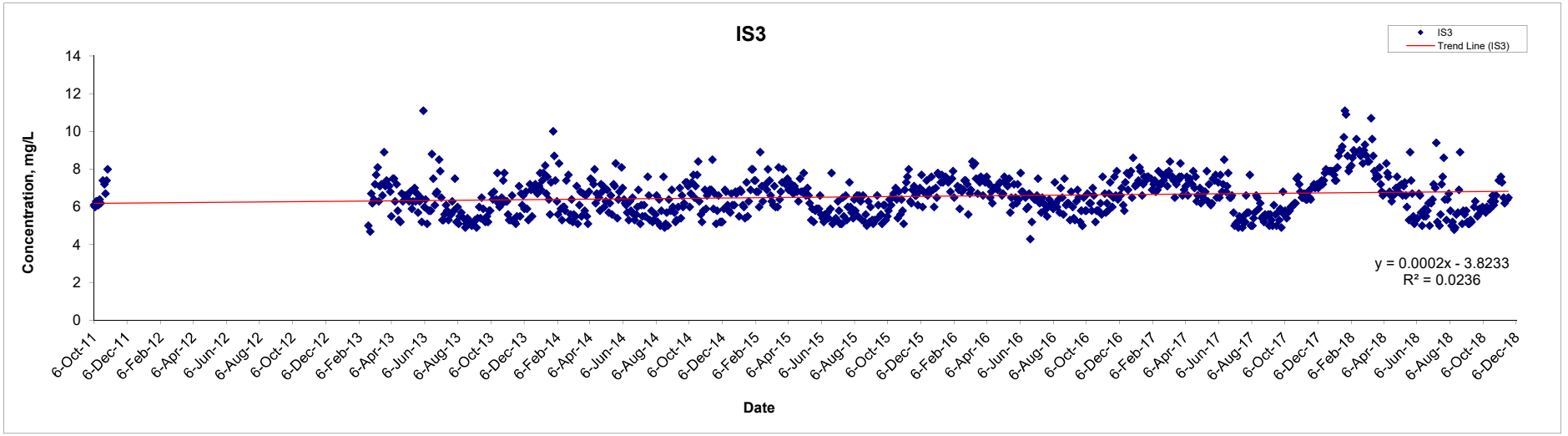

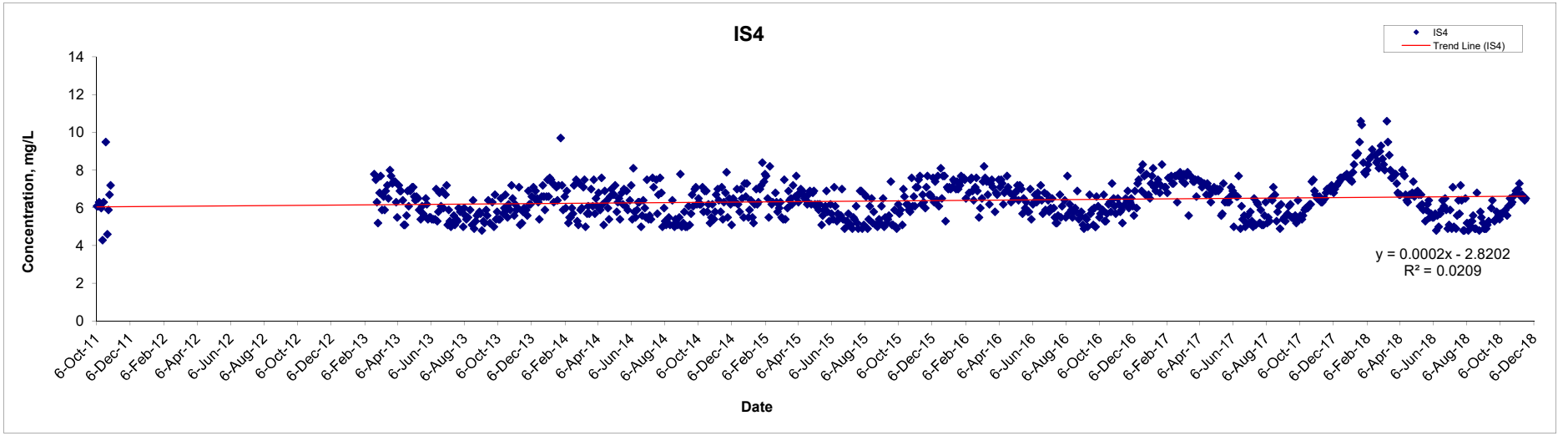

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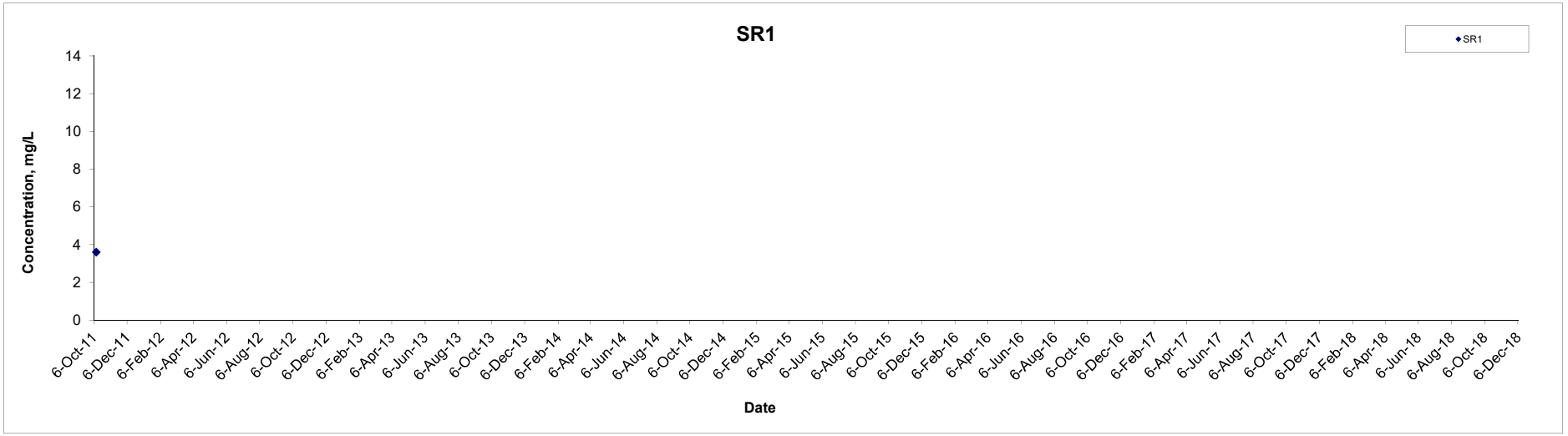

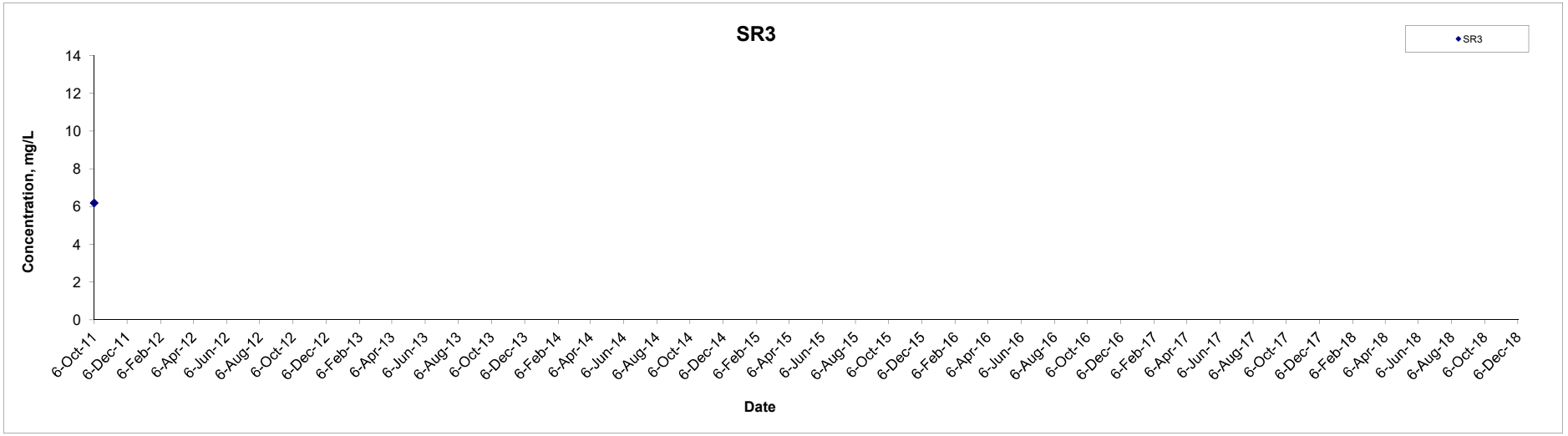

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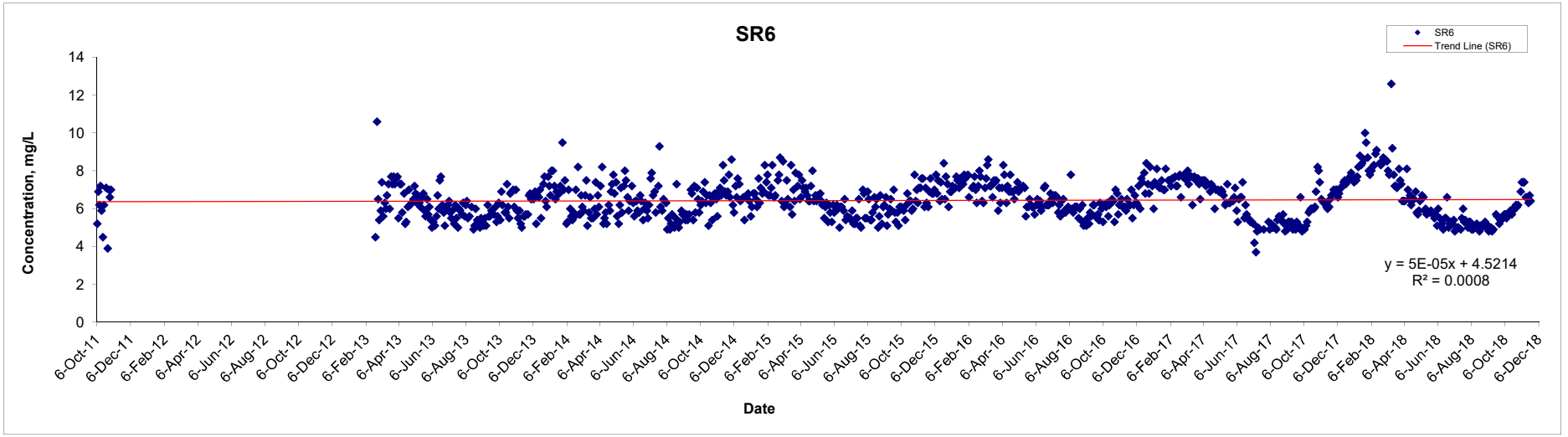

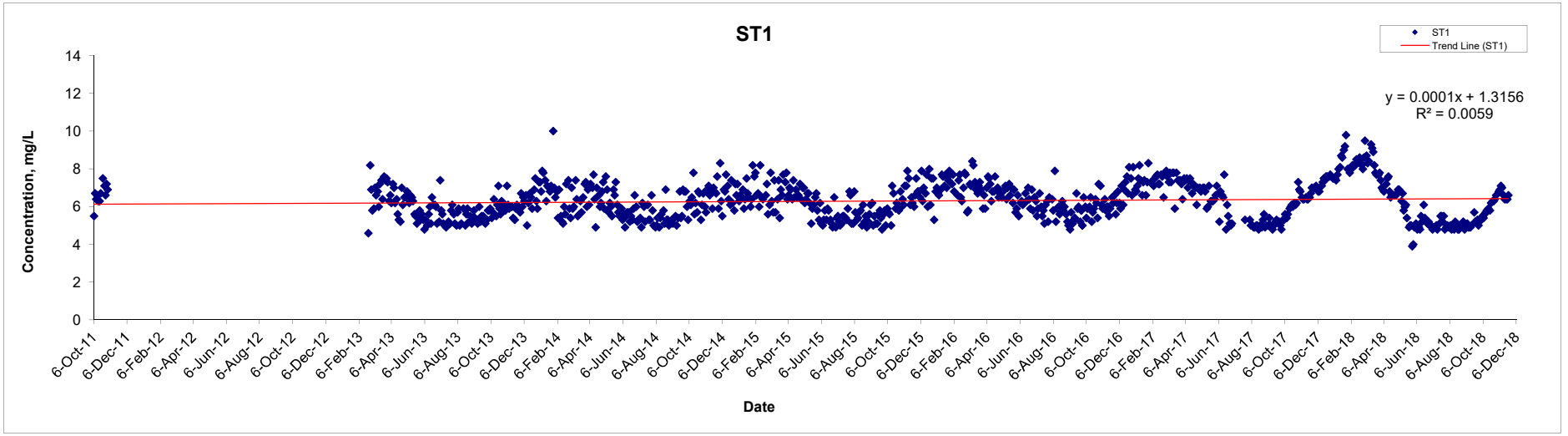

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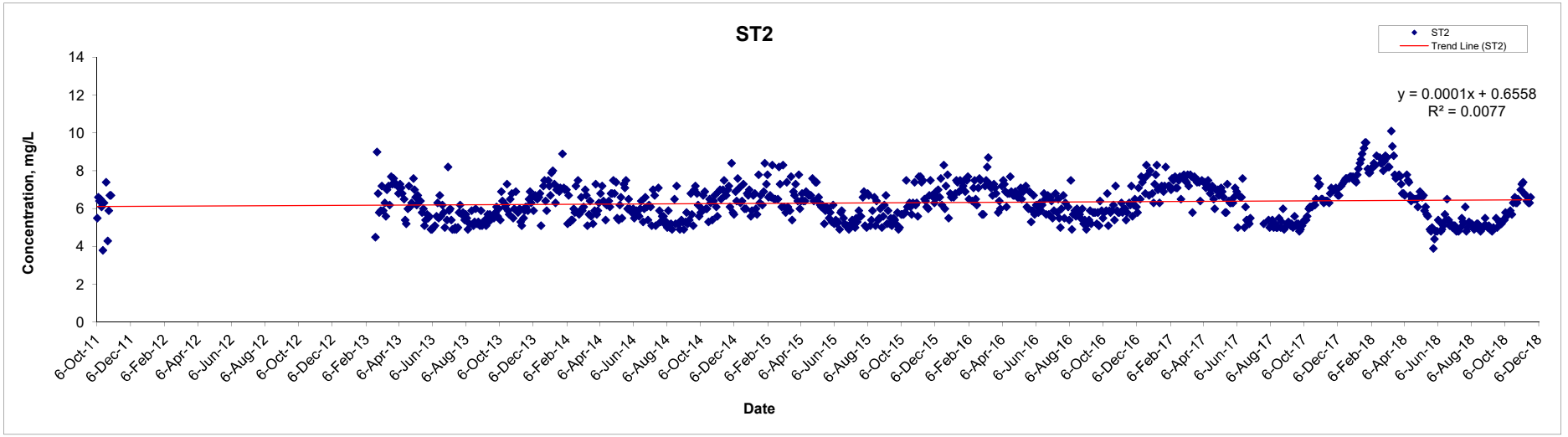

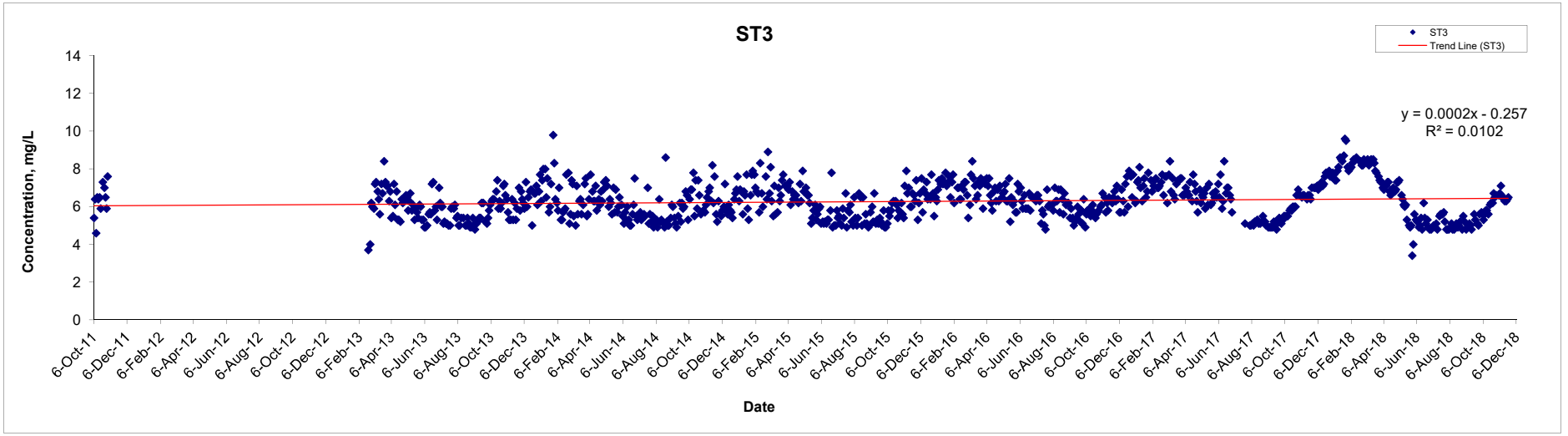

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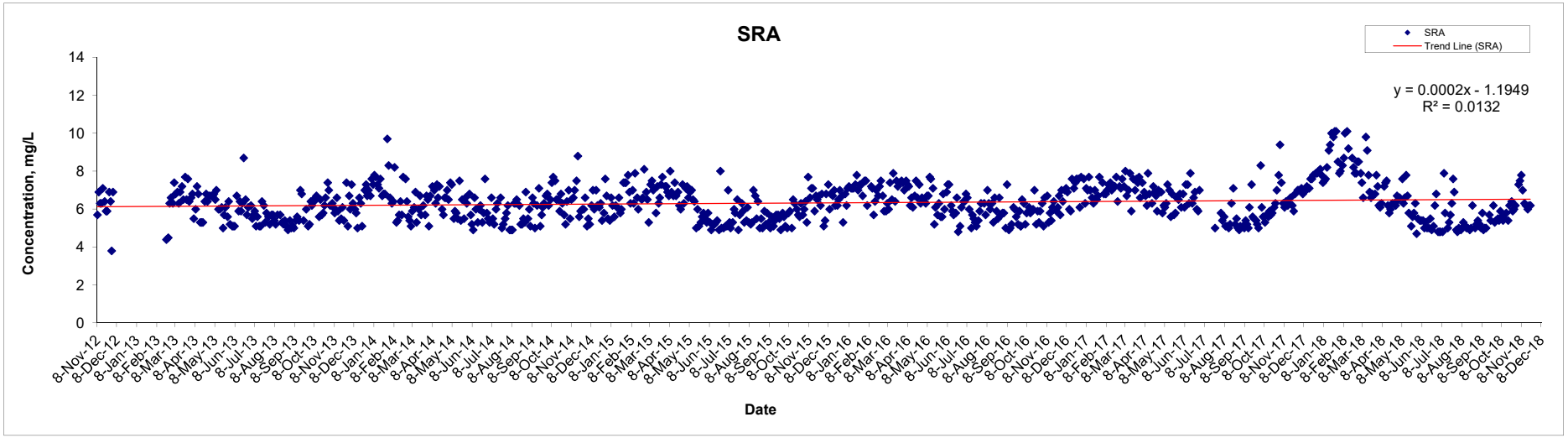

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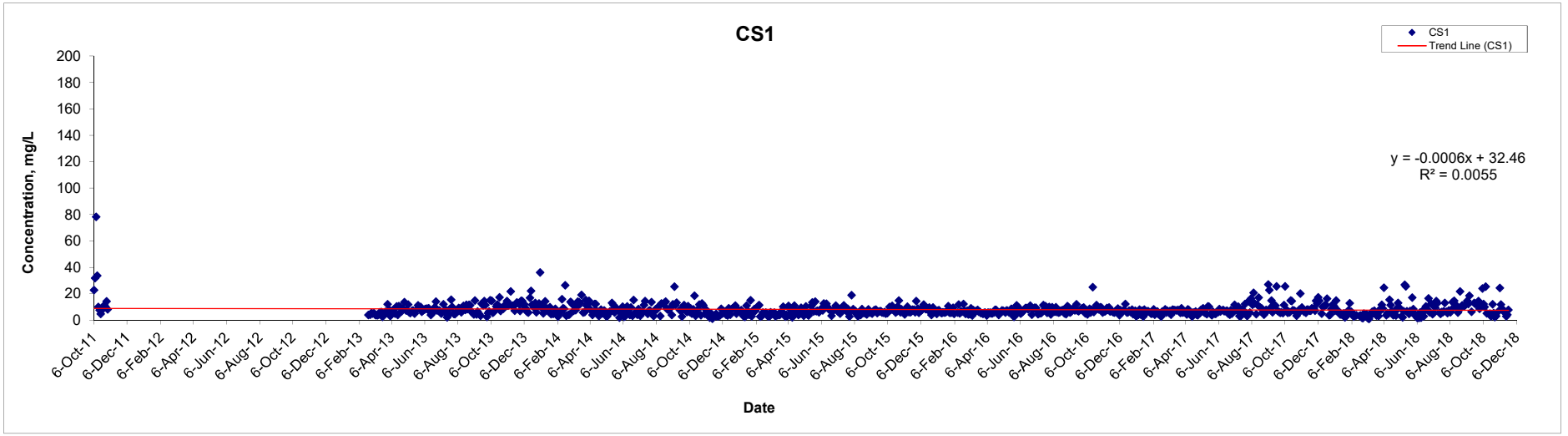
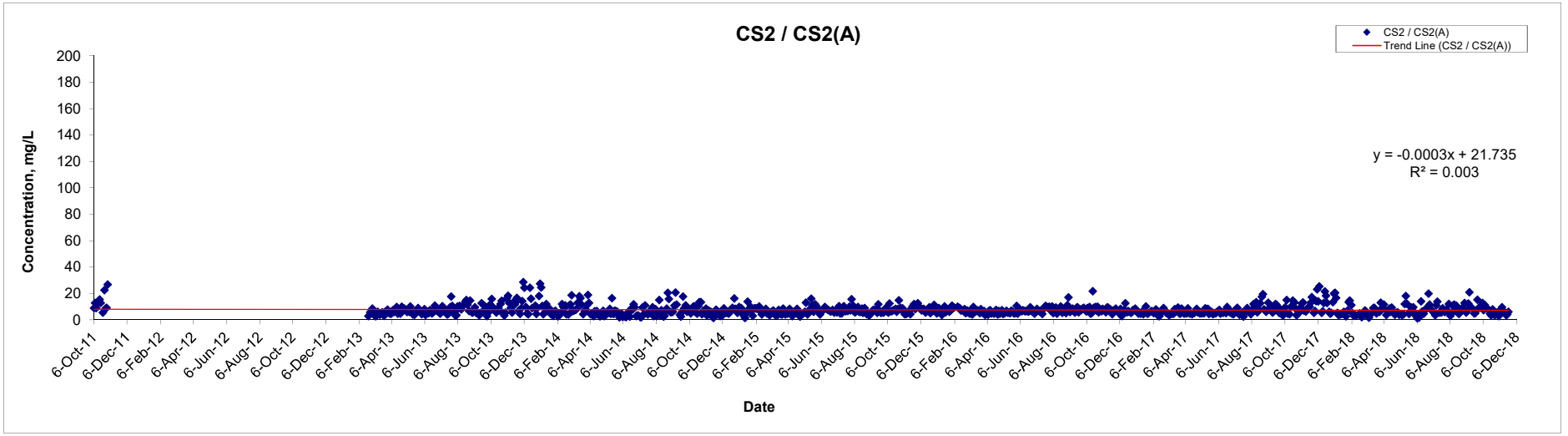
Turbidity (Depth-averaged) at Mid-Ebb Tide





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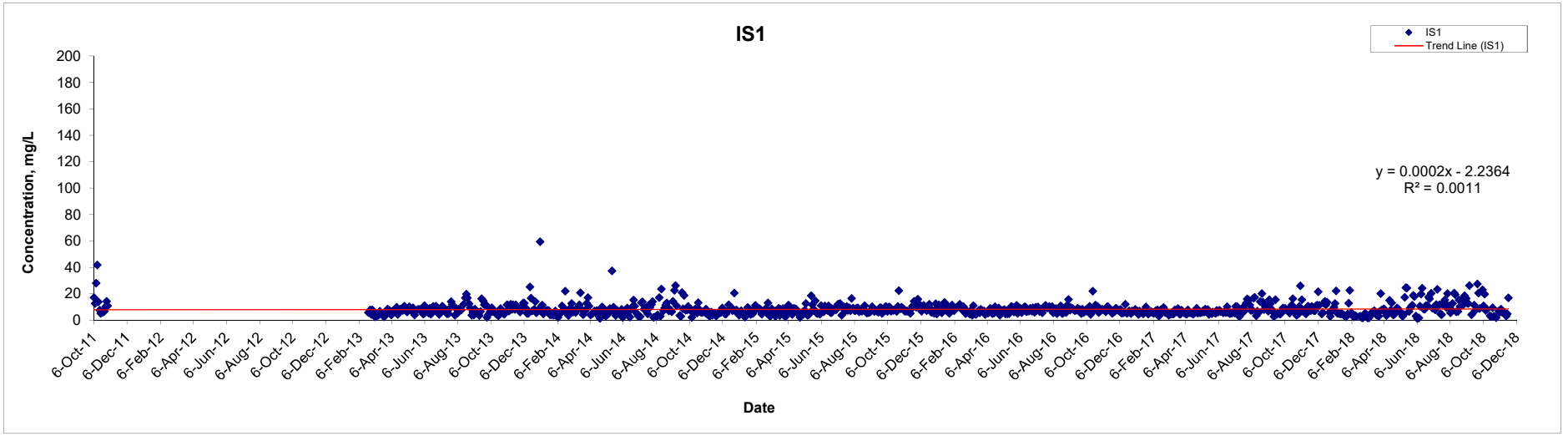
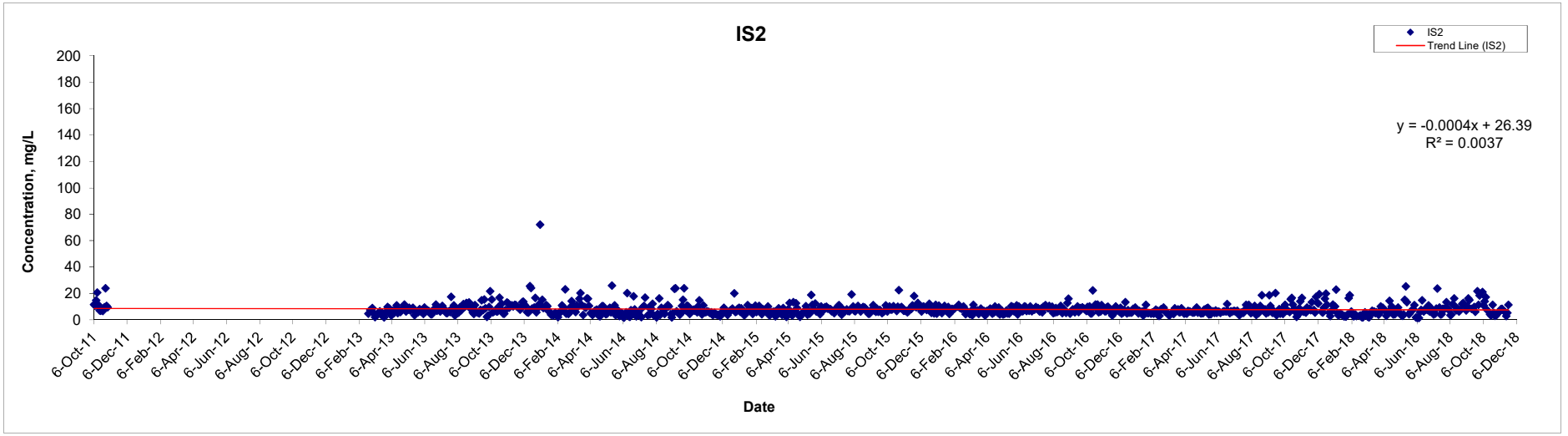
Turbidity (Depth-averaged) at Mid-Ebb Tide





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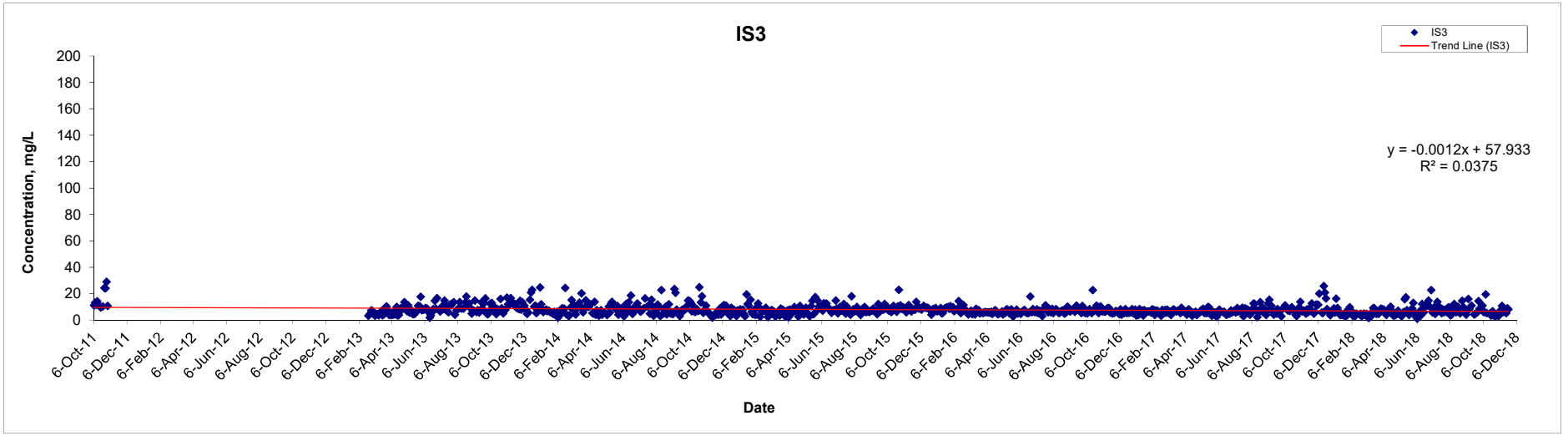

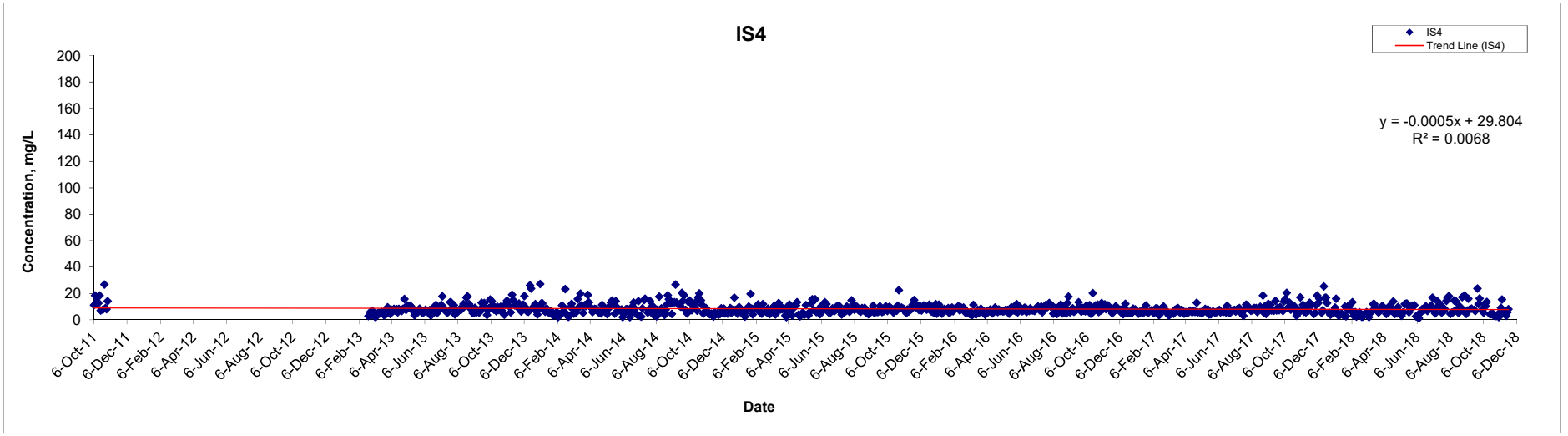

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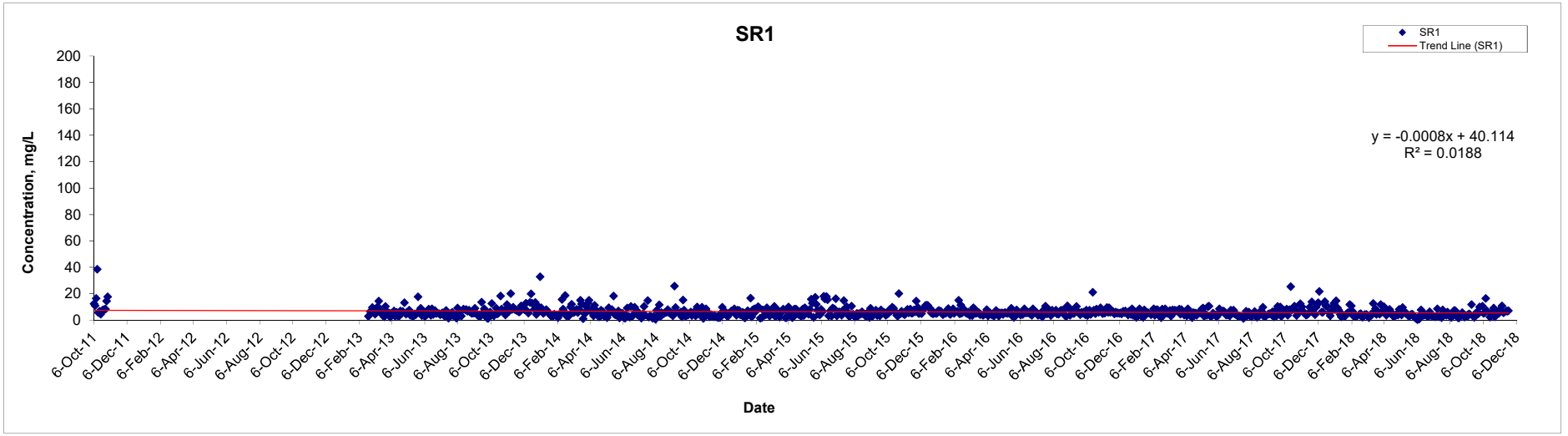

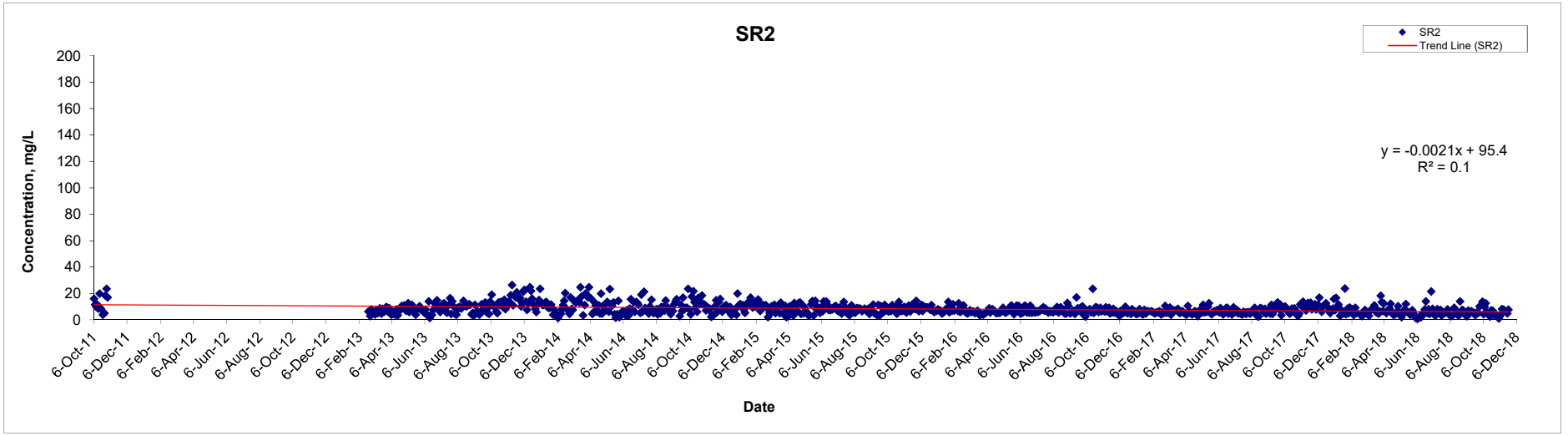

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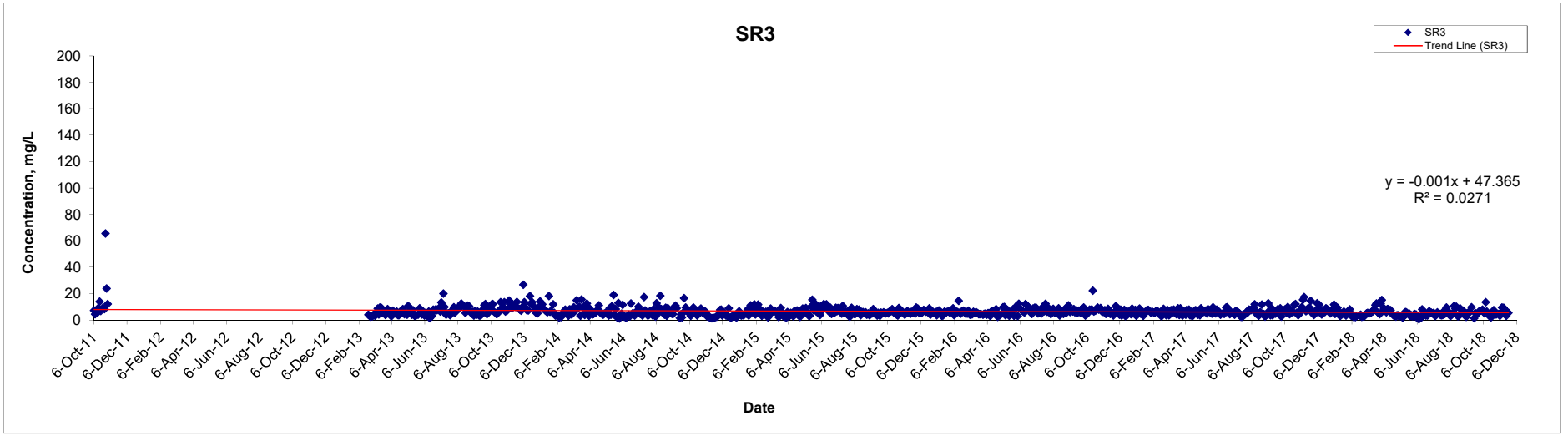

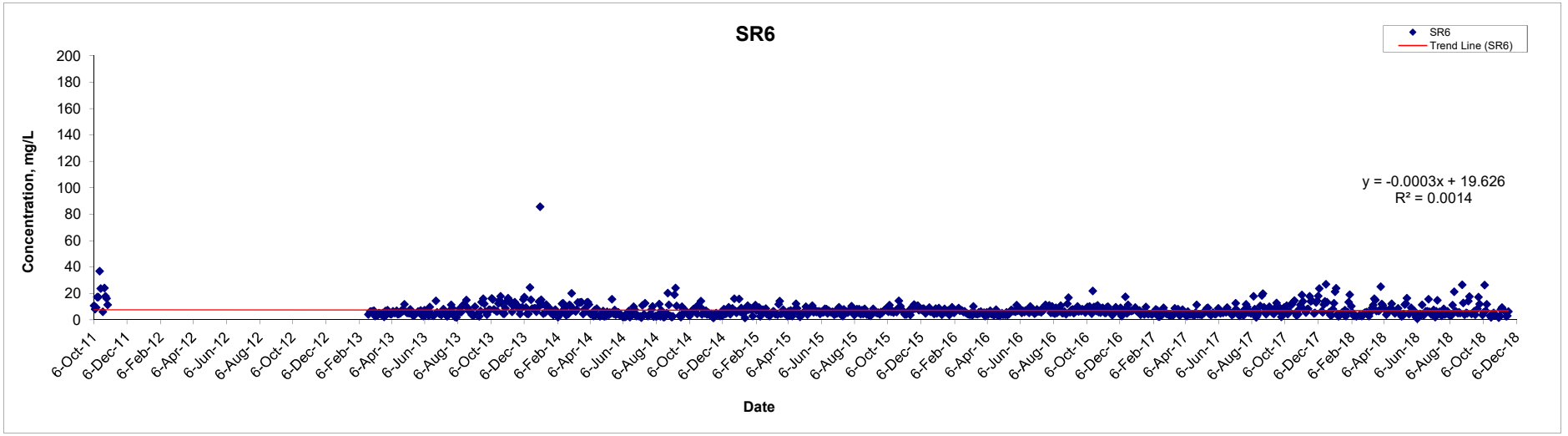

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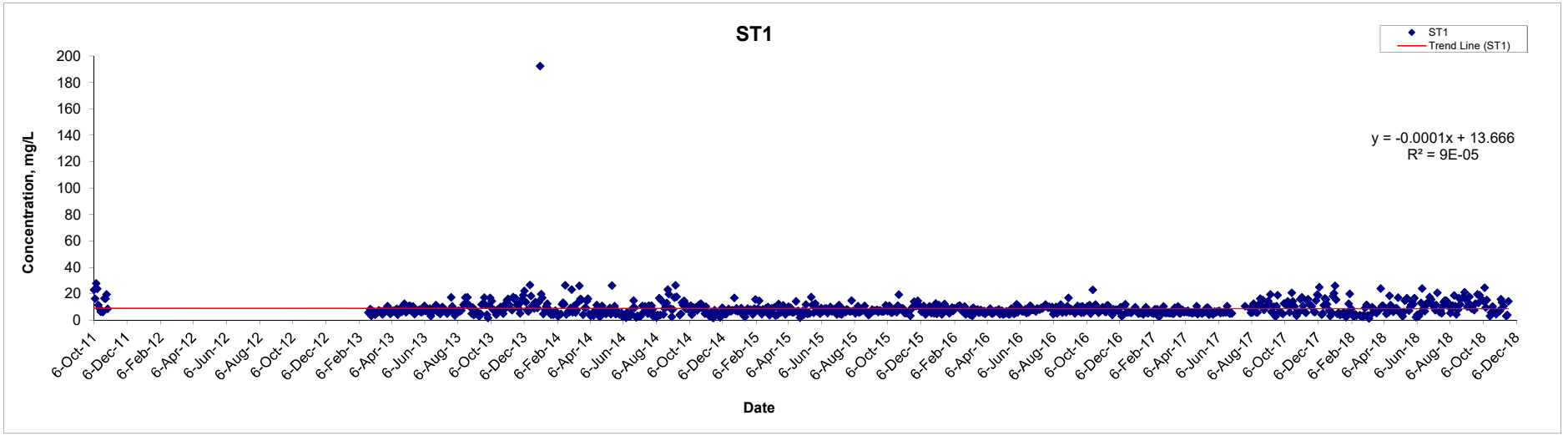

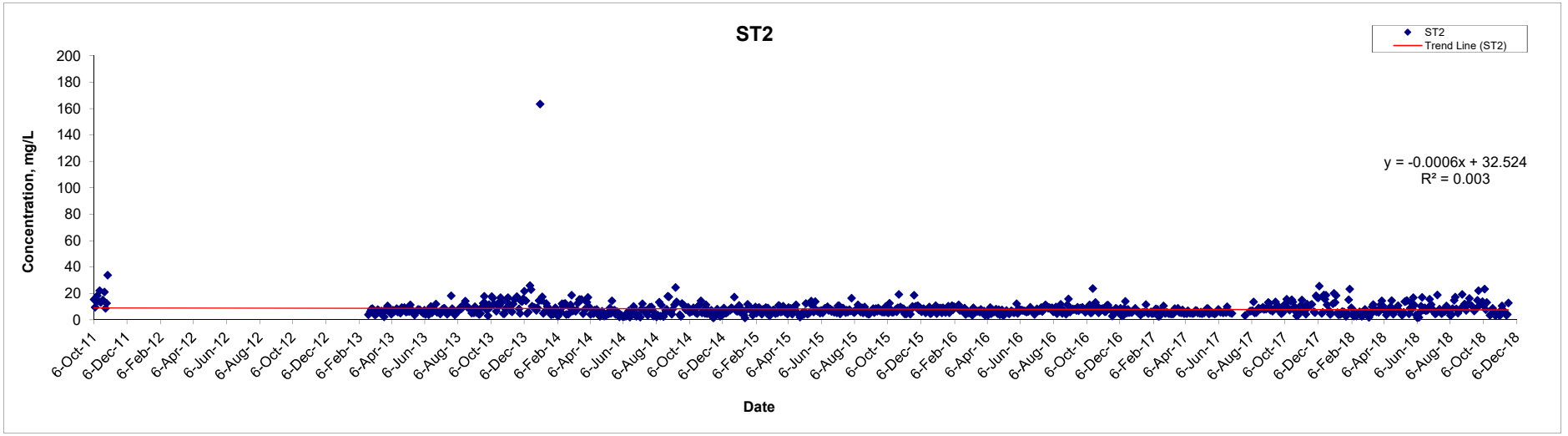

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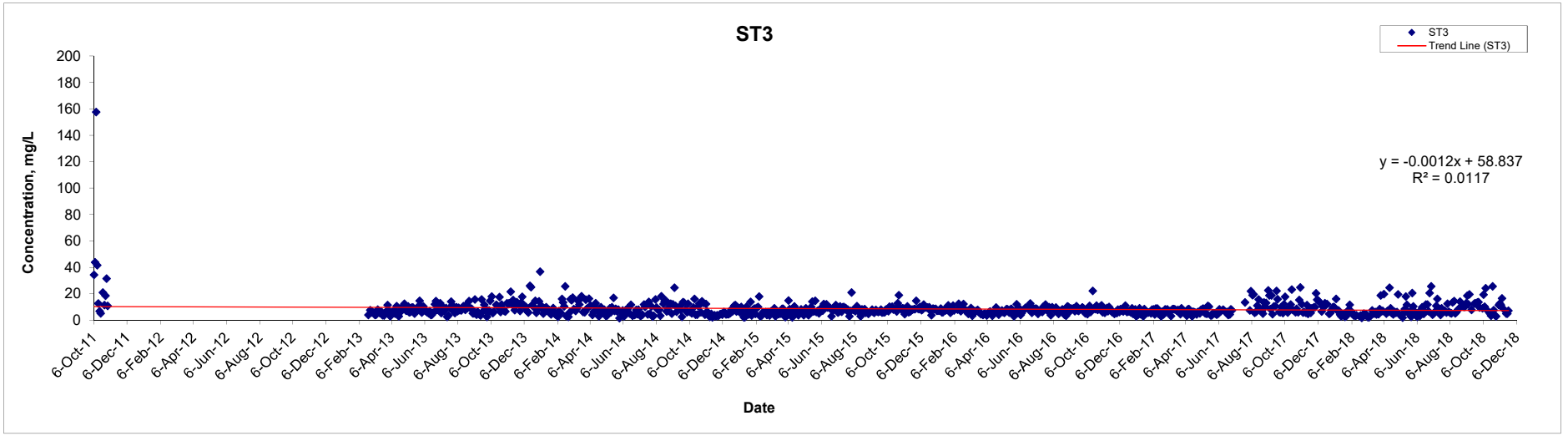

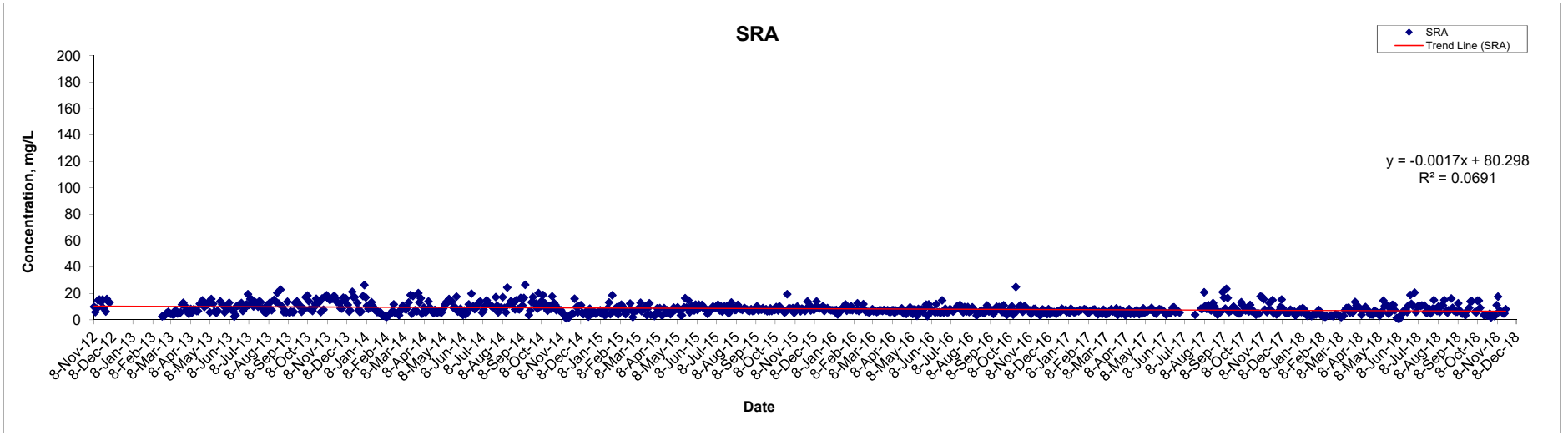

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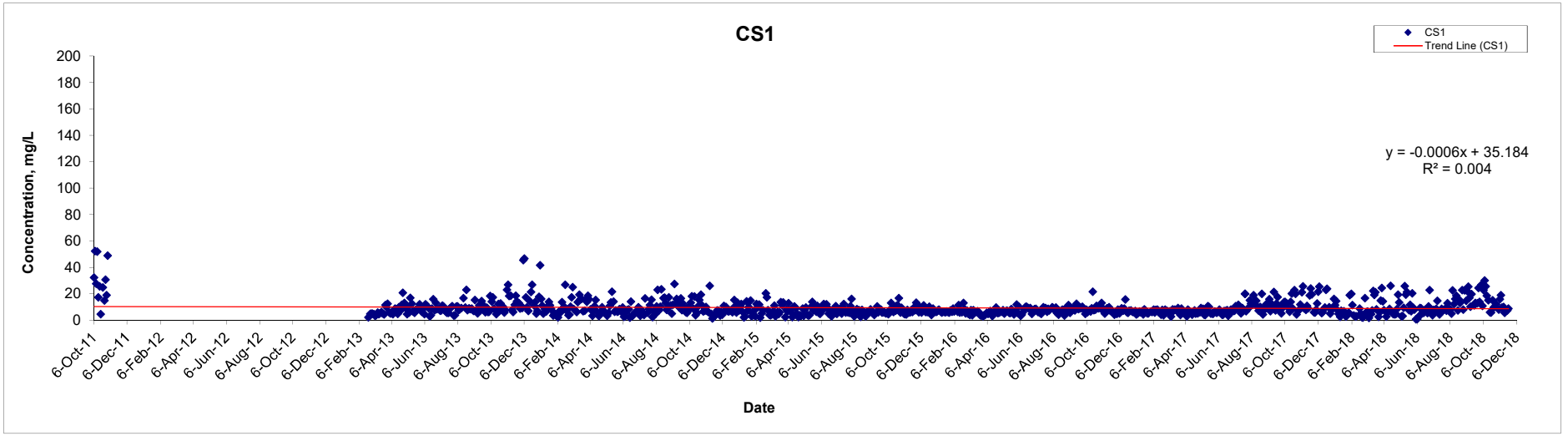
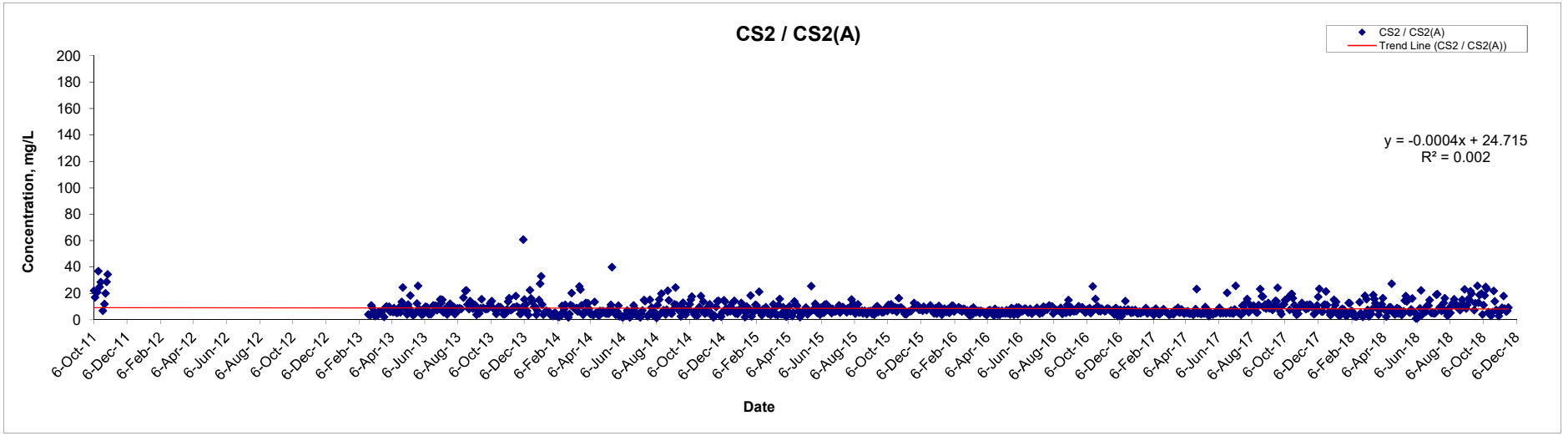
Turbidity (Depth-averaged) at Mid-Flood Tide





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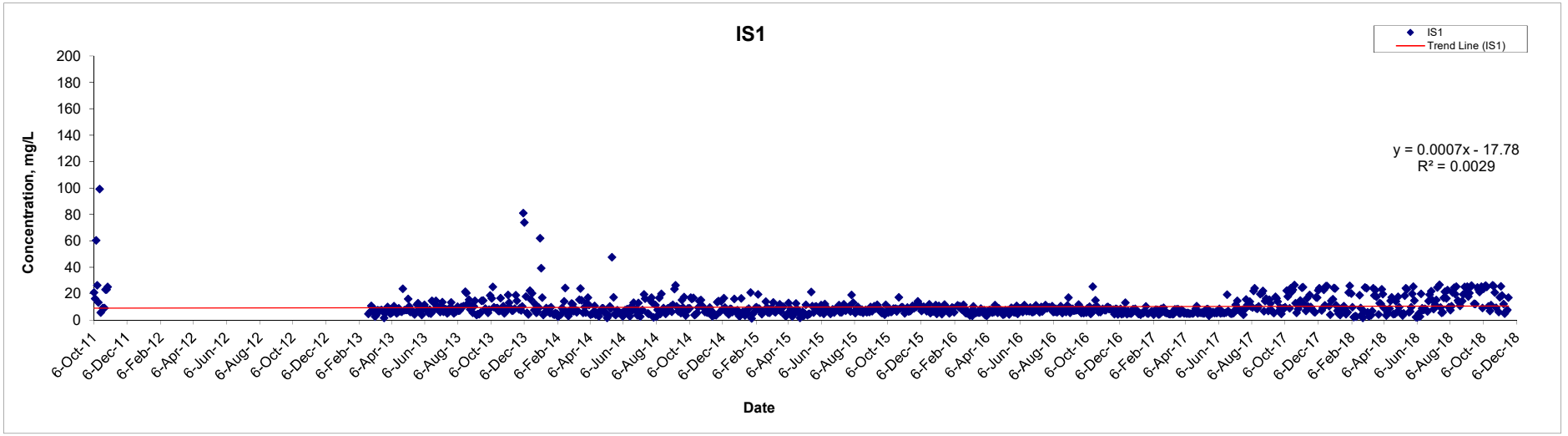

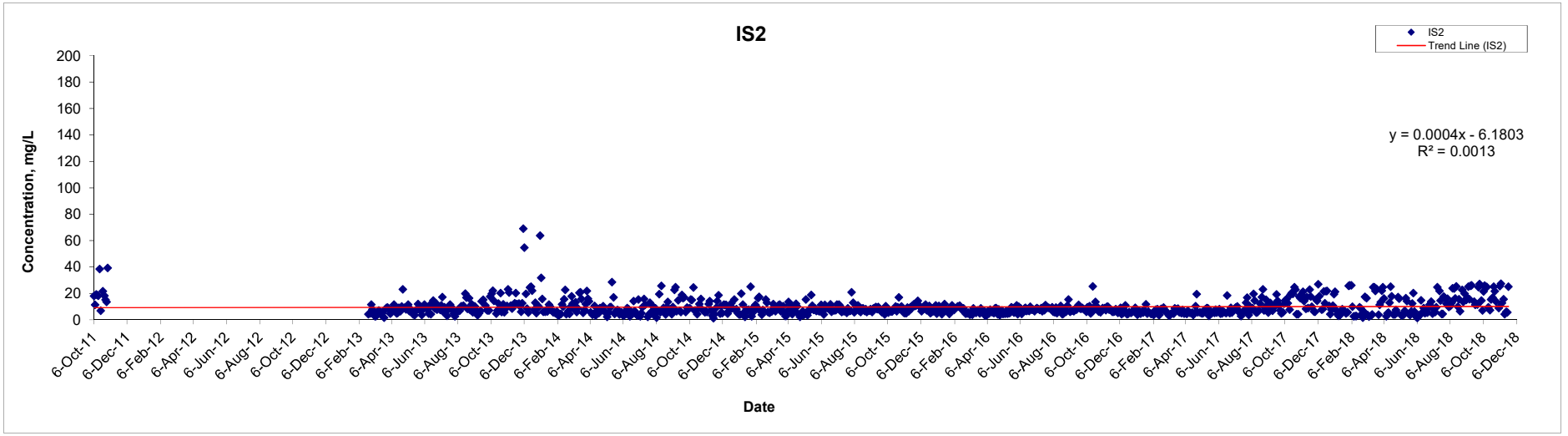

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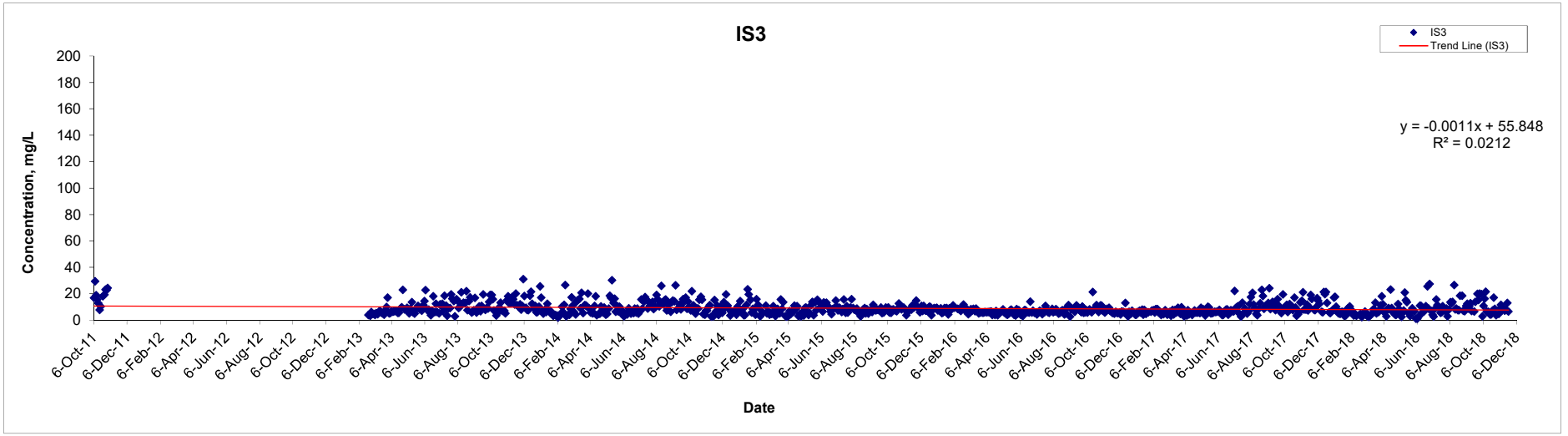

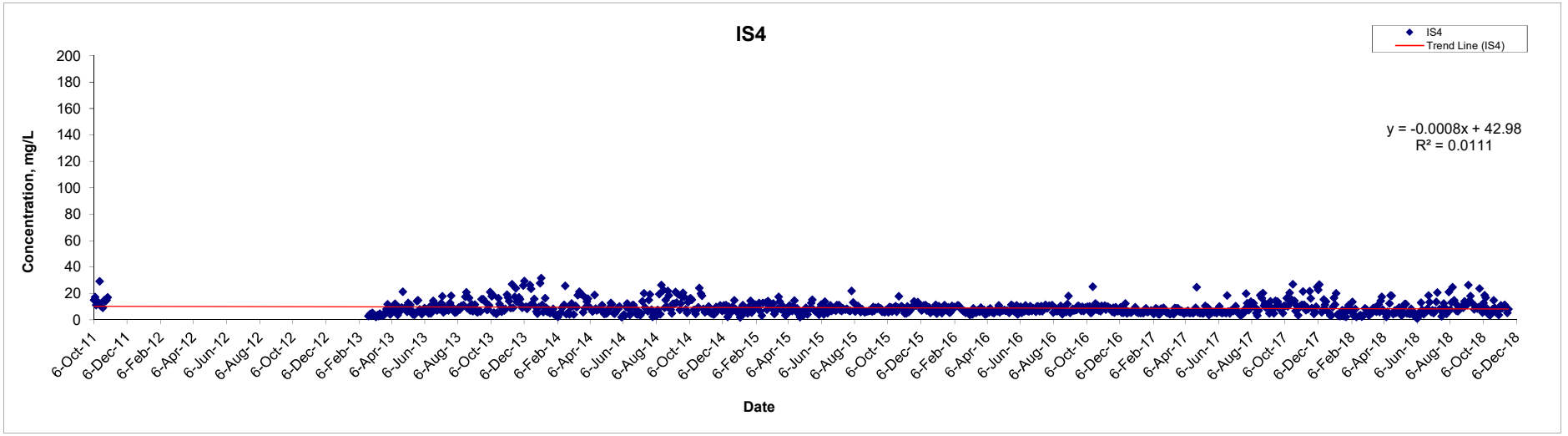

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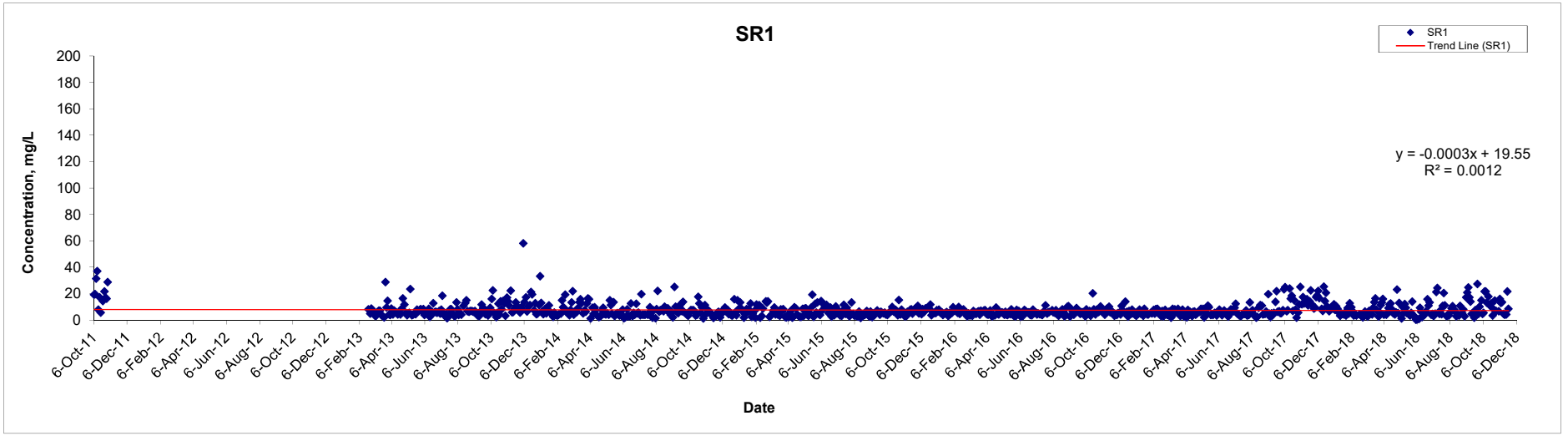

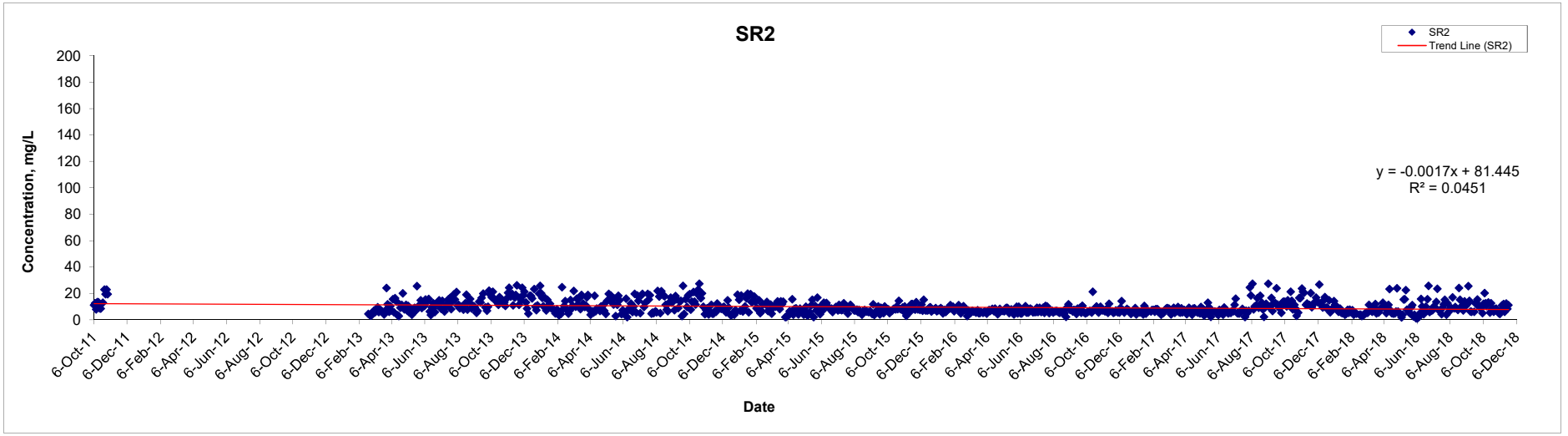

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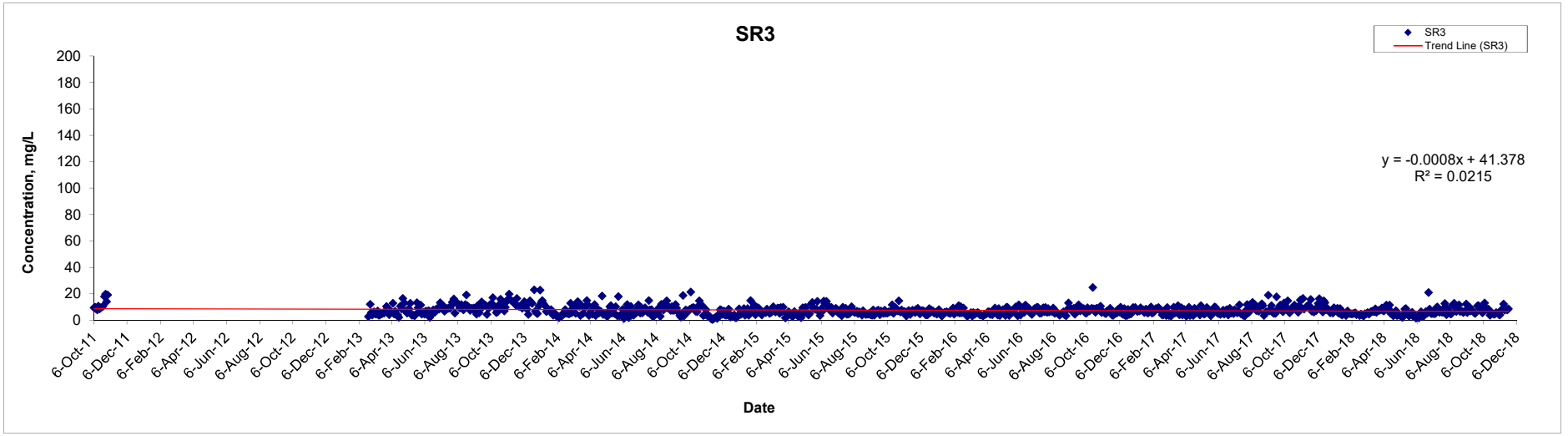

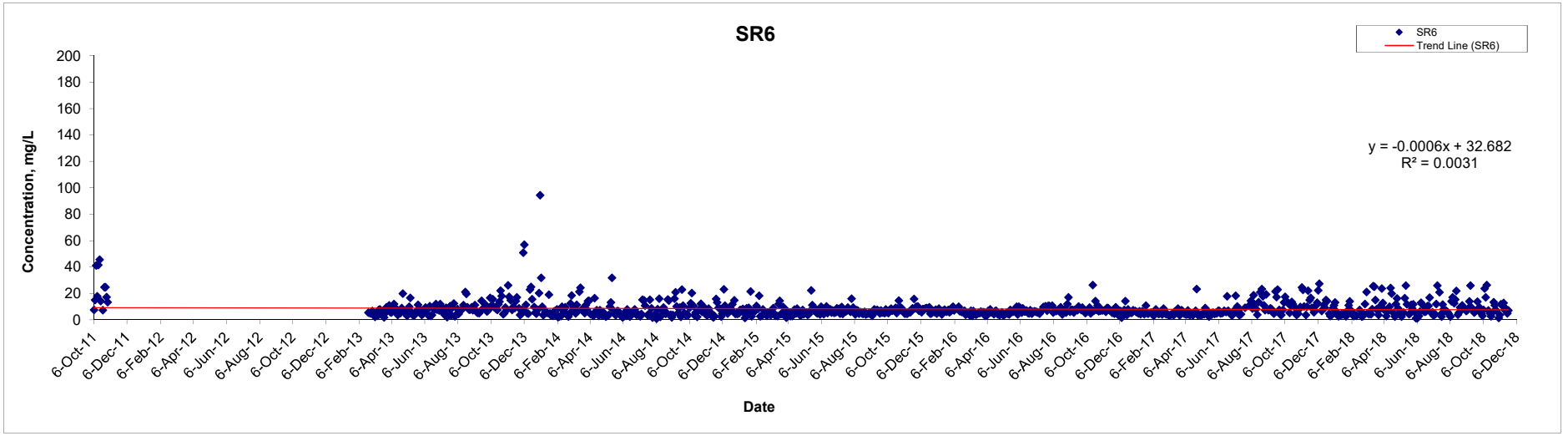

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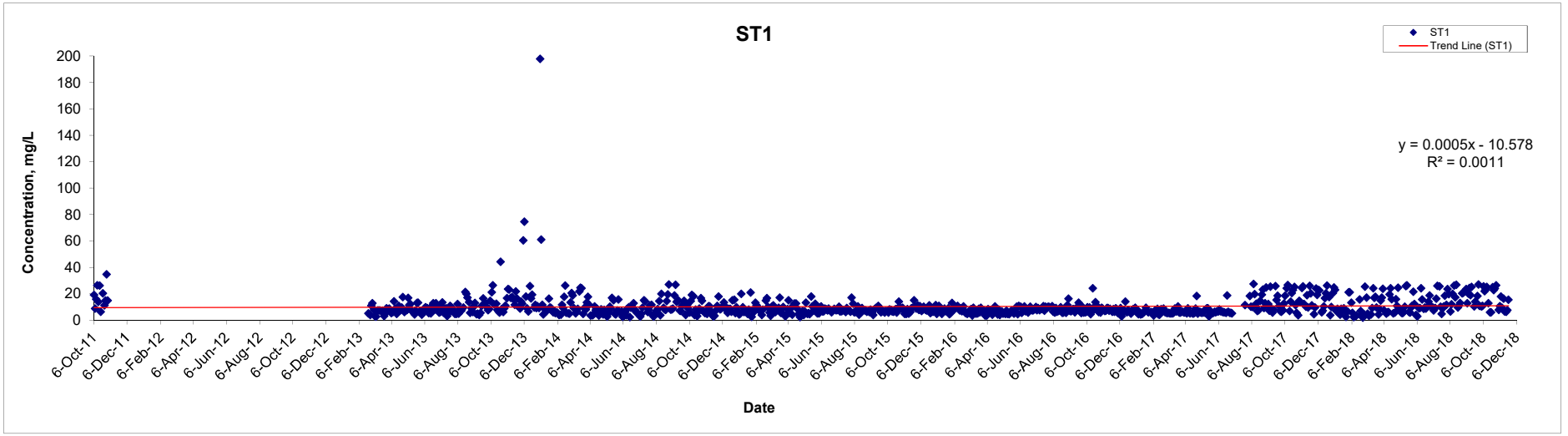

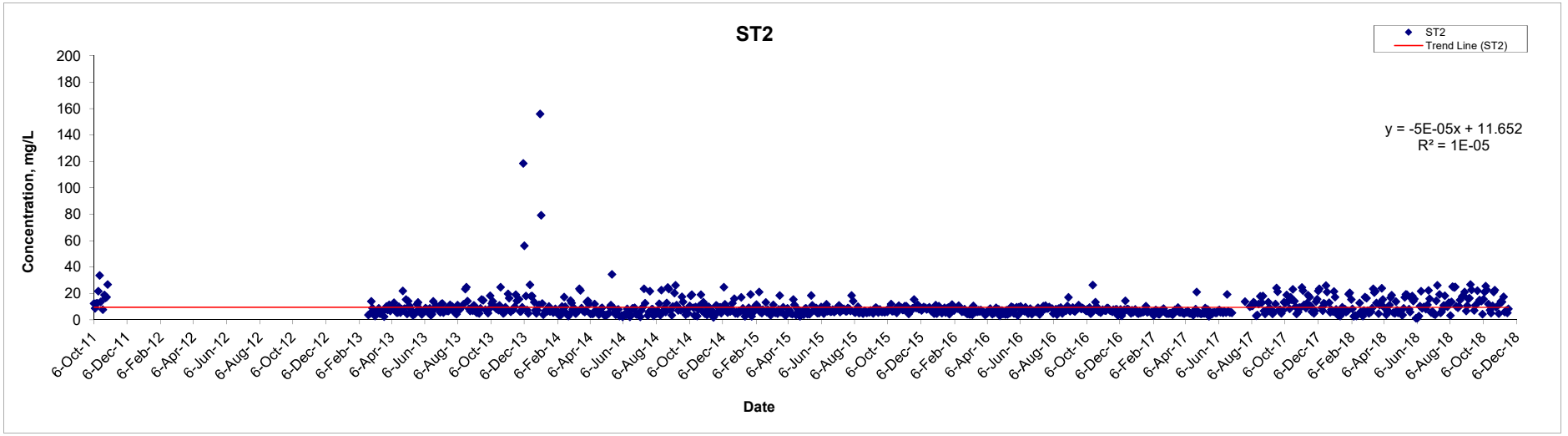

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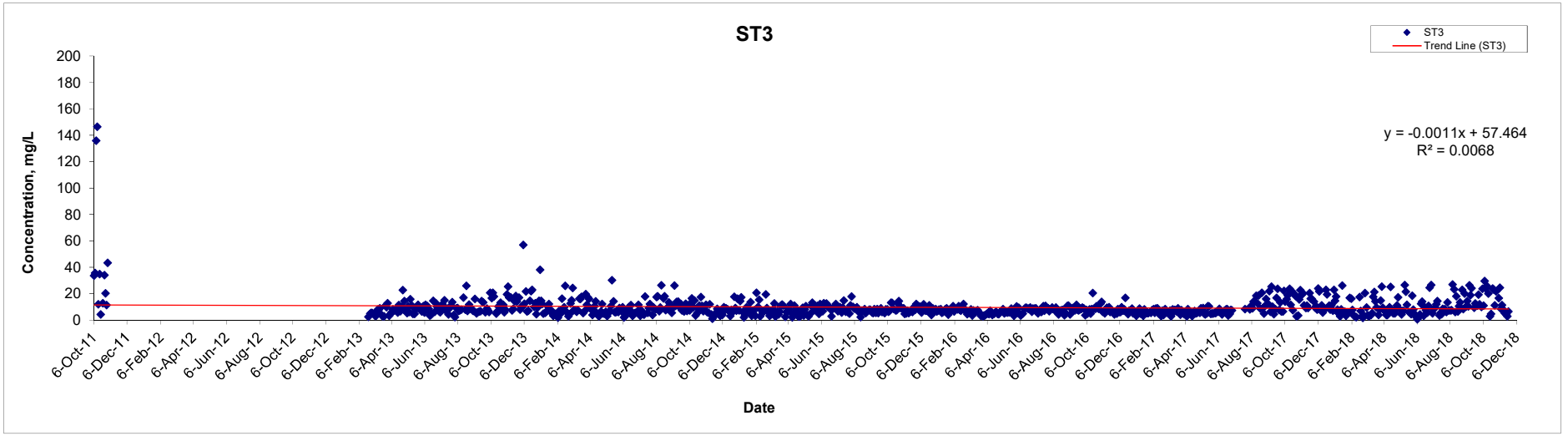

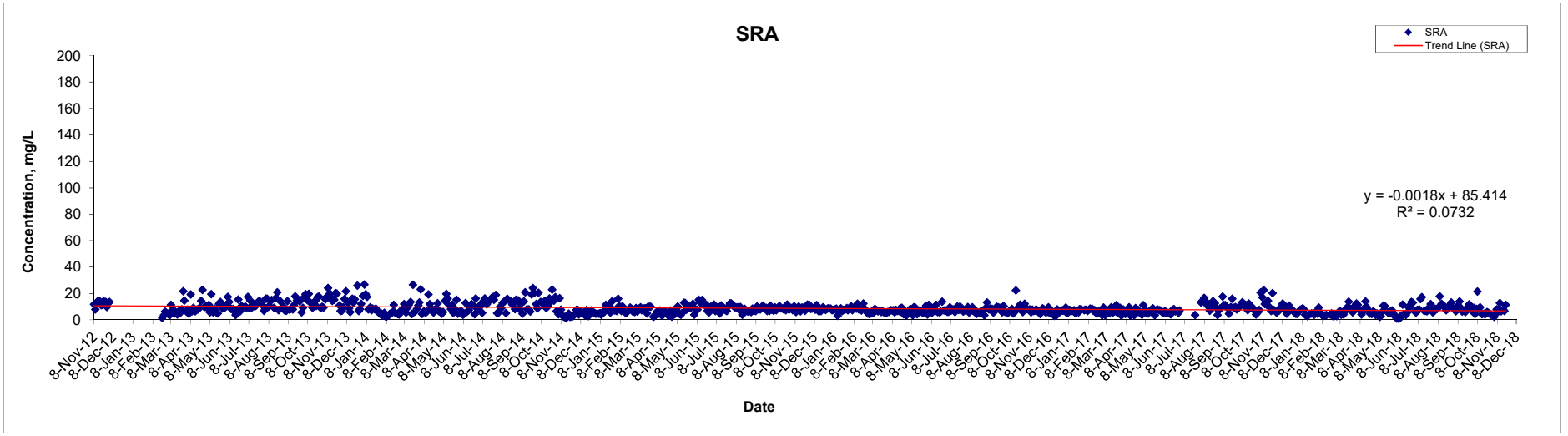

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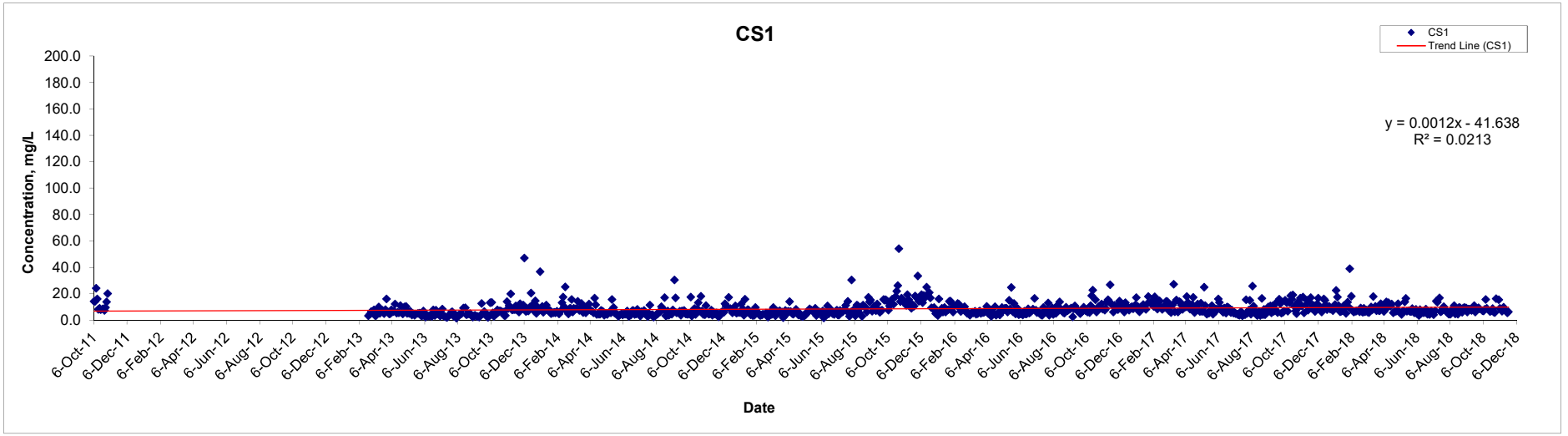
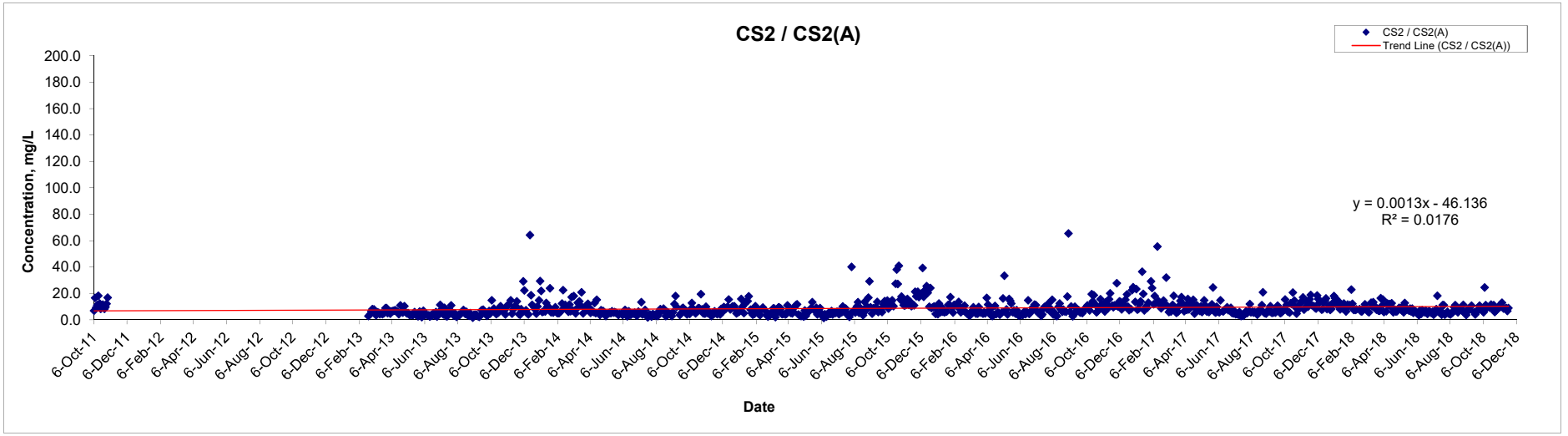
Suspended Solids (Depth-averaged) at Mid-Ebb Tide





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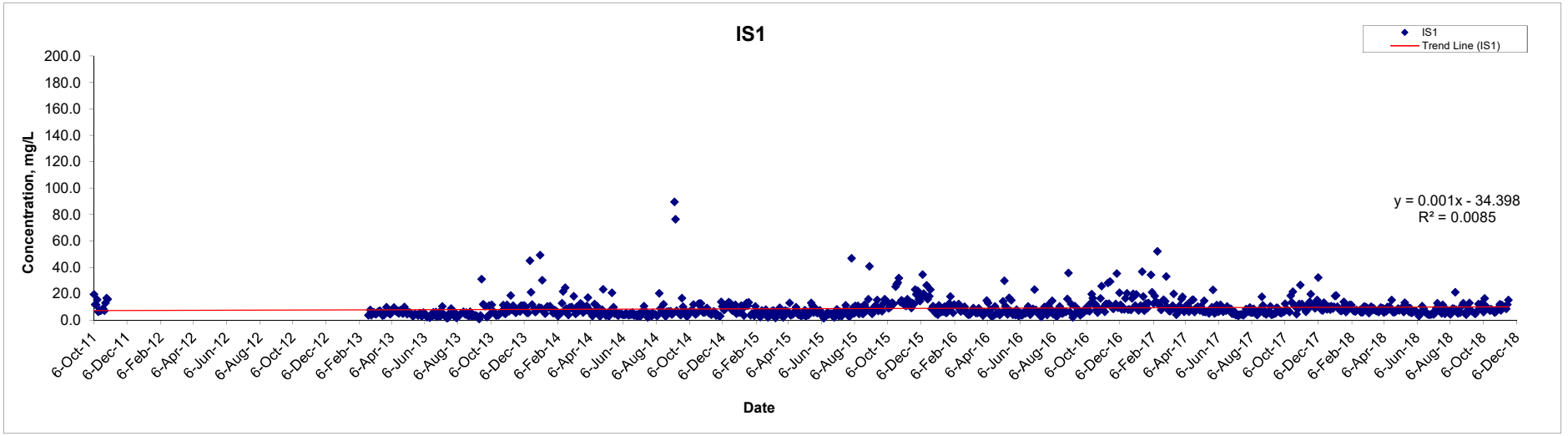

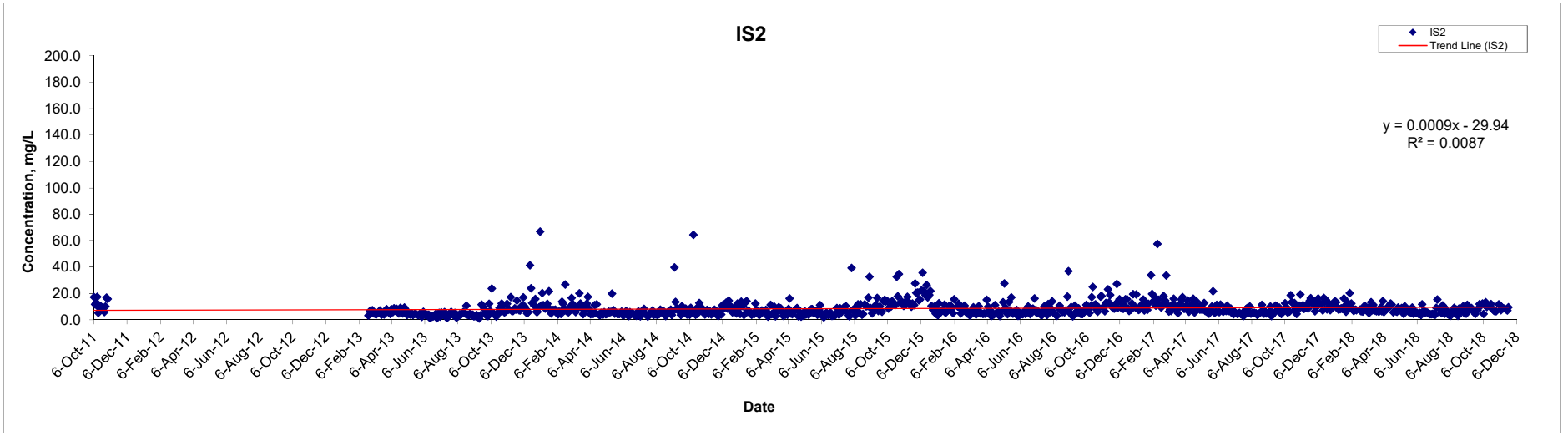

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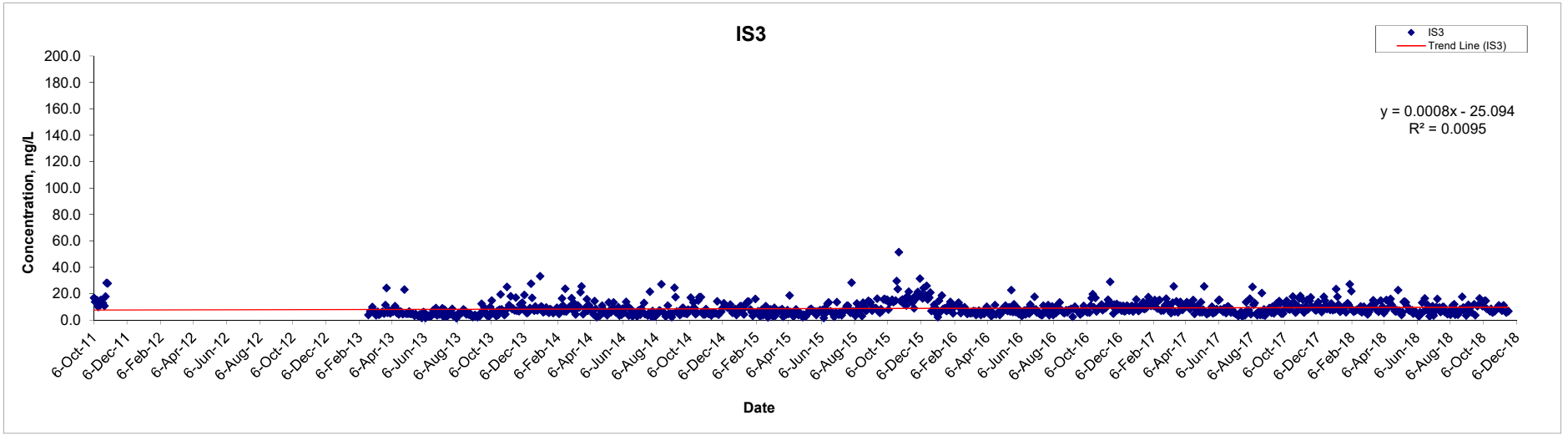

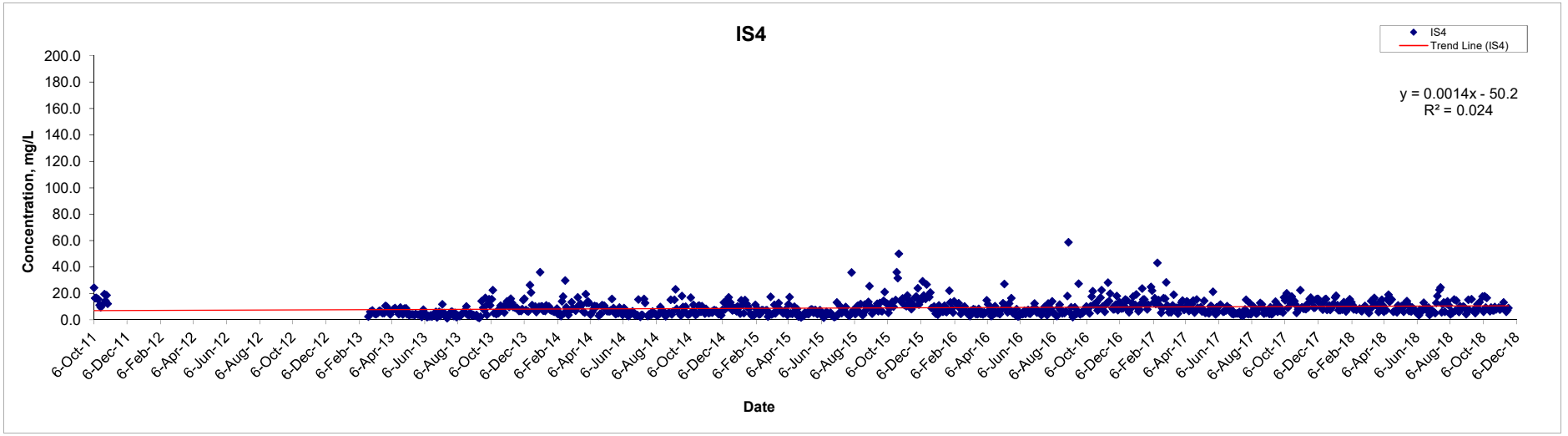

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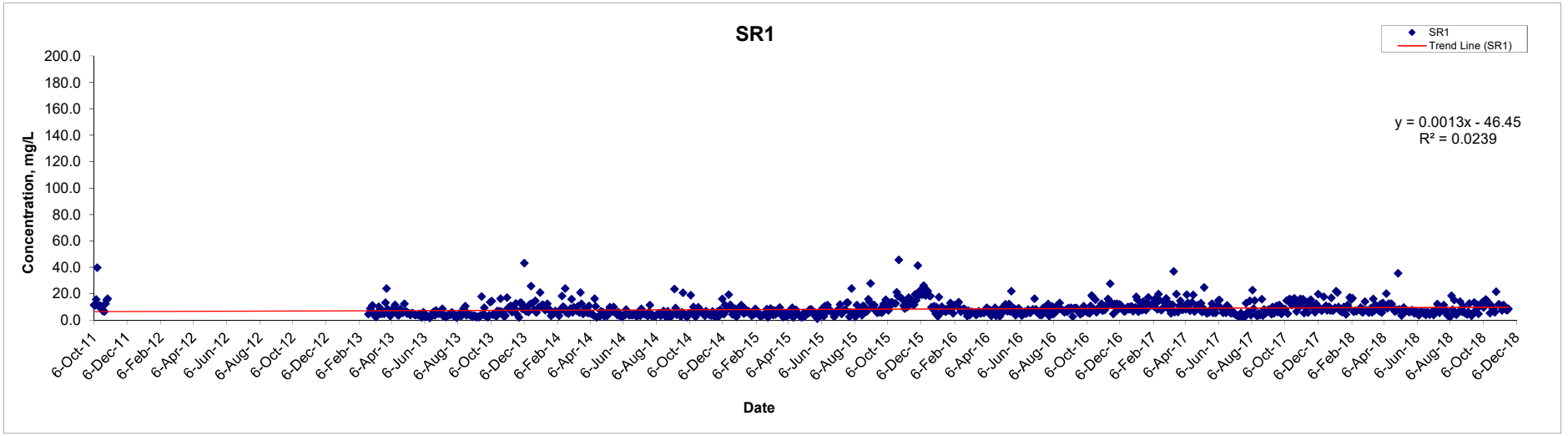

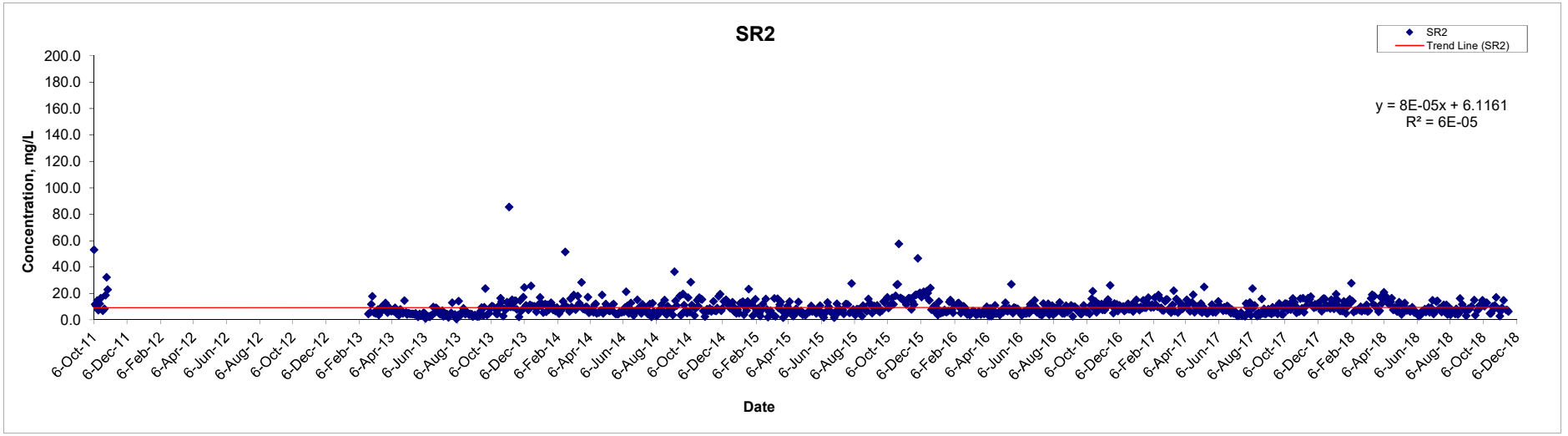

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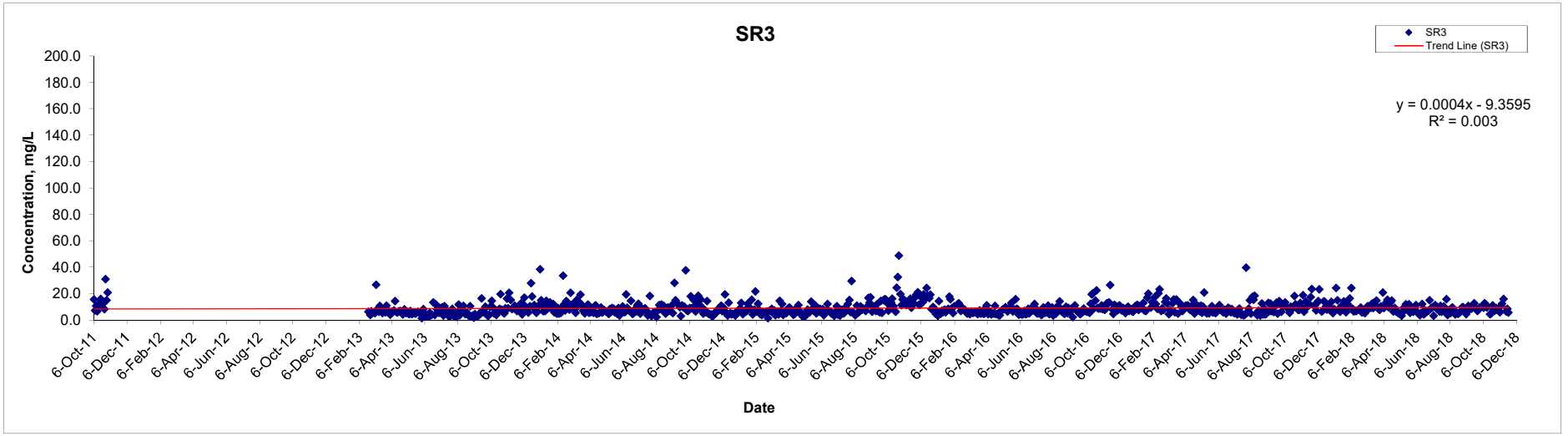

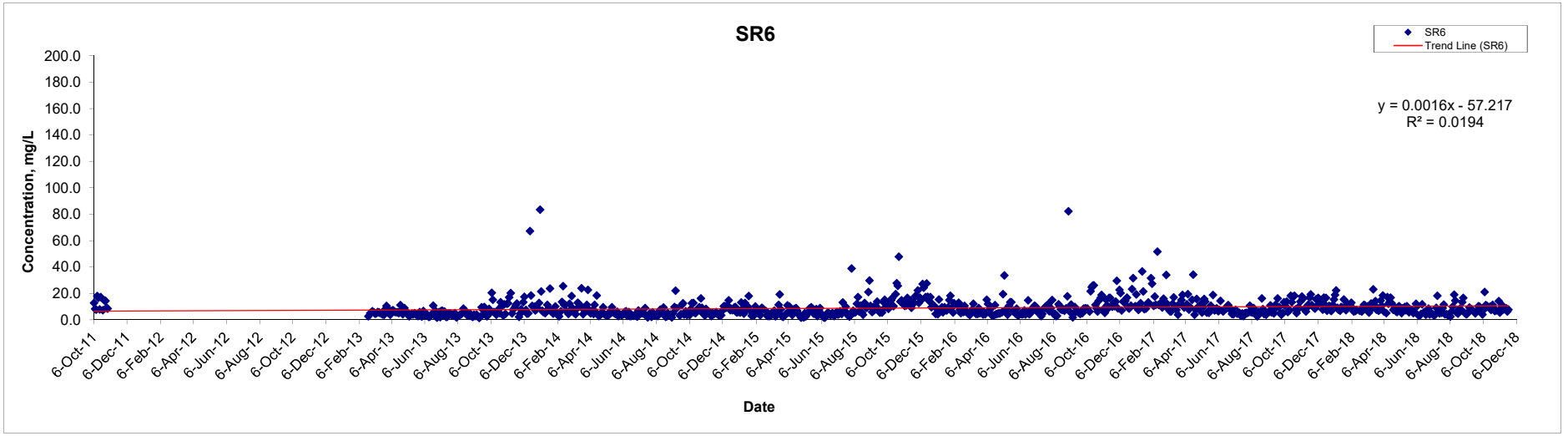

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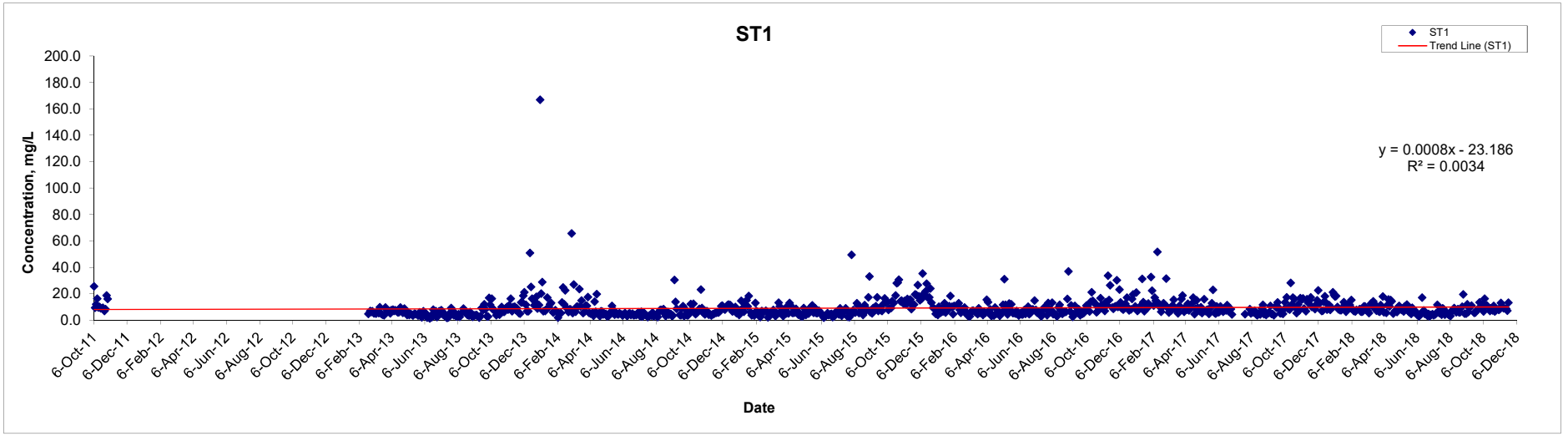

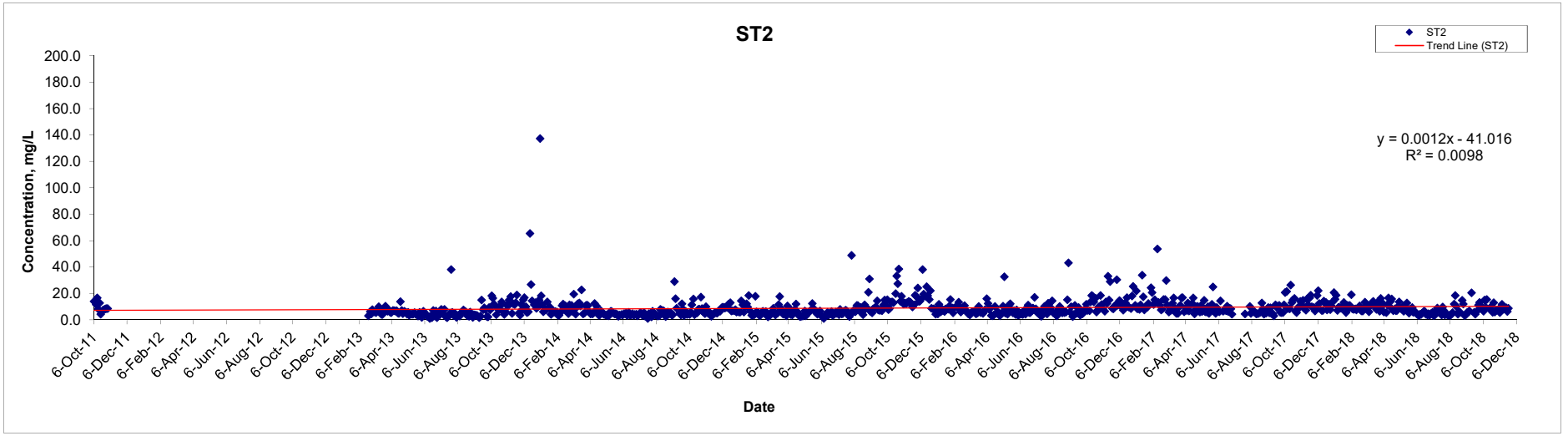

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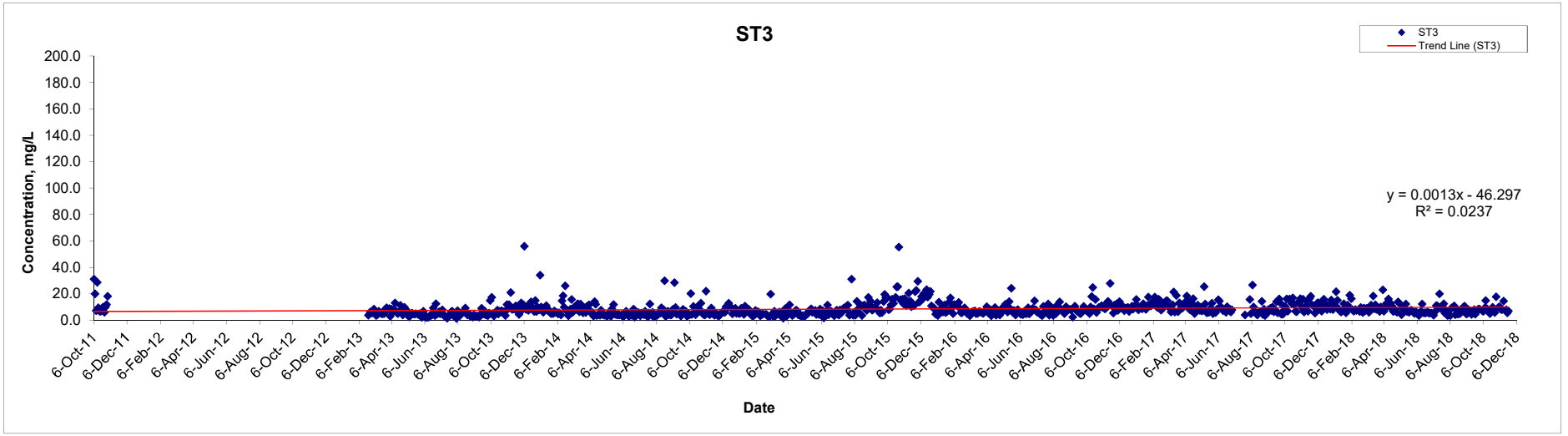

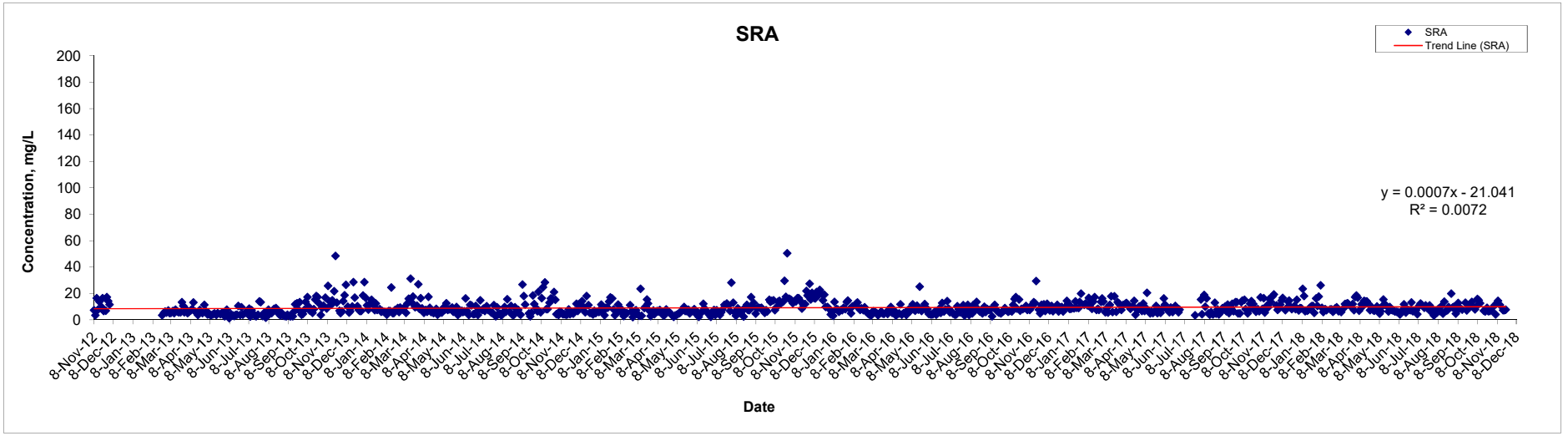

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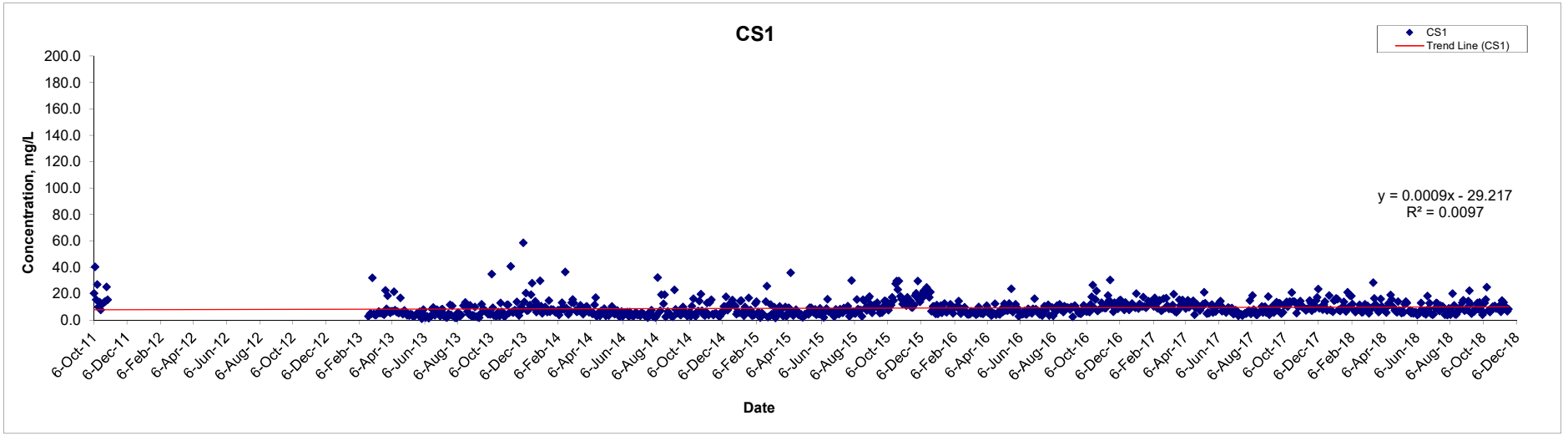

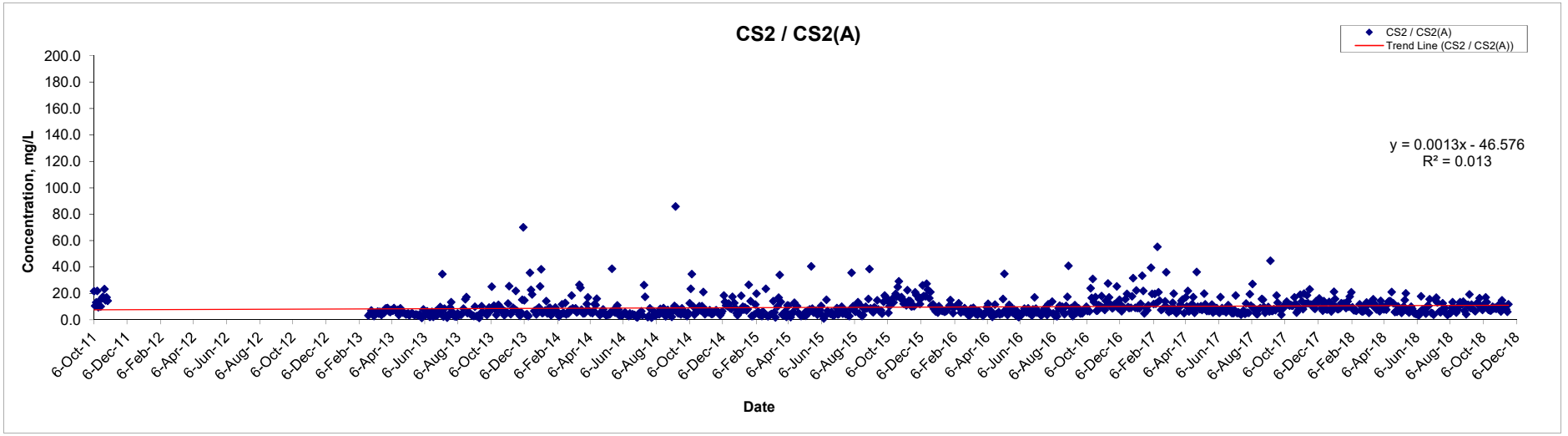

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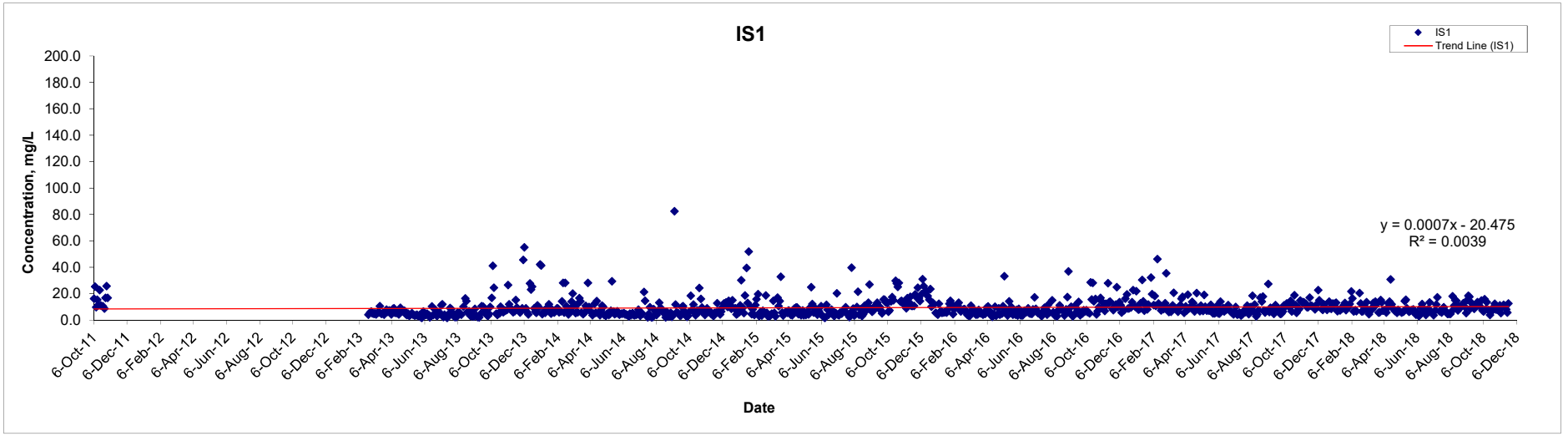

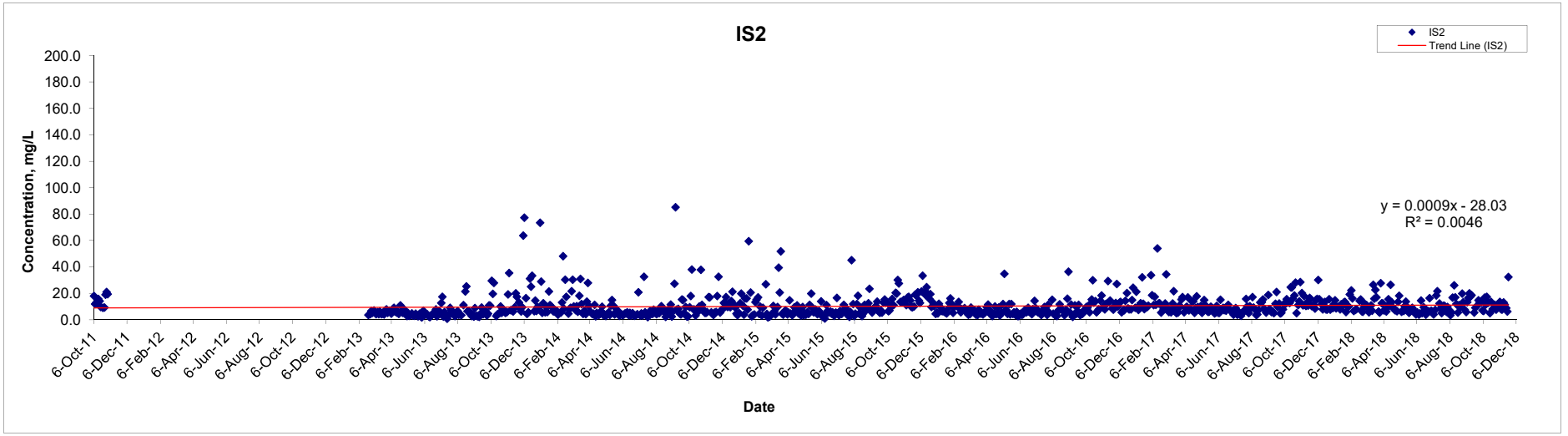

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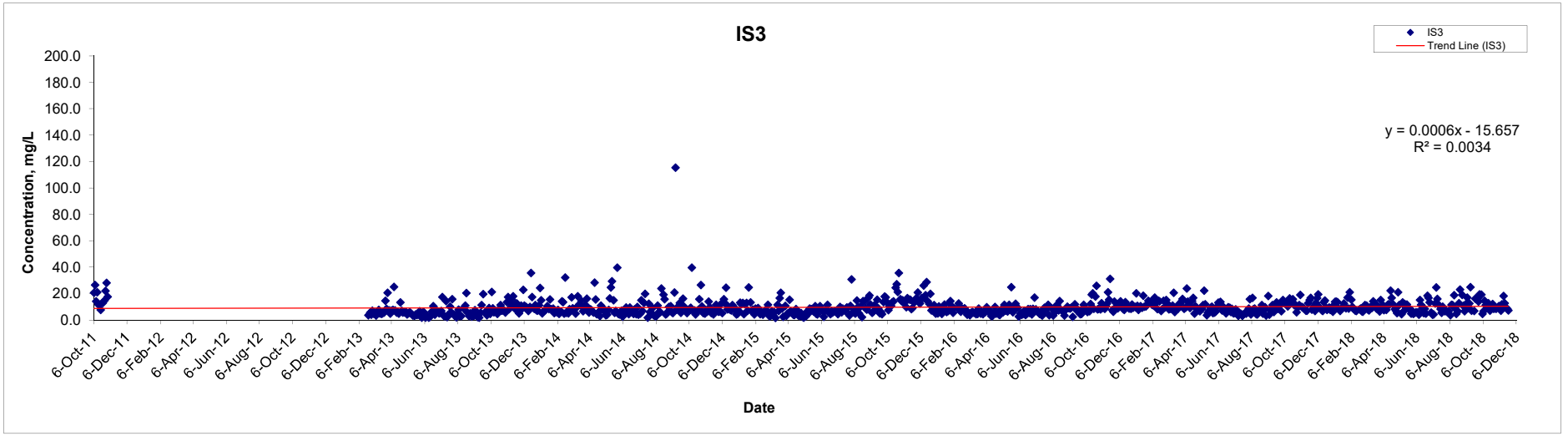

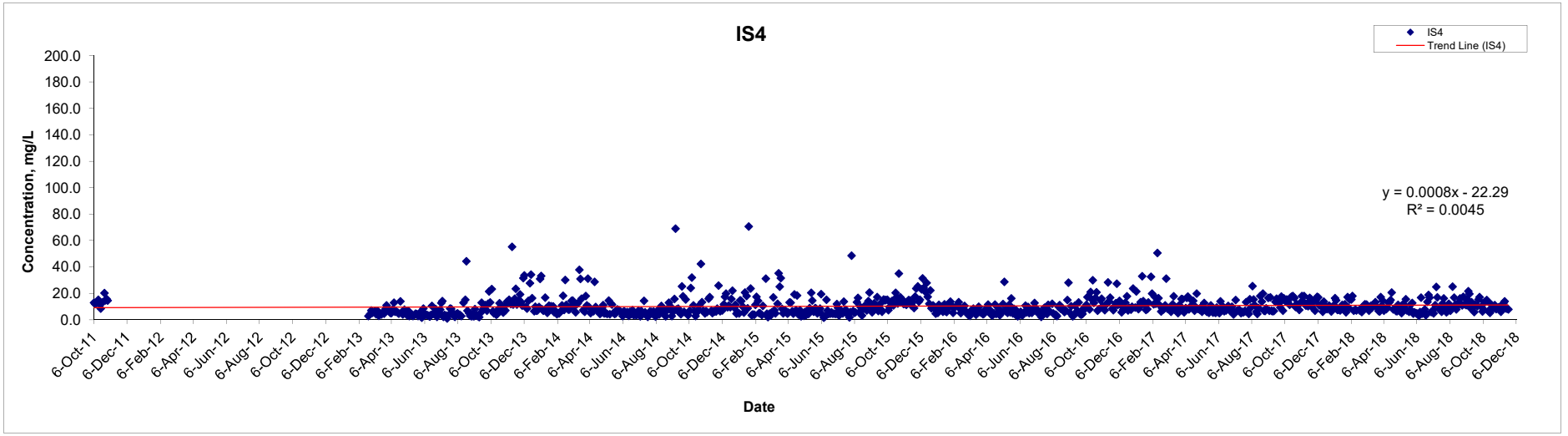

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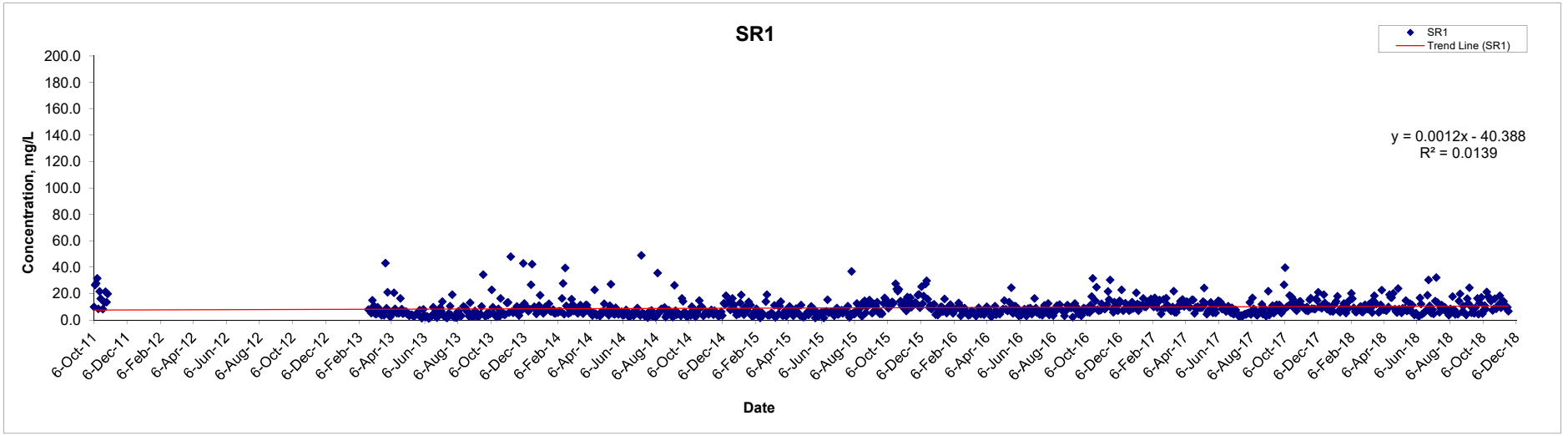

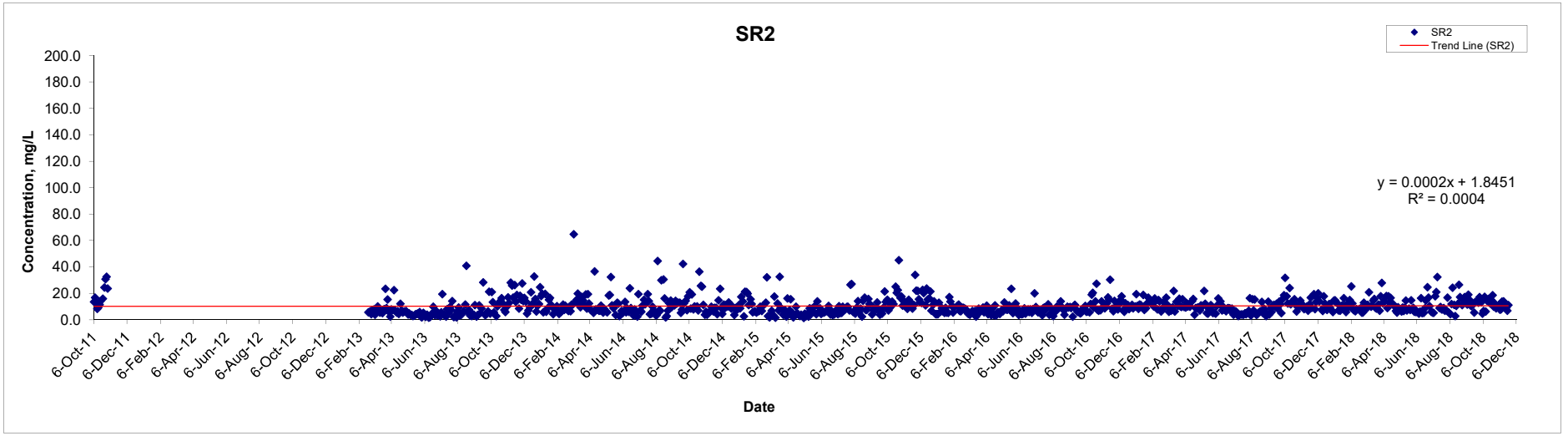

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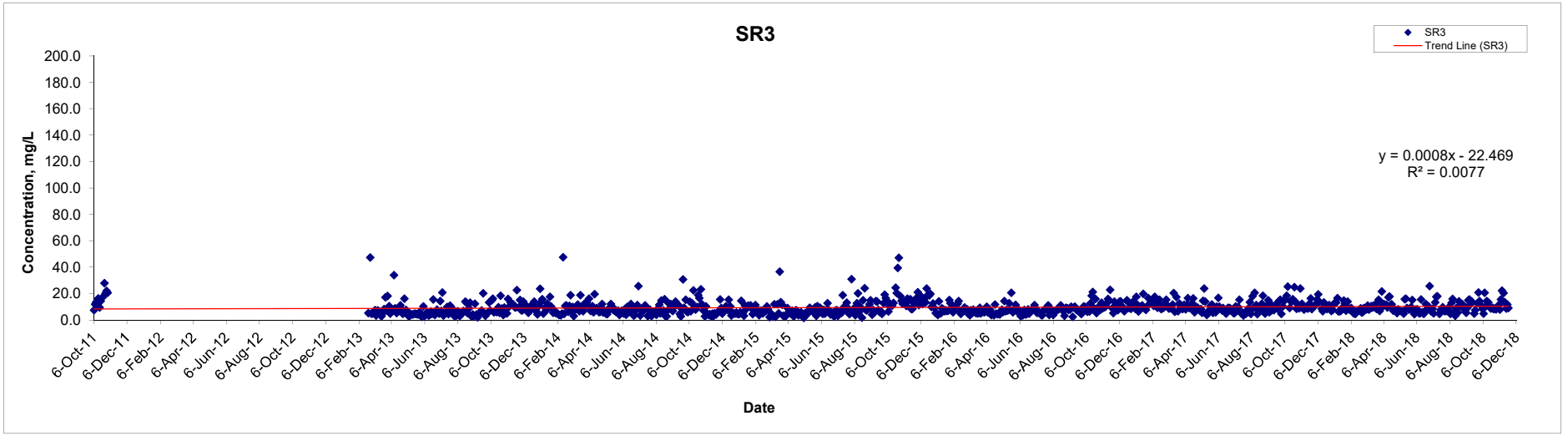

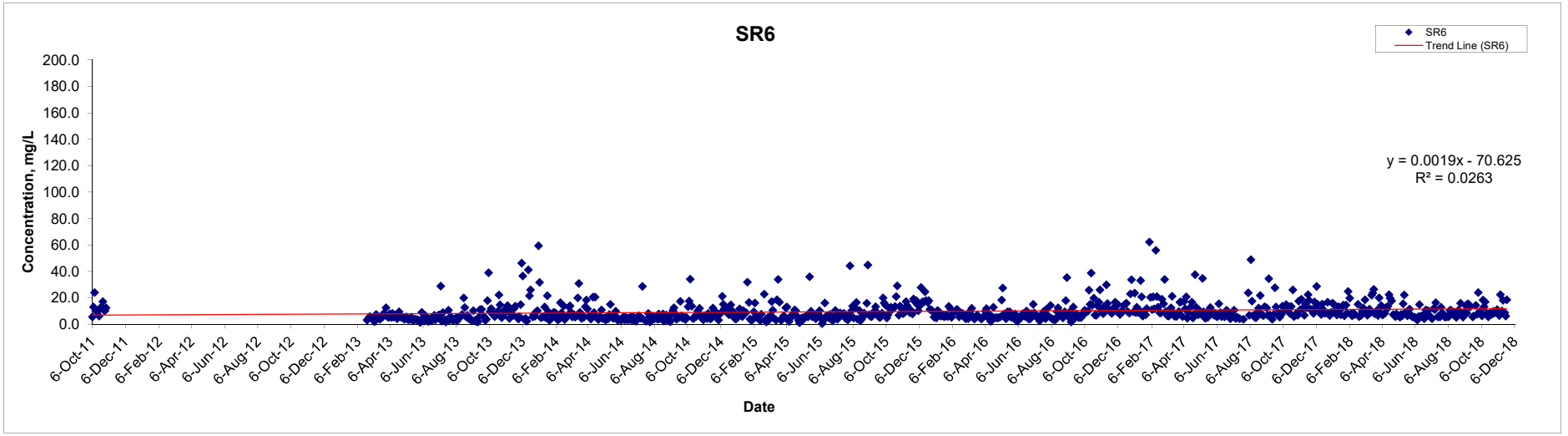

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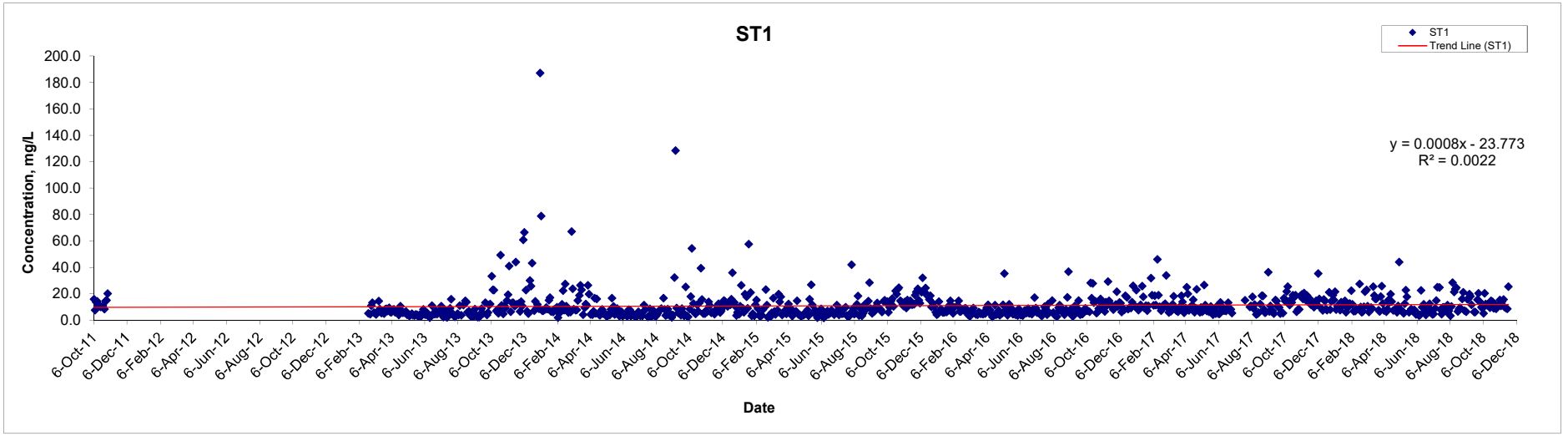

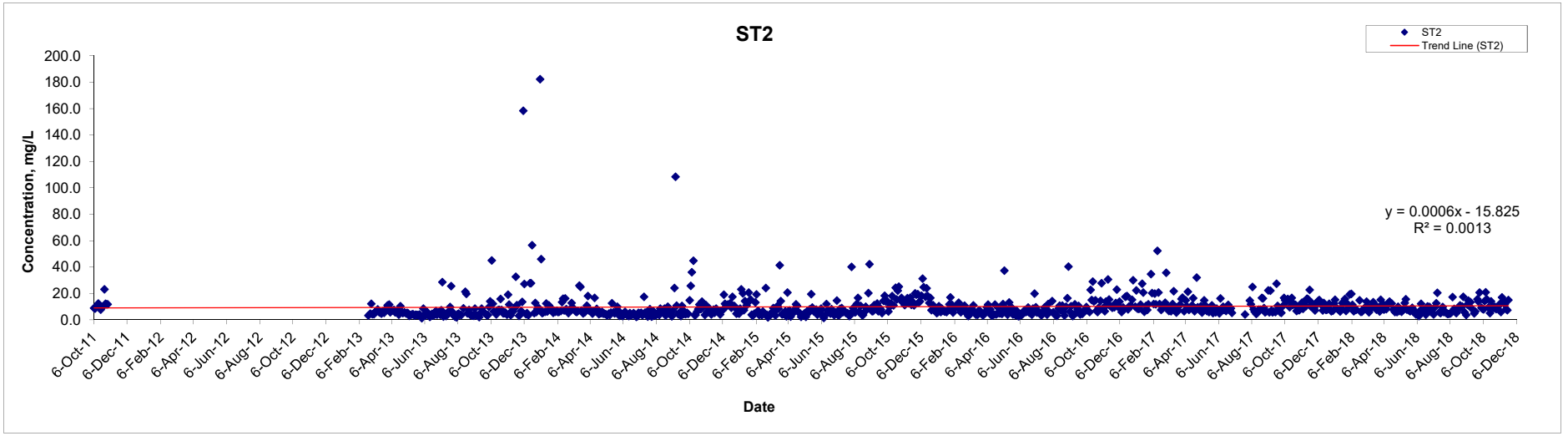

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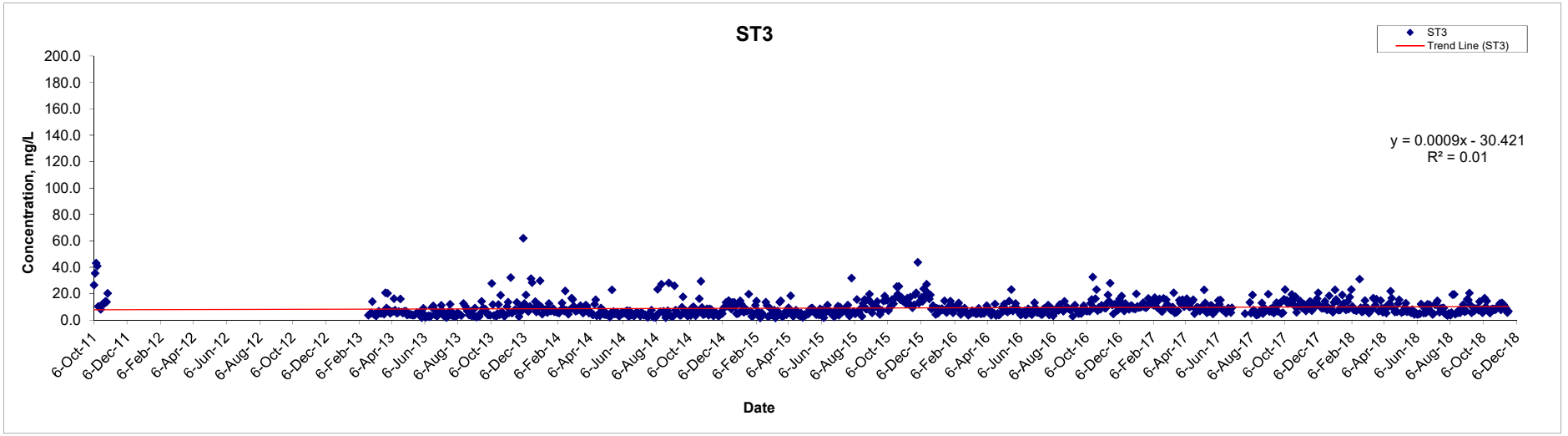

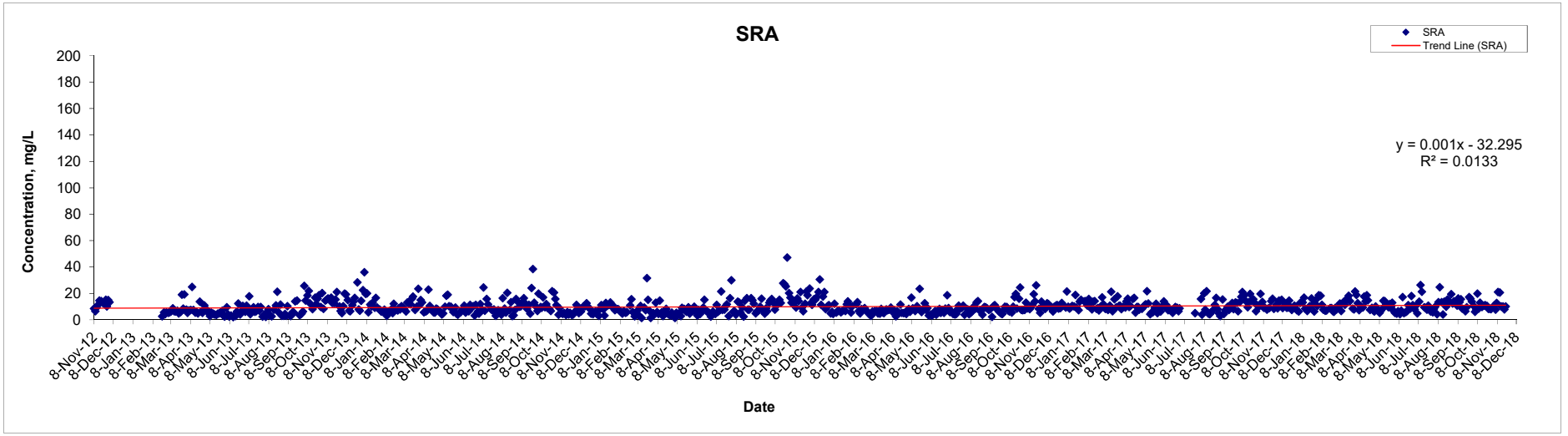

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APPENDIX C
SUMMARY OF ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
Air Quality							
S5.5.6.1	A1	1) The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	^
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	* * ^ ^ *

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
S5.5.6.2	A2	• When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	* * * * N/A ^ *

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides;					
S5.5.6.2	A2	• Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	N/A * ^
S5.5.6.3	A3	3) The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	Control construction dust	Contractor	All construction sites	Construction stage	*
S5.5.6.4	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Monitor the 24 hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.	Contractor	Selected representative dust monitoring station	Construction stage	^
S5.5.7.1	A6	The following mitigation measures should be adopted to prevent fugitive	Monitor the 24 hr and 1hr	Contractor	Selected	Construction	

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		dust emissions for concrete batching plant: • Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system; • All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP; • Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system; • The materials which may generate airborne dusty emissions should be wetted by water spray system; • All receiving hoppers should be enclosed on three sides up to 3m above unloading point; • All conveyor transfer points should be totally enclosed; • All access and route roads within the premises should be paved and wetted; and • Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body.	TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.		representative dust monitoring station	stage	N/A N/A N/A * * N/A N/A N/A
S5.5.2.7	A7	The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point: • All road surface within the barging facilities will be paved; • Dust enclosures will be provided for the loading ramp; • Vehicles will be required to pass through designated wheels wash facilities; and • Continuous water spray at the loading points.	Control construction dust	Contractor	All construction sites	Construction stage	N/A N/A N/A N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
Construction Noise (Air borne)							
S6.4.10	N1	1) Use of good site practices to limit noise emissions by considering the following: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	Control construction airborne noise by means of good site practices	Contractor	All construction sites	Construction stage	* ^ ^ ^ ^ ^
S6.4.11	N2	2) Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites	Construction stage	*
S6.4.12	N3	3) Install movable noise barriers (typically density @14kg/m^2), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.	Screen the noisy plant items to be used at all construction sites	Contractor	For plant items listed in Appendix 6D of the EIA report at all	Construction stage	*

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
					construction sites		
S6.4.13	N4	4) Select "Quiet plants" which comply with the BS 5228 Part 1 or TM standards.	Reduce the noise levels of plant items	Contractor	For plant items listed in Appendix 6D of the EIA report at all construction sites	Construction stage	^
S6.4.14	N5	5) Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	^
	N6	6) Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction stage	^
Waste Management (Construction Waste)							
S8.3.8	WM1	<u>*Construction and Demolition Material*</u> The following mitigation measures should be implemented in handling the waste: • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	^ * ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation					^ * *
S8.3.9 - S8.3.11	WM2	*C&D Waste* • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	^ *

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.					
S8.2.12-S8.3.15	WM3	*Chemical Waste* • Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes • Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. • The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. • Disposal of chemical waste should be via a licensed waste	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	* * * *

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.					
S8.3.16	WM4	*Sewage* • Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly.	Proper handling of sewage from worker to avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	^
S8.3.17	WM5	*General Refuse* • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. • Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. • Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	* * * ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminum cans, plastic bottles etc., should be provided. • Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes.					*
Water Quality (Construction Phase)							
S9.11.1 – S9.11.1.2	W1	• Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of dredging/backfilling, as well as protection measures. Details of the measures are provided below and summarised in the Environmental Mitigation Implementation Schedule in EM&A Manual. • Export for dredged spoils from NWWCZ avoiding exerting high demand on the disposal facilities in the NWWCZ and, hence, minimise potential cumulative impacts; • For the marine viaducts of HKLR, the bored piling will be undertaken within a metal casing; • where public fill is proposed for filling below -2.5mPD, the fine content in the public fill will be controlled to 25%; • single layer silt curtains will be applied around all works; • during the first two months of dredging work for HKLR, the silt-removal efficiency of the silt-curtains shall be verified by examining the results of water quality monitoring points. The water quality	To control construction water quality	Contractor	During seawall dredging and filling	Construction stage	^ ^ ^ N/A ^ N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		monitoring points to be selected for the above shall be those close to the locations of the initial period of dredging work. Details in this regard shall be determined by the ENPO to be established, taking account of the Contractor's proposed actual locations of his initial period of dredging work. • silt curtain shall be fully maintained throughout the works. In addition, dredging operations should be undertaken in such a manner as to minimise resuspension of sediments. Standard good dredging practice measures should, therefore, be implemented including the following requirements which should be written into the dredging contract. • trailer suction hopper dredgers shall not allow mud to overflow; • use of Lean Material Overboard (LMOB) systems shall be prohibited; • mechanical grabs shall be designed and maintained to avoid spillage and should seal tightly while being lifted; • barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material; • any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes; • loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;					* N/A ^ ^ ^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		• excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved; • adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; • all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; and • the works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site.					* ^ ^ *
S9.11.1.3	W2	*Land Works* General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include: • wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; • sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided; • storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt	To control construction water quality	Contractor	During seawall dredging and filling	Construction stage	* N/A *

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;					
		• silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;					*
		• temporary access roads should be surfaced with crushed stone or gravel;					^
		• rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;					*
		• measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;					*
		• open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;					*
		• manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers;					*
		• discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;					^
		• all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit;					*

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		• wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; • the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; • wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; • vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal; • the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately; • waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; • all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and • surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.					* ^ ^ N/A * ^ * ^
S9.14	W3	Implement a water quality monitoring programme	Control water quality	Contractor	At identified	During	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
					monitoring location	construction period	
Ecology (Construction Phase)							
S10.7	E1	• Good site practices to avoid runoff entering woodland habitats in Scenic Hill • Reinstate works areas in Scenic Hill • Avoid stream modification in Scenic Hill	Avoid potential disturbance on habitat of Romer's Tree Frog in Scenic Hill	Designer; Contractor	Scenic Hill	During construction	^ N/A ^
S10.7	E2	• Use closed grab in dredging works. • Install silt curtain during the construction. • Limit dredging and works fronts. • Good site practices • Strict enforcement of no marine dumping. • Site runoff control • Spill response plan	Minimise marine water quality impacts	Contractor	Seawall,	During construction	^ ^ ^ ^ ^ ^ ^
S10.7	E3	• Reprovision of replacement Artificial Reefs (of the same volume as the existing ARs inside Marine Exclusion Zone)	Mitigate water quality impacts on the existing ARs	Project proponent	To be determined	Construction phase or operation phase	N/A
S10.7	E4	Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater	Prevent Sedimentation from Land-based works areas	Contractor	Land-based works areas	During construction	^
S10.7	E5	Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time	Prevent disturbance to terrestrial fauna and habitats	Contractor	Land-based works areas	During construction	^
S10.7	E6	• Dolphin Exclusion Zone;	Minimize temporary marine	Contractor	Marine works	During marine	*

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		• Dolphin watching plan	habitat loss impact to dolphins			works	*
S10.7	E7	• Decouple compressors and other equipment on working vessels • Avoidance of percussive piling • Marine underwater noise monitoring • Temporal suspension of drilling bored pile casing in rock during peak dolphin calving season in May and June	Minimise marine noise impacts on dolphins	Contractor	Marine works	During marine works	* ^ ^ N/A
S10.7	E8	• Control vessel speed • Skipper training. • Predefined and regular routes for working vessels; avoid Brothers Islands.	Minimise marine traffic disturbance on dolphins	Contractor	Marine traffic	During marine works	^ ^ ^
S10.10	E9	• Dolphin vessel monitoring	Minimise marine traffic disturbance on dolphins	Contractor	North Lantau and West Lantau	Prior to construction, during construction, and 1 year after operation	^
Fisheries							
S11.7	F1	• Reprovision of replacement Artificial Reefs(of the same volume as the existing ARs inside Marine Exclusion Zone)	Mitigate water quality impacts on the existing ARs	Project proponent	To be determined	Construction phase or operation phase	N/A
S11.7	F2	• Reduce re-suspension of sediments • Limit dredging and works fronts. • Good site practices	Minimise marine water quality impacts	Contractor	Seawall,	During construction	^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		• Strict enforcement of no marine dumping • Spill response plan					^ ^
Landscape & Visual (Construction Phase)							
S14.3.3.3	LV2	Mitigate both Landscape and Visual Impacts • G1. Grass-hydroseed bare soil surface and stock pile areas. • G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge or footbridge to screen bridge and traffic. • G3. For HKLR, providing aesthetic design on the viaduct, tunnel portals, at-grade roads (e.g. subtle colour tone and slim form for viaduct, featured form of tunnel portals, roadside planting along at-grade roads and landscape berm on) to beautify the HKLR alignment. • G5. Vegetation reinstatement and upgrading to disturbed areas. • G6. Maximize new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed. • G7. Provide planting area around peripheral of and within HKLR for tree screening buffer effect. • G8. Plant salt tolerant native tree and shrubs etc along the planter strip at affected seawall. • G9. Reserve of loose natural granite rocks for re-use. Provide new coastline to adopt “natural-look” by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance “natural-look” of the new coastline (see Figure 14.4.2 for example).	Minimise visual & landscape impact	Contractor	HKLR	Construction stage	N/A N/A ^ N/A N/A N/A N/A N/A
S14.3.3.3	LV3	Mitigate Visual Impacts					

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		• V1.Minimize time for construction activities during construction period. • V2.Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKLR construction.					^ ^
EM&A							
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites	Construction stage	^
S15.5 - S15.6	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Contractor	All construction sites	Construction stage	^ ^ ^

Remarks: ^ Compliance of mitigation measure

* Recommendation was made during site audit but improved/rectified by the contractor

\# Recommendation was made during site audit but not yet improved/rectified by the contractor.

N/A Not Applicable at this stage as no such site activities were conducted in the reporting month (e.g. concrete batching plan, barging point, seawall dredging and filling, bored piling, landscaping works etc)

APPENDIX D
EVENT ACTION PLANS

Event / Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	SO	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and SO; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2.Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and SO; 3. Advise the SO on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and SO; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor;	1. Submit proposals for remedial to SO within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

LIMIT LEVEL				
1.Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform SO, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SO informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the SO on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2.Exceedance for two or more consecutive samples	1. Notify IEC, SO, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and SO to discuss	1. Discuss amongst SO, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the SO accordingly; 3. Supervise the implementation of	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented;	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the SO until the exceedance

	the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SO informed of the results; 8. If exceedance stops, cease additional monitoring.	remedial measures.	5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	is abated.

Abbreviations: ET – Environmental Team, IEC – Independent Environmental Checker, SO – Supervising Office

Event / Action Plan for Construction Noise

EVENT	ACTION			
	ET	**IEC**	**SO**	**CONTRACTOR**
Action Level	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Notify IEC and Contractor; 3. Report the results of investigation to the IEC, SO and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the SO accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Identify source; 2. Inform IEC, SO, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;	1. Discuss amongst SO, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the SO accordingly; 3. Supervise the implementation of	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals;

EVENT	ACTION			
	ET	**IEC**	**SO**	**CONTRACTOR**
	6. Inform IEC, SO and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SO informed of the results; 8. If exceedance stops, cease additional monitoring.	remedial measures.	noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the SO until the exceedance is abated.

Event and Action Plan for Water Quality

Event	ET Leader	IEC	SO	Contractor
Action level being exceeded by one sampling day	Repeat *in situ* measurement on next day of exceedance to confirm findings; Identify source(s) of impact; Inform IEC, contractor and SO; Check monitoring data, all plant, equipment and Contractor's working methods.	Check monitoring data submitted by ET and Contractor's working methods.	Confirm receipt of notification of non-compliance in writing; Notify Contractor.	Inform the SO and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling days	Repeat measurement on next day of exceedance to confirm findings; Identify source(s) of impact; Inform IEC, contractor, SO and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Action level;	Check monitoring data submitted by ET and Contractor's working method; Discuss with ET and Contractor on possible remedial actions; Review the proposed mitigation measures submitted by Contractor and advise the SO accordingly; Supervise the implementation of mitigation measures.	Discuss with IEC on the proposed mitigation measures; Ensure mitigation measures are properly implemented; Assess the effectiveness of the implemented mitigation measures.	Inform the Supervising Officer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment and consider changes of working methods; Submit proposal of additional mitigation measures to SO within 3 working days of notification and discuss with ET, IEC and SO; Implement the agreed mitigation measures.
Limit level being exceeded by one sampling day	Repeat measurement on next day of exceedance to confirm findings; Identify source(s) of impact; Inform IEC, contractor, SO and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, SO and Contractor;	Check monitoring data submitted by ET and Contractor's working method; Discuss with ET and Contractor on possible remedial actions; Review the proposed mitigation measures submitted by Contractor and advise the SO accordingly.	Confirm receipt of notification of failure in writing; Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to review the working methods.	Inform the SO and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment and consider changes of working methods; Submit proposal of mitigation measures to SO within 3 working days of notification and discuss with ET,

Event	ET Leader	IEC	SO	Contractor
				IEC and SO.
Limit level being exceeded by two or more consecutive sampling days	Repeat measurement on next day of exceedance to confirm findings; Identify source(s) of impact; Inform IEC, contractor, SO and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, SO and Contractor; Ensure mitigation measures are implemented;	Check monitoring data submitted by ET and Contractor's working method; Discuss with ET and Contractor on possible remedial actions; Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the SO accordingly; Supervise the implementation of mitigation measures.	Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; Ensure mitigation measures are properly implemented; Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.	Take immediate action to avoid further exceedance; Submit proposal of mitigation measures to SO within 3 working days of notification and discuss with ET, IEC and SO; Implement the agreed mitigation measures; Resubmit proposals of mitigation measures if problem still not under control; As directed by the Supervising Officer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

Event Action Plan for Dolphin Monitoring

Event	ET Leader	IEC	ER / SOR	Contractor
Action Level	1. Repeat statistical data analysis to confirm findings. 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences. 3. Identify source(s) of impact. 4. Inform the IEC, ER/SOR and Contractor, 5. Check monitoring data. 6. Review to ensure all the dolphin protective measure are fully and properly implemented and advise on additional measures if necessary.	1. Check monitoring data submitted by ET and Contractor. 2. Discuss monitoring results and findings with the ET and the Contractor.	1. Discuss monitoring data with the IEC and any other measures proposed by the ET. 2. If ER/SOR is satisfied with the proposal of any other measures, ER/SOR to signify the agreement in writing on the measures to be implemented.	1. Inform the ER/SOR and confirm notification of the non-compliance in writing. 2. Discuss with the ET and the IEC to propose measures to the IEC and the ER/SOR. 3. Implement the agreed measures.

Event	ET Leader	IEC	ER / SOR	Contractor
Limit Level	1. Repeat statistical data analysis to confirm findings. 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences. 3. Identify source(s) of impact. 4. Inform the IEC, ER/SOR and Contractor of findings, 5. Check monitoring data. 6. Repeat reviewing to ensure all the dolphin protective measure are fully and properly implemented and advise on additional measures if necessary. 7. If the ET proves that the source of impact is caused by any of the construction activity by the works contract, the ET to arrange a meeting to discuss with IEC, ER/SOR and Contractor for necessity of additional dolphin monitoring, and/or any other potential mitigation measures (eg, consider to modify the perimeter silt curtain or consider to control/temporarily stop relevant construction activities…etc), and submit to the IEC a proposal of additional dolphin monitoring and/or	1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and findings with the ET and the Contractor; 3. Attend the meeting to discuss with ET, ER/SOR and Contractor the necessity of additional dolphin monitoring and other potential mitigation measures. 4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor, and advise ER/SOR of the results and findings accordingly. 5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures, and advise ER/SOR of the results and findings accordingly.	1. Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 2. If ER/SOR is satisfied with proposals for additional dolphin monitoring and/or any other mitigation measures submitted by the ET and Contractor and verified by the IEC, ER/SOR to signify the agreement in writing on such proposals and any other mitigation measures. 3. Supervise the implementation of additional monitoring and/or any other mitigation measures.	1. Inform the ER/SOR and confirm notification of the non-compliance in writing; 2. Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures. 3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary. 4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures.

	mitigation measures where necessary.			

APPENDIX E
COMPLAINT LOGS

Appendix E - Complaint Log

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
Com-2013-04-001	Near Tung Chung New Development Pier	8 April 2013	EPD received the complaint on 8 April 2013. The complainant complained about oil was dumped from various vessels operating for Hong Kong-Zhuhai-Macao Bridge Hong Kong (HZMB HK) Projects near Tung Chung New Development Pier over the past few months.	1) The vessels photos in the complainant's photo are not the working vessels under Contract No. HK/2011/09. 2) No oil dumped from Contract No. HK/2011/09's working vessels was observed according to ET's site inspection conducted on 9 April 2013 at near Tung Chung New Development Ferry Pier. 3) Joint site inspection (DCVJV and ARUP) was conducted on 10 April 2013 and confirmed that Contract No. HY/2011/09's vessels are not involved the complaint case. 4) DCVJV will keep remind their boat crews not discharging contaminated effluent directly into the sea.	Closed
Com-2013-05-001	WA6	2 May 2013	ARUP received the complaint on 2 May 2013. The complainant alleged the noise nuisance was generated from the Works Area WA6 at around 13:00 on 1 May 2013 (Wednesday).	The site diary report was reviewed and confirmed that no works were carried out at WA6 on 1 May 2013. In addition, no noise was heard from WA6 according to the security guard who on duty at WA6 on 1 May 2013. Based on the information provided, the complaint regarding the construction noise at WA6 is not considered justifiable.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
Com-2013-05-002	WA6	18 May 2013	ARUP received the complaint on 18 May 2013. The complainant advised that the noise nuisance due to loading of metal parts at barge near the seawall of Works Area WA6 early morning (around8:45a.m) on 18 May 2013 (Saturday).	Based on the record of site activities at WA6 on 18 May 2013, 4 metal plates and 2 oxygen-acetylene set were lifted onto a derrick boat "Chiu Kee" by a crane near seawall at WA6 in the morning on that day. Such operation was commenced around 8:40a.m and completed in 10 minutes during the normal construction working hour (0700 – 1900 Monday to Saturday). However, the duration of aforesaid activities is very short and infrequent. Nevertheless, the Contractor was reminded to strengthen their site supervision and provide training for the workers regularly to increase awareness of their environmental responsibilities to minimize the noise impact to the nearby residents and the specific mitigation measures for the complaint including but not limited to:- •To place wooden planks or rubber mats on ground for loading and unloading heavy or metal objects; and •To deploy professional personnel to supervise the works.	Closed
Com-2013-05-003	Near Tung Chung New Development Pier	18 May 2013	EPD received the public complaint on 18 May 2013. This complaint was a follow-up of a previous	After receiving the complaint, additional site inspection was conducted at near Tung Chung New Development Pier on	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
			complaint received by EPD on 8 April 2013 (Com-2013-04-001). The complainant complained again about the oil was dumped from various vessels operating for Hong Kong-Zhuhai-Macao Bridge Hong Kong (HZMB HK) Projects near Tung Chung New Development Pier over the past months.	30 May 2013 to investigate whether oil dumped was due to Contract No. HY/2011/09's vessels. During the site inspection, three working vessels under Contract No.HY/2011/09 was anchored off near Tung Chung New Development Pier. No oil dumped from Contract No. HY/2011/09's vessels were observed and the water around the vessels was clear. The following mitigation measures have been implemented by DCVJV: • DCVJV has sent the letter to the shipping agent to remind them to ensure the vessels under Contract No. HY/2011/09 are in good condition and any oil dumped to sea should be avoided to prevent water pollution. • Provide training to the vessel skippers for prevention of pollution from ships. • DCVJV requested vessel skippers to provide engine oil disposal records The vessel skippers assured to us that all waste lubricants were sent to waste collectors regularly and no oil discharge into seawater.	
Com-2013-07-001	Southeast Quay of Chek Lap Kok near the junction of Chek	17 July 2013	The complaint was received by EPD on 17th July 2013. According to the EPD's letter, the complainant	In response to the complaint, ET conducted two times site inspections at Southeast Quay at Chek Lap Kok between	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
	Lap Kok South Road and Scenic Road		was concerned for the noise nuisance generated from the operation of concrete lorry mixers during evening and night-time period at Southeast Quay of Chek Lap Kok.	18:45 and 20:30 hours on 23 July 2013 and 20:30 to 22:30 hours on 30 July 2013. During the inspections, the Ro-Ro barge was observed anchored off Southeast Quay at Chek Lap Kok but no concrete lorry mixer was observed throughout the inspection. On 23 July 2013, at about 19:35, one tug boat was observed travelling to Southeast Quay, Chek Lap Kok and left at about 19:40. On 30 July 2013, no tug boat and concrete lorry mixers were observed during the inspection. According to the Contractor, there was no concreting works for the pier sites on 23 July 2013 and therefore no loading and unloading operation at Southeast Quay at Chek Lap Kok. Concreting works were performed at Pier 0 on 30 July 2013. As the Contractor anticipated the arrival time of tug boat and flap-top barge at Southeast Quay will	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				exceed 23:00 hours after the concreting works, they decided to arrange the tug boat and flap-top barge with concrete lorry mixers anchored off around Pier 66 after 23:00 hours. So, no loading and unloading operation at Southeast Quay at Chek Lap Kok was observed. Further night time site inspection was conducted on 22 August 2013 during the loading and unloading operation at Southeast Quay of Chek Lap Kok, the construction works conducted under Contract No. HY/2011/09 complied with the conditions in the CNP No. GW-RS0895-13.	
Com-2013-11-001	Chek Lap Kok (CLK) South Road	16 November 2013	The complaint was received by project customer services on 16th November 2013 regarding the dust problem at Chek Lap Kok (CLK) South Road.	After receiving the complaint, ET conducted the site inspection on 19 and 29 November 2013 to check the appropriate environmental protection and pollution control measures which are properly implemented by the Contractor under HY/2011/09 (DCVJV). The observation are summarized as below:- • Dust generation works was conducted by the other Contractor at South East Quay	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				• Proper watering of haul road to avoid dust generation during vehicle / plant equipment movement. • Vehicle washing facilities provided at every site exit at CLK South Road and South Perimeter Road. • No dark smoke was observed emitting from the plant equipments. Based on the information collected, the complaint of dust problem at Check Lap Kok South Road is considered not related to Contract No. HY/2011/09 as dust suppression measures has been properly implemented by the Contractor on site to prevent dust nuisance from the construction activities.	
Com-2014-01-001	Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09	3 January 2014	The complaint was received by EPD on 3rd January 2014. According to the EPD's letter, a resident in Tai O District was concerned for the noise nuisance occasionally arising from the hammering or hitting of metals from Contract No. HY/2011/09.	In response to the complaint, ET conducted an ad hoc night time site inspection at P0, P18 and P19 on 14 January 2014 between around 23:00 and 00:30 hours of 15 January 2014. In accordance with the site activities record and site inspections, the construction works conducted under Contract No. HY/2011/09 complied with the conditions in the CNP No. GW-	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				RS1108-13. Nevertheless, the Contractor was advised to strictly follow the conditions of the permit because any deviation from the conditions may lead to cancellation of the permit, subsequent prosecution action and the Authority's refusal to issue further permit. In addition, the following environmental mitigation measures were recommended: • Review and adjust the lighting directions of the barge, under safety consideration, to avoid potential visual impacts to residents in vicinities; • To ensure the equipment are maintaining in good operation condition; and • To strengthen site supervision and provide training for the workers regularly to increase awareness of their environmental responsibilities to minimize the noise impact to the nearby residents and the specific	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				mitigation measures.	
Com-2014-01-002	Hong Kong-Zhuhai-Macao Bridge	16 January 2014	The complaint was received by HyD's PR Team on 16 January 2014 that the complainant advised that the heavy exhaust fume affecting Tung Chung Crescent.	After receiving the complaint, ET conducted the site inspection on 21 January 2014 to check all the plant equipments which were operated for the construction works and air quality mitigation measures. Based on the information collected, the complaint of heavy exhausts affecting Tung Chung Crescent is considered not related to Contract No. HY/2011/09 due to the following reason(s):- 1) The work sites at Portion C and South East Quay at Portion A under Contract No. HY/2011/09 are approximately 800m from Tung Chung Crescent. Any unpleasant smell of exhaust fume would not be anticipated. 2) No heavy smoke was observed emitting from plants / equipment during the site inspection on 21 January 2014. 3) The vehicles and equipments were switched off while not in use.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				4) All plant and equipment were well maintained and in good operating condition. 5) Air quality mitigation measures has been properly implemented by the Contractor on site to prevent dust nuisance from the construction activities.	
Com-2014-03-001	Oil Spillage at near Sha Lo Wan	5 March 2014	The complaint was received by EPD on 5 March 2014. The complainant suspected the oil leakage from the works area of Contract No. HY/2011/09 near Sha Lo Wan	Based on ET site inspection, no oil spillage from the works area under Contract No. HY/2011/09 at near Sha Lo Wan was observed. In addition, spill kits are ready on site in order to dealing with spillage cases promptly. Nevertheless, DCVJV was also recommended the mitigation measures as below: • Provide training for the workers regularly regarding the mitigation measures on waste / chemical management. • Provide sufficient chemical spillage kit (e.g. oil absorbent) to all vessels and working platform. • Regular check the condition of vessels and plant equipments to ensure no leakage of oil.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
Com-2014-03-002	Construction Noise in the vicinity of the waters outside Sha Lo Wan	11 March 2014	The complaint was received by EPD on 11 March 2014. According to the EPD's letter, the complainant was concerned for the mobile crane which operating in the vicinity of the waters outside Sha Lo Wan after 23:00.	In accordance with an ad hoc site inspection on 18 March 2014, no construction works were conducted during the restricted hours. The 1st investigation report has been submitted to EPD on 21 March 2014 and the 2nd investigation report was submitted to EPD on 26 June 2014. The Contractor was advised to strictly follow the conditions of the permit because any deviation from the conditions may lead to cancellation of the permit, subsequent prosecution action and the Authority's refusal to issue further permit. Nevertheless, the Contractor was reminded to take sufficient noise mitigation measures to minimize the environmental impact on the nearby community: · To space out noisy equipment and position it as far away as possible from the sensitive receivers; · To avoid concurrent uses of noisy equipment near the sensitive area; · To ensure the equipment are maintaining in good operation condition; · To turned off any idle equipment on site; and	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				· To enclose the noisy part of the machine by acoustic insulation material if feasible. · To arrange tailor-made training for the Production Team including the management and foremen to explain to them the conditions and requirements listed on the CNP. · To delegate one Engineer for ensuring that all construction activities and PMEs used are in full compliance with the CNP and legislative requirements.	
Com-2014-04-001	Construction marine works by the company Bauer Hong Kong in Tung Chung	14 April 2014	The complaint was received by Agriculture, Fisheries and Conservation Department (AFCD) on 14 April 2014, the complainant complained that the dead dolphin was found under a platform at construction marine works by the company Bauer Hong Kong in Tung Chung (Macau Bridge Piling Works)	In accordance with the photos showing a date of 27 November 2013 (08:00 – 08:25a.m.) which provided by the complainant, the dolphin was observed has been dead for some time and shows signs of decomposition. It was difficult to determine the cause of death of the deceased dolphin based on the photographs and the dead dolphin was found a few months ago. By examining the photos, it is found that the body was beside a barge, not under a working platform. In addition, the dead dolphin was found in the early morning in which the marine construction works have not been commenced. Therefore, from the above	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				information the dead dolphin is considered to be washed to the work site. However, there is no significant increase of cetacean stranding were found in Hong Kong since the commencement of Contact No. HY/2011/09. In regard to the complaint, the following recommendations were made: ➢ In case stranded cetaceans are found, the AFCD shall be contacted immediately and provide the following information to facilitate AFCD's investigation: 1. Name and telephone number; 2. Date and time of discovery; 3. Location (as specific as possible); 4. Status of the stranded animal (i.e. alive, freshly dead, slightly decomposed, rotten, mummified); 5. Type and size of the stranded animal. ➢ To implement Dolphin Exclusion Zone during the installation of bored pile casing located in the waters to	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				the west of Airport. ➢ To implement Dolphin Watching Plan after the bored piling casing is installed.	
Com-2014-05-001	At the shore of Sha Lo Wan	13 May 2014	The complaint was received by EPD on 13 May 2014. According to the EPD's email, the complainant was concerned about the sand material that was excavated on the shore of Sha Lo Wan for the construction of Hong Kong - Zhuhai - Macao Bridge (HZMB) Project on 11 May 2014.	After receiving the complaint from a Sha Lo Wan's village resident, the sub-contractor was instructed to stop the sand excavation and leave immediately. In addition, all sands excavated from the shore of Sha Lo Wan were returned back to the original area on 13 May 2014. Nevertheless, the Contractor was advised to arrange tailor-made training for Production Team including the management and foremen to explain to them the conditions and requirements listed on the Environmental Permit. In addition, indicative poles and flags are recommended to put within the site boundary to identify the extent of land areas in Sha Lo Wan / Sha Lo Wan (West) Archaeological site.	Closed
Com-2014-05-002	At the shore of Sha Lo Wan	27 May 2014	The complaint was received by EPD on 27 May 2014. According to the EPD's email, the complainant was concerned about the	The complaint investigation report for the complaint of dumping rubbles along the shore area of Sha Lo Wan was submitted to EPD on 4 June 2014.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
			dumping rubbles along the shore area of Sha Lo Wan on 27 May 2014.	EPD and AFCD provided their comments on 5 and 9 June 2014 respectively. A meeting among DCVJV, ARUP, IEC, ET, EPD and AFCD was held on 17 June 2014. According to the meeting, further information is required to include in the complaint investigation report and the report was submitted to EPD on 4 March 2015.	
Com-2014-05-003	Pier 39 to 50	29 May 2014	ARUP received the complaint on 29 May 2014. The complainant advised that the workers disposed hundreds of kg of waste spoils (concrete and earth) into the sea every day in the existing locations of HZMB site area.	Based on the investigation findings, the waste spoils (concrete and earth) were disposed to HY/2010/02 Project according to approved WMP. The following recommendations were made: • To check for any accumulation of waste spoils (concrete and earth) on site. • To cover the wastes skip with waste spoils before removing from site. • To carry out inspection of pier(s) regularly to ensure the frontline staff loads inert materials to approved barge properly. • To clean the waste storage areas	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				regularly and do not cause dust nuisance.	
Com-2014-08-001	Near Sha Lo Wan	27 August 2014	ARUP received the complaint on 27 August 2014. The complainant was concerned about the dust on the surface of the roro-barge.	Based on the investigation findings, dusty materials at the ro-ro barge at P63 and dust generation when vehicles passing by at the roro-barge at Southeast Quay were observed. The following recommendations were made: • To check for any accumulation of dusty materials at roro-barge. • To cover the stockpile of dusty materials before removing from site. • To clean the surface of roro-barge regularly and do not cause dust and water quality nuisance. • To maintain the surface of roro-barge wet especially during the vehicle movements. Water misting is considered an acceptable measure to control dust emissions. • To check and replace the worn sand bags at the surface of roro-barge to prevent the turbid water from entering to the sea when watering the barge surface.	Closed
Com-2014-11-001	HZMB-HKLR – Section between HKSAR Boundary	11 November 2014	The complaint was received by EPD on 11 November 2014. According to the EPD's email, the	Based on the investigation findings, residue concrete or wastewater contaminated with concrete	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
	and Scenic Hill (Contract No. HY/2011/09)		complaint was received from one of the green groups Sea Shepherd. They complained that the residual concrete had been washed off from the deck surface of a flat-top barge into the sea, and marine littering had been spotted by a worker of HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)	overflowing/spilling into the sea from the roro barge and marine littering were suspected. The following recommendations were made: ➢ Properly clear the concrete stains on the three ro-ro barges (e.g. hand-held equipments such as shovel etc). Tarpaulin sheet is also recommended to provide when clearing the concrete stains at the edge of roro barge to prevent these removed materials from getting into the sea. The worker should also pay special care to remove the concrete stains to minimize the water quality nuisance. ➢ Keep cleanliness of the surface of roro-barge and do not cause water quality nuisance. ➢ To check and reinforce the concrete / sand bag bund between baffles erected near the edge of the three ro-ro barges to avoid accidental leakage of wastewater from the deck regularly. ➢ Keep all debris/ aggregate away from the edge of ro-ro barge to prevent them from falling into the sea.	
Com-2014-11-002	HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)	18 November 2014	The complaint was received by EPD on 18 November 2014. According to the EPD's email, it was alleged that residual concrete had been poured out directly from the concrete lorry mixers on a roro barge into the sea during night-time by the workers of HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)		Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				➢ Provide sufficient skips for temporary storage of concrete residue/wastewater. ➢ To check for any accumulation of residual waste concrete at the waste skip on roro-barge. ➢ Provide spare and sufficient sand bags at each roro barges to confine the concerned area in the event of accidental spillage of concrete when discharge the concrete from the concrete lorry mixers to pump truck. ➢ Provide absorptive materials to absorb the wastewater in case of accidental spillage of wastewater during washing concrete lorry mixers or other equipments. ➢ Assign trained staff to ensure proper management of environmental matters on each of the ro-ro barges in particular the handling of concrete residue/wastewater generated during operation. ➢ Keep record for collection of skip or temporary storage tank for wastewater and excess concrete. ➢ Ensure sufficient garbage bag / rubbish bin are provided at working	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				barge / pier site. ➢ Provide training for the workers regularly regarding the water quality mitigation measures and waste management to increase their awareness of environmental protection.	
Com-2014-11-003	Floating Concrete Batching Plant (FCBP)	28 November 2014	The complaint was received by EPD on 28 November 2014. The complaint was received from one of the green groups Green Lantau Association. They complained about the hauling of the floating concrete batching plant (FCBP) by the tug boat to the site of Contract No. HY/2011/09 from the north-east side had disturbed the seabed causing an increase of turbidity in marine waters at around noon of 15 November 2014.	Based on the information collected, the following conclusions were drawn: 1) It is suspected that the wake following the FCBP was resulted from disturbance to the bottom sediment when it was traveling during the lowest tide on that day. 2) The FCBP was traveling within the site area and the maximum number of movement of a floating plant (and therefore tug boat) is two times per day. Average duration of each movement is around 1 hour/day. Therefore, the disturbance to the bottom sediment is considered temporary, localized and infrequent. 3) No illegally discharge of wastewater or domestic wastewater to the sea from FCBP. 4) Relevant environmental mitigation	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				measures as shown in EP-352/2009/C were properly implemented. 5) No deterioration of marine water quality based on the marine water quality monitoring results on 15 November 2014. Nevertheless, DCVJV was also recommended the mitigation measures as below: • The vessel skipper should pay special care about the movement of deep draught vessel to avoid seabed disturbance. (e.g. speed restrictions) • In case of sediment plume was found behind vessel, the vessel skipper should further reduce vessel speed. • Minimum clearance of 0.6m should be maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. (Reference: EIA-081/2002 - Construction of Lung Kwu Chau Jetty)	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
Com-2014-12-001	Shores of Po Chue Tam and Shek Tsai Po, Tai O	7 December 2014	The complaint was received from one of the green groups Green Lantau Association. They complained about some waste materials (including a number of grey plastic mats and buoys) suspected in relation to the HZMB works have recently washed up on the shores of Po Chue Tam and Shek Tsai Po, Tai O	The owner of objects found on the shores could not be identified. DCVJV has taken initiative to remove these materials after receiving the complaint. Nevertheless, DCVJV was also recommended the mitigation measures as below: • Gather up and remove debris to keep the work site orderly. • Maintain site housekeeping. Designate areas for waste materials and provide containers. • Secure loose or light material that is stored on open floors. • Do not permit rubbish to fall freely from any level of the pier sites. • Provide training for the workers regularly regarding the water quality mitigation measures and waste management to increase their awareness of environmental protection.	Closed
Com-2014-12-002	Site Office of HZMB-HKLR – Section between	2 December 2014	Highways Department (HyD) received a public complaint from a resident of Le Bleu Duex on 2	Based on the information collected, the noise generated is considered due to the metal parts were dropped onto the ground	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
	HKSAR Boundary and Scenic Hill		December 2014. According to the email from ARUP dated 3 December 2014, the complainant advised that the noise nuisance due to the metal parts were dropped onto the ground by people repetitively and loading or unloading a boat at the pier. The complaint was quoted, "*A resident living in Le Bleu Duex addressed a complaint to CE of HyD at about 20:04 hrs last night. He complained about the noise nuisance coming from site office since 19:30 hrs last night. Repetitively metal parts had been dropped on the ground by people who seem to be loading or unloading a boat at the pier. Noise was still going on right now at 20:04.*"	at the seashore area near Le Bleu Duex. The metal pipe was unloaded at non-designated area and no powered mechanical equipment was used for unloading works at WA6 during restricted hour. The Contractor was reminded to take sufficient noise mitigation measures to minimize the environmental impact on the nearby community as recommended in the approved EIA report and the specific mitigation measures for the complaint including but not limited to:- • To place wooden planks or rubber mats on ground for loading and unloading heavy or metal objects; and • To deploy professional personnel to supervise the works.	
Com-2014-12-003	Along the shore from Yat Tung to Tai O	24 December 2014	The complainant was concerned about the increase of marine refuse (water bottles and debris) along the shore from Yat Tung to Tai O suspected in relation to the HZMB	The owner of marine refuse found on the shores could not be identified. DCVJV has taken initiative to remove these wastes after receiving the complaint. DCVJV will also take the initiative to clear the marine	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
			works.	refuse along the shore from Yat Tung to Tai O, if necessary. Nevertheless, DCVJV was also recommended the mitigation measures as below: • Gather up and remove debris to keep the work site orderly. • Maintain site housekeeping. Designate areas for waste materials and provide containers. • Secure loose or light material that is stored on open floors. • Do not permit rubbish to fall freely from any level of the pier sites. • Provide training for the workers regularly regarding the water quality mitigation measures and waste management to increase their awareness of environmental protection.	
Com-2015-06-001	The sea side at WA6 vertical seawall	6 June 2015	A resident living in Le Bleu Duex complained about noise from a barge which unloading materials at about 21:00 hrs last Saturday i.e. 6 June 2015	Based on the information collected, the noise generated is considered due to the unloading of steel casings to the seashore area opposite to the China State Site Office.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				The person-in-charge of the barge has been reprimanded by the Contractor for causing noise nuisance to resident nearby. In addition, the Contractor had also reminded their subcontractors to avoid unloading of materials during restricted hours (i.e. 19:00 to 07:00 hours on any day and any time on public holidays including Sundays) without Construction Noise Permit (CNP). The Contractor was reminded to obtain Construction Noise Permit (CNP) for PME use in restricted hours. The Contractor was reminded again to take sufficient noise mitigation measures to minimize the environmental impact on the nearby community as recommended in the approved EIA report and the specific mitigation measures for the complaint including but not limited to:- • To place wooden planks or rubber mats on ground for loading and unloading heavy or metal objects; and • To deploy professional personnel to supervise the works.	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
Com-2017-05-001	Pier 86-87	2 May 2017	The complainant mentioned about foul water leakage from the construction site of Hong Kong - Zhuhai - Macao Bridge (under Contract No. HY/2011/09) onto South Perimeter Road at 14:00-16:00 of 2 May 2017.	Based on the investigation findings, foul water mentioned in the complaint that leak to South Perimeter Road was being used for dust suppression during grinding work. The Contractor will temporarily suspend construction activities of the same nature at the surface of the left deck until a side barrier has been constructed completely to confine excessive water and to ensure no re-occurrence. In addition, sandbags would be laid along the edge where side barrier was not installed around. The excessive water used for dust suppression will be diverted along the deck piles or nearby plugged gully and finally carried to wastewater treatment facility for sedimentation which is in accordance with the requirement for water discharge mentioned in EIA Report and the EM&A Manual. Nevertheless, DCVJV was also recommended the mitigation measures as below: •No grinding works should be done until the side barrier has been constructed completely; •Laying sandbag along the edge where	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				side barrier could not be installed to divert the excessive water used for dust suppression will be diverted along the deck piles within the site area or nearby plugged gully and finally carried to wastewater treatment facility for sedimentation and clean effluent discharge.	
Com-2017-05-002	Tai O Po Chue Tam Outer Beach	5 May 2017	The complainant mentioned about there has been a consistent increase in the incidence of floating refuse landing around Tai O, and particularly at Po Chue Tam Outer Beach which covered with bamboo poles, as it has been for a number of months in spite of cleanings having taken place.	According to the weekly site inspections conducted since the commencement of the construction works under Contract HY/2011/09 and DCVJV's confirmation, bamboos pole has never been used for the construction works under HY/2011/09. So, the abandoned bamboos on the beach as shown in the photos as attached to the email of complaint are not originated from the work sites of HY/2011/09. Nevertheless, for other floating refuses, Waste Management Plan (WMP) has been developed in the early stages of the Contract. Based on our observation during the weekly site inspection, waste collection facilities such as refuse collection bins and recyclable bins have been provided by DCVJV on site according to WMP. Trip-ticket system has also been implemented since the	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				commencement of the Contract to ensure the disposal of C&D materials as well as the C&D waste are properly documented and verified. In addition, monthly summary waste flow table (WFT) had also be prepared and submitted in the Monthly EM&A Report to record the quantities of surplus materials and wastes generated each month. No non-compliance of waste management was recorded since the commencement of the construction works.	

APPENDIX F
SUMMARY OF PROSECUTIONS

Appendix F - Summary of Successful Prosecution

Date of Successful Prosecution	Details of the Successful Prosecution	Status	Follow Up
20 October 2014	The non-compliance of construction noise permit (CNP) numbered GW-RS1217-13 that use of powered mechanical equipment not permitted in the CNP on 15 March 2014 between the hours of 7p.m. and 7a.m. at Pier 72.	The subcontractor was fined.	To ensure the construction works would comply with the CNP during restricted hours, a Permit-to-work system was formulated to control daily operation of the CNPs.

APPENDIX G
SUMMARY OF EXCEEDANCE

Contract No. HY/2011/09
Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road –
Section between HKSAR Boundary and Scenic Hill

Exceedance Report

(A) Exceedance Report for Air Quality

Environmental Monitoring	Parameter	No. of Exceedance		No. of Exceedance related to the Construction Activities of this Contract	
		Action Level	Limit Level	Action Level	Limit Level
Air Quality	1-hr TSP	2	1	0	0
	24-hr TSP	7	0	0	0

(B) Exceedance Report for Construction Noise

Environmental Monitoring	No. of Exceedance		No. of Exceedance related to the Construction Activities of this Contract	
	Action Level	Limit Level	Action Level	Limit Level
Noise	1	0	1	0

(C) Exceedance Report for Marine Water Quality

Environmental Monitoring	Parameter	No. of Exceedance		No. of Exceedance related to the Construction Activities of this Contract	
		Action Level	Limit Level	Action Level	Limit Level
Marine Water Quality	Dissolved Oxygen (DO) (Surface & Middle)	24	15	0	0
	Dissolved Oxygen (DO) (Bottom)	47	23	0	0
	Turbidity	47	120	0	0
	Suspended Solids (SS)	330	223	0	0

(D) Exceedance Report for Line-transect Vessel Surveys

Environmental Monitoring	No. of Exceedance		No. of Exceedance related to the Construction Activities of this Contract	
	Action Level	Limit Level	Action Level	Limit Level
Dolphin Monitoring	3	1	0	0

(E) Exceedance Report for Underwater Construction Noise
(NIL in the reporting period)

APPENDIX H
POST-CONSTRUCTION WATER QUALITY MONITORING REPORT

Dragages -China Harbour-VSL JV

Contract HY/2011/09

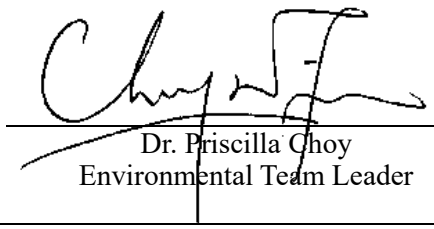
Hong Kong-Zhuhai-Macao Bridge

Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Post-Construction Water Quality Monitoring Report

(Version 2.0)

Certified By



Dr. Priscilla Choy
Environmental Team Leader

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties

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EXECUTIVE SUMMARY

Introduction

1. This is the Post-Construction Water Quality Monitoring Report prepared by Cinotech Consultants Limited for the project "Contract No. HY/2011/09 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill" (hereinafter called the "Contract"). This report documents the findings of post-construction water quality monitoring works conducted from 25th October 2018 to 21st November 2018.

Post-Construction Water Quality Monitoring Works

2. A summary of the monitoring activities for the post-construction water quality monitoring is listed in **Table I** below:

Table I Summary Table for Monitoring Activities in the reporting period

Parameter(s)	**Date(s)**
Water Quality Monitoring	25th, 27th, 29th October 2018 3rd, 5th, 7th ,9th, 12th, 14th ,17th ,19th ,21st November 2018

3. Detailed post-construction water quality monitoring schedule is shown in **Appendix B**.

4. The post-construction water quality monitoring was conducted at fourteen monitoring stations (IS1, IS2, IS3, IS4, CS1, CS2(A), SR1, SR2, SR3, SR6, ST1, ST2, ST3 &SRA) between 25th October 2018 to 21st November 2018. Monitoring was conducted three times per week for four consecutive weeks, during mid-ebb and mid-flood tides. The data was processed, reviewed and analyzed to identify if there is significant residual water quality impact by the Contract.

Table II Post-Construction Water Quality Monitoring Parameters and Frequency

Monitoring Stations	**Parameters, unit**	**Depth**	**Frequency**
IS1, IS2, IS3 IS4, CS1, CS2(A), SR1, SR2, SR3, SR6, ST1, ST2, ST3, SRA	• Temperature(°C) • pH(pH unit) • turbidity (NTU) • water depth (m) • salinity (ppt) • dissolved oxygen (DO) (mg/L and % of saturation) • suspended solids (SS) (mg/L)	• 3 water depths: 1m below sea surface, mid-depth and 1m above sea bed. • If the water depth is less than 3m, mid-depth sampling only. • If water depth less than 6m, mid-depth may be omitted.	• Post-construction monitoring: 3 days per week, at mid-flood and mid-ebb tides for 4 weeks upon the completion of all marine-based construction activities of the Contract

5. As per the Environmental Protection Department (EPD) approved termination proposal, all marine construction works under this contract have been completed. No marine-based works under this Contract was carrying out during the post-construction water quality monitoring period.

1 INTRODUCTION

Background

1.1 The proposed Hong Kong - Zhuhai - Macao Bridge Hong Kong Link Road (HKLR) is 12km long connecting the Hong Kong-Zhuhai-Macao Bridge (HZMB) at the HKSAR Boundary with the Hong Kong Boundary Crossing Facilities (HKBCF) situated at the north eastern waters of the Hong Kong International Airport, opening a new and direct connection route between Hong Kong, Macao and the Western Pearl River Delta.

1.2 The HKLR comprises a 9.4km long viaduct section from the HKSAR boundary to Scenic Hill on the Airport Island; a 1km tunnel section to the reclamation formed along the east coast of the Airport Island and a 1.6km long at-grade road section on the reclamation connecting to the HKBCF. The tunnel section of HKLR will pass under Scenic Hill, Airport Road and Airport Railway to minimize the environmental and visual impacts to Tung Chung residents.

1.3 An application (No ESB-110/2003) for an Environmental Impact Assessment (EIA) Study Brief under Section 5(1) of the Environmental Impact Assessment Ordinance (EIAO) was submitted by Highways Department (the Project Proponent) on 8 October 2003 with a Project Profile (No. No. PP-201/2003) for the Hong Kong - Zhuhai - Macao Bridge Hong Kong Section and North Lantau Highway Connection. The Hong Kong - Zhuhai - Macao Bridge Hong Kong Section and North Lantau Highway Connection has subsequently been renamed as HKLR. EPD issued an EIA Study Brief (No: ESB-110/2003) in November 2003 to the Project Proponent to carry out an EIA study.

1.4 An EIA Study (Reg. No. AEIAR-144/2009) has been undertaken to provide information on nature and extent of environmental impacts arising from the construction and operation of HKLR. The Environmental Permit was issued on 4 November 2009 (Permit No. EP-352/2009). Pursuant to Section 13 of the EIAO, the Director of Environmental Protection amends the Environmental Permit (No. EP-352/2009) based on the Application No. VEP-339/2011 and the environmental Permit (Permit No. EP-352/2009/A) was issued on 9 November 2011 for HKLR to the Highways Department as the Permit Holder. Subsequently, the Director of Environmental Protection amends the Environmental Permits (No. EP-352/2009/A, EP-352/2009/B, EP-352/2009/C) based on the Application No. VEP-409/2013, VEP-411/2013 and VEP-459/2014 respectively. The environmental Permit (Permit No. EP-352/2009/D) was then issued on 22 December 2014.

1.5 **Figure 1** shows the locations of water quality monitoring station of the Contract and the scope of the Contract works comprises the following major items:

- a dual 3-lane carriageway in the form of viaduct from the HKSAR boundary (connecting with the HZMB Main Bridge) to the Scenic Hill (connecting with the tunnel under separate Contract No. HY/2011/03), of approximately 9.4km in length with a hard shoulder for each bound of carriageway and a utilities trough on the outer edge of each bound of viaducts;
- a grade-separated turnaround facility located near San Shek Wan, composed of sliproads in the form of viaduct with single-lane carriageway bifurcated from the HKLR mainline with an elevated junction above the mainline;

- provision of ancillary facilities including, but not limited to, meteorological enhancement measures including the provisioning of anemometers and modification of the wind profiler station at hillside of Sha Lo Wan, provisioning of a compensatory marine radar, and provisioning of security systems; and
- associated civil, structural, geotechnical, marine, environmental protection, landscaping, drainage and highways electrical and mechanical (E&M) works, street lightings, traffic aids and sign gantries, marine navigational aids, ship impact protection system, water mains and fire hydrants, lightning protection system, structural health monitoring and maintenance management system (SHM&MMS), supervisory control and data acquisition (SCADA) system, as well as operation and maintenance provisions of viaducts, provisioning of facilities for installation of traffic control and surveillance system (TCSS), provisioning of facilities for installation of telecommunication cables/equipments and reprovisioning works of affected existing facilities/utilities.

1.6 Cinotech Consultants Limited (Cinotech) was appointed by Dragages -China Harbour-VSL JV (hereinafter called "the Contractor") as the Environmental Team (ET) to undertake the Post-Construction Water Quality Monitoring works of the Contract No. HY/2011/09 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill" (hereinafter called the "Contract") in accordance with EP Conditions 2.1.

Purpose of the report

1.7 This is the post-construction water quality monitoring report to present the post-construction water quality monitoring works from 25 October 2018 to 21 November 2018.

Structure of the Post-Construction Monitoring Report

1.8 The structure of the Report is as follows:

Section 1: Introduction, background, purpose and the structure of the report.
Section 2: Water Quality Monitoring, which describe the post-construction water quality monitoring.
Section 3: Conclusions

2 WATER QUALITY MONITORING

Monitoring Requirements

2.1 According to the EM&A Manual, a post-construction water quality monitoring shall be carried out upon completion of all marine-based construction activities for 4 weeks in the same manner as the Baseline monitoring.

2.2 Replicate in-situ measurements and samples collected from each independent sampling event shall be collected to ensure a robust statistically interpretable database.

2.3 Post-construction water quality monitoring was conducted two times per monitoring day during mid ebb (within ± 1.75 hours of the predicted time) and mid flood tides (within ± 1.75 hours of the predicted time) at three depths (i.e. 1m below surface, mid-depth and 1m above seabed, except where the water depth less than 6m, mid-depth station may be omitted. Should the water depth be less than 3m, only the mid-depth station was monitored) Dissolved oxygen, Suspended solids (SS), turbidity, pH, salinity and temperature were monitored in accordance with the requirements set out in the EM&A Manual.

Monitoring Locations

2.4 Post-construction water quality monitoring was conducted at 14 monitoring stations under the Contract which are summarized in **Table 2.1**. The monitoring station is also shown in **Figure 1**.

2.5 The Proposal for Change of Marine Water Quality Monitoring Station was submitted to EPD on 12 July 2017. No objection was received from EPD according to the letter (ref. (22) in Ax(4) to EP2/G/A/129pt.4) dated 28 July 2017. Therefore, the updated Water Quality Monitoring Station was used for water quality monitoring starting from 31 July 2017.

Table 2.1 Location for Marine Water Quality Monitoring Locations

Monitoring Stations	Coordinates	
	Easting	Northing
IS1	803474	815060
IS2	804851	815715
IS3	806502	815743
IS4	807008	816986
CS1	801784	812711
CS2	805849	818780
CS2(A)#	805232	818606
SR1	803126	812379
SR2	807856	816953
SR3	810525	816456
SR6	805837	821818
ST1	802677	816006
ST2	804055	818840
ST3	800667	810126
SRA	809872	817152

#Alternative station for CS2 starting from 31st July 2017, after the approval of the Proposal for Change of Marine Water Quality Monitoring Station by EPD on 28th July 2017.

Monitoring Equipment

Instrumentation

2.6 A multi-parameter meters (Model YSI EXO) were used to measure DO, turbidity, salinity, pH and temperature.

Dissolved Oxygen (DO) and Temperature Measuring Equipment

2.7 The instrument for measuring dissolved oxygen and temperature was portable and weatherproof complete with cable, sensor, comprehensive operation manuals and use DC power source. It was capable of measuring:

- a dissolved oxygen level in the range of 0-20 mg/L and 0-200% saturation; and
- a temperature of 0-45 degree Celsius.

2.8 It has a membrane electrode with automatic temperature compensation complete with a cable.

2.9 Sufficient stocks of spare electrodes and cables were available for replacement where necessary.

2.10 Salinity compensation was built-in in the DO equipment.

Turbidity

2.11 Turbidity was measured in situ by the nephelometric method. The instrument was portable and weatherproof using a DC power source complete with cable, sensor and comprehensive operation manuals. The equipment was capable of measuring turbidity between 0-1000 NTU. The probe cable was not less than 25m in length. The meter was

calibrated in order to establish the relationship between NTU units and the levels of suspended solids. The turbidity measurement was carried out on split water sample collected from the same depths of suspended solids samples.

Sampler

2.12 A water sampler, consisting of a transparent PVC or glass cylinder of a capacity of not less than two litres which can be effectively sealed with cups at both ends was used. The water sampler has a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler was at the selected water depth.

Water Depth Detector

2.13 A portable, battery-operated echo sounder was used for the determination of water depth at each designated monitoring station.

pH

2.14 The instrument was consisting of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It was readable to 0.1pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 were used for calibration of the instrument before and after use.

Salinity

2.15 A portable salinometer capable of recording salinity within the range of 0-40 ppt was used for salinity measurements.

Monitoring Position Equipment

2.16 A hand held Differential Global Positioning System (DGPS) was used during water quality monitoring to ensure the monitoring vessel is at the correct location before taking measurements.

Sample Container and Storage

2.17 Following collection, water samples for laboratory analysis were stored in high density polythene bottles (250ml/1L) with no preservatives added, packed in ice (cooled to 4°C without being frozen) and kept in dark during both on-site temporary storage and shipment to the testing laboratory. The samples were delivered to the laboratory as soon as possible and the laboratory determination works were started within 24 hours after collection of the water samples. Sufficient volume of samples was collected to achieve the detection limit.

Calibration of In Situ Instruments

2.18 All in situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring programme. Responses of sensors and electrodes were checked with

certified standard solutions before each use. Wet bulb calibration for a DO meter was carried out before measurement at each monitoring event.

2.19 For the on site calibration of field equipment (Multi-parameter Water Quality System), the BS 1427:2009, "Guide to on-site test methods for the analysis of waters" was observed.

2.20 Sufficient stocks of spare parts were maintained for replacements when necessary. Backup monitoring equipment was also being made available so that monitoring can proceed uninterrupted even when some equipment was under maintenance, calibration, etc.

2.21 The equipment used for impact water quality monitoring is shown in **Table 2.2** and copies of the calibration certificates are shown in **Appendix A**. All the monitoring equipment complied with the requirements set out in the EM&A Manual.

Table 2.2 Water Quality Monitoring Equipment

Equipment	Model and Make	Qty
Sonar Water Depth Detector	Garmin Fishfinder 140	2
Monitoring Position Equipment	KODEN DGPS (KGP913MKIID, GA-08 & BA-03)	2
Multi-parameter Water Quality System	YSI EXO	2
Water Sampler	Kahlsico Water-Bottle Model 135DW 150	2

Monitoring Parameters, Frequency

2.22 **Table 2.3** summarizes the monitoring parameters, monitoring period and frequencies of the water quality monitoring. The water quality monitoring schedule for the reporting period is shown in **Appendix B**.

Table 2.3 Water Quality Monitoring Parameters and Frequency

Monitoring Stations	Parameters, unit	Depth	Frequency
IS1, IS2, IS3 IS4, CS1, CS2(A), SR1, SR2, SR3, SR6, ST1, ST2, ST3, SRA	• Temperature(°C) • pH(pH unit) • turbidity (NTU) • water depth (m) • salinity (ppt) • dissolved oxygen (DO) (mg/L and % of saturation) • suspended solids (SS) (mg/L)	• 3 water depths: 1m below sea surface, mid-depth and 1m above sea bed. • If the water depth is less than 3m, mid-depth sampling only. • If water depth less than 6m, mid-depth may be omitted.	• Post-construction monitoring: 3 days per week, at mid-flood and mid-ebb tides for 4 weeks upon the completion of all marine-based construction activities of the Contract

2.23 Monitoring location/position, time, water depth, sampling depth, pH, salinity, DO saturation, water temperature, tidal stages, weather conditions and any special phenomena or work underway nearby were recorded.

Monitoring Methodology

Instrumentation

2.24 A multi-parameter meters (Model YSI EXO) were used to measure DO, turbidity, salinity, pH and temperature.

Operating/Analytical Procedures

2.25 The monitoring stations were accessed by the guide of a hand-held Differential Global Positioning System (DGPS) during water quality monitoring in accordance with the EM&A Manual. The depth of the monitoring location was measured using depth meter in order to determine the sampling depths. Afterwards, the probes of the in-situ measurement equipment were lowered to the predetermined depths (1 m below water surface, mid-depth and 1 m above seabed) and the measurements were carried out accordingly.

2.26 At each measurement, two consecutive measurements of DO concentration, DO saturation, salinity, turbidity, pH and temperature were taken. The probes were retrieved out of the water after the first measurement and then re-deployed for the second measurement. Where the difference in the value between the first and second readings of each set was more than 25% of the value of the first reading, the reading was discarded and further readings were taken.

2.27 Water sampler was lowered into the water to the required depths of sampling. Upon reaching the pre-determined depth, a messenger to activate the sampler was then released to travel down the wire. The water sample was sealed within the sampler before retrieving. At each station, water samples at three depths (1 m below water surface, mid-depth and 1 m above seabed) were collected accordingly. Water samples were stored in a cool box and kept at less than 4°C but without frozen and sent to the laboratory as soon as possible. In addition, field information as described in Section 5.23 was also recorded.

Laboratory Analytical Methods

2.28 The testing of all parameters was conducted by CMA Testing and Certification Laboratories (HOKLAS Registration No.004) and comprehensive quality assurance and control procedures in place in order to ensure quality and consistency in results. The methods for laboratory analysis for water samples are provided in **Table 2.4**.

Table 2.4 Methods for Laboratory Analysis for Water Samples

Determinant	Instrumentation	Analytical Method	Detection Limit
Suspended Solid (SS)	Weighing	APHA 21e 2540D	0.5 mg/L

QA/QC Requirements

Decontamination Procedures

2.29 Water sampling equipment used during the course of the monitoring programme was decontaminated by manual washing and rinsed clean seawater/distilled water after each sampling event. All disposal equipment was discarded after sampling.

Sampling Management and Supervision

2.30 All sampling bottles were labelled with the sample I.D (including the indication of sampling station and tidal stage e.g. IS1_me_a), laboratory number and sampling date. Water samples were dispatched to the testing laboratory for analysis as soon as possible after the sampling. All samples were stored in a cool box and kept at less than 4°C but without frozen. All water samples were handled under chain of custody protocols and relinquished to the laboratory representatives at locations specified by the laboratory.

2.31 The laboratory determination works were started within 24 hours after collection of the water samples.

Quality Control Measures for Sample Testing

2.32 The samples testing were performed by CMA Testing and Certification Laboratories.

2.33 The following quality control programme was performed by the CMA Testing and Certification Laboratories for every batch of 20 samples:

- ✧ One set of quality control (QC) samples.

Maintenance and Calibration

2.34 All in situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring programme.

Results and Observations

Results

2.35 Post-construction water quality monitoring at 14 monitoring stations was conducted between 25th October to 21st November 2018.The monitoring results and graphical presentation of water quality at the monitoring stations is shown in **Appendix D.**

2.36 The results DO, Turbidity and SS in reporting period are summarized in **Table 2.5**, which show the averages and ranges of reading recorded. Detailed weather conditions at the monitoring locations during the post-construction monitoring period are shown in **Appendix D**. The detailed monitoring schedule is shown in **Appendix B**.

2.37 In general, the measured DO, turbidity and SS levels at all stations were similar to /

within the range of water quality monitoring results in the baseline monitoring, the slightly differences between the baseline and post-project monitoring period are considered to be due to natural variation. Therefore, it could be confirmed that no unexpected adverse water quality impact due to the construction under the Contract.

Table 2.5 Summary of Post-Construction Water Quality Monitoring Results

Station		DO (mg/L)			Turbidity (NTU)			SS (mg/L)		
		Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.
IS1	Surface	6.9	6.4	7.7	4.1	1.3	7.6	9.0	4.8	19.3
	Middle	6.7	6.4	7.4	7.2	1.5	17.8	9.2	4.9	14.4
	Bottom	6.6	6.3	7.0	19.8	2.8	64.4	10.4	5.0	19.8
IS2	Surface	6.9	6.5	7.6	6.8	2.0	17.0	9.6	3.8	28.3
	Middle	6.8	6.4	7.5	8.9	2.4	23.1	10.5	5.1	30.9
	Bottom	6.6	6.3	7.2	18.2	3.5	50.8	10.2	5.2	38.0
IS3	Surface	6.8	6.2	7.6	5.4	2.1	14.3	9.3	6.3	20.3
	Middle	-	-	-	-	-	-	-	-	-
	Bottom	6.7	6.1	7.6	9.5	3.3	19.8	9.1	5.3	16.0
IS4	Surface	6.8	6.3	7.5	5.8	1.9	12.4	9.3	4.0	17.7
	Middle	6.8	6.3	7.5	6.6	2.0	13.0	8.8	4.1	17.5
	Bottom	6.7	6.2	7.3	9.6	2.2	27.2	9.5	5.6	15.5
CS1	Surface	6.8	6.3	7.9	4.6	1.0	16.1	9.1	4.5	19.2
	Middle	6.6	6.2	7.4	6.0	1.5	25.4	9.6	5.4	20.8
	Bottom	6.5	6.1	7.0	16.4	4.0	44.6	9.2	5.2	18.7
CS2 (A)	Surface	7.0	6.4	8.1	5.1	1.9	14.7	9.2	4.7	17.4
	Middle	6.8	6.3	8.1	6.4	2.5	16.3	8.8	5.9	14.5
	Bottom	6.7	6.2	7.6	11.5	3.5	35.7	10.0	5.6	16.4
SR1	Surface	-	-	-	-	-	-	-	-	-
	Middle	6.7	6.3	7.2	8.5	2.5	21.8	10.9	6.0	21.5
	Bottom	-	-	-	-	-	-	-	-	-
SR2	Surface	-	-	-	-	-	-	-	-	-
	Middle	6.6	6.1	7.4	6.8	1.1	12.4	9.7	3.0	17.1
	Bottom	-	-	-	-	-	-	-	-	-
SR3	Surface	-	-	-	-	-	-	-	-	-
	Middle	6.8	6.0	7.9	6.4	3.4	12.3	10.6	5.7	22.4
	Bottom	-	-	-	-	-	-	-	-	-
SR6	Surface	6.9	6.3	7.7	5.0	1.3	10.9	9.4	6.0	21.9
	Middle	-	-	-	-	-	-	-	-	-
	Bottom	6.7	6.1	7.4	8.4	1.6	19.1	10.5	5.0	22.8
SRA	Surface	6.7	6.1	7.7	5.5	1.2	11.4	10.7	4.5	28.1
	Middle	6.6	6.0	7.8	6.4	1.8	14.2	10.3	3.9	25.1
	Bottom	6.5	5.9	7.8	8.0	1.9	27.4	9.3	4.0	21.2
ST1	Surface	6.9	6.4	7.4	6.7	2.3	17.9	10.6	7.0	26.1
	Middle	6.7	6.3	7.3	9.5	2.9	23.0	11.1	4.7	27.2
	Bottom	6.6	6.3	7.1	18.3	3.5	50.0	11.1	6.5	22.8
ST2	Surface	7.0	6.4	7.9	5.3	1.3	13.8	9.1	5.4	16.7
	Middle	6.8	6.3	7.5	7.2	2.5	20.6	10.1	5.2	16.8
	Bottom	6.6	6.3	7.4	14.8	3.8	37.8	9.7	5.5	17.7
ST3	Surface	6.8	6.4	8.4	4.8	1.6	12.0	9.5	5.2	21.0
	Middle	6.6	6.3	7.3	7.9	2.5	23.7	9.2	4.8	20.5
	Bottom	6.5	6.2	7.1	17.9	3.3	55.1	9.2	4.3	15.6

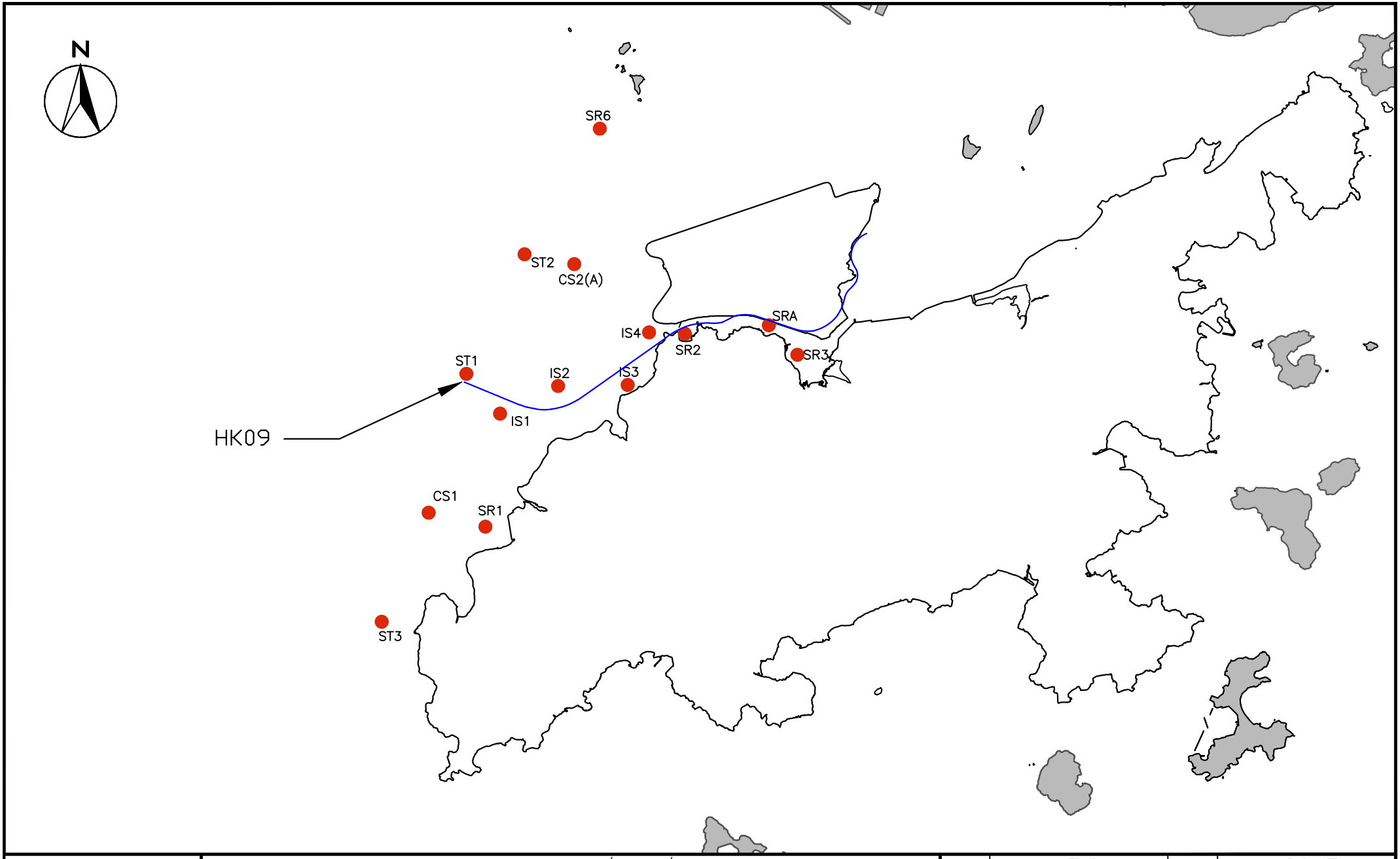
3 CONCLUSIONS

3.1 All post-construction water quality monitoring works was conducted as scheduled in **Appendix B** and all monitoring results were checked and reviewed.

3.2 As per the Environmental Protection Department (EPD) approved termination proposal, all marine construction works under this contract have been completed. No marine-based works under this Contract was carrying out during the post-construction water quality monitoring period.

3.3 In general, the measured DO, turbidity and SS levels at all stations were similar to / within the range of water quality monitoring results in the baseline monitoring, the slightly differences between the baseline and post-project monitoring period are considered to be due to natural variation. Therefore, it is concluded that no unexpected adverse water quality impact due to the construction under the Contract.

FIGURE



CINOTECH
Cinotech Consultants Limited

Contract No. HY/2011/09
Hong Kong–Zhuhai–Macao Bridge Hong Kong Link Road – Section Between HKSAR Boundary and Scenic Hill

Locations of Marine Water Quality Monitoring Stations

SCALE	N.T.S	DATE	Aug 2017
CHECK	IT	DRAWN	NL
PROJECT NO.	MA12014	FIGURE NO.	1
		REV	–

APPENDIX A

COPIES OF CALIBRATION CERTIFICATES

CASTCO

佳力高試驗中心有限公司
CASTCO TESTING CENTRE LIMITED

TEST REPORT
Chemical Analysis of Water
Accuracy check of YSI Sondes Environmental Monitoring System

Date of issue: 08-10-2018
Page 1 of 1 page(s) Castco LRN: 181005-0042

Sample details as supplied by customer:-

Customer : Dragages-China Harbour-VSL Joint Venture Customer Ref. No. : --
Address: Tung Chung Waterfront Road, adjacent to Tung Chung New Development Pier
Job Title : Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road - Section between HKSAR Boundary and Scenic Hill
Contract No.: HY/2011/09

Laboratory Test Results:-

Instrument Name: Sonde Environmental Monitoring System
Manufacturer : YSI
Model No. : EXO
Serial No. : 16J100876
Instrument No. : SW-08-15
Date of Calibration : 05-10-2018
Date of Next Calibration : 05-01-2019

pH Value Check (pH Probe : 17B103623)

Expected Reading (pH Unit)	Sonde Reading (pH Unit)	Tolerance (pH Unit)	Tolerance Limit (pH Unit)	Method Reference
4.00	4.07	+0.07	± 0.2	APHA 21e, 4500-H^+B
7.02	7.05	+0.03		
10.06	10.19	+0.13		

Turbidity Check (Turbidity Sensor : 17B102247)

Expected Reading (NTU)	Sonde Reading (NTU)	Tolerance (%)	Tolerance Limit (%)	Method Reference
0.00	/	/	± 10	APHA 21e, 2130B
4.00	4.09	+2.3		
10.00	9.96	-0.4		
20.00	19.60	-2.0		
50.00	50.77	+1.5		
100.00	105.10	+5.1		

Conductivity Performance Check (Conductivity Sensor : 17B100792)

Expected Reading (µS/cm)	Sonde Reading (µS/cm)	Tolerance (%)	Tolerance Limit (%)	Method Reference
1412 at 25 °C	1413 at 25 °C	+0.1	± 10	APHA 21e, 2510B

Salinity Performance Check (Salinity Sensor : 17B100792)

Expected Reading (ppt)	Sonde Reading (ppt)	Tolerance (%)	Tolerance Limit (%)	Method Reference
33	33.32	+1.0	± 10	APHA 19e, 2520B

Dissolved Oxygen Check (Dissolved Oxygen Sensor: 17B101545)

DO from Winkler Titration (mg/L)	Sonde Reading (mg/L)	Tolerance (mg/L)	Tolerance Limit (mg/L)	Method Reference
8.64	8.65	+0.01	± 0.20	APHA 21e, 4500-O C&G
4.69	4.73	+0.04		

Water Level Meter Check

Expected Reading (m)	Sonde Reading (m)	Tolerance (m)	Tolerance Limit (m)	Method Reference
1.00	1.034	+0.034	±0.05	YSI Sondes Procedure Manual

Temperature Check

Expected Reading (℃)	Sonde Reading (℃)	Tolerance (℃)	Tolerance Limit (℃)	Method Reference
25.0	24.969	-0.031	± 2.0	Telarc Technical Guide No.3 1986

Checked by : _____
Au Kwok Kin
Assistant Technical Manager

Certified by : _____
Cheng Chi Fai
Senior Manager

End of Report

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CASTCO
佳力高試驗中心有限公司
CASTCO TESTING CENTRE LIMITED

TEST REPORT
Chemical Analysis of Water
Accuracy check of YSI Sondes Environmental Monitoring System

Date of issue: 08-10-2018

Castco LRN: 181005-0043

Sample details as supplied by customer:-

Customer : Dragages-China Harbour-VSL Joint Venture Customer Ref. No. : --
Address: Tung Chung Waterfront Road, adjacent to Tung Chung New Development Pier
Job Title : Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road - Section between HKSAR Boundary and Scenic Hill
Contract No.: HY/2011/09

Laboratory Test Results:-

Instrument Name: Sonde Environmental Monitoring System
Manufacturer : YSI
Model No. : EXO
Serial No. : 16J100887
Instrument No. : SW-08-26
Date of Calibration : 05-10-2018
Date of Next Calibration : 05-01-2019

pH Value Check (pH Probe : 17K103107)

Expected Reading (pH Unit)	Sonde Reading (pH Unit)	Tolerance (pH Unit)	Tolerance Limit (pH Unit)	Method Reference
4.00	4.16	+0.16	± 0.2	APHA 21e, 4500-H^+B
7.02	7.12	+0.10		
10.06	10.18	+0.12		

Turbidity Check (Turbidity Sensor : 17K100336)

Expected Reading (NTU)	Sonde Reading (NTU)	Tolerance (%)	Tolerance Limit (%)	Method Reference
0.00	/	/	± 10	APHA 21e, 2130B
4.00	3.76	-6.0		
10.00	10.24	+2.4		
20.00	20.82	+4.1		
50.00	50.58	+1.2		
100.00	106.66	+6.7		

Conductivity Performance Check (Conductivity Sensor : 16H100227)

Expected Reading (µS/cm)	Sonde Reading (µS/cm)	Tolerance (%)	Tolerance Limit (%)	Method Reference
1412 at 25 °C	1413 at 25 °C	+0.1	± 10	APHA 21e, 2510B

Salinity Performance Check (Salinity Sensor : 16H100227)

Expected Reading (ppt)	Sonde Reading (ppt)	Tolerance (%)	Tolerance Limit (%)	Method Reference
33	33.72	+2.2	± 10	APHA 19e, 2520B

Dissolved Oxygen Check (Dissolved Oxygen Sensor: 17B101535)

DO from Winkler Titration (mg/L)	Sonde Reading (mg/L)	Tolerance (mg/L)	Tolerance Limit (mg/L)	Method Reference
8.64	8.63	-0.01	± 0.20	APHA 21e, 4500-O C&G
4.69	4.62	-0.07		

Water Level Meter Check

Expected Reading (m)	Sonde Reading (m)	Tolerance (m)	Tolerance Limit (m)	Method Reference
1.00	1.037	+0.037	±0.05	YSI Sondes Procedure Manual

Temperature Check

Expected Reading (℃)	Sonde Reading (℃)	Tolerance (℃)	Tolerance Limit (℃)	Method Reference
25.0	24.910	-0.090	± 2.0	Telarc Technical Guide No.3 1986

Checked by : _____
Au Kwok Kin
Assistant Technical Manager

Certified by : _____
Cheng Chi Fai
Senior Manager

End of Report

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APPENDIX B

MONITORING SCHEDULE

Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill
Post-Construction Water Quality Monitoring Schedule

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct	6-Oct
7-Oct	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct
14-Oct	15-Oct	16-Oct	**17-Oct**	18-Oct	19-Oct	20-Oct
21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct
				Water Quality Monitoring Mid-Flood 7:14 Mid-Ebb 13:12		Water Quality Monitoring Mid-Flood 8:43 Mid-Ebb 14:29
28-Oct	29-Oct	30-Oct	31-Oct			
	Water Quality Monitoring Mid-Flood 10:29 Mid-Ebb 15:59					

Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill
Post-Construction Water Quality Monitoring Schedule

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Nov	2-Nov	3-Nov
				Water Quality Monitoring [(1)]Mid-Flood 14:29 [(1)]Mid-Ebb 20:10		Water Quality Monitoring Mid-Ebb 9:03 Mid-Flood 16:13
4-Nov	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov
	Water Quality Monitoring Mid-Ebb 11:05 Mid-Flood 17:23		Water Quality Monitoring Mid-Ebb 12:38 Mid-Flood 18:24		Water Quality Monitoring Mid-Ebb 13:58 Mid-Flood 19:23	
11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov
	Water Quality Monitoring Mid-Flood 10:24 [(2)]Mid-Ebb 15:48		Water Quality Monitoring [(3)]Mid-Ebb 4:23 Mid-Flood 16:45			Water Quality Monitoring Mid-Ebb 7:26 Mid-Flood 15:35
18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov	24-Nov
	Water Quality Monitoring Mid-Ebb 9:41 Mid-Flood 16:32		Water Quality Monitoring Mid-Ebb 11:21 Mid-Flood 17:26			
25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	

*Remark: 1) Cancelled due to adverse weather (Strong Wind Signal No.3)
2) The tidal ranges is less than 0.5m
3) No Water Quality Monitoring will be conducted due to safety reason.

APPENDIX C

MONITORING RESULTS &
GRAPHICAL PRESENTATIONS

Water Quality Monitoring Results at CS1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	12:50	Surface	1	26.3 26.1	26.2	8.2 8.2	8.2	27.3 27.4	27.4	96.4 96.1	96.3	6.7 6.7	6.7	6.7	2.0 2.1	2.1	5.4	8.8 4.5	6.7	6.2
				Middle	6	25.9 25.9	25.9	8.2 8.2	8.2	29.9 30.0	30.0	96.3 96.4	96.4	6.6 6.6	6.6		1.8 1.9	1.9		4.5 9.0	6.8	
				Bottom	11	26.0 25.9	26.0	8.2 8.2	8.2	30.6 30.4	30.5	96.1 96.1	96.1	6.6 6.6	6.6	6.6	12.5 12.0	12.3		4.6 5.7	5.2	
27-Oct-18	Sunny	Moderate	14:13	Surface	1	26.2 26.2	26.2	8.3 8.3	8.3	28.1 28.3	28.2	97.0 96.6	96.8	6.7 6.7	6.7	6.6	0.9 1.0	1.0	2.2	5.9 4.2	5.1	5.7
				Middle	6.5	25.9 25.9	25.9	8.3 8.3	8.3	29.0 29.1	29.1	93.7 93.7	93.7	6.5 6.5	6.5		1.5 1.4	1.5		6.0 5.7	5.9	
				Bottom	12	25.9 25.9	25.9	8.3 8.3	8.3	29.6 30.0	29.8	93.2 93.1	93.2	6.4 6.4	6.4	6.4	4.0 4.0	4.0		6.3 5.7	6.0	
29-Oct-18	Sunny	Calm	15:24	Surface	1	25.8 25.8	25.8	8.3 8.3	8.3	28.8 28.8	28.8	99.4 99.5	99.5	6.9 6.9	6.9	6.9	1.6 1.4	1.5	3.1	15.0 12.5	13.8	16.3
				Middle	6	25.6 25.7	25.7	8.3 8.3	8.3	29.2 29.0	29.1	98.6 99.0	98.8	6.8 6.9	6.9		1.8 1.6	1.7		19.6 22.0	20.8	
				Bottom	11	25.6 25.6	25.6	8.3 8.3	8.3	30.5 30.4	30.5	95.9 95.8	95.9	6.6 6.6	6.6	6.6	6.6 5.5	6.1		14.4 14.3	14.4	
3-Nov-18	Rainy	Moderate	09:25	Surface	1	24.3 24.4	24.4	8.1 8.1	8.1	31.7 31.7	31.7	99.9 98.0	99.0	7.0 6.8	6.9	6.9	3.2 3.2	3.2	6.9	20.1 18.3	19.2	15.5
				Middle	6	24.4 24.4	24.4	8.1 8.1	8.1	31.7 31.7	31.7	97.8 97.6	97.7	6.8 6.8	6.8		3.5 3.3	3.4		18.2 16.5	17.4	
				Bottom	11	24.4 24.4	24.4	8.1 8.1	8.1	31.7 31.7	31.7	96.6 96.6	96.6	6.7 6.7	6.7	6.7	14.0 13.9	14.0		10.3 9.6	10.0	
5-Nov-18	Cloudy	Moderate	10:44	Surface	1	24.6 24.6	24.6	8.1 8.1	8.1	31.7 31.7	31.7	96.5 95.8	96.2	6.7 6.7	6.7	6.7	15.5 16.6	16.1	24.4	7.2 6.9	7.1	9.0
				Middle	6.5	24.6 24.6	24.6	8.1 8.1	8.1	31.7 31.8	31.8	95.6 95.4	95.5	6.6 6.6	6.6		24.4 26.4	25.4		11.3 8.9	10.1	
				Bottom	12	24.6 24.6	24.6	8.1 8.1	8.1	31.8 31.8	31.8	95.1 95.1	95.1	6.6 6.6	6.6	6.6	32.3 31.0	31.7		9.6 10.1	9.9	
7-Nov-18	Sunny	Moderate	11:56	Surface	1	25.1 25.2	25.2	8.1 8.1	8.1	30.7 30.7	30.7	107.1 107.0	107.1	7.4 7.4	7.4	7.3	4.2 4.1	4.2	11.8	8.6 6.5	7.6	8.1
				Middle	6	24.9 24.9	24.9	8.1 8.1	8.1	30.9 30.9	30.9	103.8 102.5	103.2	7.2 7.1	7.2		4.7 4.8	4.8		7.8 8.8	8.3	
				Bottom	11	24.8 24.8	24.8	8.1 8.1	8.1	31.5 31.5	31.5	96.7 96.4	96.6	6.7 6.7	6.7	6.7	26.1 26.7	26.4		7.1 9.5	8.3	
9-Nov-18	Sunny	Calm	13:59	Surface	1	24.9 25.0	25.0	8.1 8.1	8.1	29.4 29.3	29.4	104.9 105.1	105.0	7.4 7.4	7.4	7.2	5.3 5.4	5.4	8.8	6.5 6.7	6.6	6.7
				Middle	6.5	24.8 24.8	24.8	8.0 8.0	8.0	30.1 30.0	30.1	99.7 100.2	100.0	7.0 7.0	7.0		5.3 5.0	5.2		6.6 7.3	7.0	
				Bottom	12	24.7 24.7	24.7	8.0 8.0	8.0	31.0 31.0	31.0	93.7 93.7	93.7	6.5 6.5	6.5	6.5	15.3 16.2	15.8		5.4 7.5	6.5	
12-Nov-18	Cloudy	Calm	15:21	Surface	1	25.0 24.9	25.0	8.1 8.1	8.1	26.8 27.0	26.9	96.4 95.6	96.0	6.8 6.8	6.8	6.7	3.0 3.1	3.1	6.5	7.4 6.4	6.9	9.8
				Middle	6.5	24.7 24.7	24.7	8.1 8.1	8.1	29.8 29.9	29.9	92.0 91.7	91.9	6.5 6.4	6.5		6.9 7.3	7.1		10.6 11.4	11.0	
				Bottom	12	24.7 24.7	24.7	8.1 8.1	8.1	30.6 30.6	30.6	90.4 90.3	90.4	6.3 6.3	6.3	6.3	9.1 9.5	9.3		12.0 11.0	11.5	
17-Nov-18	Rainy	Rough	08:04	Surface	1	24.5 24.5	24.5	8.0 8.0	8.0	29.6 29.6	29.6	91.1 90.8	91.0	6.4 6.4	6.4	6.4	2.0 1.9	2.0	3.0	5.7 3.2	4.5	6.6
				Middle	6.5	24.6 24.6	24.6	8.0 8.0	8.0	30.2 30.4	30.3	89.4 89.2	89.3	6.3 6.2	6.3		2.6 2.6	2.6		10.2 9.5	9.9	
				Bottom	12	24.6 24.6	24.6	8.0 8.0	8.0	31.1 31.1	31.1	88.4 88.2	88.3	6.2 6.2	6.2	6.2	4.2 4.3	4.3		5.0 5.5	5.3	
19-Nov-18	Cloudy	Rough	10:02	Surface	1	24.5 24.5	24.5	7.9 7.9	7.9	25.0 25.0	25.0	91.1 90.2	90.7	6.6 6.5	6.6	6.4	3.7 3.7	3.7	4.2	5.9 5.2	5.6	5.5
				Middle	6.5	24.5 24.5	24.5	8.0 8.0	8.0	31.2 31.3	31.3	88.8 88.6	88.7	6.2 6.2	6.2		4.5 4.0	4.3		5.4 5.3	5.4	
				Bottom	12	24.5 24.5	24.5	8.0 8.0	8.0	31.4 31.5	31.5	88.1 88.0	88.1	6.2 6.1	6.2	6.2	4.4 4.6	4.5		4.8 6.2	5.5	
21-Nov-18	Sunny	Calm	11:55	Surface	1	24.7 24.6	24.7	8.0 8.0	8.0	30.7 30.8	30.8	93.0 92.8	92.9	6.5 6.5	6.5	6.5	3.7 3.5	3.6	7.7	5.5 5.5	5.5	6.3
				Middle	6	24.4 24.4	24.4	8.0 8.0	8.0	30.9 31.0	31.0	92.3 92.1	92.2	6.5 6.5	6.5		3.0 2.9	3.0		6.0 6.7	6.4	
				Bottom	11	24.3 24.3	24.3	8.0 8.0	8.0	31.4 31.4	31.4	89.5 89.3	89.4	6.3 6.3	6.3	6.3	15.9 16.9	16.4		6.7 7.2	7.0	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at CS1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	07:52	Surface	1	25.9 25.8	25.9	8.2 8.2	8.2	27.0 25.7	26.4	88.1 89.0	88.6	6.2 6.3	6.3	6.4	5.4 5.4	5.4	9.6	8.4 9.5	9.0	8.9
				Middle	6	25.9 25.9	25.9	8.2 8.2	8.2	29.8 29.6	29.7	92.4 91.3	91.9	6.4 6.3	6.4		7.6 7.8	7.7		7.8 7.8	7.8	
				Bottom	11	26.0 26.0	26.0	8.3 8.2	8.3	30.7 30.5	30.6	95.3 93.9	94.6	6.5 6.4	6.5	6.5	15.6 16.0	15.8		10.0 9.6	9.8	
27-Oct-18	Cloudy	Moderate	09:00	Surface	1	25.9 25.9	25.9	8.2 8.2	8.2	26.2 26.2	26.2	89.3 89.3	89.3	6.3 6.3	6.3	6.4	8.6 8.7	8.7	10.1	16.8 18.8	17.8	10.7
				Middle	6.5	25.9 25.9	25.9	8.3 8.3	8.3	29.3 29.3	29.3	92.8 92.7	92.8	6.4 6.4	6.4		7.2 7.2	7.2		5.9 8.2	7.1	
				Bottom	12	25.8 25.8	25.8	8.3 8.3	8.3	30.5 30.2	30.4	93.9 94.4	94.2	6.4 6.5	6.5	6.5	14.4 14.4	14.4		7.3 7.3	7.3	
29-Oct-18	Sunny	Calm	10:19	Surface	1	25.5 25.5	25.5	8.2 8.3	8.3	27.6 27.9	27.8	95.4 93.7	94.6	6.7 6.6	6.7	6.7	5.1 5.0	5.1	12.0	7.2 8.1	7.7	8.7
				Middle	6	25.5 25.6	25.6	8.3 8.3	8.3	29.5 29.7	29.6	95.1 95.4	95.3	6.6 6.6	6.6		4.8 5.0	4.9		9.2 9.4	9.3	
				Bottom	11	25.7 25.7	25.7	8.3 8.3	8.3	30.4 30.4	30.4	96.8 96.4	96.6	6.7 6.6	6.7	6.7	25.3 26.7	26.0		10.3 7.7	9.0	
3-Nov-18	Rainy	Moderate	15:24	Surface	1	24.2 24.2	24.2	8.1 8.1	8.1	31.5 31.6	31.6	99.4 98.3	98.9	7.0 6.9	7.0	6.9	6.2 6.0	6.1	7.9	10.8 10.2	10.5	9.9
				Middle	6	24.2 24.2	24.2	8.1 8.1	8.1	31.6 31.6	31.6	97.7 97.6	97.7	6.8 6.8	6.8		7.0 7.7	7.4		9.4 10.2	9.8	
				Bottom	11	24.2 24.2	24.2	8.1 8.1	8.1	31.6 31.6	31.6	97.3 97.3	97.3	6.8 6.8	6.8	6.8	10.4 10.1	10.3		9.1 9.9	9.5	
5-Nov-18	Sunny	Calm	17:14	Surface	1	24.8 24.8	24.8	8.2 8.2	8.2	30.3 30.3	30.3	112.0 111.9	112.0	7.8 7.8	7.8	7.5	3.1 3.0	3.1	15.8	13.7 14.3	14.0	11.1
				Middle	6.5	24.8 24.7	24.8	8.1 8.1	8.1	31.3 31.4	31.4	102.4 101.0	101.7	7.1 7.0	7.1		10.1 10.2	10.2		9.7 9.2	9.5	
				Bottom	12	24.7 24.7	24.7	8.1 8.1	8.1	31.4 31.4	31.4	100.0 99.6	99.8	7.0 6.9	7.0	7.0	35.2 33.2	34.2		9.7 9.9	9.8	
7-Nov-18	Sunny	Moderate	17:48	Surface	1	25.2 25.3	25.3	8.2 8.2	8.2	30.0 29.7	29.9	113.1 113.7	113.4	7.9 7.9	7.9	7.7	4.8 4.5	4.7	18.8	5.9 6.9	6.4	6.4
				Middle	6	25.2 25.2	25.2	8.1 8.1	8.1	30.9 30.9	30.9	107.2 107.6	107.4	7.4 7.4	7.4		7.1 6.9	7.0		5.3 8.9	7.1	
				Bottom	11	25.0 25.0	25.0	8.1 8.1	8.1	31.2 31.2	31.2	101.1 101.3	101.2	7.0 7.0	7.0	7.0	43.8 45.4	44.6		5.7 5.8	5.8	
9-Nov-18	Sunny	Calm	18:29	Surface	1	25.0 25.0	25.0	8.0 8.0	8.0	29.4 29.4	29.4	103.8 103.3	103.6	7.3 7.2	7.3	7.0	5.4 5.0	5.2	9.6	9.4 10.6	10.0	14.9
				Middle	6.5	24.7 24.7	24.7	8.0 8.0	8.0	30.5 30.5	30.5	95.3 95.9	95.6	6.7 6.7	6.7		7.2 6.9	7.1		14.6 17.4	16.0	
				Bottom	12	24.7 24.7	24.7	8.0 8.0	8.0	30.7 30.7	30.7	93.9 93.8	93.9	6.6 6.5	6.6	6.6	16.7 16.1	16.4		20.1 17.2	18.7	
12-Nov-18	Cloudy	Calm	10:35	Surface	1	24.8 24.8	24.8	8.1 8.1	8.1	26.5 26.5	26.5	92.5 92.2	92.4	6.6 6.6	6.6	6.6	5.1 5.0	5.1	10.0	16.4 9.4	12.9	13.5
				Middle	6.5	24.7 24.7	24.7	8.1 8.1	8.1	28.4 28.1	28.3	91.9 91.8	91.9	6.5 6.5	6.5		6.9 6.7	6.8		10.5 14.2	12.4	
				Bottom	12	24.7 24.6	24.7	8.1 8.1	8.1	30.3 29.8	30.1	90.7 90.7	90.7	6.4 6.4	6.4	6.4	18.3 17.8	18.1		14.7 15.4	15.1	
14-Nov-18	Cloudy	Rough	16:37	Surface	1	24.8 24.8	24.8	8.3 8.3	8.3	27.5 27.4	27.5	93.2 93.1	93.2	6.6 6.6	6.6	6.5	3.7 3.7	3.7	5.5	9.0 7.8	8.4	9.5
				Middle	6	24.7 24.7	24.7	8.3 8.3	8.3	30.3 30.2	30.3	90.2 90.9	90.6	6.3 6.4	6.4		4.9 4.7	4.8		10.8 10.2	10.5	
				Bottom	11	24.7 24.7	24.7	8.3 8.3	8.3	30.9 30.7	30.8	89.3 89.5	89.4	6.2 6.2	6.2	6.2	8.1 8.1	8.1		9.0 9.9	9.5	
17-Nov-18	Cloudy	Moderate	14:46	Surface	1	24.6 24.6	24.6	7.8 7.9	7.9	23.1 23.3	23.2	87.4 87.1	87.3	6.4 6.4	6.4	6.4	2.5 2.5	2.5	7.3	8.5 8.7	8.6	9.6
				Middle	6	24.5 24.5	24.5	8.0 7.9	8.0	27.8 27.7	27.8	88.9 88.9	88.9	6.3 6.3	6.3		4.5 4.2	4.4		9.1 10.1	9.6	
				Bottom	11	24.6 24.6	24.6	8.0 8.0	8.0	31.3 31.4	31.4	88.7 88.4	88.6	6.2 6.2	6.2	6.2	15.2 15.0	15.1		11.3 9.9	10.6	
19-Nov-18	Cloudy	Rough	16:04	Surface	1	24.8 24.8	24.8	7.9 7.9	7.9	26.2 26.3	26.3	96.5 96.3	96.4	6.9 6.9	6.9	6.6	2.5 2.5	2.5	7.3	4.3 6.5	5.4	6.7
				Middle	6	24.5 24.5	24.5	8.0 8.0	8.0	30.9 30.9	30.9	90.1 89.8	90.0	6.3 6.3	6.3		4.0 4.1	4.1		6.0 5.9	6.0	
				Bottom	11	24.4 24.4	24.4	8.0 8.0	8.0	31.4 31.4	31.4	87.6 87.6	87.6	6.1 6.1	6.1	6.1	15.5 15.1	15.3		7.6 9.8	8.7	
21-Nov-18	Sunny	Calm	16:19	Surface	1	24.9 24.9	24.9	7.9 7.9	7.9	30.1 30.3	30.2	94.4 93.9	94.2	6.6 6.6	6.6	6.6	7.1 6.3	6.7	8.8	9.9 8.5	9.2	8.3
				Middle	6	24.7 24.8	24.8	7.9 7.9	7.9	30.7 30.5	30.6	92.5 93.3	92.9	6.5 6.5	6.5		5.9 5.8	5.9		7.2 7.0	7.1	
				Bottom	11	24.5 24.5	24.5	7.9 7.9	7.9	31.0 31.1	31.1	90.8 90.6	90.7	6.3 6.3	6.3	6.3	12.7 14.8	13.8		8.2 8.9	8.6	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at CS2(A) - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	11:58	Surface	1	26.2 26.1	26.2	8.0 8.0	8.0	29.2 29.2	29.2	95.6 95.4	95.5	6.6 6.6	6.6	6.6	4.1 4.1	4.1	4.4	9.2 8.2	8.7	11.1
				Middle	3.5	26.1 26.1	26.1	8.0 8.0	8.0	29.8 30.1	30.0	95.6 96.4	96.0	6.6 6.6	6.6		4.5 4.5	4.5		11.6 12.6	12.1	
				Bottom	6	26.0 26.0	26.0	8.0 8.0	8.0	30.3 30.2	30.3	96.0 95.8	95.9	6.6 6.6	6.6	6.6	4.3 5.0	4.7		14.3 10.5	12.4	
27-Oct-18	Sunny	Moderate	13:25	Surface	1	26.3 26.3	26.3	8.0 8.0	8.0	28.0 28.0	28.0	100.6 100.0	100.3	6.9 6.9	6.9	6.9	1.9 1.9	1.9	3.6	3.9 5.5	4.7	6.0
				Middle	4	26.0 26.0	26.0	8.0 8.0	8.0	29.2 29.1	29.2	97.9 98.6	98.3	6.7 6.8	6.8		4.1 3.9	4.0		6.2 5.7	6.0	
				Bottom	7	26.0 26.0	26.0	8.0 8.0	8.0	29.4 29.4	29.4	96.8 96.8	96.8	6.7 6.7	6.7	6.7	4.9 5.0	5.0		7.2 7.2	7.2	
29-Oct-18	Sunny	Calm	14:44	Surface	1	25.9 25.9	25.9	8.0 8.0	8.0	28.9 28.9	28.9	104.3 103.0	103.7	7.2 7.1	7.2	7.1	2.0 2.0	2.0	5.5	5.9 7.8	6.9	7.2
				Middle	3.5	25.6 25.6	25.6	8.0 8.0	8.0	29.5 29.5	29.5	101.4 100.7	101.1	7.0 7.0	7.0		4.4 4.4	4.4		7.4 6.4	6.9	
				Bottom	6	25.6 25.6	25.6	8.0 8.0	8.0	29.9 29.9	29.9	98.5 98.4	98.5	6.8 6.8	6.8	6.8	10.1 10.2	10.2		8.2 7.6	7.9	
3-Nov-18	Rainy	Moderate	09:03	Surface	1	24.1 24.1	24.1	8.2 8.2	8.2	31.3 31.3	31.3	95.5 94.8	95.2	6.7 6.7	6.7	6.7	2.4 2.5	2.5	2.9	8.8 9.3	9.1	9.2
				Middle	4	24.1 24.1	24.1	8.2 8.2	8.2	31.3 31.3	31.3	94.6 94.5	94.6	6.7 6.6	6.7		2.7 2.7	2.7		8.0 6.9	7.5	
				Bottom	7	24.1 24.1	24.1	8.2 8.2	8.2	31.3 31.3	31.3	94.2 94.4	94.3	6.6 6.6	6.6	6.6	3.4 3.5	3.5		10.3 11.9	11.1	
5-Nov-18	Cloudy	Moderate	09:52	Surface	1	24.4 24.4	24.4	8.3 8.3	8.3	31.2 31.2	31.2	95.6 94.3	95.0	6.7 6.6	6.7	6.7	3.0 3.3	3.2	4.4	6.0 11.0	8.5	9.6
				Middle	4	24.4 24.4	24.4	8.3 8.3	8.3	31.3 31.3	31.3	94.3 94.3	94.3	6.6 6.6	6.6		4.1 3.9	4.0		6.2 7.1	6.7	
				Bottom	7	24.4 24.4	24.4	8.3 8.3	8.3	31.4 31.4	31.4	92.1 92.0	92.1	6.4 6.4	6.4	6.4	5.8 5.9	5.9		13.0 13.9	13.5	
7-Nov-18	Sunny	Moderate	11:30	Surface	1	25.2 25.2	25.2	8.3 8.3	8.3	30.4 30.4	30.4	102.5 101.6	102.1	7.1 7.0	7.1	6.9	5.0 5.4	5.2	8.0	10.0 12.8	11.4	12.0
				Middle	3.5	24.7 24.7	24.7	8.3 8.3	8.3	31.0 30.9	31.0	95.6 95.6	95.6	6.7 6.7	6.7		8.4 8.0	8.2		11.4 10.3	10.9	
				Bottom	6	24.7 24.7	24.7	8.3 8.3	8.3	31.0 31.0	31.0	94.4 93.9	94.2	6.6 6.5	6.6	6.6	10.5 10.6	10.6		14.3 12.8	13.6	
9-Nov-18	Sunny	Calm	13:41	Surface	1	25.2 25.1	25.2	8.1 8.1	8.1	30.1 30.1	30.1	105.6 105.7	105.7	7.3 7.4	7.4	7.3	7.2 7.4	7.3	9.5	9.3 9.4	9.4	13.1
				Middle	4	24.9 24.9	24.9	8.1 8.1	8.1	30.1 30.1	30.1	102.9 103.2	103.1	7.2 7.2	7.2		8.0 7.8	7.9		12.5 16.4	14.5	
				Bottom	7	24.7 24.8	24.8	8.1 8.1	8.1	30.4 30.4	30.4	98.3 99.5	98.9	6.9 7.0	7.0	7.0	12.9 13.9	13.4		11.9 18.8	15.4	
12-Nov-18	Cloudy	Calm	14:40	Surface	1	25.6 25.6	25.6	8.1 8.1	8.1	28.2 28.2	28.2	100.6 99.9	100.3	7.0 7.0	7.0	6.9	3.8 3.7	3.8	6.7	8.7 10.0	9.4	8.5
				Middle	3.5	24.7 24.7	24.7	8.1 8.1	8.1	29.6 29.5	29.6	95.7 95.1	95.4	6.7 6.7	6.7		7.8 7.6	7.7		7.3 9.4	8.4	
				Bottom	6	24.7 24.7	24.7	8.1 8.1	8.1	29.9 30.0	30.0	95.2 94.9	95.1	6.7 6.6	6.7	6.7	8.6 8.6	8.6		7.0 8.4	7.7	
17-Nov-18	Rainy	Rough	07:33	Surface	1	27.3 27.5	27.4	7.9 7.9	7.9	24.6 24.7	24.7	94.7 92.2	93.5	6.7 6.6	6.7	6.6	2.5 2.4	2.5	3.6	10.4 8.0	9.2	8.9
				Middle	3.5	30.1 30.0	30.1	7.9 7.9	7.9	24.6 24.6	24.6	92.0 92.0	92.0	6.5 6.5	6.5		2.9 2.9	2.9		6.9 9.1	8.0	
				Bottom	6	30.6 30.4	30.5	7.9 8.0	8.0	24.7 24.7	24.7	90.7 91.3	91.0	6.3 6.4	6.4	6.4	5.6 5.1	5.4		9.4 9.7	9.6	
19-Nov-18	Cloudy	Rough	09:23	Surface	1	24.5 24.5	24.5	7.9 7.9	7.9	26.8 26.8	26.8	96.3 92.3	94.3	6.9 6.6	6.8	6.7	2.7 2.7	2.7	4.3	8.1 8.7	8.4	6.7
				Middle	3.5	24.6 24.7	24.7	7.9 7.9	7.9	29.3 29.4	29.4	93.6 93.2	93.4	6.6 6.6	6.6		3.3 3.4	3.4		6.6 5.4	6.0	
				Bottom	6	24.7 24.7	24.7	7.9 7.9	7.9	29.9 29.9	29.9	90.2 89.9	90.1	6.3 6.3	6.3	6.3	6.6 6.7	6.7		5.8 5.7	5.8	
21-Nov-18	Sunny	Calm	11:44	Surface	1	24.5 24.5	24.5	8.0 8.0	8.0	30.8 30.8	30.8	95.9 95.4	95.7	6.7 6.7	6.7	6.7	5.1 5.0	5.1	6.2	11.5 6.3	8.9	8.9
				Middle	3.5	24.4 24.4	24.4	8.0 8.0	8.0	31.0 31.1	31.1	94.8 94.5	94.7	6.6 6.6	6.6		5.3 5.3	5.3		10.1 8.8	9.5	
				Bottom	6	24.3 24.3	24.3	8.0 8.0	8.0	31.1 31.1	31.1	92.1 92.1	92.1	6.5 6.5	6.5	6.5	7.9 8.3	8.1		7.8 8.6	8.2	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at CS2(A) - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	07:35	Surface	1	25.9 26.0	26.0	8.0 8.0	8.0	29.5 29.5	29.5	93.8 91.0	92.4	6.5 6.3	6.4	6.4	14.0 15.4	14.7	21.9	7.3 7.9	7.6	8.5
				Middle	3.5	26.0 26.0	26.0	8.0 8.0	8.0	29.5 29.5	29.5	91.9 90.6	91.3	6.3 6.2	6.3		15.7 14.6	15.2		8.8 7.7	8.3	
				Bottom	6	26.0 26.0	26.0	8.0 8.0	8.0	29.5 29.5	29.5	90.6 90.4	90.5	6.2 6.2	6.2	6.2	32.3 39.1	35.7		10.1 8.8	9.5	
27-Oct-18	Cloudy	Moderate	08:16	Surface	1	26.1 26.1	26.1	8.0 8.0	8.0	27.2 27.2	27.2	92.8 91.2	92.0	6.4 6.3	6.4	6.4	11.9 11.4	11.7	14.0	8.3 7.3	7.8	9.2
				Middle	3.5	26.1 26.1	26.1	8.0 8.0	8.0	27.2 27.2	27.2	91.4 90.7	91.1	6.4 6.3	6.4		11.1 11.7	11.4		8.7 9.7	9.2	
				Bottom	6	26.1 26.1	26.1	8.0 8.0	8.0	27.2 27.3	27.3	91.1 90.6	90.9	6.3 6.3	6.3	6.3	18.2 19.3	18.8		10.7 10.5	10.6	
29-Oct-18	Sunny	Calm	09:20	Surface	1	25.6 25.7	25.7	8.0 8.0	8.0	27.6 27.6	27.6	97.6 91.8	94.7	6.8 6.4	6.6	6.6	4.5 4.2	4.4	7.5	8.6 6.9	7.8	8.3
				Middle	3.5	25.6 25.6	25.6	8.0 8.0	8.0	28.0 27.9	28.0	92.6 91.7	92.2	6.5 6.4	6.5		5.5 5.5	5.5		7.8 7.8	7.8	
				Bottom	6	25.6 25.6	25.6	8.0 8.0	8.0	28.0 28.0	28.0	91.3 91.3	91.3	6.4 6.4	6.4	6.4	12.6 12.5	12.6		8.6 10.1	9.4	
3-Nov-18	Rainy	Moderate	15:12	Surface	1	24.0 24.0	24.0	8.2 8.2	8.2	30.8 30.8	30.8	104.4 104.6	104.5	7.4 7.4	7.4	7.4	2.2 2.1	2.2	2.9	10.7 11.5	11.1	11.3
				Middle	3.5	24.0 24.0	24.0	8.2 8.2	8.2	30.8 30.8	30.8	103.0 104.6	103.8	7.3 7.4	7.4		2.5 2.4	2.5		12.0 11.4	11.7	
				Bottom	6	24.0 24.0	24.0	8.2 8.2	8.2	30.9 30.9	30.9	101.3 101.8	101.6	7.2 7.2	7.2	7.2	4.0 3.7	3.9		11.0 11.2	11.1	
5-Nov-18	Sunny	Calm	16:32	Surface	1	24.6 24.6	24.6	8.4 8.4	8.4	30.6 30.6	30.6	110.0 112.2	111.1	7.7 7.8	7.8	7.8	4.6 5.0	4.8	6.2	10.3 7.6	9.0	8.6
				Middle	3.5	24.6 24.6	24.6	8.4 8.4	8.4	30.6 30.6	30.6	111.3 111.4	111.4	7.8 7.8	7.8		5.4 5.2	5.3		8.7 8.5	8.6	
				Bottom	6	24.6 24.6	24.6	8.4 8.4	8.4	30.7 30.7	30.7	106.9 106.8	106.9	7.5 7.5	7.5	7.5	8.4 8.3	8.4		7.8 8.6	8.2	
7-Nov-18	Sunny	Moderate	17:36	Surface	1	25.1 25.2	25.2	8.4 8.4	8.4	29.6 29.6	29.6	115.0 115.9	115.5	8.0 8.1	8.1	8.1	5.3 5.3	5.3	7.0	6.7 8.0	7.4	6.4
				Middle	3.5	25.2 25.2	25.2	8.4 8.4	8.4	29.8 29.8	29.8	114.9 115.9	115.4	8.0 8.1	8.1		5.8 5.5	5.7		5.5 7.1	6.3	
				Bottom	6	25.1 25.1	25.1	8.3 8.3	8.3	30.2 30.2	30.2	108.6 109.0	108.8	7.6 7.6	7.6	7.6	9.7 10.2	10.0		5.2 6.0	5.6	
9-Nov-18	Sunny	Calm	18:07	Surface	1	25.0 25.0	25.0	8.1 8.1	8.1	29.2 29.2	29.2	107.1 106.7	106.9	7.5 7.5	7.5	7.5	7.6 7.9	7.8	9.2	19.7 15.0	17.4	14.9
				Middle	3.5	25.0 25.0	25.0	8.1 8.1	8.1	29.2 29.2	29.2	107.4 107.3	107.4	7.5 7.5	7.5		8.0 7.8	7.9		9.7 11.8	10.8	
				Bottom	6	24.8 24.9	24.9	8.1 8.1	8.1	29.8 29.5	29.7	99.6 101.3	100.5	7.0 7.1	7.1	7.1	11.9 11.8	11.9		15.1 17.7	16.4	
12-Nov-18	Cloudy	Calm	09:56	Surface	1	24.9 24.8	24.9	8.1 8.1	8.1	28.6 28.7	28.7	96.8 96.0	96.4	6.8 6.8	6.8	6.8	6.2 6.6	6.4	18.1	11.8 9.6	10.7	10.3
				Middle	4	24.8 24.8	24.8	8.1 8.1	8.1	29.0 29.0	29.0	96.0 95.8	95.9	6.8 6.7	6.8		15.5 17.0	16.3		10.1 12.3	11.2	
				Bottom	7	24.8 24.8	24.8	8.1 8.1	8.1	29.0 29.0	29.0	95.1 95.4	95.3	6.7 6.7	6.7	6.7	30.1 33.0	31.6		8.4 9.4	8.9	
14-Nov-18	Cloudy	Rough	15:34	Surface	1	25.0 25.1	25.1	7.9 7.9	7.9	29.2 29.1	29.2	97.9 96.8	97.4	6.9 6.8	6.9	6.7	4.2 4.2	4.2	8.5	9.4 10.4	9.9	10.0
				Middle	3.5	24.8 24.8	24.8	7.9 7.9	7.9	30.1 30.1	30.1	93.2 93.5	93.4	6.5 6.5	6.5		8.0 8.4	8.2		7.5 7.0	7.3	
				Bottom	6	24.7 24.7	24.7	7.9 7.9	7.9	30.2 30.2	30.2	91.8 91.5	91.7	6.4 6.4	6.4	6.4	13.2 12.7	13.0		12.9 12.4	12.7	
17-Nov-18	Cloudy	Moderate	14:20	Surface	1	27.0 27.1	27.1	7.9 8.0	8.0	24.7 24.7	24.7	93.5 93.0	93.3	6.7 6.6	6.7	6.6	3.7 3.7	3.7	6.3	8.6 8.4	8.5	7.9
				Middle	3.5	27.9 27.6	27.8	7.9 7.9	7.9	24.7 24.7	24.7	91.4 90.7	91.1	6.5 6.4	6.5		3.8 3.7	3.8		7.1 7.3	7.2	
				Bottom	6	30.3 30.3	30.3	7.9 7.9	7.9	24.7 24.7	24.7	89.5 89.2	89.4	6.3 6.2	6.3	6.3	10.9 12.0	11.5		8.3 7.4	7.9	
19-Nov-18	Cloudy	Rough	15:26	Surface	1	24.9 24.8	24.9	7.9 7.9	7.9	26.8 27.0	26.9	99.2 94.9	97.1	7.1 6.8	7.0	6.9	4.1 4.1	4.1	7.0	5.9 6.3	6.1	6.2
				Middle	3.5	24.8 24.8	24.8	7.9 7.9	7.9	27.3 27.4	27.4	96.2 94.9	95.6	6.8 6.7	6.8		3.1 3.3	3.2		5.4 6.3	5.9	
				Bottom	6	24.7 24.7	24.7	7.9 7.9	7.9	30.0 30.0	30.0	89.8 93.3	91.6	6.3 6.5	6.4	6.4	13.7 13.7	13.7		5.2 8.0	6.6	
21-Nov-18	Sunny	Calm	16:32	Surface	1	24.8 24.9	24.9	7.9 7.9	7.9	29.4 29.2	29.3	93.2 92.9	93.1	6.5 6.5	6.5	6.5	8.0 8.0	8.0	9.3	11.8 14.8	13.3	11.9
				Middle	3.5	24.6 24.6	24.6	7.9 7.9	7.9	30.0 30.0	30.0	92.3 92.0	92.2	6.5 6.5	6.5		8.4 8.1	8.3		9.6 12.2	10.9	
				Bottom	6	24.5 24.5	24.5	7.9 7.9	7.9	30.2 30.2	30.2	92.0 92.0	92.0	6.5 6.5	6.5	6.5	11.6 11.7	11.7		12.0 11.1	11.6	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at IS1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	12:33	Surface	1	26.1 26.1	26.1	8.0 8.0	8.0	28.6 28.9	28.8	99.0 98.1	98.6	6.8 6.8	6.8	6.8	1.8 1.8	1.8	2.9	4.8 6.3	5.6	7.0
				Middle	5	26.0 26.0	26.0	8.0 8.0	8.0	29.5 29.3	29.4	97.4 97.7	97.6	6.7 6.7	6.7		1.8 1.9	1.9		6.8 5.5	6.2	
				Bottom	9	26.0 26.0	26.0	8.0 8.0	8.0	30.4 30.5	30.5	97.4 97.5	97.5	6.7 6.7	6.7	6.7	5.1 5.1	5.1		10.0 8.6	9.3	
27-Oct-18	Sunny	Moderate	14:20	Surface	1	26.3 26.3	26.3	8.0 8.0	8.0	28.3 28.3	28.3	102.3 101.4	101.9	7.0 7.0	7.0	7.0	1.3 1.5	1.4	2.8	4.9 5.0	5.0	5.7
				Middle	5	26.1 26.0	26.1	8.0 8.0	8.0	28.7 28.9	28.8	100.0 98.8	99.4	6.9 6.8	6.9		1.4 1.5	1.5		5.8 5.3	5.6	
				Bottom	9	25.9 25.9	25.9	8.1 8.1	8.1	29.8 29.8	29.8	96.9 96.7	96.8	6.7 6.6	6.7	6.7	5.7 5.4	5.6		6.6 6.4	6.5	
29-Oct-18	Sunny	Calm	15:33	Surface	1	25.9 25.9	25.9	8.1 8.1	8.1	28.9 28.9	28.9	106.0 105.9	106.0	7.3 7.3	7.3	7.3	1.3 1.2	1.3	1.9	4.6 4.9	4.8	6.6
				Middle	5	25.8 25.8	25.8	8.1 8.1	8.1	29.6 29.6	29.6	105.0 104.8	104.9	7.2 7.2	7.2		1.6 1.5	1.6		5.6 5.8	5.7	
				Bottom	9	25.7 25.7	25.7	8.1 8.1	8.1	30.4 30.1	30.3	100.8 103.0	101.9	6.9 7.1	7.0	7.0	2.7 2.9	2.8		9.6 9.0	9.3	
3-Nov-18	Rainy	Moderate	10:05	Surface	1	24.2 24.2	24.2	8.2 8.2	8.2	31.4 31.4	31.4	93.2 93.3	93.3	6.5 6.5	6.5	6.5	4.9 4.8	4.9	7.0	5.9 8.8	7.4	9.7
				Middle	5	24.2 24.2	24.2	8.2 8.2	8.2	31.4 31.4	31.4	92.6 92.7	92.7	6.5 6.5	6.5		5.6 5.6	5.6		11.7 7.0	9.4	
				Bottom	9	24.2 24.2	24.2	8.2 8.2	8.2	31.4 31.4	31.4	92.2 92.2	92.2	6.5 6.5	6.5	6.5	10.1 10.7	10.4		14.4 10.4	12.4	
5-Nov-18	Cloudy	Moderate	10:38	Surface	1	24.6 24.6	24.6	8.3 8.3	8.3	31.3 31.3	31.3	96.0 94.9	95.5	6.7 6.6	6.7	6.6	3.5 3.6	3.6	6.0	16.6 15.5	16.1	12.0
				Middle	5	24.6 24.6	24.6	8.3 8.3	8.3	31.4 31.4	31.4	93.9 93.7	93.8	6.5 6.5	6.5		4.9 4.7	4.8		15.3 10.6	13.0	
				Bottom	9	24.6 24.6	24.6	8.3 8.3	8.3	31.5 31.5	31.5	91.2 91.1	91.2	6.4 6.3	6.4	6.4	9.4 9.9	9.7		7.8 6.0	6.9	
7-Nov-18	Sunny	Moderate	12:14	Surface	1	25.0 24.9	25.0	8.3 8.3	8.3	30.6 30.7	30.7	101.3 100.5	100.9	7.0 7.0	7.0	6.9	7.0 6.6	6.8	8.3	5.3 7.1	6.2	7.3
				Middle	5	24.8 24.8	24.8	8.3 8.3	8.3	31.0 30.8	30.9	97.5 97.0	97.3	6.8 6.7	6.8		7.0 6.8	6.9		8.1 7.5	7.8	
				Bottom	9	24.7 24.7	24.7	8.3 8.3	8.3	31.3 31.3	31.3	93.7 93.9	93.8	6.5 6.5	6.5	6.5	10.9 11.5	11.2		8.3 7.7	8.0	
9-Nov-18	Sunny	Calm	14:22	Surface	1	25.2 25.2	25.2	8.1 8.1	8.1	29.7 29.8	29.8	107.4 107.8	107.6	7.5 7.5	7.5	7.5	5.9 5.9	5.9	6.1	10.3 6.1	8.2	11.3
				Middle	5	25.1 25.1	25.1	8.1 8.2	8.2	30.3 30.3	30.3	106.2 106.9	106.6	7.4 7.4	7.4		5.1 5.3	5.2		10.6 11.8	11.2	
				Bottom	9	24.9 24.8	24.9	8.1 8.1	8.1	30.7 30.8	30.8	99.8 99.3	99.6	6.9 6.9	6.9	6.9	7.0 7.2	7.1		15.1 13.6	14.4	
12-Nov-18	Cloudy	Calm	15:24	Surface	1	25.1 24.8	25.0	8.1 8.1	8.1	27.5 27.7	27.6	100.6 94.9	97.8	7.1 6.7	6.9	6.8	3.8 3.3	3.6	6.4	7.0 8.4	7.7	9.9
				Middle	5	24.8 24.8	24.8	8.1 8.1	8.1	29.5 29.5	29.5	95.9 95.8	95.9	6.7 6.7	6.7		6.5 6.4	6.5		9.1 8.7	8.9	
				Bottom	9	24.8 24.8	24.8	8.1 8.1	8.1	30.0 30.1	30.1	94.9 94.6	94.8	6.6 6.6	6.6	6.6	8.9 9.1	9.0		15.8 10.6	13.2	
17-Nov-18	Rainy	Rough	08:22	Surface	1	27.5 27.5	27.5	7.9 7.9	7.9	24.5 24.6	24.6	94.2 93.1	93.7	6.7 6.6	6.7	6.7	2.9 2.7	2.8	3.1	7.7 7.8	7.8	8.6
				Middle	5	30.0 30.0	30.0	7.9 7.9	7.9	24.5 24.5	24.5	93.3 93.0	93.2	6.6 6.5	6.6		2.8 2.7	2.8		9.6 8.7	9.2	
				Bottom	9	30.4 30.2	30.3	8.0 8.0	8.0	24.6 24.6	24.6	93.0 93.2	93.1	6.5 6.5	6.5	6.5	3.9 3.5	3.7		9.0 8.8	8.9	
19-Nov-18	Cloudy	Rough	10:09	Surface	1	24.6 24.6	24.6	7.9 7.9	7.9	26.2 26.3	26.3	95.9 92.1	94.0	6.9 6.6	6.8	6.7	4.3 4.1	4.2	4.7	12.1 9.6	10.9	11.8
				Middle	5	24.6 24.6	24.6	7.9 7.9	7.9	30.3 29.3	29.8	92.7 92.2	92.5	6.5 6.5	6.5		4.5 4.3	4.4		11.6 14.4	13.0	
				Bottom	9	24.6 24.6	24.6	8.0 7.9	8.0	31.3 30.8	31.1	90.7 91.0	90.9	6.3 6.4	6.4	6.4	5.4 5.5	5.5		13.1 10.0	11.6	
21-Nov-18	Sunny	Calm	12:40	Surface	1	24.7 24.6	24.7	8.0 8.0	8.0	31.1 31.1	31.1	96.2 95.9	96.1	6.7 6.7	6.7	6.7	7.4 7.8	7.6	16.9	14.4 12.3	13.4	15.2
				Middle	5	24.4 24.4	24.4	8.0 8.0	8.0	31.2 31.2	31.2	94.1 94.1	94.1	6.6 6.6	6.6		15.3 14.4	14.9		12.6 12.2	12.4	
				Bottom	9	24.3 24.3	24.3	8.0 8.0	8.0	31.2 31.2	31.2	92.8 92.2	92.5	6.5 6.5	6.5	6.5	28.9 27.2	28.1		17.7 21.9	19.8	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at IS1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	08:13	Surface	1	26.0 26.0	26.0	8.0 8.0	8.0	28.7 28.9	28.8	92.1 92.1	92.1	6.4 6.4	6.4	6.5	5.6 5.7	5.7	25.8	9.3 7.8	8.6	8.6
				Middle	5	26.0 26.0	26.0	8.0 8.0	8.0	30.1 30.0	30.1	95.4 94.6	95.0	6.5 6.5	6.5		7.2 7.1	7.2		8.3 8.5	8.4	
				Bottom	9	26.0 26.0	26.0	8.0 8.1	8.1	30.6 30.6	30.6	96.7 96.9	96.8	6.6 6.6	6.6	6.6	62.7 66.1	64.4		9.0 8.7	8.9	
27-Oct-18	Cloudy	Moderate	09:17	Surface	1	26.0 26.0	26.0	8.0 8.0	8.0	27.0 27.0	27.0	93.6 93.0	93.3	6.5 6.5	6.5	6.5	5.5 5.6	5.6	21.0	12.0 10.6	11.3	12.4
				Middle	5	26.1 26.1	26.1	8.0 8.0	8.0	29.1 29.1	29.1	94.7 94.5	94.6	6.5 6.5	6.5		18.4 17.1	17.8		14.0 14.8	14.4	
				Bottom	9	26.1 26.1	26.1	8.0 8.0	8.0	29.1 29.1	29.1	94.3 94.2	94.3	6.5 6.5	6.5	6.5	40.3 39.0	39.7		10.8 12.2	11.5	
29-Oct-18	Sunny	Calm	10:12	Surface	1	25.4 25.4	25.4	8.0 8.0	8.0	28.4 28.6	28.5	98.6 95.4	97.0	6.9 6.7	6.8	6.8	4.0 4.4	4.2	9.3	7.4 7.7	7.6	7.9
				Middle	5	25.5 25.5	25.5	8.0 8.0	8.0	29.1 29.0	29.1	96.1 95.4	95.8	6.7 6.6	6.7		5.2 4.7	5.0		9.1 7.5	8.3	
				Bottom	9	25.5 25.5	25.5	8.0 8.0	8.0	29.4 29.3	29.4	94.9 95.0	95.0	6.6 6.6	6.6	6.6	19.5 17.7	18.6		7.4 8.4	7.9	
3-Nov-18	Rainy	Moderate	16:07	Surface	1	24.0 24.0	24.0	8.2 8.2	8.2	30.8 30.8	30.8	104.2 103.9	104.1	7.4 7.3	7.4	7.1	1.8 1.6	1.7	6.1	9.1 9.4	9.3	9.5
				Middle	5	24.1 24.1	24.1	8.2 8.2	8.2	31.3 31.3	31.3	96.4 97.1	96.8	6.8 6.8	6.8		4.5 4.4	4.5		7.9 9.4	8.7	
				Bottom	9	24.1 24.1	24.1	8.2 8.2	8.2	31.3 31.3	31.3	95.2 95.2	95.2	6.7 6.7	6.7	6.7	12.2 11.9	12.1		10.2 10.6	10.4	
5-Nov-18	Sunny	Calm	17:13	Surface	1	24.8 24.8	24.8	8.4 8.4	8.4	31.0 31.0	31.0	104.6 105.0	104.8	7.3 7.3	7.3	7.1	3.7 3.3	3.5	17.3	10.3 7.7	9.0	11.1
				Middle	5	24.7 24.7	24.7	8.4 8.4	8.4	31.2 31.2	31.2	99.8 99.6	99.7	6.9 6.9	6.9		11.8 10.4	11.1		11.4 10.1	10.8	
				Bottom	9	24.7 24.7	24.7	8.3 8.4	8.4	31.3 31.3	31.3	96.8 98.4	97.6	6.7 6.8	6.8	6.8	37.1 37.7	37.4		12.1 14.9	13.5	
7-Nov-18	Sunny	Moderate	18:16	Surface	1	25.1 25.1	25.1	8.4 8.4	8.4	30.0 30.1	30.1	103.2 104.3	103.8	7.2 7.3	7.3	7.1	5.3 5.3	5.3	25.6	5.0 5.8	5.4	5.4
				Middle	5	25.0 25.0	25.0	8.3 8.3	8.3	30.8 30.7	30.8	99.5 99.5	99.5	6.9 6.9	6.9		14.8 13.6	14.2		5.3 6.1	5.7	
				Bottom	9	25.0 25.0	25.0	8.3 8.3	8.3	30.9 30.9	30.9	98.1 98.3	98.2	6.8 6.8	6.8	6.8	59.1 55.3	57.2		5.3 4.7	5.0	
9-Nov-18	Sunny	Calm	18:49	Surface	1	25.1 25.1	25.1	8.1 8.1	8.1	29.2 29.2	29.2	109.4 109.9	109.7	7.7 7.7	7.7	7.4	5.8 5.8	5.8	18.7	7.6 7.2	7.4	10.1
				Middle	5	24.9 24.9	24.9	8.1 8.1	8.1	30.6 30.6	30.6	100.0 99.9	100.0	7.0 7.0	7.0		11.1 11.2	11.2		7.0 7.6	7.3	
				Bottom	9	24.8 24.8	24.8	8.1 8.1	8.1	30.7 30.7	30.7	98.4 98.3	98.4	6.9 6.8	6.9	6.9	40.0 38.0	39.0		16.1 15.0	15.6	
12-Nov-18	Cloudy	Calm	10:38	Surface	1	24.9 25.1	25.0	8.1 8.1	8.1	27.6 27.4	27.5	97.2 97.4	97.3	6.9 6.9	6.9	6.9	5.4 5.0	5.2	12.2	13.6 12.2	12.9	11.7
				Middle	5	24.7 24.9	24.8	8.1 8.1	8.1	28.8 28.0	28.4	95.8 96.4	96.1	6.8 6.8	6.8		7.7 7.7	7.7		12.6 12.7	12.7	
				Bottom	9	24.7 24.7	24.7	8.1 8.1	8.1	29.5 29.5	29.5	94.6 94.5	94.6	6.7 6.6	6.7	6.7	25.0 22.1	23.6		9.2 9.5	9.4	
14-Nov-18	Cloudy	Rough	16:24	Surface	1	24.9 24.9	24.9	8.0 8.0	8.0	27.6 27.7	27.7	96.9 96.3	96.6	6.9 6.8	6.9	6.8	3.0 3.1	3.1	5.0	8.6 10.4	9.5	10.7
				Middle	5	24.7 24.7	24.7	8.0 8.0	8.0	30.0 30.1	30.1	94.3 93.6	94.0	6.6 6.6	6.6		4.1 4.0	4.1		11.2 11.6	11.4	
				Bottom	9	24.7 24.7	24.7	8.0 8.0	8.0	30.8 30.8	30.8	91.6 91.5	91.6	6.4 6.4	6.4	6.4	7.7 7.6	7.7		12.1 10.1	11.1	
17-Nov-18	Cloudy	Moderate	15:02	Surface	1	23.0 23.4	23.2	7.8 7.8	7.8	24.6 24.7	24.7	92.7 89.9	91.3	6.8 6.5	6.7	6.6	2.4 2.7	2.6	6.8	8.2 8.1	8.2	8.1
				Middle	5	30.7 30.5	30.6	7.9 7.9	7.9	24.6 24.6	24.6	91.7 91.6	91.7	6.4 6.4	6.4		7.4 6.4	6.9		8.5 6.8	7.7	
				Bottom	9	30.9 30.9	30.9	8.0 8.0	8.0	24.7 24.7	24.7	91.0 91.0	91.0	6.4 6.4	6.4	6.4	11.3 10.3	10.8		8.3 8.3	8.3	
19-Nov-18	Cloudy	Rough	16:14	Surface	1	24.9 24.9	24.9	7.9 7.9	7.9	25.3 25.5	25.4	99.8 96.9	98.4	7.2 6.9	7.1	6.8	2.5 2.7	2.6	7.8	4.6 5.7	5.2	5.8
				Middle	5	24.6 24.6	24.6	7.9 8.0	8.0	30.9 31.1	31.0	92.1 92.0	92.1	6.4 6.4	6.4		8.2 8.9	8.6		4.7 5.0	4.9	
				Bottom	9	24.6 24.6	24.6	8.0 8.0	8.0	31.3 31.4	31.4	91.0 90.7	90.9	6.3 6.3	6.3	6.3	12.4 12.1	12.3		7.5 7.1	7.3	
21-Nov-18	Sunny	Calm	17:29	Surface	1	24.8 24.8	24.8	8.0 8.0	8.0	30.7 30.7	30.7	97.4 96.3	96.9	6.8 6.7	6.8	6.8	4.8 5.2	5.0	17.1	18.5 20.0	19.3	12.7
				Middle	5	24.8 24.7	24.8	8.0 8.0	8.0	30.9 31.0	31.0	96.0 95.2	95.6	6.7 6.6	6.7		11.3 12.5	11.9		6.6 9.2	7.9	
				Bottom	9	24.6 24.6	24.6	8.0 8.0	8.0	31.1 31.1	31.1	94.2 94.2	94.2	6.6 6.6	6.6	6.6	35.8 32.9	34.4		12.5 9.0	10.8	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at IS2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	12:41	Surface	1	26.1 26.1	26.1	8.0 8.0	8.0	28.5 28.7	28.6	99.9 100.3	100.1	6.9 6.9	6.9	6.8	2.2 1.8	2.0	5.4	3.6 4.0	3.8	7.2
				Middle	3.5	26.1 26.1	26.1	8.0 8.0	8.0	29.8 29.8	29.8	98.5 96.8	97.7	6.8 6.6	6.7		3.8 3.9	3.9		8.3 11.4	9.9	
				Bottom	6	26.0 26.0	26.0	8.0 8.0	8.0	30.0 30.2	30.1	96.7 95.7	96.2	6.6 6.6	6.6	6.6	9.9 10.8	10.4		5.1 10.6	7.9	
27-Oct-18	Sunny	Moderate	14:33	Surface	1	26.3 26.4	26.4	8.0 8.0	8.0	27.9 27.9	27.9	101.3 100.1	100.7	7.0 6.9	7.0	6.9	2.2 2.1	2.2	3.1	6.9 7.0	7.0	6.6
				Middle	3.5	26.2 26.2	26.2	8.0 8.0	8.0	28.3 28.3	28.3	99.1 98.6	98.9	6.8 6.8	6.8		2.3 2.4	2.4		8.0 5.1	6.6	
				Bottom	6	26.0 26.0	26.0	8.0 8.0	8.0	28.9 28.9	28.9	97.6 97.3	97.5	6.7 6.7	6.7	6.7	4.6 4.6	4.6		6.3 6.1	6.2	
29-Oct-18	Sunny	Calm	15:44	Surface	1	25.7 25.7	25.7	8.1 8.1	8.1	28.9 29.1	29.0	105.1 103.8	104.5	7.3 7.2	7.3	7.2	2.3 2.7	2.5	3.3	9.4 6.7	8.1	6.5
				Middle	3.5	25.5 25.6	25.6	8.1 8.1	8.1	29.0 29.0	29.0	100.0 102.2	101.1	6.9 7.1	7.0		3.3 3.7	3.5		5.9 6.3	6.1	
				Bottom	6	25.6 25.5	25.6	8.1 8.1	8.1	29.6 29.4	29.5	99.5 98.9	99.2	6.9 6.9	6.9	6.9	3.9 3.7	3.8		4.9 5.5	5.2	
3-Nov-18	Rainy	Moderate	10:20	Surface	1	24.1 24.1	24.1	8.2 8.2	8.2	31.2 31.2	31.2	96.3 95.6	96.0	6.8 6.7	6.8	6.8	3.4 3.1	3.3	6.0	12.9 13.3	13.1	11.8
				Middle	3.5	24.1 24.1	24.1	8.2 8.2	8.2	31.2 31.2	31.2	95.0 94.9	95.0	6.7 6.7	6.7		4.4 4.5	4.5		13.0 13.6	13.3	
				Bottom	6	24.1 24.1	24.1	8.2 8.2	8.2	31.2 31.2	31.2	94.5 94.4	94.5	6.6 6.6	6.6	6.6	9.8 10.3	10.1		6.8 10.9	8.9	
5-Nov-18	Cloudy	Moderate	10:49	Surface	1	24.5 24.5	24.5	8.3 8.3	8.3	31.3 31.4	31.4	94.7 92.5	93.6	6.6 6.5	6.6	6.6	5.9 6.5	6.2	6.5	11.5 13.1	12.3	11.1
				Middle	3.5	24.5 24.5	24.5	8.3 8.3	8.3	31.4 31.4	31.4	93.6 93.3	93.5	6.5 6.5	6.5		6.1 6.1	6.1		13.4 10.0	11.7	
				Bottom	6	24.5 24.5	24.5	8.3 8.3	8.3	31.5 31.4	31.5	92.3 92.8	92.6	6.4 6.5	6.5	6.5	7.8 6.7	7.3		10.2 8.1	9.2	
7-Nov-18	Sunny	Moderate	12:24	Surface	1	25.2 25.2	25.2	8.3 8.3	8.3	30.8 30.8	30.8	101.4 100.6	101.0	7.0 7.0	7.0	6.8	6.0 6.2	6.1	8.2	7.1 6.6	6.9	7.3
				Middle	3.5	24.7 24.7	24.7	8.3 8.3	8.3	31.1 31.0	31.1	95.3 95.2	95.3	6.6 6.6	6.6		8.7 8.7	8.7		8.8 10.3	9.6	
				Bottom	6	24.7 24.7	24.7	8.3 8.3	8.3	31.2 31.2	31.2	93.0 92.9	93.0	6.5 6.5	6.5	6.5	10.0 9.7	9.9		5.1 5.9	5.5	
9-Nov-18	Sunny	Calm	14:31	Surface	1	25.3 25.3	25.3	8.1 8.2	8.2	29.2 29.2	29.2	107.7 108.4	108.1	7.5 7.6	7.6	7.4	6.2 6.2	6.2	8.4	10.7 8.0	9.4	8.8
				Middle	3.5	24.9 24.8	24.9	8.1 8.1	8.1	29.6 29.7	29.7	103.0 102.6	102.8	7.2 7.2	7.2		8.2 9.0	8.6		9.9 6.6	8.3	
				Bottom	6	24.7 24.7	24.7	8.1 8.1	8.1	30.3 30.3	30.3	99.1 99.6	99.4	6.9 7.0	7.0	7.0	10.6 10.4	10.5		7.5 9.6	8.6	
12-Nov-18	Cloudy	Calm	15:33	Surface	1	25.0 24.9	25.0	8.1 8.1	8.1	27.6 28.0	27.8	99.6 96.8	98.2	7.0 6.8	6.9	6.9	5.6 5.6	5.6	6.9	6.7 7.9	7.3	8.8
				Middle	3.5	24.8 24.8	24.8	8.1 8.1	8.1	28.5 28.5	28.5	96.9 96.9	96.9	6.8 6.8	6.8		5.1 5.1	5.1		11.0 9.6	10.3	
				Bottom	6	24.7 24.7	24.7	8.1 8.1	8.1	29.4 29.2	29.3	94.4 95.2	94.8	6.6 6.7	6.7	6.7	10.7 9.1	9.9		7.9 9.8	8.9	
17-Nov-18	Rainy	Rough	08:32	Surface	1	28.6 29.4	29.0	7.9 8.0	8.0	24.5 24.6	24.6	96.0 92.2	94.1	6.8 6.5	6.7	6.7	2.5 2.8	2.7	3.0	3.5 6.0	4.8	8.0
				Middle	3.5	29.5 29.3	29.4	7.9 8.0	8.0	24.6 24.6	24.6	93.5 93.1	93.3	6.6 6.6	6.6		2.7 2.8	2.8		8.7 8.5	8.6	
				Bottom	6	30.2 30.2	30.2	8.0 8.0	8.0	24.7 24.7	24.7	92.2 92.4	92.3	6.5 6.5	6.5	6.5	3.3 3.6	3.5		10.7 10.5	10.6	
19-Nov-18	Cloudy	Rough	10:18	Surface	1	24.4 24.6	24.5	7.9 7.9	7.9	25.4 25.4	25.4	98.8 91.7	95.3	7.1 6.6	6.9	6.9	4.7 5.0	4.9	5.4	10.4 6.4	8.4	7.1
				Middle	3.5	24.5 24.5	24.5	7.9 7.9	7.9	26.0 26.5	26.3	95.3 92.7	94.0	6.9 6.6	6.8		3.3 3.3	3.3		6.4 6.5	6.5	
				Bottom	6	24.6 24.6	24.6	7.9 7.9	7.9	30.8 30.8	30.8	92.6 90.6	91.6	6.5 6.3	6.4	6.4	7.6 8.1	7.9		5.5 7.0	6.3	
21-Nov-18	Sunny	Calm	12:48	Surface	1	24.9 24.9	24.9	8.0 8.0	8.0	30.8 30.8	30.8	96.8 95.9	96.4	6.7 6.7	6.7	6.7	4.7 4.6	4.7	11.4	8.4 7.2	7.8	9.5
				Middle	3.5	24.6 24.5	24.6	8.0 8.0	8.0	31.1 31.1	31.1	94.5 93.7	94.1	6.6 6.5	6.6		9.0 10.0	9.5		9.1 9.5	9.3	
				Bottom	6	24.4 24.4	24.4	8.0 8.0	8.0	31.2 31.1	31.2	93.0 93.0	93.0	6.5 6.5	6.5	6.5	20.1 19.6	19.9		11.6 11.2	11.4	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at IS2 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	08:20	Surface	1	26.0 26.0	26.0	8.0 8.0	8.0	29.9 29.9	29.9	96.3 93.4	94.9	6.6 6.4	6.5	6.5	18.1 15.8	17.0	25.2	9.5 8.0	8.8	8.7
				Middle	3.5	26.0 26.0	26.0	8.0 8.0	8.0	30.0 29.9	30.0	93.4 93.2	93.3	6.4 6.4	6.4		20.6 21.5	21.1		7.6 8.8	8.2	
				Bottom	6	26.0 26.0	26.0	8.0 8.0	8.0	30.1 30.1	30.1	93.4 93.2	93.3	6.4 6.4	6.4	6.4	37.6 37.6	37.6		8.6 9.4	9.0	
27-Oct-18	Cloudy	Moderate	09:31	Surface	1	26.1 26.1	26.1	8.0 8.0	8.0	28.5 28.5	28.5	95.7 94.9	95.3	6.6 6.6	6.6	6.6	13.0 13.2	13.1	21.8	8.4 9.4	8.9	11.3
				Middle	3	26.1 26.1	26.1	8.0 8.0	8.0	28.5 28.5	28.5	95.0 94.7	94.9	6.6 6.5	6.6		11.2 11.8	11.5		12.2 11.7	12.0	
				Bottom	5	26.1 26.1	26.1	8.0 8.0	8.0	28.5 28.5	28.5	94.6 94.4	94.5	6.5 6.5	6.5	6.5	42.2 39.4	40.8		13.4 12.5	13.0	
29-Oct-18	Sunny	Calm	10:24	Surface	1	25.4 25.4	25.4	8.0 8.0	8.0	29.0 29.0	29.0	98.8 95.6	97.2	6.9 6.7	6.8	6.8	4.8 5.4	5.1	13.8	6.9 7.8	7.4	7.8
				Middle	3	25.4 25.4	25.4	8.0 8.0	8.0	29.2 29.1	29.2	96.3 95.6	96.0	6.7 6.7	6.7		10.0 8.5	9.3		9.0 7.0	8.0	
				Bottom	5	25.4 25.4	25.4	8.0 8.0	8.0	29.3 29.3	29.3	95.3 95.0	95.2	6.6 6.6	6.6	6.6	27.8 26.2	27.0		7.6 8.4	8.0	
3-Nov-18	Rainy	Moderate	16:21	Surface	1	24.0 24.0	24.0	8.2 8.2	8.2	31.1 31.2	31.2	97.2 97.0	97.1	6.9 6.8	6.9	6.9	6.4 6.3	6.4	8.9	10.2 10.4	10.3	10.2
				Middle	3.5	24.0 24.0	24.0	8.2 8.2	8.2	31.1 31.1	31.1	97.0 96.8	96.9	6.8 6.8	6.8		5.8 5.7	5.8		11.1 10.2	10.7	
				Bottom	6	24.0 24.0	24.0	8.2 8.2	8.2	31.2 31.2	31.2	95.1 95.2	95.2	6.7 6.7	6.7	6.7	14.8 14.0	14.4		8.9 10.0	9.5	
5-Nov-18	Sunny	Calm	17:22	Surface	1	24.7 24.7	24.7	8.4 8.3	8.4	31.2 31.2	31.2	99.4 99.0	99.2	6.9 6.9	6.9	6.9	15.2 13.1	14.2	25.6	13.3 12.2	12.8	13.6
				Middle	3	24.7 24.7	24.7	8.3 8.3	8.3	31.2 31.2	31.2	99.3 99.0	99.2	6.9 6.9	6.9		22.2 23.9	23.1		14.1 18.3	16.2	
				Bottom	5	24.7 24.7	24.7	8.3 8.3	8.3	31.2 31.2	31.2	98.6 98.6	98.6	6.9 6.9	6.9	6.9	37.7 41.5	39.6		11.2 12.6	11.9	
7-Nov-18	Sunny	Moderate	18:26	Surface	1	25.1 25.1	25.1	8.4 8.4	8.4	30.4 30.5	30.5	103.2 104.5	103.9	7.2 7.3	7.3	7.3	12.7 14.7	13.7	27.3	8.7 6.7	7.7	8.2
				Middle	3.5	25.1 25.1	25.1	8.4 8.4	8.4	30.5 30.5	30.5	104.2 104.3	104.3	7.2 7.2	7.2		16.1 18.9	17.5		8.6 8.5	8.6	
				Bottom	6	25.1 25.1	25.1	8.4 8.4	8.4	30.6 30.6	30.6	103.7 104.0	103.9	7.2 7.2	7.2	7.2	48.6 52.9	50.8		9.3 7.4	8.4	
9-Nov-18	Sunny	Calm	18:59	Surface	1	25.1 25.0	25.1	8.2 8.1	8.2	29.4 29.7	29.6	109.4 107.6	108.5	7.6 7.5	7.6	7.6	5.5 5.4	5.5	12.8	8.4 8.2	8.3	7.8
				Middle	3.5	25.0 25.0	25.0	8.1 8.1	8.1	29.8 29.8	29.8	107.3 105.7	106.5	7.5 7.4	7.5		7.3 7.2	7.3		7.6 6.7	7.2	
				Bottom	6	24.8 24.9	24.9	8.1 8.1	8.1	30.4 30.0	30.2	100.1 101.3	100.7	7.0 7.1	7.1	7.1	25.8 25.5	25.7		6.9 9.0	8.0	
12-Nov-18	Cloudy	Calm	10:48	Surface	1	24.9 24.8	24.9	8.1 8.1	8.1	28.3 28.6	28.5	97.6 95.7	96.7	6.9 6.8	6.9	6.9	9.5 9.5	9.5	15.7	12.3 14.4	13.4	13.3
				Middle	3.5	24.7 24.8	24.8	8.1 8.1	8.1	29.1 28.6	28.9	95.1 96.0	95.6	6.7 6.8	6.8		15.0 13.1	14.1		17.9 11.7	14.8	
				Bottom	6	24.7 24.7	24.7	8.1 8.1	8.1	29.3 29.2	29.3	94.7 95.1	94.9	6.7 6.7	6.7	6.7	22.0 25.2	23.6		10.8 12.8	11.8	
14-Nov-18	Cloudy	Rough	16:35	Surface	1	24.8 24.9	24.9	8.0 8.0	8.0	29.2 29.0	29.1	96.0 95.6	95.8	6.7 6.7	6.7	6.7	3.7 3.5	3.6	4.3	11.4 9.3	10.4	11.7
				Middle	3.5	24.8 24.8	24.8	8.0 8.0	8.0	29.9 29.9	29.9	94.3 94.1	94.2	6.6 6.6	6.6		4.2 4.2	4.2		9.6 11.9	10.8	
				Bottom	6	24.8 24.8	24.8	8.0 8.0	8.0	30.2 30.2	30.2	92.9 92.5	92.7	6.5 6.5	6.5	6.5	5.0 5.1	5.1		15.1 12.8	14.0	
17-Nov-18	Cloudy	Moderate	15:12	Surface	1	23.8 23.8	23.8	7.8 7.8	7.8	24.6 24.6	24.6	94.0 91.1	92.6	6.8 6.6	6.7	6.6	2.6 2.3	2.5	6.2	8.7 8.5	8.6	8.9
				Middle	3.5	29.9 29.8	29.9	7.9 7.9	7.9	24.6 24.6	24.6	91.9 91.2	91.6	6.5 6.4	6.5		5.4 5.6	5.5		9.2 9.8	9.5	
				Bottom	6	30.1 30.1	30.1	7.9 7.9	7.9	24.6 24.6	24.6	91.5 91.2	91.4	6.4 6.4	6.4	6.4	10.4 10.9	10.7		9.1 8.1	8.6	
19-Nov-18	Cloudy	Rough	16:24	Surface	1	24.9 24.8	24.9	7.9 8.0	8.0	26.5 26.5	26.5	100.0 96.2	98.1	7.1 6.9	7.0	6.9	2.5 2.4	2.5	5.7	8.3 7.6	8.0	6.3
				Middle	3.5	24.8 24.9	24.9	7.9 8.0	8.0	29.3 29.6	29.5	94.8 96.2	95.5	6.7 6.7	6.7		4.8 4.9	4.9		6.0 4.1	5.1	
				Bottom	6	24.6 24.7	24.7	8.0 8.0	8.0	31.2 30.9	31.1	89.5 89.9	89.7	6.2 6.3	6.3	6.3	9.9 9.7	9.8		6.5 5.2	5.9	
21-Nov-18	Sunny	Calm	17:40	Surface	1	24.7 24.7	24.7	8.0 8.0	8.0	30.7 30.8	30.8	95.6 95.0	95.3	6.7 6.6	6.7	6.7	17.7 15.5	16.6	25.1	28.5 28.0	28.3	32.4
				Middle	3.5	24.7 24.7	24.7	8.0 8.0	8.0	30.7 30.8	30.8	95.2 95.0	95.1	6.6 6.6	6.6		22.6 21.2	21.9		31.3 30.5	30.9	
				Bottom	6	24.8 24.7	24.8	8.0 8.0	8.0	30.8 30.8	30.8	95.3 94.7	95.0	6.6 6.6	6.6	6.6	35.2 38.1	36.7		38.9 37.0	38.0	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at IS3 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	13:11	Surface	1	26.3 26.2	26.3	8.2 8.2	8.2	28.6 28.8	28.7	94.9 93.3	94.1	6.5 6.4	6.5	6.5	2.0 2.1	2.1	3.5	7.7 6.5	7.1	6.9
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.6	26.0 26.0	26.0	8.2 8.2	8.2	29.4 29.4	29.4	92.0 91.9	92.0	6.3 6.3	6.3	6.3	4.7 4.8	4.8		4.3 8.8	6.6	
27-Oct-18	Sunny	Moderate	14:30	Surface	1	26.4 26.4	26.4	8.3 8.2	8.3	27.5 27.5	27.5	95.3 94.8	95.1	6.6 6.5	6.6	6.6	2.5 2.6	2.6	3.4	7.4 8.5	8.0	6.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.6	26.3 26.3	26.3	8.2 8.2	8.2	27.6 27.6	27.6	94.3 94.2	94.3	6.5 6.5	6.5	6.5	4.1 4.1	4.1		4.8 6.3	5.6	
29-Oct-18	Sunny	Calm	15:39	Surface	1	25.7 25.8	25.8	8.2 8.3	8.3	28.3 28.4	28.4	99.1 99.3	99.2	6.9 6.9	6.9	6.9	3.0 2.4	2.7	3.0	7.7 7.8	7.8	8.7
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.5	25.8 25.8	25.8	8.3 8.3	8.3	28.5 28.5	28.5	99.3 99.4	99.4	6.9 6.9	6.9	6.9	3.3 3.2	3.3		9.5 9.5	9.5	
3-Nov-18	Rainy	Moderate	09:10	Surface	1	23.9 23.9	23.9	8.1 8.1	8.1	31.5 31.5	31.5	99.6 97.1	98.4	7.0 6.8	6.9	6.9	3.1 3.1	3.1	3.3	12.7 13.5	13.1	11.1
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.6	23.9 23.9	23.9	8.1 8.1	8.1	31.5 31.5	31.5	96.9 96.9	96.9	6.8 6.8	6.8	6.8	3.5 3.5	3.5		6.5 11.7	9.1	
5-Nov-18	Cloudy	Moderate	10:29	Surface	1	24.3 24.4	24.4	8.1 8.1	8.1	31.4 31.4	31.4	99.4 99.1	99.3	7.0 6.9	7.0	7.0	3.4 3.1	3.3	6.6	9.6 7.9	8.8	8.9
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4	24.3 24.3	24.3	8.1 8.1	8.1	31.5 31.5	31.5	96.7 96.6	96.7	6.8 6.8	6.8	6.8	9.7 10.0	9.9		7.9 10.0	9.0	
7-Nov-18	Sunny	Moderate	11:45	Surface	1	24.9 25.0	25.0	8.1 8.1	8.1	30.9 30.9	30.9	104.2 104.4	104.3	7.2 7.2	7.2	7.2	7.0 7.2	7.1	7.8	12.2 8.9	10.6	9.7
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.7	24.8 24.8	24.8	8.1 8.1	8.1	31.1 31.1	31.1	99.4 99.2	99.3	6.9 6.9	6.9	6.9	8.4 8.4	8.4		9.2 8.3	8.8	
9-Nov-18	Sunny	Calm	13:44	Surface	1	25.2 25.2	25.2	8.0 8.0	8.0	29.1 29.1	29.1	108.3 108.6	108.5	7.6 7.6	7.6	7.6	7.4 7.3	7.4	10.8	5.8 7.4	6.6	7.2
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.1	24.8 24.8	24.8	8.0 8.0	8.0	29.3 29.3	29.3	101.3 101.5	101.4	7.1 7.1	7.1	7.1	13.9 14.5	14.2		8.3 7.3	7.8	
12-Nov-18	Cloudy	Calm	15:37	Surface	1	25.2 25.2	25.2	8.1 8.1	8.1	27.8 27.8	27.8	97.7 97.3	97.5	6.9 6.9	6.9	6.9	5.4 5.6	5.5	6.2	16.5 8.0	12.3	11.1
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.1	25.1 25.1	25.1	8.1 8.1	8.1	28.1 28.2	28.2	95.7 95.3	95.5	6.7 6.7	6.7	6.7	6.9 6.9	6.9		8.1 11.6	9.9	
17-Nov-18	Rainy	Rough	07:41	Surface	1	24.6 24.6	24.6	8.0 8.0	8.0	29.9 29.9	29.9	90.9 90.3	90.6	6.4 6.4	6.4	6.4	3.1 3.2	3.2	5.3	7.5 5.1	6.3	5.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4	24.7 24.7	24.7	8.0 8.0	8.0	30.1 30.0	30.1	88.7 88.6	88.7	6.2 6.2	6.2	6.2	7.1 7.5	7.3		5.0 5.5	5.3	
19-Nov-18	Cloudy	Rough	09:49	Surface	1	24.6 24.6	24.6	7.9 7.9	7.9	25.0 25.0	25.0	90.5 90.0	90.3	6.5 6.5	6.5	6.5	6.0 6.2	6.1	8.9	7.6 6.7	7.2	7.2
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.1	24.7 24.7	24.7	7.9 7.9	7.9	28.1 27.7	27.9	85.9 85.6	85.8	6.1 6.1	6.1	6.1	11.5 11.6	11.6		7.9 6.2	7.1	
21-Nov-18	Sunny	Calm	11:40	Surface	1	24.7 24.6	24.7	8.0 7.9	8.0	30.8 30.9	30.9	92.6 90.4	91.5	6.5 6.3	6.4	6.4	4.4 5.1	4.8	8.1	6.7 6.6	6.7	6.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.6	24.3 24.2	24.3	8.0 7.9	8.0	31.0 31.0	31.0	89.7 88.6	89.2	6.3 6.2	6.3	6.3	10.6 12.0	11.3		7.4 6.4	6.9	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at IS3 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	07:33	Surface	1	25.9 25.9	25.9	8.2 8.2	8.2	29.2 29.2	29.2	89.3 88.1	88.7	6.2 6.1	6.2	6.2	13.8 14.8	14.3	17.1	9.0 9.5	9.3	8.6
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.6	25.9 25.9	25.9	8.2 8.2	8.2	29.2 29.2	29.2	88.1 88.0	88.1	6.1 6.1	6.1	6.1	20.9 18.6	19.8		8.1 7.5	7.8	
27-Oct-18	Cloudy	Moderate	08:42	Surface	1	26.0 26.0	26.0	8.2 8.2	8.2	27.4 27.5	27.5	92.4 91.5	92.0	6.4 6.4	6.4	6.4	3.0 3.0	3.0	8.5	7.9 8.5	8.2	8.9
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4	25.9 25.9	25.9	8.2 8.2	8.2	27.7 27.7	27.7	90.9 90.5	90.7	6.3 6.3	6.3	6.3	14.0 13.7	13.9		9.3 9.8	9.6	
29-Oct-18	Sunny	Calm	10:00	Surface	1	25.4 25.4	25.4	8.3 8.3	8.3	28.9 28.9	28.9	95.7 94.1	94.9	6.7 6.6	6.7	6.7	3.0 2.8	2.9	3.8	8.1 6.8	7.5	8.6
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.5	25.3 25.3	25.3	8.3 8.3	8.3	29.2 29.2	29.2	94.0 93.6	93.8	6.6 6.5	6.6	6.6	4.1 5.0	4.6		9.2 10.1	9.7	
3-Nov-18	Rainy	Moderate	15:39	Surface	1	23.9 23.9	23.9	8.1 8.1	8.1	31.4 31.4	31.4	104.3 104.5	104.4	7.4 7.4	7.4	7.4	4.5 4.6	4.6	4.7	10.1 10.4	10.3	10.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.6	23.9 23.9	23.9	8.1 8.1	8.1	31.4 31.4	31.4	104.7 104.7	104.7	7.4 7.4	7.4	7.4	4.8 4.6	4.7		9.9 11.4	10.7	
5-Nov-18	Sunny	Calm	17:28	Surface	1	24.8 24.9	24.9	8.1 8.1	8.1	31.4 31.4	31.4	107.3 106.7	107.0	7.4 7.4	7.4	7.4	6.4 6.3	6.4	8.7	10.1 11.4	10.8	10.6
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.1	24.9 24.9	24.9	8.1 8.1	8.1	31.4 31.4	31.4	105.9 106.1	106.0	7.3 7.4	7.4	7.4	10.7 11.1	10.9		10.2 10.6	10.4	
7-Nov-18	Sunny	Moderate	18:04	Surface	1	25.3 25.3	25.3	8.2 8.2	8.2	30.8 30.8	30.8	110.5 110.6	110.6	7.6 7.6	7.6	7.6	8.3 7.9	8.1	11.6	7.4 6.6	7.0	7.1
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.7	25.3 25.3	25.3	8.2 8.2	8.2	30.9 30.9	30.9	110.1 110.3	110.2	7.6 7.6	7.6	7.6	15.2 14.7	15.0		5.9 8.3	7.1	
9-Nov-18	Sunny	Calm	18:46	Surface	1	25.3 25.3	25.3	8.1 8.1	8.1	29.3 29.3	29.3	108.2 107.9	108.1	7.5 7.5	7.5	7.5	5.3 5.3	5.3	8.0	9.8 12.4	11.1	12.1
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.1	25.1 25.1	25.1	8.1 8.0	8.1	29.4 29.4	29.4	104.2 103.3	103.8	7.3 7.2	7.3	7.3	11.0 10.2	10.6		12.2 13.8	13.0	
12-Nov-18	Cloudy	Calm	10:21	Surface	1	24.7 24.7	24.7	8.1 8.1	8.1	29.7 29.7	29.7	93.3 93.3	93.3	6.6 6.6	6.6	6.6	7.5 7.6	7.6	9.2	20.9 19.6	20.3	18.2
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4	24.6 24.6	24.6	8.1 8.1	8.1	29.9 29.9	29.9	92.3 92.2	92.3	6.5 6.5	6.5	6.5	11.0 10.6	10.8		14.9 17.1	16.0	
14-Nov-18	Cloudy	Rough	16:24	Surface	1	24.7 24.7	24.7	8.3 8.3	8.3	29.7 29.7	29.7	90.7 89.6	90.2	6.4 6.3	6.4	6.4	6.2 6.3	6.3	7.2	10.5 10.7	10.6	12.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4	24.7 24.7	24.7	8.3 8.3	8.3	29.8 29.8	29.8	88.0 88.1	88.1	6.2 6.2	6.2	6.2	8.1 8.1	8.1		17.0 13.0	15.0	
17-Nov-18	Cloudy	Moderate	14:32	Surface	1	24.6 24.6	24.6	7.9 7.9	7.9	26.0 26.0	26.0	89.7 89.4	89.6	6.4 6.4	6.4	6.4	5.7 5.5	5.6	7.7	7.6 9.4	8.5	9.1
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.6	24.6 24.6	24.6	7.9 7.9	7.9	26.7 26.8	26.8	89.0 88.8	88.9	6.4 6.4	6.4	6.4	9.3 10.1	9.7		9.4 9.9	9.7	
19-Nov-18	Cloudy	Rough	16:18	Surface	1	25.1 25.1	25.1	7.9 7.9	7.9	25.5 25.5	25.5	95.8 95.7	95.8	6.8 6.8	6.8	6.8	7.5 7.8	7.7	13.1	7.8 8.5	8.2	8.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.7	24.9 24.9	24.9	7.9 7.9	7.9	26.7 26.7	26.7	90.5 90.3	90.4	6.4 6.4	6.4	6.4	18.1 18.6	18.4		9.4 8.1	8.8	
21-Nov-18	Sunny	Calm	16:48	Surface	1	24.9 24.9	24.9	8.0 8.0	8.0	30.3 30.3	30.3	94.0 93.6	93.8	6.6 6.5	6.6	6.6	5.4 5.1	5.3	6.6	6.0 9.6	7.8	7.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.6	24.9 24.9	24.9	8.0 8.0	8.0	30.4 30.4	30.4	93.6 93.4	93.5	6.5 6.5	6.5	6.5	7.8 7.7	7.8		7.9 5.6	6.8	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at IS4 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	11:48	Surface	1	26.3 26.2	26.3	7.9 7.9	7.9	29.4 29.4	29.4	97.2 96.3	96.8	6.7 6.6	6.7	6.7	3.2 3.4	3.3	3.4	7.3 5.7	6.5	7.2
				Middle	3	26.2 26.2	26.2	7.9 7.9	7.9	29.5 29.5	29.5	96.4 96.1	96.3	6.6 6.6	6.6		3.7 3.4	3.6		7.2 11.6	9.4	
				Bottom	5	26.2 26.2	26.2	7.9 7.9	7.9	29.6 29.6	29.6	96.1 95.9	96.0	6.6 6.6	6.6	6.6	3.2 3.2	3.2		5.3 5.9	5.6	
27-Oct-18	Sunny	Moderate	13:11	Surface	1	26.4 26.3	26.4	7.9 8.0	8.0	28.0 28.0	28.0	98.9 98.5	98.7	6.8 6.8	6.8	6.8	2.8 2.8	2.8	3.6	12.1 8.2	10.2	9.8
				Middle	3.5	26.3 26.3	26.3	7.9 8.0	8.0	28.1 28.0	28.1	98.3 98.1	98.2	6.8 6.8	6.8		3.4 3.6	3.5		9.9 8.0	9.0	
				Bottom	6	26.3 26.3	26.3	8.0 8.0	8.0	28.1 28.1	28.1	97.8 97.7	97.8	6.7 6.7	6.7	6.7	4.5 4.3	4.4		8.9 11.3	10.1	
29-Oct-18	Sunny	Calm	14:32	Surface	1	25.8 25.7	25.8	7.9 7.9	7.9	29.0 28.9	29.0	104.6 101.8	103.2	7.2 7.1	7.2	7.2	2.5 2.8	2.7	3.0	10.2 6.0	8.1	8.0
				Middle	3.5	25.8 25.7	25.8	7.9 8.0	8.0	29.0 28.9	29.0	103.9 101.7	102.8	7.2 7.1	7.2		2.6 3.0	2.8		7.6 10.5	9.1	
				Bottom	6	25.7 25.6	25.7	7.9 8.0	8.0	29.0 29.1	29.1	102.0 100.8	101.4	7.1 7.0	7.1	7.1	3.3 3.9	3.6		6.1 7.4	6.8	
3-Nov-18	Rainy	Moderate	08:48	Surface	1	23.9 23.9	23.9	8.2 8.2	8.2	31.2 31.2	31.2	93.7 93.5	93.6	6.6 6.6	6.6	6.6	1.9 1.9	1.9	2.0	9.2 9.0	9.1	9.4
				Middle	3.5	23.9 23.9	23.9	8.2 8.2	8.2	31.3 31.2	31.3	93.4 93.5	93.5	6.6 6.6	6.6		2.0 1.9	2.0		10.7 11.4	11.1	
				Bottom	6	24.0 24.0	24.0	8.2 8.2	8.2	31.3 31.3	31.3	93.1 93.1	93.1	6.6 6.6	6.6	6.6	2.2 2.2	2.2		7.7 8.5	8.1	
5-Nov-18	Cloudy	Moderate	09:39	Surface	1	24.3 24.3	24.3	8.1 8.2	8.2	31.3 31.3	31.3	94.7 92.8	93.8	6.6 6.5	6.6	6.6	5.3 5.5	5.4	5.8	9.3 10.0	9.7	7.7
				Middle	3.5	24.3 24.3	24.3	8.2 8.2	8.2	31.3 31.3	31.3	93.7 93.3	93.5	6.6 6.5	6.6		5.9 5.2	5.6		7.3 5.8	6.6	
				Bottom	6	24.3 24.3	24.3	8.2 8.2	8.2	31.3 31.3	31.3	91.9 91.6	91.8	6.4 6.4	6.4	6.4	6.8 6.1	6.5		6.0 7.6	6.8	
7-Nov-18	Sunny	Moderate	11:20	Surface	1	24.8 24.9	24.9	8.2 8.3	8.3	30.7 30.7	30.7	99.2 99.0	99.1	6.9 6.9	6.9	6.9	8.7 8.9	8.8	9.2	9.3 9.8	9.6	8.6
				Middle	3.5	24.8 24.9	24.9	8.2 8.3	8.3	30.7 30.8	30.8	98.6 98.7	98.7	6.9 6.9	6.9		8.2 8.4	8.3		6.1 9.7	7.9	
				Bottom	6	24.7 24.8	24.8	8.2 8.3	8.3	30.9 30.9	30.9	94.4 96.8	95.6	6.6 6.7	6.7	6.7	10.6 10.6	10.6		8.3 8.0	8.2	
9-Nov-18	Sunny	Calm	13:28	Surface	1	25.3 25.2	25.3	8.0 8.1	8.1	29.6 29.6	29.6	107.6 106.2	106.9	7.5 7.4	7.5	7.4	7.8 7.9	7.9	15.4	6.8 7.3	7.1	9.8
				Middle	3.5	24.8 24.9	24.9	8.0 8.1	8.1	29.6 29.6	29.6	102.9 105.1	104.0	7.2 7.4	7.3		10.5 11.8	11.2		10.1 9.6	9.9	
				Bottom	6	24.7 24.8	24.8	8.1 8.1	8.1	29.8 29.8	29.8	100.8 102.8	101.8	7.1 7.2	7.2	7.2	28.1 26.2	27.2		13.8 11.0	12.4	
12-Nov-18	Cloudy	Calm	14:29	Surface	1	25.4 25.3	25.4	7.9 8.0	8.0	27.9 28.1	28.0	100.9 99.9	100.4	7.1 7.0	7.1	7.1	3.8 4.6	4.2	5.2	10.8 10.9	10.9	13.2
				Middle	3.5	25.2 25.2	25.2	8.0 8.0	8.0	28.4 28.3	28.4	100.1 100.2	100.2	7.0 7.0	7.0		5.8 5.2	5.5		15.8 19.1	17.5	
				Bottom	6	25.0 25.1	25.1	8.0 8.0	8.0	29.3 28.6	29.0	98.5 99.4	99.0	6.9 7.0	7.0	7.0	5.8 5.9	5.9		9.4 13.0	11.2	
17-Nov-18	Rainy	Rough	07:19	Surface	1	29.6 29.9	29.8	7.8 7.9	7.9	24.5 24.6	24.6	96.0 93.0	94.5	6.8 6.5	6.7	6.7	2.9 3.3	3.1	3.2	3.9 4.1	4.0	6.1
				Middle	3.5	30.0 30.0	30.0	7.8 7.9	7.9	24.6 24.6	24.6	94.0 93.4	93.7	6.6 6.6	6.6		2.9 2.9	2.9		5.3 2.9	4.1	
				Bottom	6	30.0 30.0	30.0	7.9 7.9	7.9	24.6 24.6	24.6	93.1 93.2	93.2	6.5 6.5	6.5	6.5	3.6 3.4	3.5		10.0 10.2	10.1	
19-Nov-18	Cloudy	Rough	09:11	Surface	1	24.6 24.6	24.6	7.8 7.9	7.9	25.1 25.2	25.2	94.3 92.1	93.2	6.8 6.7	6.8	6.8	4.7 5.0	4.9	5.8	6.9 6.8	6.9	7.3
				Middle	3.5	24.6 24.7	24.7	7.8 7.9	7.9	25.7 26.1	25.9	93.3 92.4	92.9	6.7 6.6	6.7		4.8 4.8	4.8		6.7 5.7	6.2	
				Bottom	6	24.7 24.7	24.7	7.8 7.9	7.9	28.2 27.7	28.0	92.2 91.7	92.0	6.5 6.5	6.5	6.5	7.5 7.6	7.6		5.8 11.5	8.7	
21-Nov-18	Sunny	Calm	11:25	Surface	1	24.4 24.6	24.5	7.9 7.9	7.9	30.9 30.8	30.9	92.8 93.0	92.9	6.5 6.5	6.5	6.5	5.6 5.5	5.6	8.2	7.3 8.4	7.9	9.0
				Middle	3	24.3 24.3	24.3	7.9 7.9	7.9	31.0 31.0	31.0	91.1 91.5	91.3	6.4 6.4	6.4		8.0 7.8	7.9		8.0 9.0	8.5	
				Bottom	5	24.3 24.3	24.3	7.9 7.9	7.9	31.1 31.1	31.1	91.3 91.0	91.2	6.4 6.4	6.4	6.4	11.5 10.8	11.2		11.0 10.0	10.5	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at IS4 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	07:24	Surface	1	25.9 25.9	25.9	7.8 7.9	7.9	29.5 29.5	29.5	92.2 91.0	91.6	6.3 6.3	6.3	6.3	12.4 12.3	12.4	14.8	8.1 8.7	8.4	9.0
				Middle	3.5	25.9 26.0	26.0	7.9 7.9	7.9	29.5 29.5	29.5	91.1 90.8	91.0	6.3 6.2	6.3		12.5 12.7	12.6		9.5 10.1	9.8	
				Bottom	6	26.0 26.0	26.0	7.9 8.0	8.0	29.5 29.5	29.5	90.7 90.6	90.7	6.2 6.2	6.2	6.2	19.5 19.4	19.5		9.3 8.5	8.9	
27-Oct-18	Cloudy	Moderate	08:02	Surface	1	26.1 26.1	26.1	7.9 8.0	8.0	27.7 27.7	27.7	93.2 92.0	92.6	6.5 6.4	6.5	6.5	7.2 6.9	7.1	9.2	12.3 15.3	13.8	11.2
				Middle	3	26.2 26.2	26.2	8.0 8.0	8.0	27.7 27.7	27.7	92.0 91.6	91.8	6.4 6.3	6.4		9.0 9.1	9.1		3.7 4.6	4.2	
				Bottom	5	26.2 26.2	26.2	8.0 8.0	8.0	27.7 27.7	27.7	91.4 91.3	91.4	6.3 6.3	6.3	6.3	11.2 11.5	11.4		16.6 14.4	15.5	
29-Oct-18	Sunny	Calm	09:09	Surface	1	25.3 25.4	25.4	8.0 8.0	8.0	29.1 29.2	29.2	96.7 94.3	95.5	6.7 6.6	6.7	6.7	5.0 4.4	4.7	5.5	6.8 7.4	7.1	8.2
				Middle	3	25.4 25.4	25.4	8.0 8.0	8.0	29.2 29.2	29.2	95.0 95.0	95.0	6.6 6.6	6.6		4.7 4.5	4.6		8.1 9.4	8.8	
				Bottom	5	25.5 25.5	25.5	8.0 8.0	8.0	29.3 29.3	29.3	94.6 94.4	94.5	6.6 6.6	6.6	6.6	7.4 7.1	7.3		8.1 9.2	8.7	
3-Nov-18	Rainy	Moderate	14:57	Surface	1	23.9 23.9	23.9	8.2 8.2	8.2	30.9 30.9	30.9	97.4 97.5	97.5	6.9 6.9	6.9	7.0	4.3 4.8	4.6	3.8	10.2 9.3	9.8	9.5
				Middle	3	23.9 23.9	23.9	8.2 8.2	8.2	31.1 31.1	31.1	98.2 98.7	98.5	6.9 7.0	7.0		3.4 3.1	3.3		8.7 8.9	8.8	
				Bottom	5	23.9 23.9	23.9	8.2 8.2	8.2	31.2 31.1	31.2	97.9 98.4	98.2	6.9 6.9	6.9	6.9	3.5 3.3	3.4		10.3 9.4	9.9	
5-Nov-18	Sunny	Calm	16:21	Surface	1	24.7 24.7	24.7	8.1 8.2	8.2	31.2 31.2	31.2	98.5 97.9	98.2	6.9 6.8	6.9	6.9	6.1 6.2	6.2	7.9	9.4 9.7	9.6	9.0
				Middle	3	24.6 24.6	24.6	8.2 8.2	8.2	31.2 31.2	31.2	97.8 96.9	97.4	6.8 6.8	6.8		7.9 7.8	7.9		6.1 8.3	7.2	
				Bottom	5	24.5 24.5	24.5	8.2 8.2	8.2	31.3 31.3	31.3	96.9 96.9	96.9	6.8 6.8	6.8	6.8	9.4 9.6	9.5		7.9 12.7	10.3	
7-Nov-18	Sunny	Moderate	17:26	Surface	1	25.3 25.2	25.3	8.2 8.2	8.2	30.7 30.8	30.8	103.4 102.5	103.0	7.1 7.1	7.1	7.1	6.6 6.5	6.6	10.9	6.1 5.6	5.9	6.1
				Middle	3.5	25.2 25.2	25.2	8.2 8.2	8.2	30.8 30.8	30.8	102.0 102.6	102.3	7.1 7.1	7.1		8.9 8.3	8.6		6.4 6.6	6.5	
				Bottom	6	25.1 25.1	25.1	8.2 8.2	8.2	30.9 30.9	30.9	100.8 100.8	100.8	7.0 7.0	7.0	7.0	17.3 17.8	17.6		6.0 5.8	5.9	
9-Nov-18	Sunny	Calm	17:56	Surface	1	25.1 25.2	25.2	8.0 8.1	8.1	29.6 29.6	29.6	106.3 107.4	106.9	7.4 7.5	7.5	7.5	8.1 8.0	8.1	8.7	13.6 10.8	12.2	11.2
				Middle	3.5	25.2 25.2	25.2	8.0 8.1	8.1	29.6 29.6	29.6	107.3 107.5	107.4	7.5 7.5	7.5		8.1 7.9	8.0		8.9 13.5	11.2	
				Bottom	6	25.0 24.9	25.0	8.0 8.1	8.1	29.6 29.6	29.6	104.3 104.3	104.3	7.3 7.3	7.3	7.3	9.5 10.6	10.1		8.6 12.0	10.3	
12-Nov-18	Cloudy	Calm	09:44	Surface	1	24.8 24.8	24.8	8.1 8.1	8.1	29.7 29.7	29.7	95.7 95.4	95.6	6.7 6.7	6.7	6.7	7.3 7.3	7.3	9.9	17.1 18.2	17.7	12.9
				Middle	3.5	24.7 24.7	24.7	8.1 8.1	8.1	30.2 30.0	30.1	94.7 95.2	95.0	6.6 6.7	6.7		9.8 8.4	9.1		10.2 7.6	8.9	
				Bottom	6	24.7 24.7	24.7	8.1 8.1	8.1	30.4 30.3	30.4	94.2 94.7	94.5	6.6 6.6	6.6	6.6	13.8 13.0	13.4		10.8 13.2	12.0	
14-Nov-18	Cloudy	Rough	15:21	Surface	1	24.9 25.0	25.0	7.8 7.9	7.9	29.7 29.7	29.7	96.8 95.7	96.3	6.8 6.7	6.8	6.8	12.2 12.1	12.2	11.4	13.4 15.5	14.5	14.1
				Middle	3.5	24.9 24.9	24.9	7.8 7.9	7.9	29.7 29.7	29.7	96.0 95.0	95.5	6.7 6.6	6.7		12.9 13.1	13.0		13.1 17.9	15.5	
				Bottom	6	24.9 24.9	24.9	7.8 7.9	7.9	29.8 29.8	29.8	95.5 94.8	95.2	6.7 6.6	6.7	6.7	8.5 9.3	8.9		12.6 11.7	12.2	
17-Nov-18	Cloudy	Moderate	14:09	Surface	1	28.1 28.2	28.2	7.9 7.9	7.9	24.6 24.6	24.6	94.0 92.1	93.1	6.7 6.5	6.6	6.6	5.5 6.2	5.9	8.5	9.9 8.9	9.4	8.6
				Middle	3.5	28.3 28.2	28.3	7.9 7.9	7.9	24.6 24.6	24.6	93.4 92.6	93.0	6.6 6.6	6.6		7.2 7.4	7.3		9.4 8.1	8.8	
				Bottom	6	29.4 28.5	29.0	7.9 7.9	7.9	24.6 24.6	24.6	91.6 92.4	92.0	6.5 6.5	6.5	6.5	13.0 11.7	12.4		6.8 8.1	7.5	
19-Nov-18	Cloudy	Rough	15:14	Surface	1	25.0 24.9	25.0	7.8 7.8	7.8	26.5 26.5	26.5	100.3 96.0	98.2	7.1 6.8	7.0	7.0	3.2 3.0	3.1	5.4	6.9 9.8	8.4	8.5
				Middle	3.5	25.0 25.0	25.0	7.8 7.8	7.8	26.6 26.5	26.6	99.1 97.0	98.1	7.0 6.9	7.0		3.9 3.6	3.8		6.0 6.8	6.4	
				Bottom	6	24.9 24.9	24.9	7.8 7.9	7.9	29.0 28.9	29.0	90.8 89.0	89.9	6.4 6.3	6.4	6.4	9.4 8.9	9.2		11.2 10.1	10.7	
21-Nov-18	Sunny	Calm	16:17	Surface	1	24.9 24.8	24.9	7.9 7.9	7.9	30.7 30.8	30.8	95.8 95.1	95.5	6.7 6.6	6.7	6.7	5.2 5.3	5.3	8.1	8.5 6.3	7.4	8.0
				Middle	3	24.7 24.7	24.7	7.9 7.9	7.9	30.9 30.9	30.9	94.3 94.0	94.2	6.6 6.6	6.6		6.0 6.1	6.1		8.3 7.8	8.1	
				Bottom	5	24.5 24.5	24.5	7.9 7.9	7.9	31.0 31.0	31.0	92.3 92.1	92.2	6.5 6.4	6.5	6.5	12.7 12.8	12.8		9.0 8.1	8.6	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at SR1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	12:19	Surface	-	-	-	-	-	-	-	-	-	-	-	6.9	-	-	9.2	-	-	8.5
				Middle	1.2	26.3	26.3	8.0	8.0	29.5	29.6	99.6	100.4	6.8	6.9		9.1	9.2		7.5	8.5	
						26.2		8.0		29.7		101.1		6.9			9.2			9.5		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
27-Oct-18	Sunny	Moderate	13:48	Surface	-	-	-	-	-	-	-	-	-	-	-	6.7	-	-	2.5	-	-	6.0
				Middle	1.1	26.2	26.2	8.3	8.3	28.6	28.6	97.5	97.5	6.7	6.7		2.5	2.5		7.0	6.0	
						26.2		8.3		28.6		97.4		6.7			2.4			4.9		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
29-Oct-18	Sunny	Calm	15:02	Surface	-	-	-	-	-	-	-	-	-	-	-	7.1	-	-	4.7	-	-	21.5
				Middle	1.1	25.9	25.9	8.2	8.2	30.0	30.0	103.2	103.2	7.1	7.1		4.7	4.7		20.1	21.5	
						25.9		8.2		30.0		103.2		7.1			4.7			22.9		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
3-Nov-18	Rainy	Moderate	09:49	Surface	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-	5.1	-	-	12.1
				Middle	1.1	23.6	23.6	8.1	8.1	31.5	31.5	96.7	96.5	6.8	6.8		5.1	5.1		13.1	12.1	
						23.6		8.1		31.5		96.2		6.8			5.1			11.1		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
5-Nov-18	Cloudy	Moderate	11:10	Surface	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-	7.9	-	-	11.4
				Middle	1	24.7	24.7	8.1	8.1	31.8	31.8	97.5	97.4	6.8	6.8		7.8	7.9		9.7	11.4	
						24.7		8.1		31.8		97.2		6.7			8.0			13.1		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
7-Nov-18	Sunny	Moderate	12:22	Surface	-	-	-	-	-	-	-	-	-	-	-	7.2	-	-	6.9	-	-	10.7
				Middle	1.2	25.2	25.2	8.1	8.1	31.1	31.1	103.9	103.9	7.2	7.2		6.8	6.9		10.7	10.7	
						25.2		8.1		31.1		103.9		7.2			6.9			10.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
9-Nov-18	Sunny	Calm	14:25	Surface	-	-	-	-	-	-	-	-	-	-	-	7.1	-	-	10.8	-	-	7.3
				Middle	1.1	25.0	25.0	8.0	8.0	30.4	30.4	102.0	102.1	7.1	7.1		10.8	10.8		8.0	7.3	
						25.0		8.0		30.4		102.1		7.1			10.7			6.5		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
12-Nov-18	Cloudy	Calm	15:01	Surface	-	-	-	-	-	-	-	-	-	-	-	6.9	-	-	5.6	-	-	11.4
				Middle	1.2	25.1	25.1	8.1	8.1	25.9	25.9	97.5	97.5	6.9	6.9		5.4	5.6		12.5	11.4	
						25.1		8.1		25.9		97.4		6.9			5.7			10.2		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
17-Nov-18	Rainy	Rough	08:38	Surface	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	7.0	-	-	7.7
				Middle	1.1	24.5	24.5	8.0	8.0	29.9	29.9	89.5	89.4	6.3	6.3		6.9	7.0		7.4	7.7	
						24.5		8.0		29.9		89.3		6.3			7.0			8.0		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
19-Nov-18	Cloudy	Rough	10:25	Surface	-	-	-	-	-	-	-	-	-	-	-	6.6	-	-	6.8	-	-	7.6
				Middle	1.1	24.4	24.4	7.9	7.9	25.6	25.6	91.3	91.4	6.6	6.6		6.8	6.8		6.0	7.6	
						24.4		7.9		25.6		91.4		6.6			6.7			9.2		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
21-Nov-18	Sunny	Calm	12:19	Surface	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	7.1	-	-	8.5
				Middle	1.2	24.7	24.7	8.0	8.0	31.2	31.2	92.2	92.2	6.4	6.4		7.0	7.1		6.8	8.5	
						24.7		8.0		31.2		92.1		6.4			7.1			10.2		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at SR1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	08:21	Surface	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	8.2	-	-	8.6
						-		-		-		-		-			-			-		
				Middle	1.2	25.8	25.8	8.2	8.2	29.6	29.6	91.6	91.4	6.3	6.3		8.0	8.2		8.7	8.6	
						25.8		8.2		29.6		91.2		6.3			8.4			8.4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
27-Oct-18	Cloudy	Moderate	09:29	Surface	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	14.8	-	-	16.2
						-		-		-		-		-			-			-		
				Middle	1.1	25.7	25.7	8.2	8.2	28.3	28.3	90.9	90.9	6.3	6.3		14.8	14.8		15.6	16.2	
						25.7		8.2		28.3		90.9		6.3			14.7			16.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
29-Oct-18	Sunny	Calm	10:44	Surface	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-	7.0	-	-	8.6
						-		-		-		-		-			-			-		
				Middle	1.2	25.1	25.1	8.3	8.3	29.9	29.9	97.7	97.2	6.8	6.8		6.9	7.0		8.2	8.6	
						25.1		8.3		29.9		96.6		6.7			7.0			9.0		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
3-Nov-18	Rainy	Moderate	15:01	Surface	-	-	-	-	-	-	-	-	-	-	-	7.0	-	-	6.7	-	-	11.8
						-		-		-		-		-			-			-		
				Middle	1.2	23.8	23.8	8.0	8.0	31.5	31.5	98.6	98.7	7.0	7.0		6.6	6.7		11.4	11.8	
						23.8		8.0		31.5		98.7		7.0			6.7			12.2		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
5-Nov-18	Sunny	Calm	16:55	Surface	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-	16.0	-	-	18.5
						-		-		-		-		-			-			-		
				Middle	1.2	25.1	25.1	8.1	8.1	31.6	31.6	98.7	98.7	6.8	6.8		15.9	16.0		19.6	18.5	
						25.1		8.1		31.6		98.6		6.8			16.1			17.4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
7-Nov-18	Sunny	Moderate	17:28	Surface	-	-	-	-	-	-	-	-	-	-	-	7.1	-	-	13.0	-	-	9.3
						-		-		-		-		-			-			-		
				Middle	1.1	25.3	25.3	8.1	8.1	31.2	31.2	102.8	102.8	7.1	7.1		12.9	13.0		9.0	9.3	
						25.3		8.1		31.2		102.8		7.1			13.1			9.6		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
9-Nov-18	Sunny	Calm	18:05	Surface	-	-	-	-	-	-	-	-	-	-	-	7.0	-	-	13.7	-	-	14.1
						-		-		-		-		-			-			-		
				Middle	1.2	24.8	24.9	8.0	8.0	30.0	30.0	100.7	100.7	7.0	7.0		13.4	13.7		14.8	14.1	
						24.9		8.0		30.0		100.7		7.0			14.0			13.4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
12-Nov-18	Cloudy	Calm	10:59	Surface	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-	4.8	-	-	14.2
						-		-		-		-		-			-			-		
				Middle	1.1	24.9	24.9	8.1	8.1	25.1	25.1	94.2	94.2	6.8	6.8		4.8	4.8		15.8	14.2	
						24.9		8.1		25.1		94.1		6.8			4.7			12.6		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
14-Nov-18	Cloudy	Rough	16:55	Surface	-	-	-	-	-	-	-	-	-	-	-	6.7	-	-	4.1	-	-	10.1
						-		-		-		-		-			-			-		
				Middle	0.6	24.8	24.8	8.3	8.3	27.3	27.3	93.9	93.9	6.7	6.7		4.0	4.1		10.0	10.1	
						24.8		8.3		27.3		93.9		6.7			4.1			10.1		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
17-Nov-18	Cloudy	Moderate	15:15	Surface	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	4.3	-	-	10.2
						-		-		-		-		-			-			-		
				Middle	0.8	24.5	24.5	7.9	7.9	26.2	26.2	89.4	89.4	6.4	6.4		4.2	4.3		10.6	10.2	
						24.5		7.9		26.2		89.3		6.4			4.3			9.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
19-Nov-18	Cloudy	Rough	15:45	Surface	-	-	-	-	-	-	-	-	-	-	-	6.6	-	-	21.8	-	-	9.7
						-		-		-		-		-			-			-		
				Middle	1.2	24.9	24.9	7.9	7.9	27.3	27.3	92.7	92.5	6.6	6.6		22.0	21.8		9.9	9.7	
						24.9		7.9		27.3		92.3		6.6			21.6			9.5		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
21-Nov-18	Sunny	Calm	15:58	Surface	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	8.6	-	-	6.7
						-		-		-		-		-			-			-		
				Middle	1.2	25.1	25.1	7.9	7.9	31.1	31.1	94.2	94.2	6.5	6.5		8.0	8.6		7.1	6.7	
						25.1		7.9		31.1		94.1		6.5			9.1			6.2		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at SR2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	13:21	Surface	-	-	-	-	-	-	-	-	-	-	-	6.6	-	-	3.9	-	-	8.0
						-		-		-		-		-			-			-		
				Middle	0.8	26.3	26.3	8.2	8.2	29.3	29.3	96.5	95.9	6.6	6.6		3.8	3.9		7.4	8.0	
						26.3		8.2		29.3		95.2		6.5			3.9			8.6		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
27-Oct-18	Sunny	Moderate	14:46	Surface	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	5.0	-	-	11.0
						-		-		-		-		-			-			-		
				Middle	0.5	26.9	26.9	8.2	8.2	27.7	27.7	93.2	93.1	6.4	6.4		5.0	5.0		10.2	11.0	
						26.8		8.2		27.7		93.0		6.4			5.0			11.8		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
29-Oct-18	Sunny	Calm	15:59	Surface	-	-	-	-	-	-	-	-	-	-	-	6.9	-	-	3.9	-	-	17.1
						-		-		-		-		-			-			-		
				Middle	0.7	25.7	25.8	8.3	8.3	28.8	28.8	99.7	99.7	6.9	6.9		4.0	3.9		19.5	17.1	
						25.8		8.3		28.8		99.6		6.9			3.7			14.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
3-Nov-18	Rainy	Moderate	09:01	Surface	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-	1.1	-	-	8.0
						-		-		-		-		-			-			-		
				Middle	0.8	23.6	23.6	8.1	8.1	30.7	30.7	95.0	95.0	6.8	6.8		1.1	1.1		7.8	8.0	
						23.6		8.1		30.7		95.0		6.8			1.1			8.1		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
5-Nov-18	Cloudy	Moderate	10:24	Surface	-	-	-	-	-	-	-	-	-	-	-	6.7	-	-	2.7	-	-	3.0
						-		-		-		-		-			-			-		
				Middle	0.8	24.2	24.2	8.1	8.1	31.3	31.3	95.2	95.1	6.7	6.7		2.7	2.7		2.6	3.0	
						24.2		8.1		31.3		95.0		6.7			2.6			3.4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
7-Nov-18	Sunny	Moderate	11:39	Surface	-	-	-	-	-	-	-	-	-	-	-	7.2	-	-	4.4	-	-	6.7
						-		-		-		-		-			-			-		
				Middle	0.8	25.2	25.3	8.1	8.1	31.0	31.0	103.8	103.9	7.2	7.2		4.5	4.4		5.5	6.7	
						25.3		8.1		31.0		103.9		7.2			4.2			7.9		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
9-Nov-18	Sunny	Calm	13:38	Surface	-	-	-	-	-	-	-	-	-	-	-	7.2	-	-	8.2	-	-	9.1
						-		-		-		-		-			-			-		
				Middle	0.8	25.3	25.3	8.0	8.0	29.5	29.5	104.2	104.2	7.2	7.2		8.2	8.2		10.5	9.1	
						25.3		8.0		29.5		104.1		7.2			8.1			7.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
12-Nov-18	Cloudy	Calm	15:45	Surface	-	-	-	-	-	-	-	-	-	-	-	6.9	-	-	7.7	-	-	14.8
						-		-		-		-		-			-			-		
				Middle	0.9	25.6	25.6	8.1	8.1	28.5	28.5	98.7	98.7	6.9	6.9		7.4	7.7		16.9	14.8	
						25.6		8.1		28.5		98.6		6.9			7.9			12.6		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
17-Nov-18	Rainy	Rough	07:35	Surface	-	-	-	-	-	-	-	-	-	-	-	6.2	-	-	6.5	-	-	7.6
						-		-		-		-		-			-			-		
				Middle	0.9	24.5	24.5	8.0	8.0	30.0	30.0	87.7	87.6	6.2	6.2		6.4	6.5		8.5	7.6	
						24.5		8.0		30.0		87.5		6.2			6.5			6.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
19-Nov-18	Cloudy	Rough	09:44	Surface	-	-	-	-	-	-	-	-	-	-	-	6.6	-	-	5.0	-	-	7.4
						-		-		-		-		-			-			-		
				Middle	0.8	24.4	24.4	7.9	7.9	25.3	25.3	91.7	91.6	6.6	6.6		5.0	5.0		5.7	7.4	
						24.4		7.9		25.3		91.4		6.6			4.9			9.0		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
21-Nov-18	Sunny	Calm	11:34	Surface	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	7.8	-	-	6.3
						-		-		-		-		-			-			-		
				Middle	0.8	24.4	24.4	7.9	7.9	30.8	30.8	89.5	89.4	6.3	6.3		7.9	7.8		6.0	6.3	
						24.4		7.9		30.8		89.3		6.3			7.6			6.6		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at SR2 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	07:26	Surface	-	-	-	-	-	-	-	-	-	-	-	6.1	-	-	6.2	-	-	9.9
						-		-		-		-		-			-			-		
				Middle	0.8	25.9	25.9	8.2	8.2	28.8	28.8	88.7	88.1	6.1	6.1		6.3	6.2		10.0	9.9	
						25.9		8.2		28.8		87.5		6.1			6.1			9.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
27-Oct-18	Cloudy	Moderate	08:35	Surface	-	-	-	-	-	-	-	-	-	-	-	6.1	-	-	8.1	-	-	12.4
						-		-		-		-		-			-			-		
				Middle	0.6	25.9	25.9	8.2	8.2	27.8	27.8	87.3	87.2	6.1	6.1		8.1	8.1		12.4	12.4	
						25.9		8.2		27.8		87.1		6.1			8.0			12.3		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
29-Oct-18	Sunny	Calm	09:52	Surface	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	8.6	-	-	8.8
						-		-		-		-		-			-			-		
				Middle	0.7	25.3	25.3	8.2	8.2	28.4	28.4	89.7	89.7	6.3	6.3		8.4	8.6		8.6	8.8	
						25.3		8.2		28.4		89.7		6.3			8.7			8.9		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
3-Nov-18	Rainy	Moderate	15:51	Surface	-	-	-	-	-	-	-	-	-	-	-	7.2	-	-	5.2	-	-	11.0
						-		-		-		-		-			-			-		
				Middle	0.7	23.9	23.9	8.1	8.1	30.4	30.4	101.8	101.8	7.2	7.2		5.1	5.2		11.2	11.0	
						23.9		8.1		30.4		101.8		7.2			5.2			10.8		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
5-Nov-18	Sunny	Calm	17:35	Surface	-	-	-	-	-	-	-	-	-	-	-	7.2	-	-	4.6	-	-	7.8
						-		-		-		-		-			-			-		
				Middle	0.9	24.8	24.8	8.1	8.1	31.1	31.2	103.7	103.7	7.2	7.2		4.5	4.6		8.2	7.8	
						24.8		8.1		31.2		103.7		7.2			4.6			7.4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
7-Nov-18	Sunny	Moderate	18:10	Surface	-	-	-	-	-	-	-	-	-	-	-	7.4	-	-	7.4	-	-	7.9
						-		-		-		-		-			-			-		
				Middle	0.9	25.4	25.4	8.1	8.1	30.9	30.9	107.7	107.9	7.4	7.4		7.3	7.4		7.9	7.9	
						25.4		8.1		30.9		108.1		7.4			7.5			7.8		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
9-Nov-18	Sunny	Calm	18:57	Surface	-	-	-	-	-	-	-	-	-	-	-	7.0	-	-	11.0	-	-	13.9
						-		-		-		-		-			-			-		
				Middle	0.8	24.9	24.9	8.0	8.0	29.5	29.5	99.1	99.2	6.9	7.0		10.8	11.0		12.6	13.9	
						24.9		8.0		29.5		99.3		7.0			11.1			15.1		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
12-Nov-18	Cloudy	Calm	10:14	Surface	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	12.1	-	-	14.1
						-		-		-		-		-			-			-		
				Middle	0.8	24.7	24.7	8.1	8.1	29.9	29.9	90.5	90.5	6.4	6.4		12.0	12.1		10.7	14.1	
						24.7		8.1		29.9		90.4		6.3			12.2			17.4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
14-Nov-18	Cloudy	Rough	16:20	Surface	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	6.1	-	-	10.4
						-		-		-		-		-			-			-		
				Middle	0.7	25.0	25.0	8.3	8.3	29.2	29.2	92.3	92.2	6.5	6.5		6.1	6.1		10.7	10.4	
						25.0		8.3		29.1		92.1		6.5			6.1			10.0		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
17-Nov-18	Cloudy	Moderate	14:26	Surface	-	-	-	-	-	-	-	-	-	-	-	6.1	-	-	12.4	-	-	9.1
						-		-		-		-		-			-			-		
				Middle	0.7	24.7	24.7	7.9	7.9	29.9	29.9	87.5	87.4	6.1	6.1		12.4	12.4		8.8	9.1	
						24.7		7.9		29.9		87.3		6.1			12.4			9.4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
19-Nov-18	Cloudy	Rough	16:25	Surface	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	8.3	-	-	6.9
						-		-		-		-		-			-			-		
				Middle	0.8	25.0	25.0	7.9	7.9	27.0	27.0	91.8	92.0	6.5	6.5		8.5	8.3		8.1	6.9	
						25.0		7.9		26.9		92.1		6.5			8.1			5.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		
21-Nov-18	Sunny	Calm	16:57	Surface	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	11.2	-	-	11.2
						-		-		-		-		-			-			-		
				Middle	0.8	24.8	24.8	7.9	7.9	30.1	30.1	90.0	90.0	6.3	6.3		11.1	11.2		10.9	11.2	
						24.8		7.9		30.1		89.9		6.3			11.3			11.5		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at SR3 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	13:37	Surface	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	7.6	-	-	7.7
				Middle	0.6	26.5	26.5	8.2	8.2	28.7	28.7	92.8	92.6	6.4	6.4		7.5	7.6		7.9	7.7	
						26.4		8.2		28.7		92.3		6.3			7.7			7.5		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
27-Oct-18	Sunny	Moderate	15:02	Surface	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	5.0	-	-	7.1
				Middle	0.4	26.7	26.7	8.2	8.2	28.0	28.0	93.0	92.9	6.4	6.4		5.0	5.0		6.9	7.1	
						26.7		8.2		28.0		92.8		6.4			4.9			7.3		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
29-Oct-18	Sunny	Calm	16:17	Surface	-	-	-	-	-	-	-	-	-	-	-	7.1	-	-	4.3	-	-	9.2
				Middle	0.6	26.7	26.7	8.3	8.3	28.1	28.1	103.3	103.3	7.1	7.1		4.3	4.3		9.5	9.2	
						26.7		8.3		28.1		103.2		7.1			4.3			8.9		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
3-Nov-18	Rainy	Moderate	08:43	Surface	-	-	-	-	-	-	-	-	-	-	-	7.2	-	-	4.7	-	-	7.1
				Middle	0.5	23.9	23.9	8.0	8.0	29.6	29.6	100.6	100.6	7.2	7.2		4.8	4.7		7.1	7.1	
						23.9		8.0		29.6		100.5		7.2			4.5			7.1		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
5-Nov-18	Cloudy	Moderate	10:07	Surface	-	-	-	-	-	-	-	-	-	-	-	7.2	-	-	3.4	-	-	5.9
				Middle	0.6	24.3	24.3	7.9	7.9	30.8	30.8	101.8	101.9	7.2	7.2		3.4	3.4		5.6	5.9	
						24.3		7.9		30.8		101.9		7.2			3.3			6.1		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
7-Nov-18	Sunny	Moderate	11:24	Surface	-	-	-	-	-	-	-	-	-	-	-	7.9	-	-	5.0	-	-	10.7
				Middle	0.6	25.1	25.1	8.0	8.0	31.0	31.0	113.5	113.7	7.9	7.9		5.1	5.0		10.3	10.7	
						25.1		8.0		31.0		113.8		7.9			4.9			11.0		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
9-Nov-18	Sunny	Calm	13:22	Surface	-	-	-	-	-	-	-	-	-	-	-	7.5	-	-	9.6	-	-	12.5
				Middle	0.6	25.4	25.4	8.0	8.0	29.9	29.9	108.3	108.4	7.5	7.5		9.9	9.6		11.9	12.5	
						25.4		8.0		29.9		108.4		7.5			9.2			13.1		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
12-Nov-18	Cloudy	Calm	16:00	Surface	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-	9.4	-	-	16.1
				Middle	0.5	25.6	25.6	8.1	8.1	29.8	29.8	98.3	98.4	6.8	6.8		9.2	9.4		14.4	16.1	
						25.6		8.1		29.8		98.5		6.8			9.5			17.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
17-Nov-18	Rainy	Rough	07:16	Surface	-	-	-	-	-	-	-	-	-	-	-	6.0	-	-	3.4	-	-	6.6
				Middle	0.6	24.4	24.4	7.7	7.8	29.4	29.4	85.4	85.4	6.0	6.0		3.4	3.4		5.4	6.6	
						24.4		7.8		29.4		85.4		6.0			3.4			7.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
19-Nov-18	Cloudy	Rough	09:28	Surface	-	-	-	-	-	-	-	-	-	-	-	6.2	-	-	6.2	-	-	8.5
				Middle	0.6	24.6	24.6	7.8	7.8	29.0	29.0	87.9	87.8	6.2	6.2		6.0	6.2		9.3	8.5	
						24.6		7.8		29.0		87.7		6.2			6.3			7.7		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
21-Nov-18	Sunny	Calm	11:17	Surface	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	5.6	-	-	5.7
				Middle	0.5	25.2	25.2	7.9	7.9	28.7	28.7	92.2	92.1	6.5	6.5		5.6	5.6		5.3	5.7	
						25.1		7.9		28.7		92.0		6.5			5.5			6.0		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at SR3 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	07:11	Surface	-	-	-	-	-	-	-	-	-	-	-	6.1	-	-	4.5	-	-	8.3
						-		-		-		-		-			-			-		
				Middle	0.6	25.9	25.9	8.0	8.0	28.7	28.7	88.0	87.7	6.1	6.1		4.6	4.5		8.8	8.3	
						25.9		8.0		28.7		87.4		6.0			4.4			7.8		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
27-Oct-18	Cloudy	Moderate	08:14	Surface	-	-	-	-	-	-	-	-	-	-	-	6.1	-	-	4.6	-	-	8.8
						-		-		-		-		-			-			-		
				Middle	0.5	26.1	26.1	8.1	8.1	28.1	28.1	88.7	88.7	6.1	6.1		4.7	4.6		8.7	8.8	
						26.1		8.1		28.1		88.7		6.1			4.5			8.8		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
29-Oct-18	Sunny	Calm	09:26	Surface	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	5.8	-	-	8.2
						-		-		-		-		-			-			-		
				Middle	0.5	25.4	25.4	8.2	8.2	28.3	28.3	93.4	93.4	6.5	6.5		5.8	5.8		7.5	8.2	
						25.4		8.2		28.3		93.3		6.5			5.8			8.8		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
3-Nov-18	Rainy	Moderate	16:09	Surface	-	-	-	-	-	-	-	-	-	-	-	7.3	-	-	4.3	-	-	11.3
						-		-		-		-		-			-			-		
				Middle	0.5	24.1	24.1	8.1	8.1	30.1	30.1	103.3	103.4	7.3	7.3		4.4	4.3		11.0	11.3	
						24.1		8.1		30.1		103.5		7.3			4.1			11.5		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
5-Nov-18	Sunny	Calm	17:47	Surface	-	-	-	-	-	-	-	-	-	-	-	7.5	-	-	3.9	-	-	7.9
						-		-		-		-		-			-			-		
				Middle	0.6	24.6	24.6	8.1	8.1	30.9	30.9	107.6	107.7	7.5	7.5		3.9	3.9		6.5	7.9	
						24.6		8.1		30.9		107.8		7.5			3.9			9.3		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
7-Nov-18	Sunny	Moderate	18:24	Surface	-	-	-	-	-	-	-	-	-	-	-	7.5	-	-	7.3	-	-	15.6
						-		-		-		-		-			-			-		
				Middle	0.6	25.1	25.1	8.2	8.2	30.9	30.9	107.3	107.6	7.4	7.5		7.3	7.3		13.7	15.6	
						25.1		8.2		30.9		107.8		7.5			7.2			17.4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
9-Nov-18	Sunny	Calm	19:12	Surface	-	-	-	-	-	-	-	-	-	-	-	6.9	-	-	8.0	-	-	22.4
						-		-		-		-		-			-			-		
				Middle	0.6	24.9	24.9	8.0	8.0	29.7	29.7	98.2	98.3	6.9	6.9		8.1	8.0		23.1	22.4	
						24.9		8.0		29.7		98.4		6.9			7.8			21.6		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
12-Nov-18	Cloudy	Calm	09:54	Surface	-	-	-	-	-	-	-	-	-	-	-	6.6	-	-	12.3	-	-	20.6
						-		-		-		-		-			-			-		
				Middle	0.6	24.8	24.8	8.1	8.1	29.8	29.8	94.8	94.5	6.6	6.6		12.1	12.3		20.3	20.6	
						24.8		8.1		29.8		94.2		6.6			12.5			20.9		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
14-Nov-18	Cloudy	Rough	16:05	Surface	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	7.6	-	-	13.7
						-		-		-		-		-			-			-		
				Middle	0.4	25.4	25.4	8.1	8.1	28.8	28.8	93.4	93.4	6.5	6.5		7.7	7.6		12.8	13.7	
						25.4		8.1		28.8		93.4		6.5			7.5			14.6		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
17-Nov-18	Cloudy	Moderate	14:09	Surface	-	-	-	-	-	-	-	-	-	-	-	6.2	-	-	8.2	-	-	8.8
						-		-		-		-		-			-			-		
				Middle	0.5	24.7	24.7	7.8	7.8	29.4	29.4	88.4	88.4	6.2	6.2		8.2	8.2		8.2	8.8	
						24.7		7.8		29.4		88.4		6.2			8.1			9.4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
19-Nov-18	Cloudy	Rough	16:39	Surface	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-	7.8	-	-	11.9
						-		-		-		-		-			-			-		
				Middle	0.6	25.3	25.3	8.0	8.0	28.0	28.1	97.0	96.7	6.8	6.8		7.8	7.8		11.9	11.9	
						25.3		8.0		28.1		96.3		6.8			7.7			11.8		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		
21-Nov-18	Sunny	Calm	17:23	Surface	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	8.5	-	-	9.1
						-		-		-		-		-			-			-		
				Middle	0.5	24.9	24.9	7.9	7.9	29.0	29.0	89.7	89.7	6.3	6.3		8.5	8.5		9.8	9.1	
						24.9		7.9		29.0		89.7		6.3			8.4			8.4		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						-		-		-		-		-			-			-		

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at SR6 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	12:08	Surface	1	26.2 26.2	26.2	8.0 8.0	8.0	29.1 29.3	29.2	95.1 93.4	94.3	6.5 6.4	6.5	6.5	4.1 4.6	4.4	5.3	6.1 7.6	6.9	7.9
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.9	26.0 26.0	26.0	8.0 8.0	8.0	29.5 29.5	29.5	93.0 92.3	92.7	6.4 6.3	6.4		6.0 6.4	6.2		7.5 10.3	8.9	
27-Oct-18	Sunny	Moderate	13:40	Surface	1	26.4 26.4	26.4	8.0 8.0	8.0	27.2 27.3	27.3	98.6 97.7	98.2	6.8 6.8	6.8	6.8	2.6 2.6	2.6	3.5	5.6 6.4	6.0	6.7
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.3	26.2 26.3	26.3	8.0 8.0	8.0	27.7 27.7	27.7	94.8 95.4	95.1	6.6 6.6	6.6		4.2 4.4	4.3		8.0 6.7	7.4	
29-Oct-18	Sunny	Calm	14:58	Surface	1	25.7 25.8	25.8	8.0 8.0	8.0	28.7 28.6	28.7	101.4 99.5	100.5	7.0 6.9	7.0	7.0	3.0 2.9	3.0	3.5	5.9 6.8	6.4	7.1
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.4	25.7 25.7	25.7	8.0 8.0	8.0	28.8 28.8	28.8	98.9 98.5	98.7	6.9 6.8	6.9	6.9	4.1 3.7	3.9		8.4 7.2	7.8	
3-Nov-18	Rainy	Moderate	09:23	Surface	1	23.9 23.9	23.9	8.2 8.2	8.2	30.8 30.9	30.9	99.5 98.6	99.1	7.0 7.0	7.0	7.0	1.2 1.3	1.3	1.7	15.3 12.2	13.8	14.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.2	24.1 24.1	24.1	8.2 8.2	8.2	31.3 31.3	31.3	95.2 94.6	94.9	6.7 6.7	6.7	6.7	2.2 2.0	2.1		15.4 13.9	14.7	
5-Nov-18	Cloudy	Moderate	10:05	Surface	1	24.3 24.3	24.3	8.3 8.3	8.3	31.1 31.2	31.2	97.1 95.0	96.1	6.8 6.7	6.8	6.8	3.1 3.1	3.1	3.2	6.1 6.3	6.2	5.6
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.4	24.2 24.2	24.2	8.3 8.3	8.3	31.2 31.2	31.2	95.0 95.0	95.0	6.7 6.7	6.7	6.7	3.3 3.2	3.3		5.1 4.9	5.0	
7-Nov-18	Sunny	Moderate	11:42	Surface	1	25.0 25.0	25.0	8.3 8.3	8.3	30.4 30.4	30.4	102.9 102.8	102.9	7.2 7.2	7.2	7.2	6.4 6.5	6.5	7.9	7.5 8.6	8.1	8.7
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.5	24.8 24.8	24.8	8.3 8.3	8.3	30.4 30.4	30.4	98.5 98.6	98.6	6.9 6.9	6.9	6.9	9.5 8.8	9.2		8.6 9.8	9.2	
9-Nov-18	Sunny	Calm	13:53	Surface	1	25.1 25.0	25.1	8.1 8.1	8.1	28.9 29.1	29.0	109.4 109.9	109.7	7.7 7.7	7.7	7.7	7.0 6.9	7.0	9.3	14.9 9.3	12.1	11.1
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.5	24.8 24.8	24.8	8.1 8.1	8.1	29.6 29.6	29.6	102.1 101.9	102.0	7.2 7.2	7.2	7.2	11.6 11.6	11.6		9.4 10.5	10.0	
12-Nov-18	Cloudy	Calm	14:53	Surface	1	25.3 25.3	25.3	8.1 8.1	8.1	27.9 28.3	28.1	100.4 98.9	99.7	7.0 6.9	7.0	7.0	4.6 4.9	4.8	7.3	6.6 7.6	7.1	8.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.5	24.9 24.9	24.9	8.1 8.1	8.1	29.0 29.0	29.0	96.1 96.1	96.1	6.8 6.8	6.8	6.8	9.3 10.2	9.8		8.4 9.2	8.8	
17-Nov-18	Rainy	Rough	07:49	Surface	1	25.4 25.3	25.4	7.8 7.9	7.9	24.7 24.7	24.7	92.0 89.9	91.0	6.6 6.5	6.6	6.6	2.6 2.6	2.6	2.7	7.8 7.2	7.5	8.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.4	27.7 27.4	27.6	7.9 7.9	7.9	24.8 24.8	24.8	91.0 90.3	90.7	6.5 6.4	6.5	6.5	2.7 2.6	2.7		10.2 9.9	10.1	
19-Nov-18	Cloudy	Rough	09:38	Surface	1	24.5 24.6	24.6	7.9 7.9	7.9	25.3 25.4	25.4	94.5 91.9	93.2	6.8 6.6	6.7	6.7	2.8 2.9	2.9	3.2	8.3 5.7	7.0	6.4
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.4	24.6 24.6	24.6	7.9 7.9	7.9	28.1 29.1	28.6	92.2 91.6	91.9	6.5 6.5	6.5	6.5	3.3 3.5	3.4		6.0 5.4	5.7	
21-Nov-18	Sunny	Calm	12:00	Surface	1	24.6 24.5	24.6	8.0 8.0	8.0	29.8 29.8	29.8	95.3 94.4	94.9	6.7 6.6	6.7	6.7	4.7 4.9	4.8	6.4	7.7 6.8	7.3	7.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.9	24.4 24.4	24.4	8.0 8.0	8.0	30.2 30.3	30.3	93.9 93.8	93.9	6.6 6.6	6.6	6.6	8.0 8.0	8.0		8.5 7.8	8.2	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at SR6 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	07:46	Surface	1	26.0 26.0	26.0	8.0 8.0	8.0	28.7 28.7	28.7	93.1 90.0	91.6	6.4 6.2	6.3	6.3	9.7 9.2	9.5	13.5	7.6 7.9	7.8	7.7
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.2	26.0 26.0	26.0	8.0 8.0	8.0	29.0 29.0	29.0	90.4 89.9	90.2	6.2 6.2	6.2	6.2	16.9 18.0	17.5		7.4 7.5	7.5	
27-Oct-18	Cloudy	Moderate	08:34	Surface	1	26.2 26.2	26.2	7.9 7.9	7.9	26.0 26.0	26.0	91.4 87.4	89.4	6.4 6.1	6.3	6.3	9.4 9.4	9.4	10.9	7.4 7.8	7.6	9.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.1	26.2 26.2	26.2	7.9 7.9	7.9	26.0 26.0	26.0	87.8 87.0	87.4	6.1 6.1	6.1	6.1	12.4 12.3	12.4		11.3 12.4	11.9	
29-Oct-18	Sunny	Calm	09:35	Surface	1	25.8 25.8	25.8	7.9 7.9	7.9	25.8 25.8	25.8	91.1 88.2	89.7	6.4 6.2	6.3	6.3	5.9 5.3	5.6	7.3	8.2 8.8	8.5	8.7
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.1	25.8 25.8	25.8	7.9 7.9	7.9	25.8 25.8	25.8	88.3 88.2	88.3	6.2 6.2	6.2	6.2	8.9 9.0	9.0		9.9 7.9	8.9	
3-Nov-18	Rainy	Moderate	15:25	Surface	1	24.5 24.5	24.5	8.1 8.1	8.1	30.2 30.2	30.2	99.2 99.3	99.3	7.0 7.0	7.0	7.0	1.4 1.4	1.4	1.5	10.1 11.6	10.9	11.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.8	24.5 24.6	24.6	8.1 8.1	8.1	30.2 30.2	30.2	98.9 98.7	98.8	6.9 6.9	6.9	6.9	1.6 1.5	1.6		11.1 11.0	11.1	
5-Nov-18	Sunny	Calm	16:44	Surface	1	24.9 24.9	24.9	8.3 8.3	8.3	29.3 29.3	29.3	104.5 105.6	105.1	7.3 7.4	7.4	7.4	3.2 3.2	3.2	3.8	7.5 8.3	7.9	9.2
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.1	24.8 24.8	24.8	8.3 8.3	8.3	29.4 29.3	29.4	104.9 105.3	105.1	7.4 7.4	7.4	7.4	4.3 4.2	4.3		8.6 12.4	10.5	
7-Nov-18	Sunny	Moderate	17:47	Surface	1	25.2 25.2	25.2	8.3 8.3	8.3	28.5 28.5	28.5	104.0 105.4	104.7	7.3 7.4	7.4	7.4	10.5 11.3	10.9	11.8	7.6 6.1	6.9	6.7
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.5	25.2 25.2	25.2	8.3 8.3	8.3	28.5 28.5	28.5	105.1 105.6	105.4	7.4 7.4	7.4	7.4	13.7 11.5	12.6		5.4 7.4	6.4	
9-Nov-18	Sunny	Calm	18:18	Surface	1	24.9 24.9	24.9	8.1 8.1	8.1	28.6 28.6	28.6	107.8 108.0	107.9	7.6 7.6	7.6	7.6	6.9 7.5	7.2	11.1	20.7 23.0	21.9	22.4
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.4	24.9 24.9	24.9	8.1 8.1	8.1	28.9 28.9	28.9	103.9 105.1	104.5	7.3 7.4	7.4	7.4	15.1 14.7	14.9		20.8 24.8	22.8	
12-Nov-18	Cloudy	Calm	10:08	Surface	1	25.0 25.0	25.0	8.1 8.1	8.1	26.5 26.7	26.6	94.4 93.3	93.9	6.7 6.6	6.7	6.7	6.7 6.6	6.7	12.9	10.6 10.1	10.4	10.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.5	24.9 25.0	25.0	8.1 8.1	8.1	27.8 27.8	27.8	93.3 93.0	93.2	6.6 6.6	6.6	6.6	18.3 19.8	19.1		8.5 10.6	9.6	
14-Nov-18	Cloudy	Rough	15:47	Surface	1	24.8 24.8	24.8	8.0 8.0	8.0	28.8 28.8	28.8	94.9 94.2	94.6	6.7 6.6	6.7	6.7	6.2 6.1	6.2	7.6	15.4 15.7	15.6	18.2
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4	24.8 24.8	24.8	8.0 8.0	8.0	29.0 29.0	29.0	93.6 93.4	93.5	6.6 6.6	6.6	6.6	8.5 9.4	9.0		20.5 20.9	20.7	
17-Nov-18	Cloudy	Moderate	14:31	Surface	1	24.2 24.3	24.3	7.8 7.8	7.8	24.8 24.8	24.8	93.4 93.0	93.2	6.8 6.7	6.8	6.8	3.5 3.7	3.6	8.2	7.7 8.2	8.0	8.9
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.5	27.8 27.8	27.8	7.9 7.9	7.9	24.8 24.8	24.8	89.2 88.3	88.8	6.3 6.3	6.3	6.3	12.5 13.1	12.8		9.4 10.2	9.8	
19-Nov-18	Cloudy	Rough	15:40	Surface	1	25.1 25.1	25.1	7.9 7.9	7.9	26.2 26.2	26.2	97.9 94.0	96.0	7.0 6.7	6.9	6.9	3.0 2.4	2.7	5.0	6.5 7.7	7.1	6.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4.5	25.0 25.0	25.0	7.9 7.9	7.9	26.5 26.6	26.6	94.3 93.8	94.1	6.7 6.7	6.7	6.7	6.4 7.9	7.2		6.1 4.7	5.4	
21-Nov-18	Sunny	Calm	16:47	Surface	1	25.1 25.1	25.1	8.0 8.0	8.0	27.8 27.8	27.8	92.6 91.4	92.0	6.5 6.4	6.5	6.5	6.1 6.1	6.1	7.2	17.3 15.2	16.3	18.6
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3.9	25.1 25.1	25.1	8.0 8.0	8.0	27.8 27.8	27.8	91.0 90.8	90.9	6.4 6.4	6.4	6.4	8.4 8.1	8.3		21.5 20.1	20.8	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at SRA - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	13:28	Surface	1	26.0 26.2	26.1	8.2 8.2	8.2	29.5 29.4	29.5	95.1 91.9	93.5	6.5 6.3	6.4	6.4	2.8 2.7	2.8	3.4	7.6 4.8	6.2	6.6
				Middle	4.5	26.1 26.1	26.1	8.2 8.2	8.2	29.4 29.4	29.4	92.1 91.7	91.9	6.3 6.3	6.3		3.2 3.4	3.3		7.1 6.2	6.7	
				Bottom	8	26.1 26.1	26.1	8.2 8.2	8.2	29.4 29.4	29.4	91.0 91.1	91.1	6.2 6.3	6.3	6.3	4.2 4.2	4.2		6.7 6.8	6.8	
27-Oct-18	Sunny	Moderate	14:52	Surface	1	26.3 26.3	26.3	8.2 8.2	8.2	27.8 27.8	27.8	93.6 92.7	93.2	6.5 6.4	6.5	6.5	4.1 4.0	4.1	4.7	6.8 6.7	6.8	6.7
				Middle	4.5	26.2 26.2	26.2	8.2 8.2	8.2	27.8 27.9	27.9	92.0 91.4	91.7	6.4 6.3	6.4		4.3 4.3	4.3		6.9 7.5	7.2	
				Bottom	8	26.2 26.2	26.2	8.2 8.2	8.2	27.8 27.9	27.9	90.9 90.6	90.8	6.3 6.3	6.3	6.3	5.6 5.7	5.7		5.9 6.0	6.0	
29-Oct-18	Sunny	Calm	16:06	Surface	1	25.7 25.7	25.7	8.3 8.3	8.3	28.8 28.8	28.8	99.7 98.4	99.1	6.9 6.8	6.9	6.9	1.7 1.6	1.7	1.8	7.7 6.6	7.2	7.3
				Middle	4.5	25.7 25.7	25.7	8.3 8.3	8.3	28.8 28.8	28.8	98.4 97.6	98.0	6.8 6.8	6.8		1.8 1.7	1.8		7.5 7.5	7.5	
				Bottom	8	25.6 25.6	25.6	8.3 8.3	8.3	28.8 28.8	28.8	96.9 96.3	96.6	6.7 6.7	6.7	6.7	1.9 1.8	1.9		6.8 7.8	7.3	
3-Nov-18	Rainy	Moderate	08:49	Surface	1	23.6 23.7	23.7	8.1 8.1	8.1	30.2 30.3	30.3	100.3 100.1	100.2	7.2 7.1	7.2	7.0	1.1 1.2	1.2	2.9	14.0 10.5	12.3	10.7
				Middle	4.5	23.9 23.9	23.9	8.1 8.1	8.1	31.3 31.3	31.3	96.4 96.3	96.4	6.8 6.8	6.8		2.2 2.3	2.3		8.7 10.9	9.8	
				Bottom	8	23.9 23.9	23.9	8.1 8.1	8.1	31.4 31.4	31.4	95.0 95.0	95.0	6.7 6.7	6.7	6.7	5.3 4.9	5.1		8.5 11.2	9.9	
5-Nov-18	Cloudy	Moderate	10:13	Surface	1	24.3 24.3	24.3	8.1 8.1	8.1	31.4 31.5	31.5	96.3 96.0	96.2	6.7 6.7	6.7	6.7	3.4 3.4	3.4	3.8	4.2 4.7	4.5	4.1
				Middle	4.5	24.3 24.3	24.3	8.1 8.1	8.1	31.5 31.5	31.5	95.5 95.6	95.6	6.7 6.7	6.7		3.9 4.1	4.0		5.0 2.7	3.9	
				Bottom	8	24.3 24.3	24.3	8.1 8.1	8.1	31.5 31.5	31.5	94.7 94.8	94.8	6.6 6.6	6.6	6.6	4.1 4.1	4.1		3.7 4.3	4.0	
7-Nov-18	Sunny	Moderate	11:30	Surface	1	24.9 25.0	25.0	8.1 8.1	8.1	30.8 30.8	30.8	102.2 102.8	102.5	7.1 7.1	7.1	7.1	8.1 7.9	8.0	11.1	15.4 15.4	15.4	12.4
				Middle	4.5	24.8 24.8	24.8	8.1 8.1	8.1	30.8 30.8	30.8	100.6 101.2	100.9	7.0 7.0	7.0		9.5 10.1	9.8		14.0 10.7	12.4	
				Bottom	8	24.8 24.8	24.8	8.1 8.1	8.1	30.9 30.9	30.9	99.2 99.7	99.5	6.9 6.9	6.9	6.9	15.6 15.6	15.6		9.3 9.5	9.4	
9-Nov-18	Sunny	Calm	13:26	Surface	1	24.9 24.8	24.9	8.0 8.0	8.0	29.4 29.4	29.4	101.4 100.6	101.0	7.1 7.1	7.1	7.0	11.5 11.2	11.4	17.7	11.9 18.0	15.0	14.4
				Middle	4.5	24.7 24.7	24.7	8.0 8.0	8.0	29.4 29.4	29.4	98.9 98.6	98.8	6.9 6.9	6.9		14.3 14.0	14.2		12.2 17.8	15.0	
				Bottom	8	24.7 24.7	24.7	8.0 8.0	8.0	29.4 29.4	29.4	97.7 97.7	97.7	6.9 6.9	6.9	6.9	26.7 28.0	27.4		14.6 11.9	13.3	
12-Nov-18	Cloudy	Calm	15:51	Surface	1	25.2 25.2	25.2	8.1 8.1	8.1	29.0 29.0	29.0	96.8 96.3	96.6	6.8 6.7	6.8	6.7	6.3 6.2	6.3	7.1	14.5 12.9	13.7	11.3
				Middle	4.5	25.0 25.0	25.0	8.1 8.1	8.1	29.7 29.6	29.7	93.2 93.5	93.4	6.5 6.5	6.5		7.2 7.1	7.2		10.2 13.5	11.9	
				Bottom	8	24.8 24.9	24.9	8.1 8.1	8.1	29.9 29.8	29.9	90.8 91.1	91.0	6.4 6.4	6.4	6.4	8.0 7.8	7.9		8.2 8.5	8.4	
17-Nov-18	Rainy	Rough	07:23	Surface	1	24.6 24.6	24.6	8.0 8.0	8.0	30.1 30.1	30.1	88.4 87.8	88.1	6.2 6.2	6.2	6.2	4.5 4.5	4.5	4.9	6.3 7.4	6.9	7.3
				Middle	4.5	24.7 24.7	24.7	8.0 8.0	8.0	30.1 30.1	30.1	87.6 87.5	87.6	6.1 6.1	6.1		4.6 4.5	4.6		7.3 7.8	7.6	
				Bottom	8	24.7 24.7	24.7	8.0 8.0	8.0	30.2 30.2	30.2	86.6 86.6	86.6	6.1 6.1	6.1	6.1	5.7 5.7	5.7		7.1 7.5	7.3	
19-Nov-18	Cloudy	Rough	09:34	Surface	1	24.6 24.6	24.6	7.9 7.9	7.9	26.3 26.3	26.3	89.7 90.0	89.9	6.4 6.5	6.5	6.3	5.3 5.1	5.2	4.9	6.6 7.3	7.0	7.4
				Middle	4.5	24.7 24.7	24.7	7.9 7.9	7.9	28.2 28.1	28.2	86.2 86.4	86.3	6.1 6.1	6.1		5.4 5.1	5.3		5.9 7.4	6.7	
				Bottom	8	24.9 24.9	24.9	7.9 7.9	7.9	29.3 29.3	29.3	84.3 84.4	84.4	5.9 5.9	5.9	5.9	4.1 4.3	4.2		10.7 6.2	8.5	
21-Nov-18	Sunny	Calm	11:23	Surface	1	24.7 24.8	24.8	7.9 7.9	7.9	30.3 30.1	30.2	90.2 90.1	90.2	6.3 6.3	6.3	6.3	5.6 4.9	5.3	8.2	9.3 8.2	8.8	7.8
				Middle	4.5	24.4 24.4	24.4	7.9 7.9	7.9	30.6 30.7	30.7	89.3 88.7	89.0	6.3 6.2	6.3		8.1 8.0	8.1		7.9 7.4	7.7	
				Bottom	8	24.3 24.3	24.3	7.9 7.9	7.9	30.7 30.7	30.7	88.1 88.4	88.3	6.2 6.2	6.2	6.2	11.6 10.8	11.2		5.6 8.1	6.9	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at SRA - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	07:16	Surface	1	25.9 25.9	25.9	8.1 8.1	8.1	28.7 28.7	28.7	87.8 86.5	87.2	6.1 6.0	6.1	6.1	5.1 5.1	5.1	5.3	8.1 9.2	8.7	8.3
				Middle	4.5	25.9 25.9	25.9	8.1 8.1	8.1	28.7 28.7	28.7	86.5 86.3	86.4	6.0 6.0	6.0		5.1 5.2	5.2		8.7 7.7	8.2	
				Bottom	8	25.9 25.9	25.9	8.1 8.1	8.1	28.7 28.7	28.7	85.7 85.9	85.8	5.9 5.9	5.9	5.9	5.6 5.4	5.5		7.2 8.7	8.0	
27-Oct-18	Cloudy	Moderate	08:23	Surface	1	26.1 26.1	26.1	8.2 8.2	8.2	28.1 28.1	28.1	88.4 87.5	88.0	6.1 6.1	6.1	6.1	3.7 3.6	3.7	4.7	7.6 8.0	7.8	8.4
				Middle	4.5	26.1 26.1	26.1	8.2 8.2	8.2	28.1 28.1	28.1	87.4 87.2	87.3	6.1 6.0	6.1		4.7 4.8	4.8		7.4 8.5	8.0	
				Bottom	8	26.1 26.1	26.1	8.2 8.2	8.2	28.1 28.1	28.1	86.7 86.8	86.8	6.0 6.0	6.0	6.0	5.5 5.4	5.5		8.8 10.2	9.5	
29-Oct-18	Sunny	Calm	09:36	Surface	1	25.5 25.5	25.5	8.2 8.2	8.2	28.0 28.0	28.0	90.3 87.9	89.1	6.3 6.1	6.2	6.2	3.5 3.5	3.5	4.0	8.0 8.2	8.1	8.1
				Middle	4.5	25.5 25.5	25.5	8.2 8.2	8.2	28.1 28.0	28.1	88.3 87.5	87.9	6.2 6.1	6.2		4.0 3.8	3.9		9.1 8.3	8.7	
				Bottom	8	25.5 25.5	25.5	8.2 8.2	8.2	28.1 28.1	28.1	88.4 88.1	88.3	6.2 6.2	6.2	6.2	4.7 4.7	4.7		7.4 7.5	7.5	
3-Nov-18	Rainy	Moderate	15:58	Surface	1	24.1 24.1	24.1	8.1 8.1	8.1	30.2 30.2	30.2	103.8 103.8	103.8	7.3 7.3	7.3	7.3	2.3 2.2	2.3	2.2	12.1 11.8	12.0	11.0
				Middle	4.5	24.1 24.1	24.1	8.1 8.1	8.1	30.2 30.2	30.2	103.5 103.6	103.6	7.3 7.3	7.3		2.2 2.0	2.1		10.7 10.1	10.4	
				Bottom	8	24.1 24.1	24.1	8.1 8.1	8.1	30.2 30.2	30.2	103.1 103.2	103.2	7.3 7.3	7.3	7.3	2.1 2.3	2.2		11.0 10.1	10.6	
5-Nov-18	Sunny	Calm	17:40	Surface	1	24.7 24.7	24.7	8.1 8.1	8.1	30.9 30.9	30.9	108.9 108.6	108.8	7.6 7.6	7.6	7.6	4.0 3.7	3.9	4.4	7.9 7.4	7.7	7.7
				Middle	4.5	24.7 24.7	24.7	8.1 8.1	8.1	30.9 30.9	30.9	108.4 108.4	108.4	7.6 7.6	7.6		4.4 4.5	4.5		7.4 8.1	7.8	
				Bottom	8	24.8 24.8	24.8	8.1 8.1	8.1	31.0 31.0	31.0	107.5 106.5	107.0	7.5 7.4	7.5	7.5	4.6 4.7	4.7		6.4 8.8	7.6	
7-Nov-18	Sunny	Moderate	18:15	Surface	1	25.3 25.2	25.3	8.2 8.2	8.2	30.9 30.9	30.9	110.9 111.4	111.2	7.7 7.7	7.7	7.8	7.3 7.6	7.5	7.9	15.2 15.6	15.4	12.8
				Middle	4.5	25.2 25.2	25.2	8.2 8.2	8.2	30.9 30.9	30.9	111.8 112.2	112.0	7.7 7.8	7.8		7.4 7.8	7.6		14.0 14.7	14.4	
				Bottom	8	25.2 25.2	25.2	8.2 8.2	8.2	30.9 30.9	30.9	112.6 112.6	112.6	7.8 7.8	7.8	7.8	8.8 8.4	8.6		6.9 10.0	8.5	
9-Nov-18	Sunny	Calm	19:03	Surface	1	25.0 25.0	25.0	8.0 8.0	8.0	29.6 29.6	29.6	100.7 100.8	100.8	7.0 7.0	7.0	7.0	7.9 7.9	7.9	7.8	26.3 29.8	28.1	21.1
				Middle	4.5	25.0 24.9	25.0	8.0 8.0	8.0	29.6 29.6	29.6	100.3 99.9	100.1	7.0 7.0	7.0		7.8 7.7	7.8		19.8 21.2	20.5	
				Bottom	8	24.9 25.0	25.0	8.0 8.0	8.0	29.6 29.7	29.7	99.6 99.6	99.6	7.0 7.0	7.0	7.0	7.5 7.9	7.7		14.6 14.9	14.8	
12-Nov-18	Cloudy	Calm	10:04	Surface	1	24.7 24.7	24.7	8.1 8.1	8.1	29.8 29.8	29.8	91.5 91.2	91.4	6.4 6.4	6.4	6.4	11.3 11.3	11.3	12.9	16.0 16.2	16.1	20.8
				Middle	4.5	24.7 24.7	24.7	8.1 8.1	8.1	29.8 29.8	29.8	90.6 90.6	90.6	6.4 6.4	6.4		13.9 13.6	13.8		24.7 25.5	25.1	
				Bottom	8	24.7 24.7	24.7	8.1 8.1	8.1	29.8 29.8	29.8	90.0 90.0	90.0	6.3 6.3	6.3	6.3	13.5 13.8	13.7		21.0 21.3	21.2	
14-Nov-18	Cloudy	Rough	16:11	Surface	1	24.9 24.9	24.9	8.2 8.2	8.2	28.9 28.9	28.9	89.5 89.0	89.3	6.3 6.3	6.3	6.3	5.3 5.1	5.2	6.6	10.8 10.7	10.8	10.1
				Middle	4.5	24.9 24.8	24.9	8.2 8.2	8.2	29.2 29.2	29.2	87.6 87.4	87.5	6.2 6.1	6.2		6.3 6.5	6.4		8.6 10.2	9.4	
				Bottom	8	24.8 24.8	24.8	8.3 8.3	8.3	29.7 29.7	29.7	87.8 87.4	87.6	6.2 6.1	6.2	6.2	8.2 8.1	8.2		9.3 10.7	10.0	
17-Nov-18	Cloudy	Moderate	14:17	Surface	1	24.7 24.7	24.7	7.9 7.9	7.9	29.4 29.4	29.4	87.2 86.4	86.8	6.1 6.1	6.1	6.1	7.1 7.1	7.1	8.0	9.4 10.1	9.8	10.2
				Middle	4.5	24.7 24.7	24.7	7.9 7.9	7.9	29.5 29.5	29.5	85.8 85.5	85.7	6.0 6.0	6.0		7.5 7.5	7.5		10.4 10.2	10.3	
				Bottom	8	24.7 24.7	24.7	7.9 7.9	7.9	29.7 29.6	29.7	84.9 84.9	84.9	6.0 6.0	6.0	6.0	9.4 9.6	9.5		10.8 10.1	10.5	
19-Nov-18	Cloudy	Rough	16:30	Surface	1	25.2 25.2	25.2	7.9 7.9	7.9	28.4 28.5	28.5	92.4 91.2	91.8	6.5 6.4	6.5	6.4	5.6 5.2	5.4	6.8	6.9 9.0	8.0	7.9
				Middle	4.5	25.2 25.2	25.2	7.9 7.9	7.9	28.8 28.8	28.8	88.8 89.0	88.9	6.2 6.2	6.2		7.5 7.1	7.3		7.6 7.7	7.7	
				Bottom	8	25.1 25.2	25.2	7.9 7.9	7.9	28.8 28.8	28.8	88.1 88.1	88.1	6.2 6.2	6.2	6.2	7.8 7.8	7.8		7.6 8.3	8.0	
21-Nov-18	Sunny	Calm	17:14	Surface	1	24.9 24.9	24.9	7.9 7.9	7.9	29.1 29.1	29.1	89.6 88.7	89.2	6.3 6.2	6.3	6.3	10.3 11.1	10.7	11.5	9.0 10.9	10.0	10.1
				Middle	4.5	24.9 24.9	24.9	7.9 7.9	7.9	29.1 29.1	29.1	89.0 89.0	89.0	6.3 6.3	6.3		11.4 10.7	11.1		11.3 9.3	10.3	
				Bottom	8	24.8 24.8	24.8	7.9 7.9	7.9	29.4 29.3	29.4	87.9 88.4	88.2	6.2 6.2	6.2	6.2	13.4 12.0	12.7		10.2 9.7	10.0	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at ST1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	12:26	Surface	1	26.4 26.2	26.3	8.0 8.0	8.0	29.4 29.4	29.4	96.3 95.3	95.8	6.6 6.5	6.6	6.6	3.4 3.7	3.6	7.7	7.8 9.7	8.8	10.7
				Middle	5.5	26.0 26.0	26.0	8.0 8.0	8.0	30.7 30.7	30.7	96.6 96.1	96.4	6.6 6.6	6.6		5.0 4.6	4.8		12.2 9.0	10.6	
				Bottom	10	26.0 26.0	26.0	8.0 8.0	8.0	31.0 31.0	31.0	97.7 97.5	97.6	6.7 6.6	6.7	6.7	15.1 14.3	14.7		13.3 12.1	12.7	
27-Oct-18	Sunny	Moderate	14:07	Surface	1	26.3 26.3	26.3	8.0 8.0	8.0	28.7 28.7	28.7	99.9 99.5	99.7	6.9 6.8	6.9	6.8	2.7 2.9	2.8	6.0	8.0 8.9	8.5	6.6
				Middle	5.5	26.1 26.1	26.1	8.0 8.0	8.0	29.5 29.5	29.5	97.5 97.4	97.5	6.7 6.7	6.7		3.7 3.7	3.7		4.7 4.7	4.7	
				Bottom	10	25.9 25.9	25.9	8.1 8.0	8.1	30.5 30.5	30.5	96.0 96.0	96.0	6.6 6.6	6.6	6.6	12.1 10.7	11.4		6.6 6.4	6.5	
29-Oct-18	Sunny	Calm	15:23	Surface	1	25.8 25.8	25.8	8.0 8.1	8.1	29.3 29.3	29.3	101.6 100.8	101.2	7.0 7.0	7.0	7.0	3.3 3.1	3.2	4.5	7.7 7.0	7.4	7.6
				Middle	5.5	25.8 25.8	25.8	8.1 8.1	8.1	29.9 29.8	29.9	101.0 100.6	100.8	7.0 6.9	7.0		3.6 3.3	3.5		9.2 6.8	8.0	
				Bottom	10	25.7 25.7	25.7	8.1 8.1	8.1	30.6 30.4	30.5	99.0 99.2	99.1	6.8 6.8	6.8	6.8	6.9 6.7	6.8		6.9 7.8	7.4	
3-Nov-18	Rainy	Moderate	09:51	Surface	1	24.0 24.0	24.0	8.2 8.2	8.2	31.0 31.1	31.1	97.9 96.1	97.0	6.9 6.8	6.9	6.8	2.2 2.3	2.3	7.0	6.7 8.4	7.6	7.8
				Middle	5.5	24.2 24.2	24.2	8.2 8.2	8.2	31.4 31.3	31.4	93.7 94.5	94.1	6.6 6.6	6.6		4.3 4.7	4.5		8.0 6.8	7.4	
				Bottom	10	24.2 24.2	24.2	8.2 8.2	8.2	31.4 31.4	31.4	92.8 92.8	92.8	6.5 6.5	6.5	6.5	14.4 13.9	14.2		8.5 8.0	8.3	
5-Nov-18	Cloudy	Moderate	10:27	Surface	1	24.4 24.4	24.4	8.3 8.3	8.3	31.0 31.1	31.1	96.9 94.1	95.5	6.8 6.6	6.7	6.6	3.3 3.7	3.5	7.0	6.5 7.5	7.0	8.3
				Middle	5.5	24.5 24.5	24.5	8.3 8.3	8.3	31.3 31.3	31.3	92.5 93.4	93.0	6.5 6.5	6.5		7.3 6.7	7.0		9.6 8.1	8.9	
				Bottom	10	24.5 24.5	24.5	8.3 8.3	8.3	31.3 31.3	31.3	91.9 91.9	91.9	6.4 6.4	6.4	6.4	10.7 10.3	10.5		8.6 9.2	8.9	
7-Nov-18	Sunny	Moderate	12:05	Surface	1	25.0 25.1	25.1	8.4 8.3	8.4	30.2 30.1	30.2	105.5 106.6	106.1	7.4 7.4	7.4	7.1	6.0 5.6	5.8	15.8	7.4 6.9	7.2	13.0
				Middle	5.5	24.8 24.7	24.8	8.3 8.3	8.3	30.7 30.9	30.8	96.5 95.1	95.8	6.7 6.6	6.7		8.2 8.6	8.4		17.8 13.5	15.7	
				Bottom	10	24.7 24.7	24.7	8.3 8.3	8.3	31.0 31.0	31.0	94.7 92.8	93.8	6.6 6.5	6.6	6.6	32.3 34.0	33.2		14.9 17.0	16.0	
9-Nov-18	Sunny	Calm	14:14	Surface	1	24.8 24.8	24.8	8.1 8.1	8.1	30.1 30.3	30.2	102.7 99.1	100.9	7.2 6.9	7.1	7.0	10.1 10.1	10.1	13.4	10.5 11.3	10.9	10.8
				Middle	5.5	24.8 24.8	24.8	8.1 8.1	8.1	30.9 31.0	31.0	98.8 97.9	98.4	6.9 6.8	6.9		10.6 10.6	10.6		10.0 8.6	9.3	
				Bottom	10	24.8 24.8	24.8	8.1 8.1	8.1	31.3 31.2	31.3	96.2 96.7	96.5	6.7 6.7	6.7	6.7	18.8 20.1	19.5		12.5 11.7	12.1	
12-Nov-18	Cloudy	Calm	15:14	Surface	1	25.2 25.0	25.1	8.1 8.1	8.1	28.3 28.4	28.4	99.6 97.0	98.3	7.0 6.8	6.9	6.8	4.4 4.5	4.5	10.5	8.9 8.4	8.7	9.0
				Middle	5.5	24.8 24.8	24.8	8.1 8.1	8.1	29.8 29.8	29.8	94.4 94.4	94.4	6.6 6.6	6.6		13.8 13.6	13.7		12.5 7.5	10.0	
				Bottom	10	24.8 24.8	24.8	8.1 8.1	8.1	30.1 30.2	30.2	93.2 93.1	93.2	6.5 6.5	6.5	6.5	13.2 13.6	13.4		8.7 7.8	8.3	
17-Nov-18	Rainy	Rough	08:13	Surface	1	26.2 26.2	26.2	7.9 7.9	7.9	24.6 24.6	24.6	93.2 93.1	93.2	6.7 6.7	6.7	6.7	3.1 3.1	3.1	3.2	10.5 7.7	9.1	8.5
				Middle	5.5	30.0 29.0	29.5	7.9 7.9	7.9	24.5 24.6	24.6	93.4 94.1	93.8	6.6 6.7	6.7		3.0 2.8	2.9		10.3 6.7	8.5	
				Bottom	10	30.4 30.5	30.5	8.0 8.0	8.0	24.6 24.6	24.6	92.7 92.5	92.6	6.5 6.5	6.5	6.5	3.4 3.5	3.5		7.9 8.0	8.0	
19-Nov-18	Cloudy	Rough	10:01	Surface	1	24.5 24.5	24.5	7.9 7.9	7.9	26.7 26.8	26.8	95.1 93.1	94.1	6.8 6.7	6.8	6.8	3.0 3.1	3.1	3.9	7.7 7.5	7.6	7.1
				Middle	5.5	24.5 24.5	24.5	7.9 7.9	7.9	26.8 26.8	26.8	93.3 93.0	93.2	6.7 6.7	6.7		3.1 3.2	3.2		6.7 6.6	6.7	
				Bottom	10	24.6 24.6	24.6	7.9 7.9	7.9	31.2 31.2	31.2	90.6 91.9	91.3	6.3 6.4	6.4	6.4	5.5 5.1	5.3		7.6 6.4	7.0	
21-Nov-18	Sunny	Calm	12:31	Surface	1	24.8 24.9	24.9	8.0 8.0	8.0	30.7 30.6	30.7	96.9 96.8	96.9	6.8 6.7	6.8	6.7	5.6 5.1	5.4	14.2	8.3 6.9	7.6	13.3
				Middle	5.5	24.3 24.3	24.3	8.0 8.0	8.0	30.9 30.9	30.9	93.0 93.1	93.1	6.5 6.5	6.5		16.8 14.5	15.7		11.0 13.2	12.1	
				Bottom	10	24.3 24.3	24.3	8.0 8.0	8.0	31.0 31.0	31.0	92.3 92.3	92.3	6.5 6.5	6.5	6.5	20.8 21.9	21.4		19.6 20.7	20.2	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at ST1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	08:06	Surface	1	26.0 26.0	26.0	8.0 8.0	8.0	29.4 29.4	29.4	94.0 91.2	92.6	6.5 6.3	6.4	6.4	18.1 17.6	17.9	22.8	9.5 9.3	9.4	8.9
				Middle	5.5	26.0 26.0	26.0	8.0 8.0	8.0	29.4 29.5	29.5	91.3 90.8	91.1	6.3 6.2	6.3		19.6 20.2	19.9		8.4 8.7	8.6	
				Bottom	10	26.0 26.0	26.0	8.0 8.0	8.0	29.7 29.7	29.7	91.0 90.6	90.8	6.3 6.2	6.3	6.3	31.3 30.0	30.7		8.2 8.9	8.6	
27-Oct-18	Cloudy	Moderate	09:05	Surface	1	26.1 26.1	26.1	8.0 8.0	8.0	27.2 27.0	27.1	92.7 91.7	92.2	6.4 6.4	6.4	6.4	17.0 16.3	16.7	23.9	10.2 10.6	10.4	11.8
				Middle	5.5	26.1 26.1	26.1	8.0 8.0	8.0	27.4 27.7	27.6	92.3 92.1	92.2	6.4 6.4	6.4		24.2 21.7	23.0		15.0 18.3	16.7	
				Bottom	10	26.2 26.2	26.2	8.0 8.0	8.0	28.0 28.0	28.0	92.4 92.3	92.4	6.4 6.4	6.4	6.4	33.9 30.2	32.1		7.0 9.7	8.4	
29-Oct-18	Sunny	Calm	10:00	Surface	1	25.4 25.5	25.5	8.0 8.0	8.0	28.4 28.6	28.5	98.0 95.1	96.6	6.8 6.6	6.7	6.7	8.7 8.7	8.7	26.4	8.8 7.6	8.2	8.5
				Middle	5.5	25.5 25.5	25.5	8.0 8.0	8.0	28.9 28.9	28.9	95.2 94.6	94.9	6.6 6.6	6.6		19.8 20.9	20.4		8.6 8.8	8.7	
				Bottom	10	25.5 25.5	25.5	8.0 8.0	8.0	29.2 29.0	29.1	94.4 94.3	94.4	6.6 6.6	6.6	6.6	49.5 50.4	50.0		8.0 9.2	8.6	
3-Nov-18	Rainy	Moderate	15:54	Surface	1	24.0 24.0	24.0	8.2 8.2	8.2	30.8 30.8	30.8	99.5 99.3	99.4	7.0 7.0	7.0	7.0	4.2 4.3	4.3	7.8	12.3 10.7	11.5	11.4
				Middle	5.5	24.0 24.0	24.0	8.2 8.2	8.2	30.9 30.9	30.9	98.2 97.8	98.0	6.9 6.9	6.9		4.5 4.6	4.6		10.1 11.2	10.7	
				Bottom	10	24.0 24.0	24.0	8.2 8.2	8.2	31.1 31.1	31.1	96.2 96.3	96.3	6.8 6.8	6.8	6.8	14.3 14.8	14.6		12.5 11.6	12.1	
5-Nov-18	Sunny	Calm	17:04	Surface	1	24.6 24.6	24.6	8.4 8.4	8.4	30.7 30.8	30.8	101.2 102.5	101.9	7.1 7.2	7.2	7.2	6.1 7.2	6.7	10.6	16.2 13.8	15.0	15.2
				Middle	5.5	24.6 24.6	24.6	8.4 8.4	8.4	30.9 30.9	30.9	101.5 101.8	101.7	7.1 7.1	7.1		10.2 8.7	9.5		15.2 15.8	15.5	
				Bottom	10	24.6 24.6	24.6	8.3 8.4	8.4	31.2 31.1	31.2	97.4 99.1	98.3	6.8 6.9	6.9	6.9	15.7 15.3	15.5		15.7 14.7	15.2	
7-Nov-18	Sunny	Moderate	18:08	Surface	1	25.0 25.0	25.0	8.4 8.4	8.4	30.2 30.2	30.2	104.3 104.7	104.5	7.3 7.3	7.3	7.3	9.8 9.8	9.8	17.8	9.8 9.3	9.6	10.8
				Middle	5.5	25.0 25.0	25.0	8.4 8.4	8.4	30.2 30.2	30.2	105.0 104.9	105.0	7.3 7.3	7.3		9.4 9.3	9.4		8.2 9.7	9.0	
				Bottom	10	25.0 25.0	25.0	8.3 8.3	8.3	30.4 30.3	30.4	101.3 102.2	101.8	7.1 7.1	7.1	7.1	32.7 35.8	34.3		14.3 13.5	13.9	
9-Nov-18	Sunny	Calm	18:40	Surface	1	25.0 25.0	25.0	8.1 8.1	8.1	29.8 29.8	29.8	104.6 104.1	104.4	7.3 7.3	7.3	7.3	6.2 6.1	6.2	9.3	13.6 15.0	14.3	14.1
				Middle	5.5	24.9 24.9	24.9	8.1 8.1	8.1	30.3 30.1	30.2	102.5 102.7	102.6	7.1 7.2	7.2		9.0 8.3	8.7		14.2 13.0	13.6	
				Bottom	10	24.9 24.9	24.9	8.1 8.1	8.1	30.5 30.5	30.5	100.8 100.4	100.6	7.0 7.0	7.0	7.0	12.9 13.1	13.0		11.2 17.5	14.4	
12-Nov-18	Cloudy	Calm	10:29	Surface	1	24.8 24.8	24.8	8.1 8.1	8.1	28.8 28.8	28.8	96.1 95.3	95.7	6.8 6.7	6.8	6.8	11.5 11.8	11.7	16.3	18.4 18.7	18.6	15.7
				Middle	5.5	24.8 24.8	24.8	8.1 8.1	8.1	29.0 29.0	29.0	95.2 95.2	95.2	6.7 6.7	6.7		12.6 12.7	12.7		20.2 17.8	19.0	
				Bottom	10	24.7 24.7	24.7	8.1 8.1	8.1	29.7 29.6	29.7	94.1 94.2	94.2	6.6 6.6	6.6	6.6	25.6 23.5	24.6		9.4 9.4	9.4	
14-Nov-18	Cloudy	Rough	16:13	Surface	1	24.8 24.8	24.8	8.0 8.0	8.0	29.0 29.3	29.2	96.2 95.1	95.7	6.8 6.7	6.8	6.7	3.9 4.1	4.0	6.5	11.6 11.0	11.3	9.7
				Middle	5.5	24.8 24.8	24.8	8.0 8.0	8.0	29.5 29.6	29.6	94.0 93.2	93.6	6.6 6.5	6.6		4.6 4.8	4.7		10.9 9.6	10.3	
				Bottom	10	24.7 24.7	24.7	8.0 8.0	8.0	30.8 30.8	30.8	91.1 90.8	91.0	6.4 6.3	6.4	6.4	10.6 10.9	10.8		6.1 8.7	7.4	
17-Nov-18	Cloudy	Moderate	14:53	Surface	1	21.7 21.8	21.8	7.8 7.8	7.8	24.7 24.7	24.7	91.4 89.4	90.4	6.7 6.6	6.7	6.6	4.3 4.1	4.2	6.3	10.2 8.7	9.5	9.0
				Middle	5.5	29.0 29.1	29.1	7.9 7.9	7.9	24.6 24.6	24.6	90.9 89.3	90.1	6.4 6.3	6.4		5.6 5.1	5.4		7.6 8.6	8.1	
				Bottom	10	30.2 30.1	30.2	8.0 8.0	8.0	24.6 24.6	24.6	90.5 90.7	90.6	6.3 6.4	6.4	6.4	9.1 9.2	9.2		10.3 8.4	9.4	
19-Nov-18	Cloudy	Rough	16:06	Surface	1	24.8 24.8	24.8	7.9 7.9	7.9	27.4 27.3	27.4	96.8 94.0	95.4	6.9 6.7	6.8	6.7	3.9 4.0	4.0	7.6	10.6 8.2	9.4	8.6
				Middle	5.5	24.7 24.7	24.7	8.0 7.9	8.0	29.8 29.8	29.8	92.6 92.6	92.6	6.5 6.5	6.5		7.1 7.5	7.3		6.7 6.8	6.8	
				Bottom	10	24.6 24.6	24.6	8.0 8.0	8.0	30.4 30.5	30.5	91.6 91.4	91.5	6.4 6.4	6.4	6.4	11.2 11.9	11.6		9.7 9.4	9.6	
21-Nov-18	Sunny	Calm	17:14	Surface	1	24.6 24.6	24.6	8.0 8.0	8.0	30.6 30.6	30.6	96.2 95.8	96.0	6.7 6.7	6.7	6.7	11.0 12.7	11.9	15.5	27.6 24.6	26.1	25.4
				Middle	5.5	24.6 24.6	24.6	8.0 8.0	8.0	30.7 30.7	30.7	95.2 95.1	95.2	6.7 6.7	6.7		14.6 14.1	14.4		27.0 27.3	27.2	
				Bottom	10	24.6 24.5	24.6	8.0 8.0	8.0	30.7 30.7	30.7	94.9 93.9	94.4	6.6 6.6	6.6	6.6	20.7 19.8	20.3		20.6 25.0	22.8	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at ST2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	12:16	Surface	1	26.1 26.1	26.1	8.0 8.0	8.0	29.4 29.3	29.4	94.7 92.9	93.8	6.5 6.4	6.5	6.5	4.5 4.5	4.5	6.6	9.1 12.8	11.0	13.1
				Middle	4	26.0 26.0	26.0	8.0 8.0	8.0	29.6 29.7	29.7	92.6 92.2	92.4	6.4 6.3	6.4		5.5 5.4	5.5		15.0 10.0	12.5	
				Bottom	7	26.0 26.0	26.0	8.0 8.0	8.0	30.0 30.0	30.0	92.7 93.0	92.9	6.4 6.4	6.4	6.4	9.8 9.7	9.8		16.6 14.8	15.7	
27-Oct-18	Sunny	Moderate	13:53	Surface	1	26.4 26.4	26.4	8.0 8.0	8.0	28.8 28.8	28.8	100.6 100.0	100.3	6.9 6.9	6.9	6.9	2.6 2.5	2.6	3.7	4.4 6.5	5.5	6.0
				Middle	4	26.0 26.0	26.0	8.1 8.0	8.1	29.8 29.8	29.8	99.1 98.8	99.0	6.8 6.8	6.8		3.0 2.9	3.0		6.2 5.1	5.7	
				Bottom	7	25.9 25.9	25.9	8.1 8.1	8.1	30.2 30.2	30.2	97.2 97.0	97.1	6.7 6.6	6.7	6.7	5.4 5.4	5.4		5.9 7.5	6.7	
29-Oct-18	Sunny	Calm	15:10	Surface	1	25.8 25.8	25.8	8.0 8.0	8.0	28.6 28.6	28.6	101.5 100.5	101.0	7.0 7.0	7.0	7.0	3.3 3.4	3.4	3.8	6.8 6.6	6.7	7.2
				Middle	4	25.9 25.9	25.9	8.0 8.0	8.0	29.1 29.0	29.1	102.0 100.7	101.4	7.0 7.0	7.0		2.4 2.5	2.5		7.9 7.8	7.9	
				Bottom	7	25.7 25.7	25.7	8.0 8.1	8.1	30.1 30.3	30.2	100.9 99.8	100.4	6.9 6.9	6.9	6.9	5.2 5.6	5.4		6.1 8.0	7.1	
3-Nov-18	Rainy	Moderate	09:34	Surface	1	23.7 23.7	23.7	8.2 8.2	8.2	30.3 30.3	30.3	98.7 98.5	98.6	7.0 7.0	7.0	6.8	1.4 1.2	1.3	3.9	7.5 8.7	8.1	8.3
				Middle	4	24.1 24.1	24.1	8.2 8.2	8.2	31.2 31.2	31.2	94.4 94.4	94.4	6.6 6.6	6.6		3.4 3.0	3.2		8.5 8.0	8.3	
				Bottom	7	24.1 24.1	24.1	8.2 8.2	8.2	31.3 31.3	31.3	93.1 93.0	93.1	6.5 6.5	6.5	6.5	7.1 7.0	7.1		8.4 8.8	8.6	
5-Nov-18	Cloudy	Moderate	10:15	Surface	1	24.3 24.3	24.3	8.3 8.3	8.3	31.1 31.1	31.1	97.8 96.7	97.3	6.9 6.8	6.9	6.9	3.0 3.2	3.1	3.3	5.6 5.7	5.7	5.5
				Middle	4	24.4 24.4	24.4	8.3 8.3	8.3	31.2 31.2	31.2	95.9 96.4	96.2	6.7 6.8	6.8		2.9 3.0	3.0		6.2 4.2	5.2	
				Bottom	7	24.4 24.4	24.4	8.3 8.3	8.3	31.3 31.3	31.3	93.4 94.6	94.0	6.5 6.6	6.6	6.6	3.7 3.8	3.8		6.1 5.3	5.7	
7-Nov-18	Sunny	Moderate	11:52	Surface	1	25.2 25.1	25.2	8.4 8.3	8.4	29.9 29.9	29.9	105.6 106.1	105.9	7.4 7.4	7.4	7.2	5.5 6.0	5.8	7.1	6.9 7.1	7.0	7.7
				Middle	4	24.8 24.9	24.9	8.3 8.3	8.3	30.3 30.1	30.2	99.2 100.2	99.7	6.9 7.0	7.0		7.1 6.7	6.9		6.7 7.6	7.2	
				Bottom	7	24.7 24.7	24.7	8.3 8.3	8.3	30.8 30.6	30.7	94.3 97.6	96.0	6.6 6.8	6.7	6.7	8.9 8.4	8.7		10.1 7.6	8.9	
9-Nov-18	Sunny	Calm	14:03	Surface	1	25.2 25.2	25.2	8.1 8.1	8.1	29.0 29.1	29.1	107.3 108.3	107.8	7.5 7.6	7.6	7.4	7.2 7.4	7.3	10.6	10.1 8.7	9.4	11.9
				Middle	4	24.8 25.0	24.9	8.1 8.1	8.1	30.1 29.7	29.9	101.3 101.2	101.3	7.1 7.1	7.1		9.4 8.7	9.1		12.1 16.8	14.5	
				Bottom	7	24.7 24.7	24.7	8.1 8.1	8.1	30.6 30.4	30.5	96.3 99.4	97.9	6.7 6.9	6.8	6.8	15.9 15.0	15.5		10.5 12.9	11.7	
12-Nov-18	Cloudy	Calm	15:03	Surface	1	25.3 25.2	25.3	8.1 8.1	8.1	28.4 28.6	28.5	99.4 98.6	99.0	7.0 6.9	7.0	6.9	4.1 4.6	4.4	7.1	7.1 7.9	7.5	8.2
				Middle	4	24.8 25.0	24.9	8.1 8.1	8.1	29.2 29.0	29.1	96.8 97.5	97.2	6.8 6.8	6.8		6.5 5.2	5.9		9.1 8.2	8.7	
				Bottom	7	24.7 24.7	24.7	8.1 8.1	8.1	29.5 29.5	29.5	93.7 94.4	94.1	6.6 6.6	6.6	6.6	12.0 10.2	11.1		8.6 8.3	8.5	
17-Nov-18	Rainy	Rough	08:01	Surface	1	25.1 25.7	25.4	7.8 7.9	7.9	24.6 24.7	24.7	95.1 91.2	93.2	6.9 6.6	6.8	6.7	3.2 3.6	3.4	3.8	8.7 9.3	9.0	9.1
				Middle	4	29.1 30.0	29.6	7.9 7.9	7.9	24.7 24.7	24.7	91.8 91.1	91.5	6.5 6.4	6.5		3.5 3.6	3.6		7.0 8.2	7.6	
				Bottom	7	30.5 30.6	30.6	7.9 8.0	8.0	24.7 24.7	24.7	91.2 90.7	91.0	6.4 6.3	6.4	6.4	4.2 4.3	4.3		10.5 10.8	10.7	
19-Nov-18	Cloudy	Rough	09:49	Surface	1	24.4 24.5	24.5	7.9 7.9	7.9	26.5 26.4	26.5	98.2 93.1	95.7	7.1 6.7	6.9	6.9	2.5 2.7	2.6	4.2	4.4 6.3	5.4	6.4
				Middle	4	24.5 24.5	24.5	7.9 7.9	7.9	27.3 27.5	27.4	94.6 94.2	94.4	6.8 6.7	6.8		3.5 3.6	3.6		8.4 7.0	7.7	
				Bottom	7	24.7 24.7	24.7	7.9 7.9	7.9	29.9 29.9	29.9	90.0 90.0	90.0	6.3 6.3	6.3	6.3	6.6 6.3	6.5		6.1 5.8	6.0	
21-Nov-18	Sunny	Calm	12:17	Surface	1	24.8 24.9	24.9	8.0 8.0	8.0	30.3 30.4	30.4	97.9 97.5	97.7	6.8 6.8	6.8	6.8	4.8 5.1	5.0	12.9	6.6 7.6	7.1	8.7
				Middle	4	24.6 24.6	24.6	8.0 8.0	8.0	30.6 30.6	30.6	96.1 95.7	95.9	6.7 6.7	6.7		8.0 7.9	8.0		10.9 9.4	10.2	
				Bottom	7	24.4 24.4	24.4	8.0 8.0	8.0	30.8 30.8	30.8	94.1 93.7	93.9	6.6 6.6	6.6	6.6	24.5 26.9	25.7		8.3 9.1	8.7	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at ST2 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	07:55	Surface	1	25.9 25.9	25.9	8.0 8.0	8.0	29.2 29.2	29.2	94.5 91.2	92.9	6.5 6.3	6.4	6.4	13.1 14.4	13.8	21.1	8.9 8.3	8.6	8.9
				Middle	4	25.9 25.9	25.9	8.0 8.0	8.0	29.2 29.2	29.2	91.3 90.8	91.1	6.3 6.3	6.3		15.2 15.4	15.3		9.1 8.6	8.9	
				Bottom	7	25.9 25.9	25.9	8.0 8.0	8.0	29.3 29.3	29.3	90.9 90.5	90.7	6.3 6.2	6.3	6.3	32.5 35.6	34.1		9.6 8.7	9.2	
27-Oct-18	Cloudy	Moderate	08:49	Surface	1	26.2 26.2	26.2	8.0 8.0	8.0	27.3 27.3	27.3	92.1 91.3	91.7	6.4 6.3	6.4	6.4	9.4 9.2	9.3	22.6	8.8 7.6	8.2	10.0
				Middle	3.5	26.2 26.2	26.2	8.0 8.0	8.0	27.3 27.3	27.3	91.2 91.0	91.1	6.3 6.3	6.3		21.1 20.0	20.6		9.0 9.9	9.5	
				Bottom	6	26.2 26.2	26.2	8.0 8.0	8.0	27.3 27.3	27.3	90.6 90.3	90.5	6.3 6.3	6.3	6.3	39.1 36.5	37.8		11.2 13.3	12.3	
29-Oct-18	Sunny	Calm	09:47	Surface	1	25.6 25.6	25.6	8.0 8.0	8.0	27.8 28.0	27.9	97.9 93.3	95.6	6.8 6.5	6.7	6.7	5.3 6.2	5.8	9.5	8.0 7.3	7.7	8.1
				Middle	3.5	25.6 25.6	25.6	8.0 8.0	8.0	28.3 28.3	28.3	94.1 92.8	93.5	6.6 6.5	6.6		9.0 9.5	9.3		8.3 9.1	8.7	
				Bottom	6	25.6 25.6	25.6	8.0 8.0	8.0	28.3 28.3	28.3	93.0 92.1	92.6	6.5 6.4	6.5	6.5	14.3 12.2	13.3		7.5 8.1	7.8	
3-Nov-18	Rainy	Moderate	15:38	Surface	1	24.0 24.0	24.0	8.2 8.2	8.2	31.0 31.0	31.0	100.9 100.7	100.8	7.1 7.1	7.1	7.1	3.8 4.1	4.0	4.8	10.9 11.0	11.0	10.8
				Middle	3.5	24.0 24.0	24.0	8.2 8.2	8.2	31.0 31.0	31.0	100.1 100.2	100.2	7.1 7.1	7.1		4.2 4.5	4.4		11.6 10.7	11.2	
				Bottom	6	24.0 24.0	24.0	8.2 8.2	8.2	31.0 31.0	31.0	99.4 99.6	99.5	7.0 7.0	7.0	7.0	5.9 6.3	6.1		10.6 9.5	10.1	
5-Nov-18	Sunny	Calm	16:54	Surface	1	24.5 24.5	24.5	8.4 8.4	8.4	30.4 30.4	30.4	108.5 110.9	109.7	7.6 7.8	7.7	7.6	5.4 5.1	5.3	12.2	11.6 10.7	11.2	12.0
				Middle	3.5	24.5 24.5	24.5	8.4 8.4	8.4	30.7 30.6	30.7	104.7 105.6	105.2	7.3 7.4	7.4		6.8 6.4	6.6		12.6 14.3	13.5	
				Bottom	6	24.4 24.4	24.4	8.4 8.4	8.4	30.9 30.8	30.9	102.7 104.3	103.5	7.2 7.3	7.3	7.3	23.8 25.8	24.8		11.1 11.5	11.3	
7-Nov-18	Sunny	Moderate	17:57	Surface	1	24.9 25.1	25.0	8.4 8.4	8.4	29.7 29.5	29.6	110.5 114.8	112.7	7.7 8.0	7.9	7.7	5.4 5.3	5.4	14.0	6.1 5.1	5.6	6.0
				Middle	4	25.1 25.1	25.1	8.4 8.4	8.4	30.3 30.3	30.3	107.0 107.6	107.3	7.4 7.5	7.5		12.1 12.1	12.1		6.6 6.3	6.5	
				Bottom	7	25.1 25.1	25.1	8.4 8.3	8.4	30.3 30.3	30.3	105.7 105.7	105.7	7.3 7.4	7.4	7.4	25.4 23.7	24.6		5.5 6.4	6.0	
9-Nov-18	Sunny	Calm	18:29	Surface	1	24.8 24.8	24.8	8.1 8.1	8.1	29.1 29.1	29.1	103.2 104.1	103.7	7.3 7.3	7.3	7.2	7.6 7.7	7.7	13.7	16.4 16.4	16.4	17.0
				Middle	4	24.8 24.8	24.8	8.1 8.1	8.1	29.6 29.6	29.6	100.3 100.0	100.2	7.0 7.0	7.0		9.4 9.3	9.4		19.9 13.7	16.8	
				Bottom	7	24.8 24.8	24.8	8.1 8.1	8.1	30.2 30.2	30.2	96.9 96.6	96.8	6.8 6.8	6.8	6.8	24.2 23.8	24.0		16.9 18.4	17.7	
12-Nov-18	Cloudy	Calm	10:19	Surface	1	24.9 24.9	24.9	8.1 8.1	8.1	28.0 28.0	28.0	99.5 98.4	99.0	7.0 7.0	7.0	6.9	7.0 6.9	7.0	17.4	15.4 17.9	16.7	14.2
				Middle	4	24.8 24.8	24.8	8.1 8.1	8.1	28.7 28.4	28.6	96.0 96.2	96.1	6.8 6.8	6.8		14.2 14.8	14.5		15.2 13.9	14.6	
				Bottom	7	24.8 24.8	24.8	8.1 8.1	8.1	28.9 28.9	28.9	95.1 95.1	95.1	6.7 6.7	6.7	6.7	31.2 30.2	30.7		10.0 12.8	11.4	
14-Nov-18	Cloudy	Rough	15:59	Surface	1	24.9 24.9	24.9	8.0 8.0	8.0	28.4 28.7	28.6	96.6 95.8	96.2	6.8 6.7	6.8	6.7	3.6 3.8	3.7	6.0	12.1 9.0	10.6	11.9
				Middle	3.5	24.7 24.7	24.7	8.0 8.0	8.0	30.0 30.0	30.0	92.6 92.7	92.7	6.5 6.5	6.5		6.1 6.0	6.1		14.9 14.7	14.8	
				Bottom	6	24.7 24.7	24.7	8.0 8.0	8.0	30.3 30.3	30.3	91.1 90.9	91.0	6.4 6.4	6.4	6.4	8.1 8.3	8.2		12.5 8.2	10.4	
17-Nov-18	Cloudy	Moderate	14:41	Surface	1	25.9 25.9	25.9	7.9 7.9	7.9	24.7 24.7	24.7	94.6 91.4	93.0	6.8 6.6	6.7	6.6	7.1 6.2	6.7	7.2	7.4 8.5	8.0	8.2
				Middle	4	27.0 26.9	27.0	7.9 7.9	7.9	24.7 24.7	24.7	91.4 90.9	91.2	6.5 6.5	6.5		3.3 3.5	3.4		9.0 8.2	8.6	
				Bottom	7	30.1 30.1	30.1	7.9 7.9	7.9	24.7 24.7	24.7	89.6 89.8	89.7	6.3 6.3	6.3	6.3	12.3 10.5	11.4		7.6 8.3	8.0	
19-Nov-18	Cloudy	Rough	15:53	Surface	1	24.9 24.9	24.9	7.9 7.9	7.9	26.4 26.5	26.5	99.3 95.6	97.5	7.1 6.8	7.0	6.9	3.5 3.3	3.4	5.3	7.3 8.6	8.0	7.3
				Middle	3.5	24.9 24.9	24.9	7.9 7.9	7.9	27.0 26.9	27.0	96.0 95.4	95.7	6.8 6.8	6.8		2.9 2.5	2.7		7.5 9.1	8.3	
				Bottom	6	24.7 24.7	24.7	7.9 7.9	7.9	30.1 30.0	30.1	90.1 90.0	90.1	6.3 6.3	6.3	6.3	10.4 9.3	9.9		5.5 5.5	5.5	
21-Nov-18	Sunny	Calm	17:01	Surface	1	24.8 24.8	24.8	8.0 8.0	8.0	29.5 29.5	29.5	95.2 94.8	95.0	6.7 6.6	6.7	6.7	5.5 5.5	5.5	8.3	14.5 15.5	15.0	15.1
				Middle	3.5	24.8 24.8	24.8	8.0 8.0	8.0	29.6 29.7	29.7	94.4 94.2	94.3	6.6 6.6	6.6		6.1 6.3	6.2		15.5 16.8	16.2	
				Bottom	6	24.7 24.7	24.7	8.0 8.0	8.0	30.0 30.0	30.0	93.8 93.7	93.8	6.6 6.6	6.6	6.6	13.1 13.1	13.1		13.4 14.7	14.1	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at ST3 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	12:31	Surface	1	26.3 26.1	26.2	8.2 8.2	8.2	28.9 29.3	29.1	100.4 101.0	100.7	6.9 6.9	6.9	6.9	1.5 1.8	1.7	7.6	9.4 4.4	6.9	7.3
				Middle	6.5	25.9 26.0	26.0	8.2 8.2	8.2	30.4 30.3	30.4	99.1 99.6	99.4	6.8 6.8	6.8		10.0 8.8	9.4		11.7 8.1	9.9	
				Bottom	12	26.0 26.0	26.0	8.2 8.2	8.2	30.4 30.4	30.4	98.6 99.2	98.9	6.7 6.8	6.8	6.8	11.7 11.9	11.8		4.3 5.7	5.0	
27-Oct-18	Sunny	Moderate	14:02	Surface	1	26.2 26.2	26.2	8.3 8.3	8.3	28.7 28.7	28.7	98.0 97.5	97.8	6.7 6.7	6.7	6.6	1.8 1.9	1.9	3.7	6.4 4.8	5.6	5.7
				Middle	7	25.9 25.9	25.9	8.3 8.3	8.3	29.5 29.5	29.5	94.3 94.5	94.4	6.5 6.5	6.5		2.9 3.0	3.0		5.7 6.9	6.3	
				Bottom	13	25.9 25.9	25.9	8.3 8.3	8.3	30.3 30.3	30.3	93.7 93.7	93.7	6.4 6.4	6.4	6.4	6.3 5.9	6.1		5.2 5.1	5.2	
29-Oct-18	Sunny	Calm	15:12	Surface	1	25.8 25.8	25.8	8.3 8.3	8.3	28.8 28.8	28.8	100.9 100.5	100.7	7.0 7.0	7.0	7.0	1.6 1.5	1.6	3.0	19.5 22.4	21.0	17.6
				Middle	6.5	25.6 25.6	25.6	8.3 8.3	8.3	29.3 29.1	29.2	98.5 99.1	98.8	6.8 6.9	6.9		2.7 2.3	2.5		22.5 18.5	20.5	
				Bottom	12	25.6 25.6	25.6	8.3 8.3	8.3	30.4 30.4	30.4	97.2 97.1	97.2	6.7 6.7	6.7	6.7	4.8 5.1	5.0		11.1 11.3	11.2	
3-Nov-18	Rainy	Moderate	09:37	Surface	1	24.3 24.4	24.4	8.1 8.1	8.1	31.7 31.7	31.7	99.4 97.5	98.5	6.9 6.8	6.9	6.9	6.3 6.3	6.3	11.3	10.3 9.9	10.1	9.9
				Middle	6.5	24.4 24.4	24.4	8.1 8.1	8.1	31.7 31.7	31.7	97.3 97.0	97.2	6.8 6.8	6.8		9.0 8.1	8.6		8.2 8.4	8.3	
				Bottom	12	24.5 24.5	24.5	8.1 8.1	8.1	31.7 31.7	31.7	96.8 96.7	96.8	6.7 6.7	6.7	6.7	19.1 18.8	19.0		9.1 13.3	11.2	
5-Nov-18	Cloudy	Moderate	10:56	Surface	1	24.7 24.8	24.8	8.1 8.1	8.1	31.9 31.9	31.9	97.7 97.7	97.7	6.8 6.8	6.8	6.8	5.9 5.6	5.8	12.6	12.3 12.5	12.4	10.0
				Middle	7	24.7 24.7	24.7	8.1 8.1	8.1	31.9 31.9	31.9	96.5 96.2	96.4	6.7 6.7	6.7		7.4 7.1	7.3		11.1 7.2	9.2	
				Bottom	13	24.7 24.7	24.7	8.1 8.1	8.1	31.9 31.9	31.9	95.5 95.5	95.5	6.6 6.6	6.6	6.6	23.5 25.6	24.6		8.6 8.1	8.4	
7-Nov-18	Sunny	Moderate	12:07	Surface	1	24.8 24.8	24.8	8.1 8.1	8.1	31.0 31.0	31.0	102.9 102.0	102.5	7.2 7.1	7.2	7.1	4.8 4.6	4.7	11.3	9.9 7.8	8.9	8.1
				Middle	6.5	24.8 24.8	24.8	8.1 8.1	8.1	31.2 31.1	31.2	99.2 99.5	99.4	6.9 6.9	6.9		8.8 8.6	8.7		10.1 10.3	10.2	
				Bottom	12	24.8 24.8	24.8	8.1 8.1	8.1	31.3 31.3	31.3	97.1 97.1	97.1	6.7 6.7	6.7	6.7	20.3 20.6	20.5		5.3 4.8	5.1	
9-Nov-18	Sunny	Calm	14:10	Surface	1	24.7 24.7	24.7	8.0 8.0	8.0	30.3 30.3	30.3	97.8 97.8	97.8	6.8 6.8	6.8	6.8	6.8 6.9	6.9	16.4	6.3 5.8	6.1	7.9
				Middle	7	24.7 24.7	24.7	8.0 8.0	8.0	30.5 30.5	30.5	96.4 96.2	96.3	6.7 6.7	6.7		8.6 8.0	8.3		6.6 8.1	7.4	
				Bottom	13	24.7 24.8	24.8	8.0 8.0	8.0	30.8 30.7	30.8	95.1 95.3	95.2	6.6 6.6	6.6	6.6	35.1 32.6	33.9		8.7 11.5	10.1	
12-Nov-18	Cloudy	Calm	15:09	Surface	1	24.8 24.8	24.8	8.1 8.1	8.1	27.3 27.8	27.6	94.6 93.9	94.3	6.7 6.7	6.7	6.6	5.2 5.4	5.3	8.4	17.1 10.0	13.6	14.4
				Middle	7	24.7 24.7	24.7	8.1 8.1	8.1	30.4 30.4	30.4	92.1 91.9	92.0	6.4 6.4	6.4		9.1 8.7	8.9		12.5 15.6	14.1	
				Bottom	13	24.7 24.7	24.7	8.1 8.1	8.1	30.9 31.0	31.0	91.1 91.0	91.1	6.4 6.3	6.4	6.4	10.6 11.3	11.0		12.9 18.3	15.6	
17-Nov-18	Rainy	Rough	08:17	Surface	1	24.4 24.4	24.4	7.9 7.9	7.9	26.9 27.5	27.2	91.2 90.8	91.0	6.5 6.5	6.5	6.5	3.1 2.9	3.0	4.9	7.8 9.7	8.8	8.0
				Middle	7	24.5 24.5	24.5	8.0 8.0	8.0	29.0 29.2	29.1	90.2 90.2	90.2	6.4 6.4	6.4		2.9 2.8	2.9		8.1 6.4	7.3	
				Bottom	13	24.6 24.7	24.7	8.0 8.0	8.0	30.3 30.9	30.6	88.9 89.0	89.0	6.2 6.2	6.2	6.2	8.8 8.6	8.7		9.9 6.1	8.0	
19-Nov-18	Cloudy	Rough	10:11	Surface	1	24.5 24.5	24.5	7.9 7.9	7.9	26.3 26.2	26.3	91.2 90.7	91.0	6.6 6.5	6.6	6.5	3.3 3.3	3.3	5.0	6.0 5.6	5.8	5.5
				Middle	7	24.4 24.4	24.4	8.0 8.0	8.0	31.4 31.5	31.5	89.6 89.3	89.5	6.3 6.2	6.3		4.8 4.8	4.8		5.2 4.4	4.8	
				Bottom	13	24.4 24.4	24.4	8.0 8.0	8.0	31.5 31.5	31.5	88.7 88.8	88.8	6.2 6.2	6.2	6.2	6.9 6.6	6.8		5.8 5.7	5.8	
21-Nov-18	Sunny	Calm	12:06	Surface	1	24.6 24.6	24.6	8.0 8.0	8.0	30.8 30.7	30.8	93.6 93.7	93.7	6.5 6.6	6.6	6.6	3.5 3.2	3.4	7.2	5.6 4.8	5.2	7.0
				Middle	6.5	24.6 24.6	24.6	8.0 8.0	8.0	30.9 30.9	30.9	92.7 92.7	92.7	6.5 6.5	6.5		4.9 4.7	4.8		9.2 6.7	8.0	
				Bottom	12	24.4 24.5	24.5	8.0 8.0	8.0	31.0 31.0	31.0	91.4 90.1	90.8	6.4 6.3	6.4	6.4	14.0 12.7	13.4		6.2 9.3	7.8	

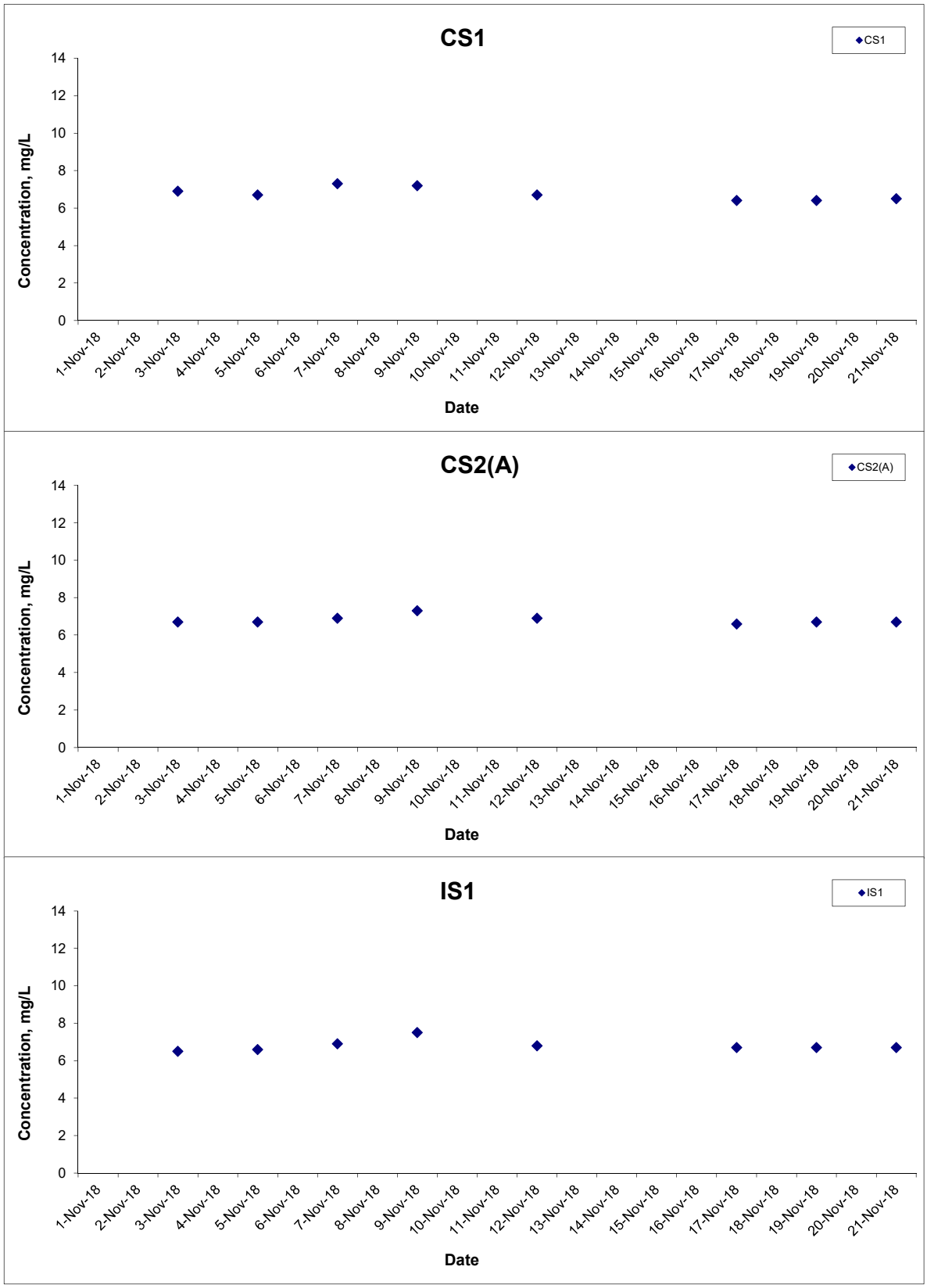
Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at ST3 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
25-Oct-18	Sunny	Moderate	08:06	Surface	1	25.8 25.9	25.9	8.2 8.3	8.3	28.4 28.1	28.3	93.3 92.7	93.0	6.5 6.4	6.5	6.6	5.9 4.9	5.4	23.2	8.3 8.0	8.2	8.3
				Middle	6.5	26.0 25.9	26.0	8.3 8.2	8.3	30.8 30.9	30.9	98.3 97.7	98.0	6.7 6.7	6.7		14.3 12.4	13.4		9.3 7.2	8.3	
				Bottom	12	26.0 26.0	26.0	8.3 8.3	8.3	30.9 30.9	30.9	98.1 97.8	98.0	6.7 6.7	6.7	6.7	47.9 53.6	50.8		7.9 8.6	8.3	
27-Oct-18	Cloudy	Moderate	09:11	Surface	1	25.9 25.9	25.9	8.3 8.3	8.3	28.9 28.9	28.9	94.3 94.2	94.3	6.5 6.5	6.5	6.5	3.7 3.6	3.7	11.2	8.2 7.4	7.8	7.8
				Middle	7	25.8 25.8	25.8	8.3 8.3	8.3	30.1 29.9	30.0	94.3 94.2	94.3	6.5 6.5	6.5		12.3 12.1	12.2		6.3 7.9	7.1	
				Bottom	13	25.8 25.8	25.8	8.3 8.3	8.3	30.8 30.8	30.8	94.6 94.5	94.6	6.5 6.5	6.5	6.5	17.7 17.6	17.7		8.5 8.7	8.6	
29-Oct-18	Sunny	Calm	10:29	Surface	1	25.5 25.6	25.6	8.3 8.3	8.3	29.1 29.1	29.1	97.7 96.7	97.2	6.8 6.7	6.8	6.8	4.0 3.9	4.0	21.8	7.2 7.1	7.2	8.4
				Middle	6.5	25.6 25.6	25.6	8.3 8.3	8.3	29.4 29.4	29.4	96.4 96.2	96.3	6.7 6.7	6.7		6.5 5.9	6.2		9.7 9.0	9.4	
				Bottom	12	25.6 25.6	25.6	8.3 8.3	8.3	30.7 30.7	30.7	96.6 96.6	96.6	6.6 6.6	6.6	6.6	54.9 55.2	55.1		8.1 9.3	8.7	
3-Nov-18	Rainy	Moderate	15:11	Surface	1	24.2 24.2	24.2	8.1 8.1	8.1	31.7 31.6	31.7	96.5 95.1	95.8	6.8 6.7	6.8	6.7	12.9 11.1	12.0	16.6	11.3 11.0	11.2	11.0
				Middle	6.5	24.3 24.3	24.3	8.1 8.1	8.1	31.7 31.6	31.7	95.0 94.9	95.0	6.6 6.6	6.6		13.2 14.3	13.8		11.9 10.1	11.0	
				Bottom	12	24.3 24.3	24.3	8.1 8.1	8.1	31.6 31.6	31.6	94.4 94.4	94.4	6.6 6.6	6.6	6.6	22.8 25.0	23.9		11.3 10.4	10.9	
5-Nov-18	Sunny	Calm	17:04	Surface	1	24.8 24.8	24.8	8.1 8.1	8.1	31.8 31.8	31.8	97.2 97.1	97.2	6.7 6.7	6.7	6.7	9.3 10.8	10.1	24.5	11.5 13.1	12.3	12.7
				Middle	7	24.7 24.7	24.7	8.1 8.1	8.1	31.8 31.8	31.8	96.5 96.5	96.5	6.7 6.7	6.7		22.3 25.0	23.7		12.9 12.5	12.7	
				Bottom	13	24.7 24.7	24.7	8.1 8.1	8.1	31.7 31.7	31.7	96.0 95.8	95.9	6.7 6.6	6.7	6.7	38.1 41.1	39.6		13.8 12.3	13.1	
7-Nov-18	Sunny	Moderate	17:37	Surface	1	25.5 25.5	25.5	8.2 8.2	8.2	29.2 29.0	29.1	120.3 119.9	120.1	8.4 8.3	8.4	7.9	4.4 4.3	4.4	8.5	13.6 9.9	11.8	7.8
				Middle	6.5	25.1 25.1	25.1	8.1 8.1	8.1	30.7 30.7	30.7	105.8 106.0	105.9	7.3 7.3	7.3		7.8 7.3	7.6		7.8 6.8	7.3	
				Bottom	12	25.0 25.0	25.0	8.1 8.1	8.1	30.9 31.0	31.0	102.8 102.3	102.6	7.1 7.1	7.1	7.1	13.4 13.6	13.5		4.2 4.3	4.3	
9-Nov-18	Sunny	Calm	18:15	Surface	1	24.9 24.9	24.9	8.0 8.0	8.0	30.0 30.0	30.0	101.0 101.2	101.1	7.1 7.1	7.1	6.9	6.8 6.5	6.7	11.3	12.1 14.7	13.4	13.1
				Middle	7	24.7 24.7	24.7	8.0 8.0	8.0	30.7 30.7	30.7	95.5 95.4	95.5	6.7 6.7	6.7		10.9 10.8	10.9		10.8 11.4	11.1	
				Bottom	13	24.7 24.7	24.7	8.0 8.0	8.0	31.0 31.1	31.1	93.9 94.1	94.0	6.5 6.5	6.5	6.5	16.6 16.2	16.4		15.9 13.9	14.9	
12-Nov-18	Cloudy	Calm	10:46	Surface	1	24.9 24.9	24.9	8.1 8.1	8.1	25.3 25.3	25.3	94.4 93.9	94.2	6.8 6.7	6.8	6.7	4.9 4.9	4.9	7.7	10.1 12.6	11.4	11.8
				Middle	7	24.7 24.7	24.7	8.1 8.1	8.1	27.3 27.0	27.2	92.6 92.6	92.6	6.6 6.6	6.6		7.2 6.9	7.1		10.1 9.3	9.7	
				Bottom	13	24.7 24.7	24.7	8.1 8.1	8.1	28.1 28.0	28.1	92.2 92.1	92.2	6.5 6.5	6.5	6.5	11.3 10.8	11.1		13.2 15.3	14.3	
14-Nov-18	Cloudy	Rough	16:45	Surface	1	24.7 24.6	24.7	8.3 8.3	8.3	29.2 29.1	29.2	91.6 91.6	91.6	6.5 6.5	6.5	6.5	3.9 4.0	4.0	5.3	9.1 8.5	8.8	10.5
				Middle	6	24.7 24.7	24.7	8.3 8.3	8.3	30.5 30.4	30.5	90.9 91.0	91.0	6.4 6.4	6.4		4.6 4.6	4.6		6.5 11.0	8.8	
				Bottom	11	24.7 24.7	24.7	8.3 8.3	8.3	30.9 30.8	30.9	89.5 90.2	89.9	6.2 6.3	6.3	6.3	7.1 7.2	7.2		16.1 11.9	14.0	
17-Nov-18	Cloudy	Moderate	15:00	Surface	1	24.5 24.5	24.5	7.9 7.9	7.9	24.8 24.8	24.8	88.9 88.6	88.8	6.4 6.4	6.4	6.4	3.8 3.9	3.9	4.2	8.8 9.2	9.0	8.7
				Middle	6.5	24.5 24.5	24.5	8.0 8.0	8.0	29.2 29.5	29.4	89.7 89.7	89.7	6.3 6.3	6.3		3.8 3.8	3.8		8.4 9.3	8.9	
				Bottom	12	24.4 24.5	24.5	8.0 8.0	8.0	29.9 29.9	29.9	89.5 89.4	89.5	6.3 6.3	6.3	6.3	4.9 5.1	5.0		8.4 8.0	8.2	
19-Nov-18	Cloudy	Rough	15:52	Surface	1	24.8 24.9	24.9	7.9 7.9	7.9	26.7 26.6	26.7	96.7 96.4	96.6	6.9 6.9	6.9	6.7	2.5 2.4	2.5	2.9	6.1 4.7	5.4	5.7
				Middle	6.5	24.6 24.6	24.6	8.0 8.0	8.0	29.3 29.4	29.4	92.4 92.2	92.3	6.5 6.5	6.5		2.7 2.8	2.8		5.4 6.6	6.0	
				Bottom	12	24.5 24.6	24.6	8.0 8.0	8.0	30.3 30.1	30.2	91.1 91.3	91.2	6.4 6.4	6.4	6.4	3.3 3.2	3.3		5.6 5.5	5.6	
21-Nov-18	Sunny	Calm	16:06	Surface	1	25.0 25.0	25.0	7.9 7.9	7.9	30.4 30.3	30.4	94.8 94.4	94.6	6.6 6.6	6.6	6.6	6.0 5.9	6.0	6.6	7.3 6.2	6.8	6.7
				Middle	6.5	24.9 24.9	24.9	7.9 7.9	7.9	30.6 30.6	30.6	94.0 94.0	94.0	6.5 6.5	6.5		6.2 6.3	6.3		7.6 5.2	6.4	
				Bottom	12	24.8 24.7	24.8	7.9 7.9	7.9	30.9 31.0	31.0	92.6 92.2	92.4	6.5 6.4	6.5	6.5	7.4 7.4	7.4		4.1 9.4	6.8	

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



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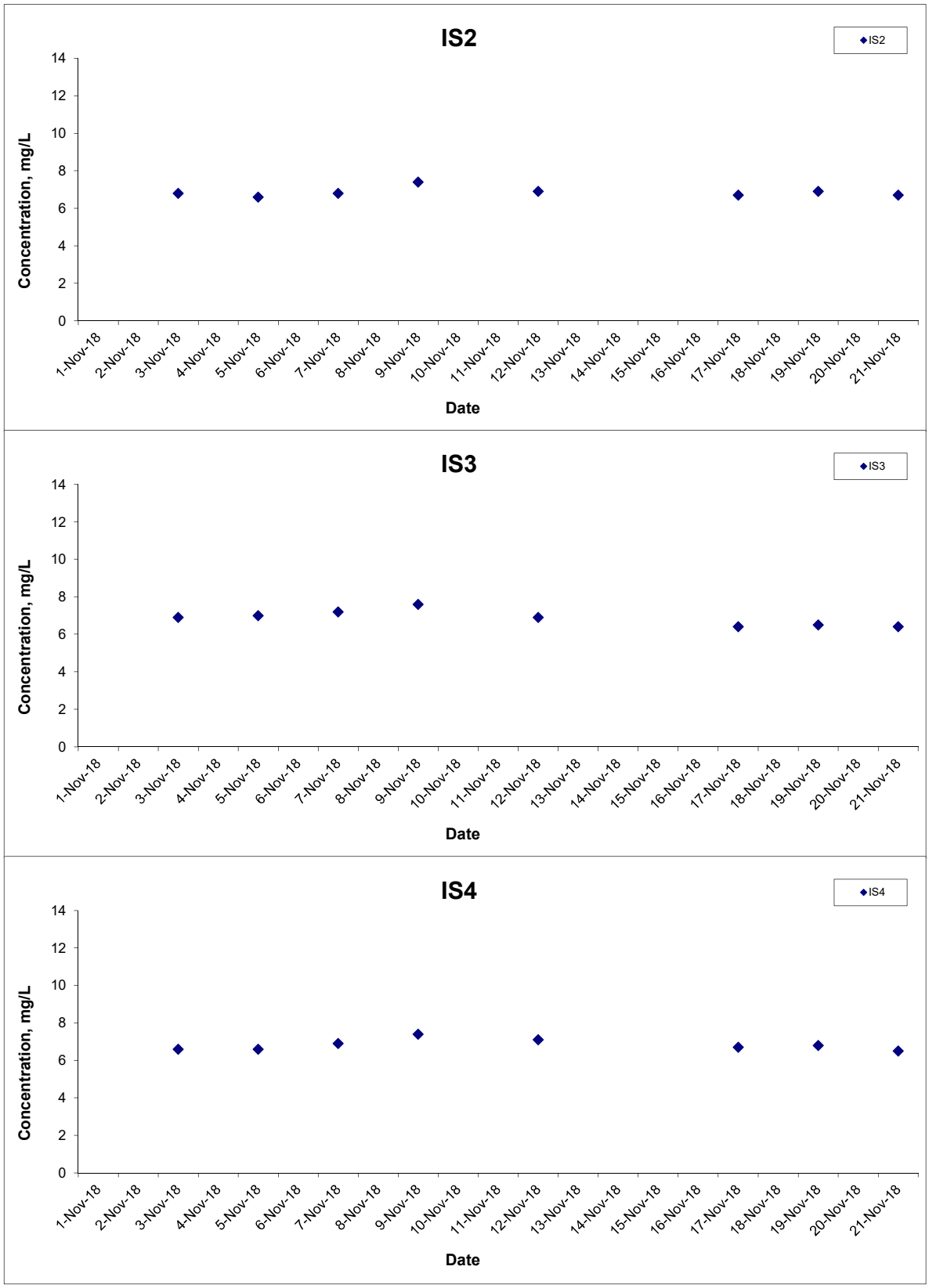
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA12014	CINOTECH
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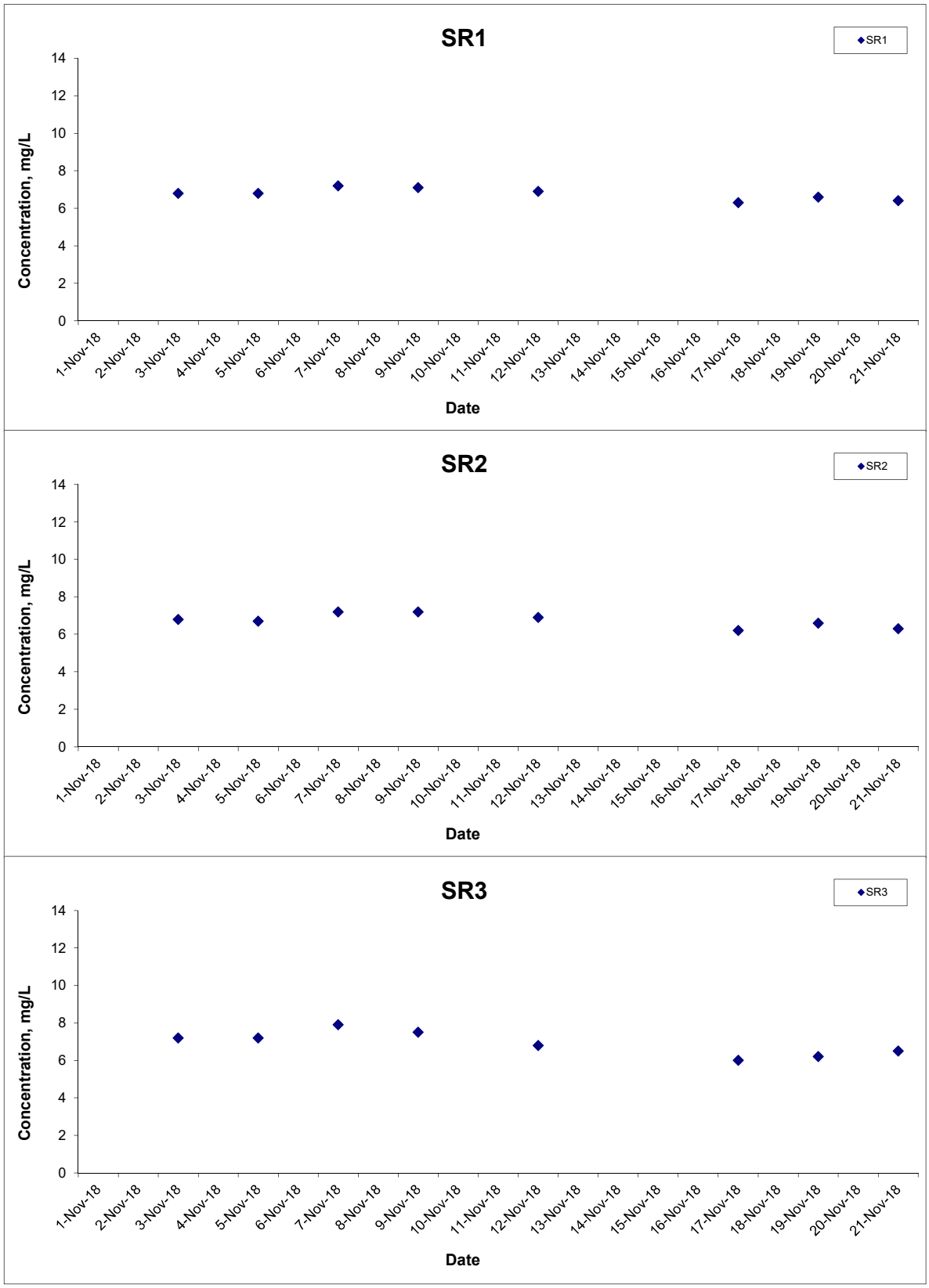
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



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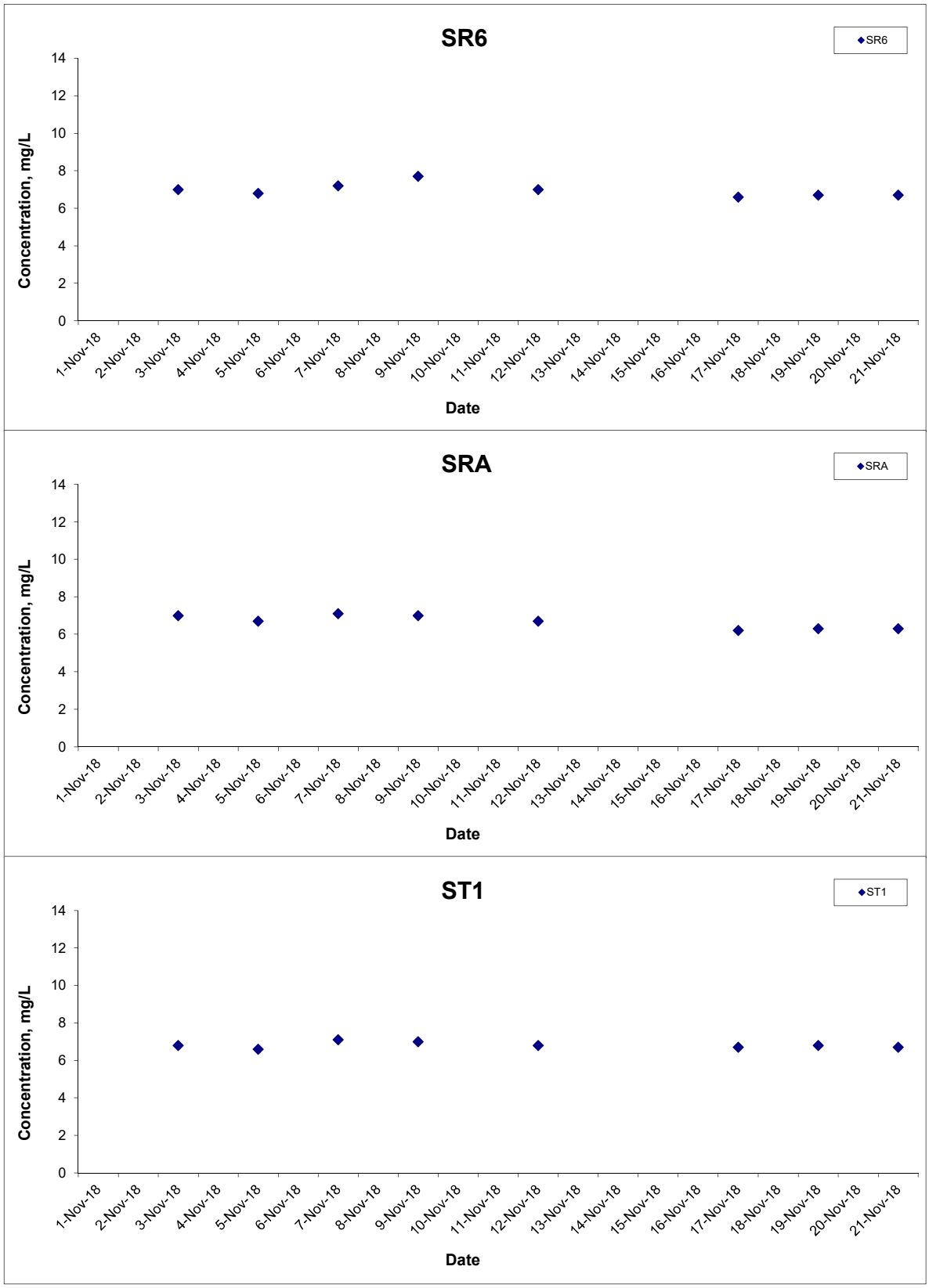
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



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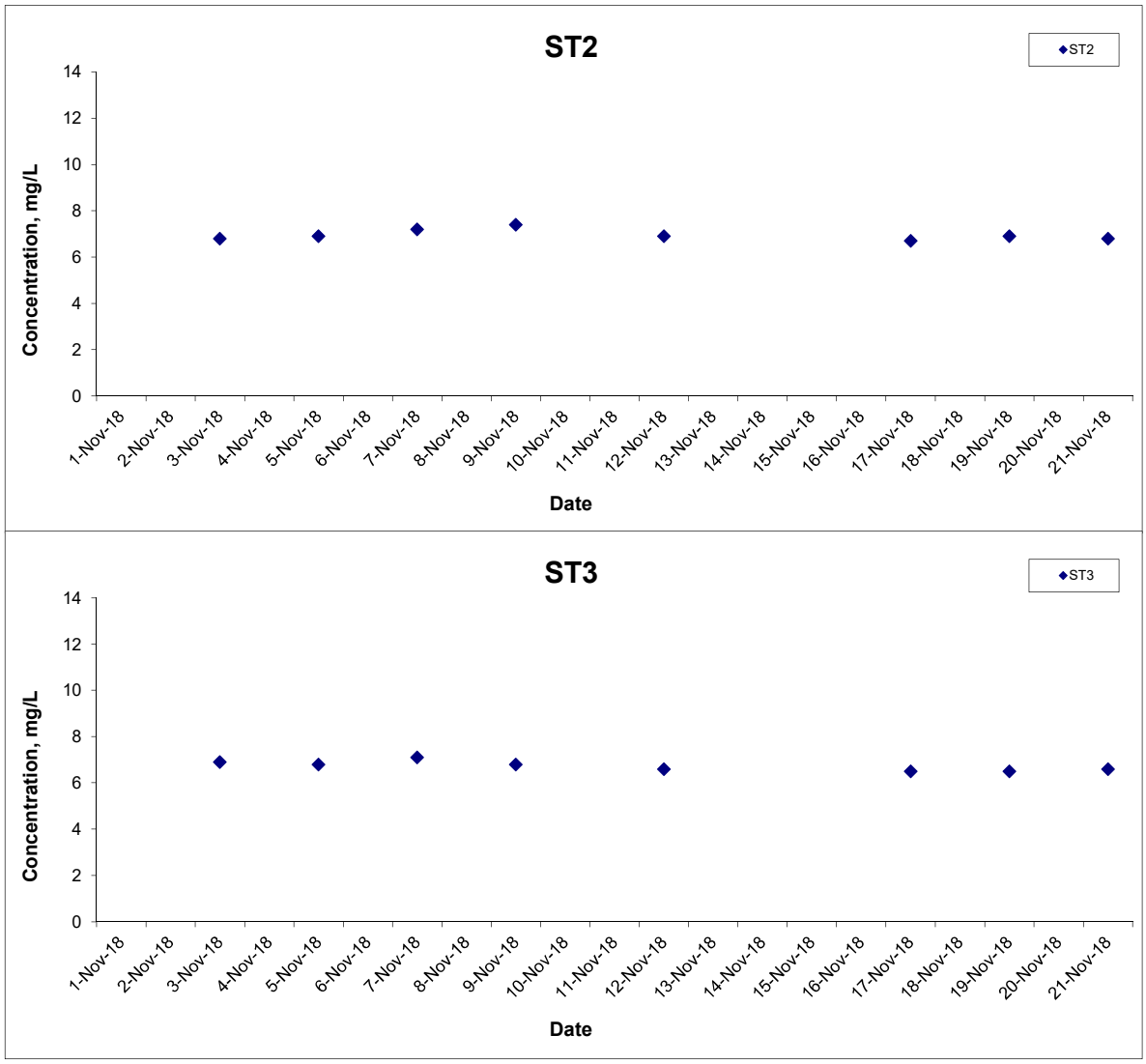
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



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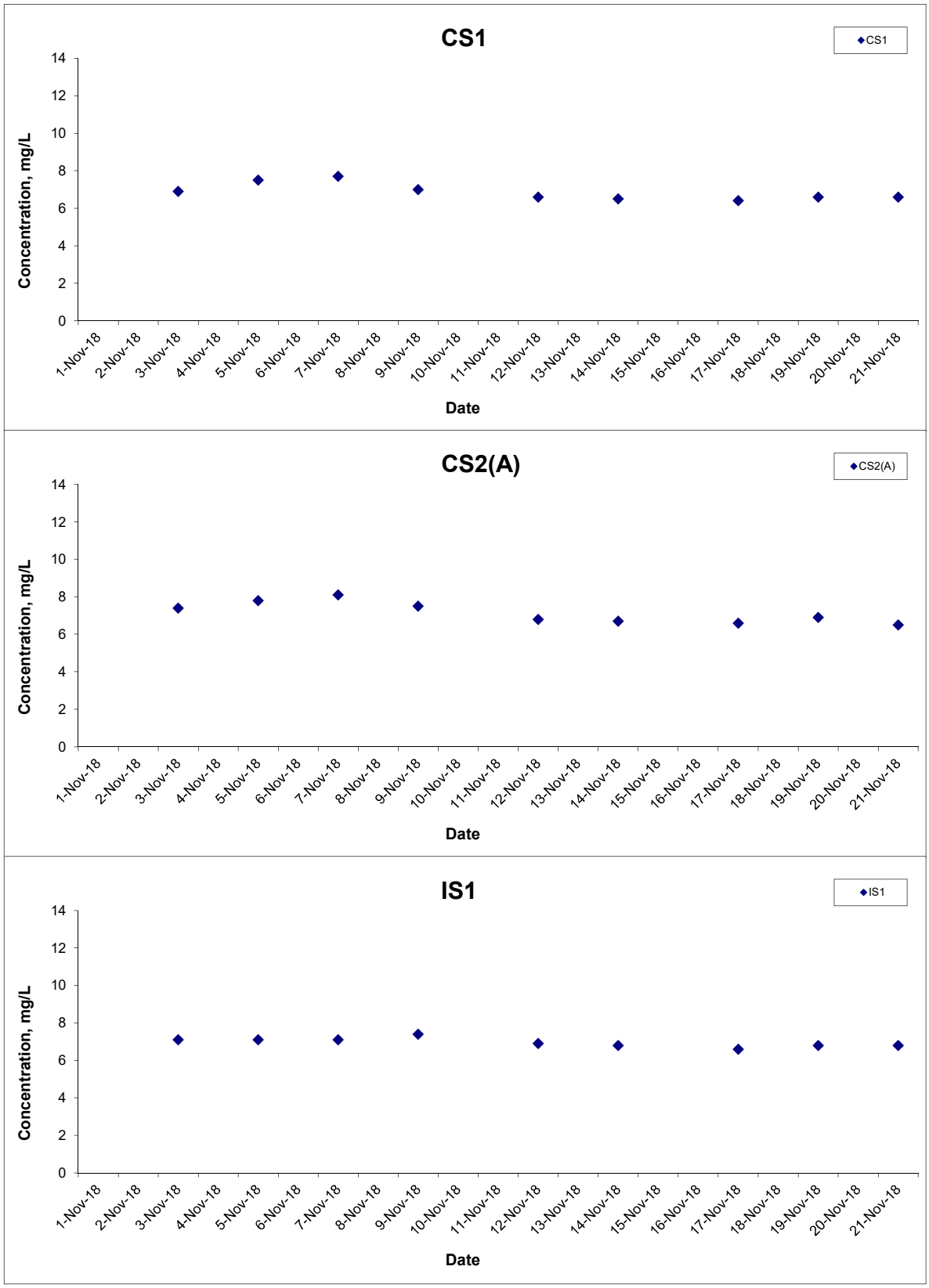
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
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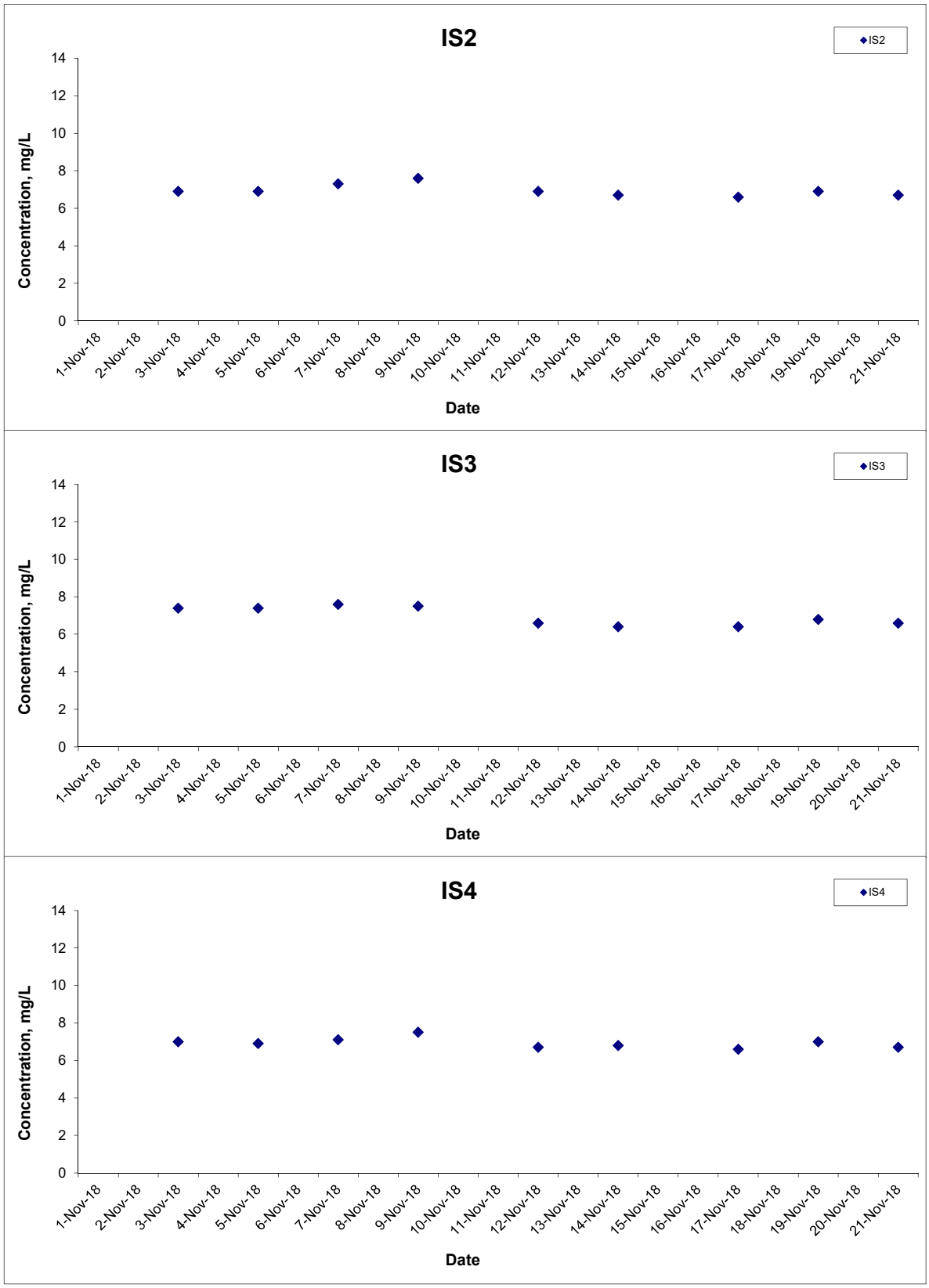
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



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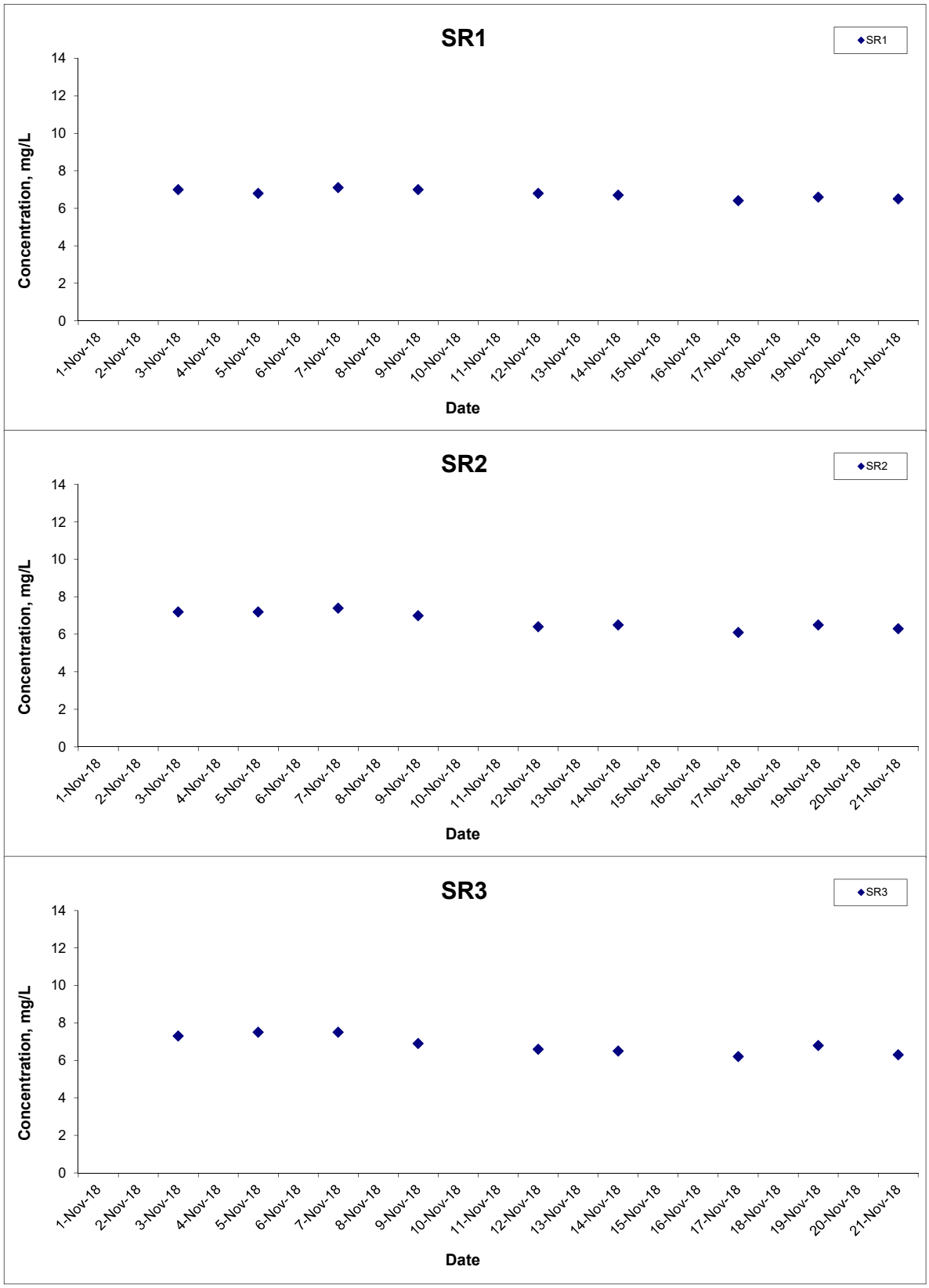
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



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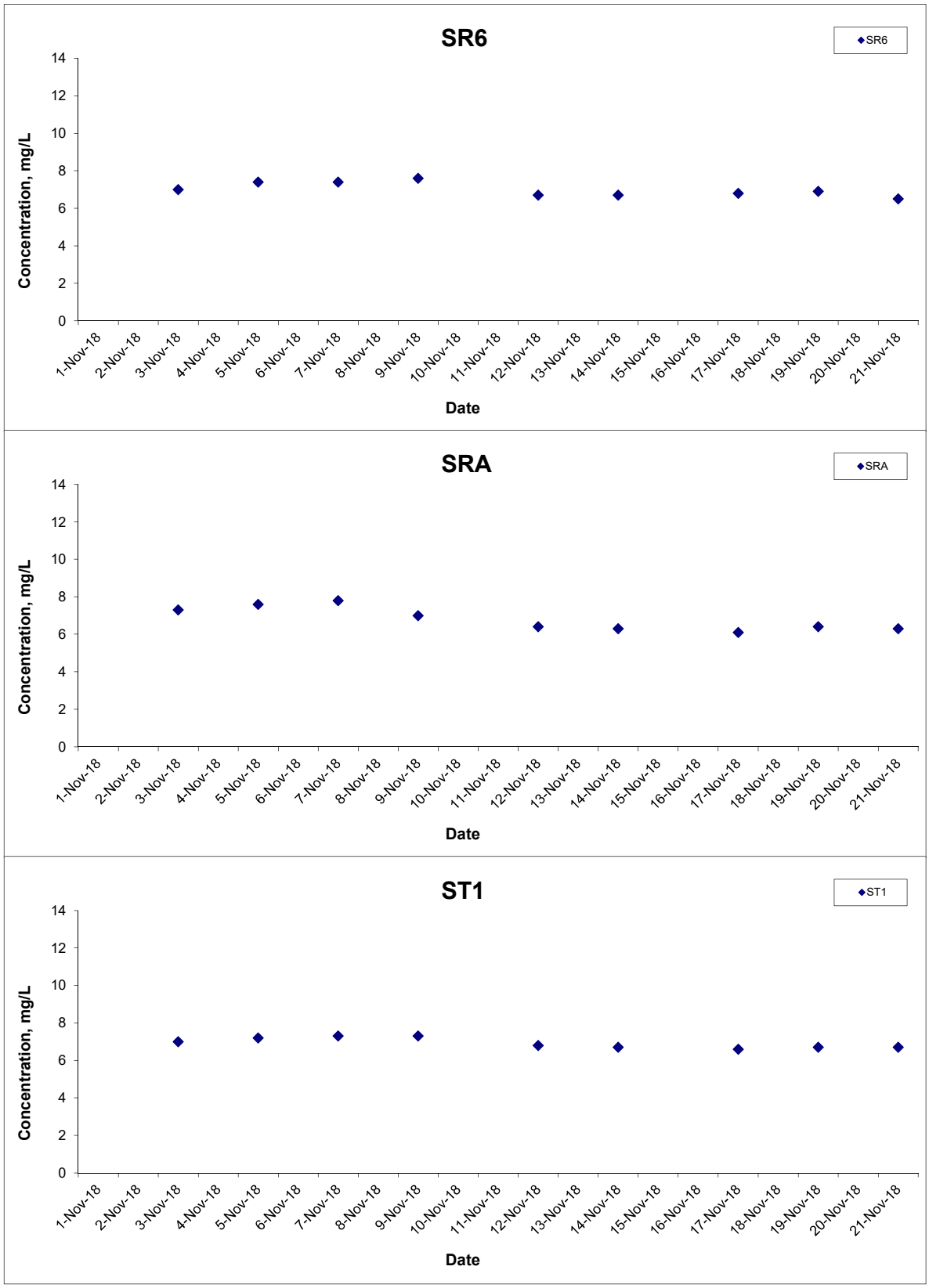
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



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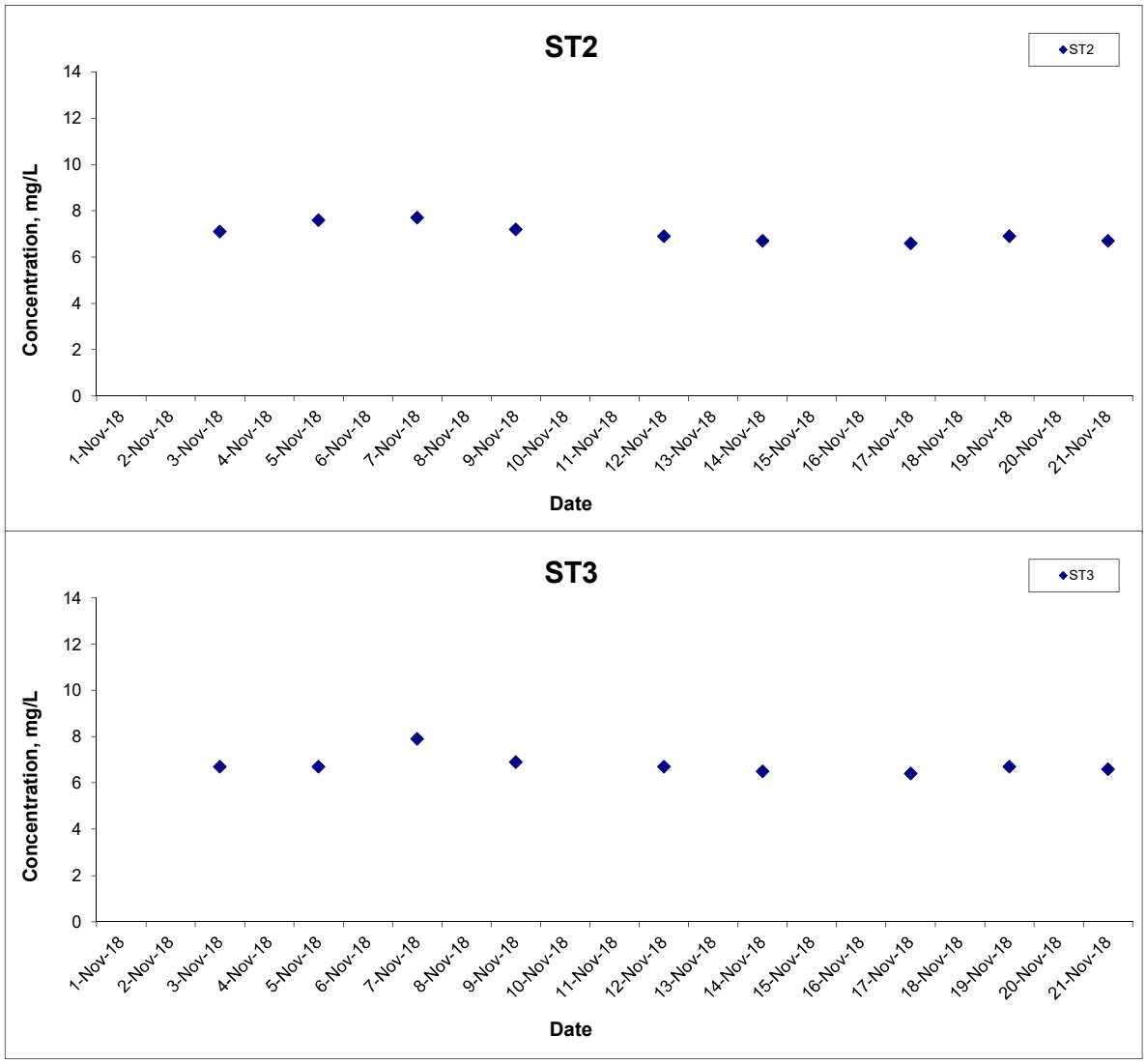
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



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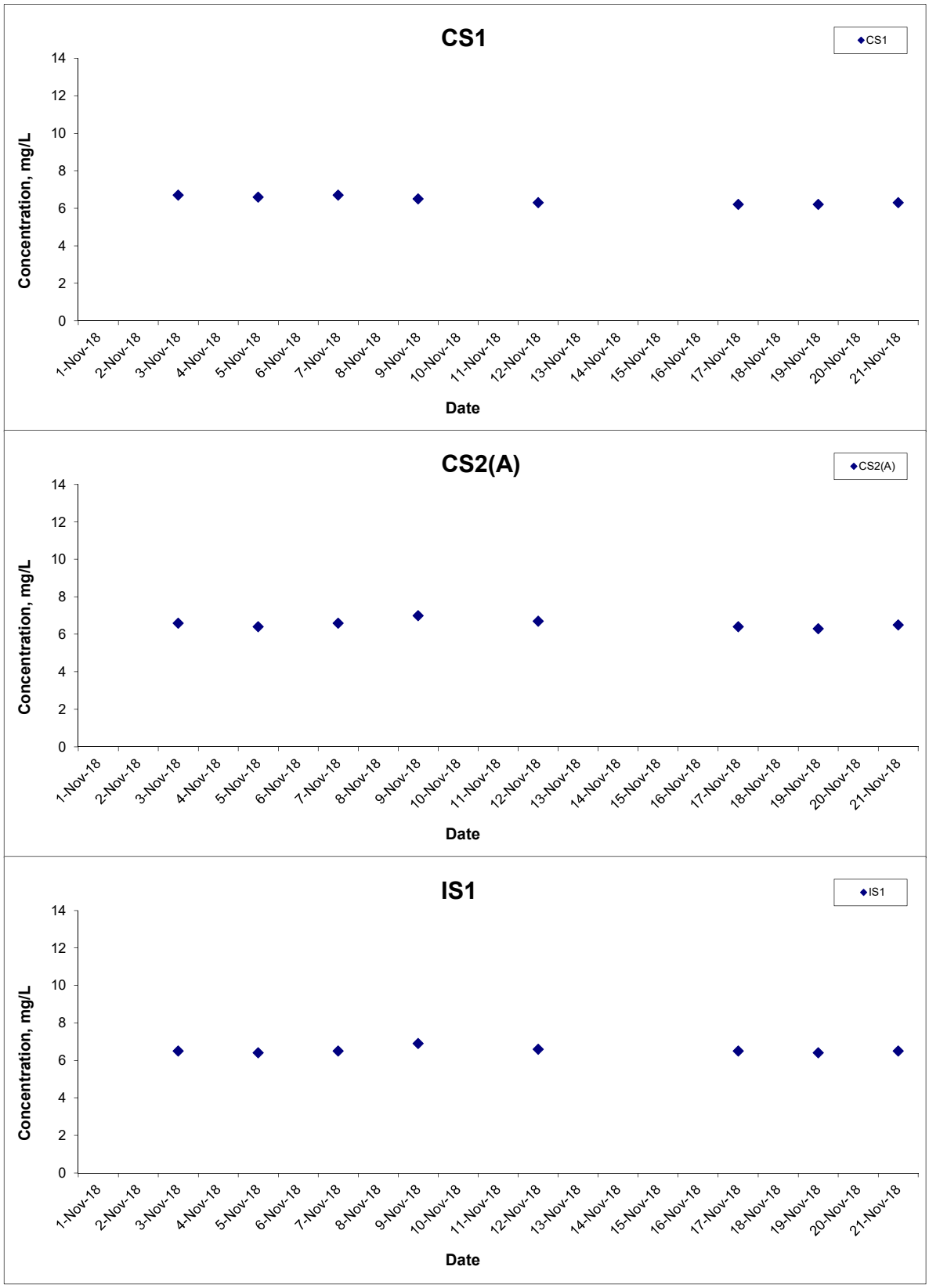
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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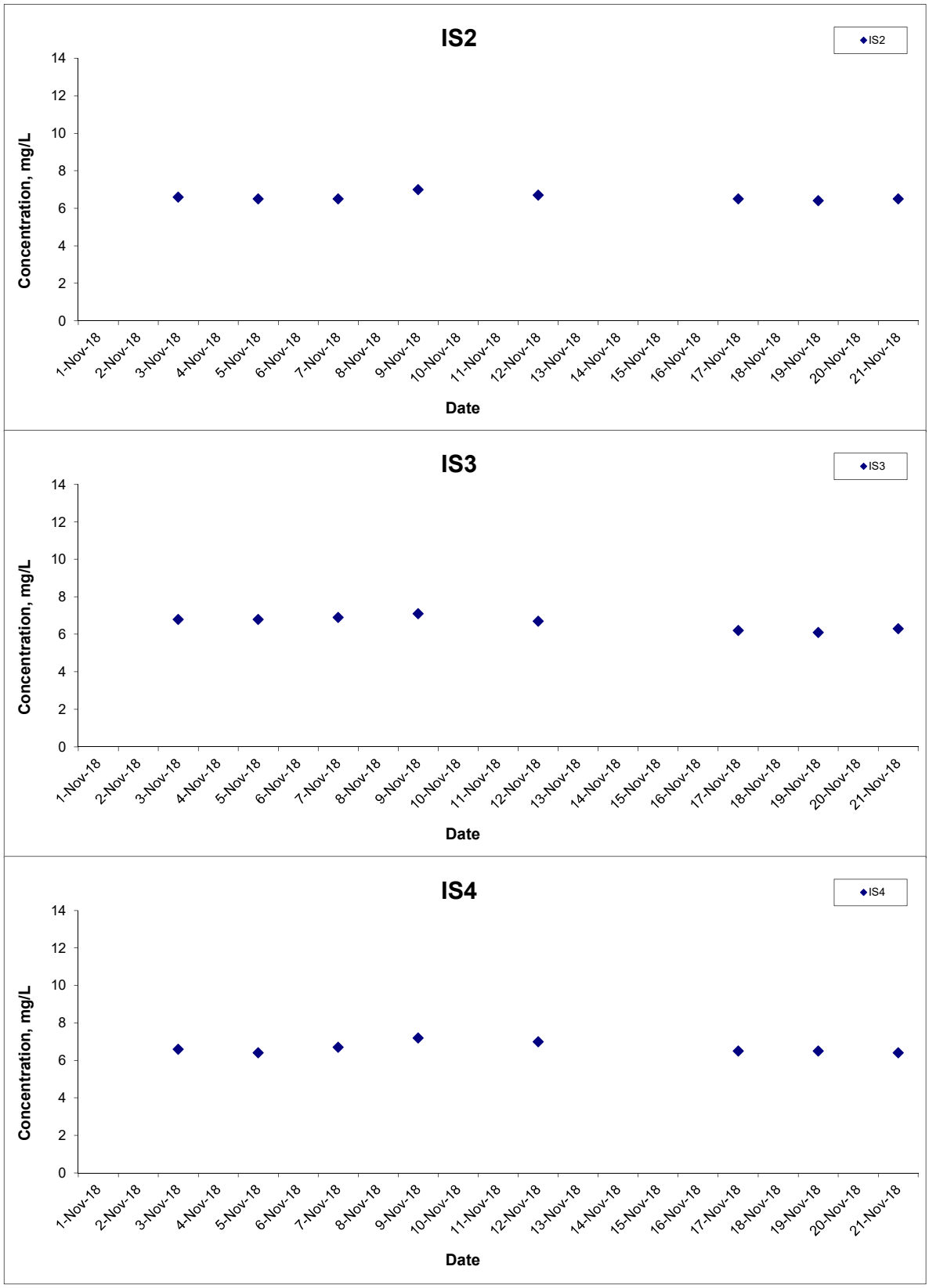
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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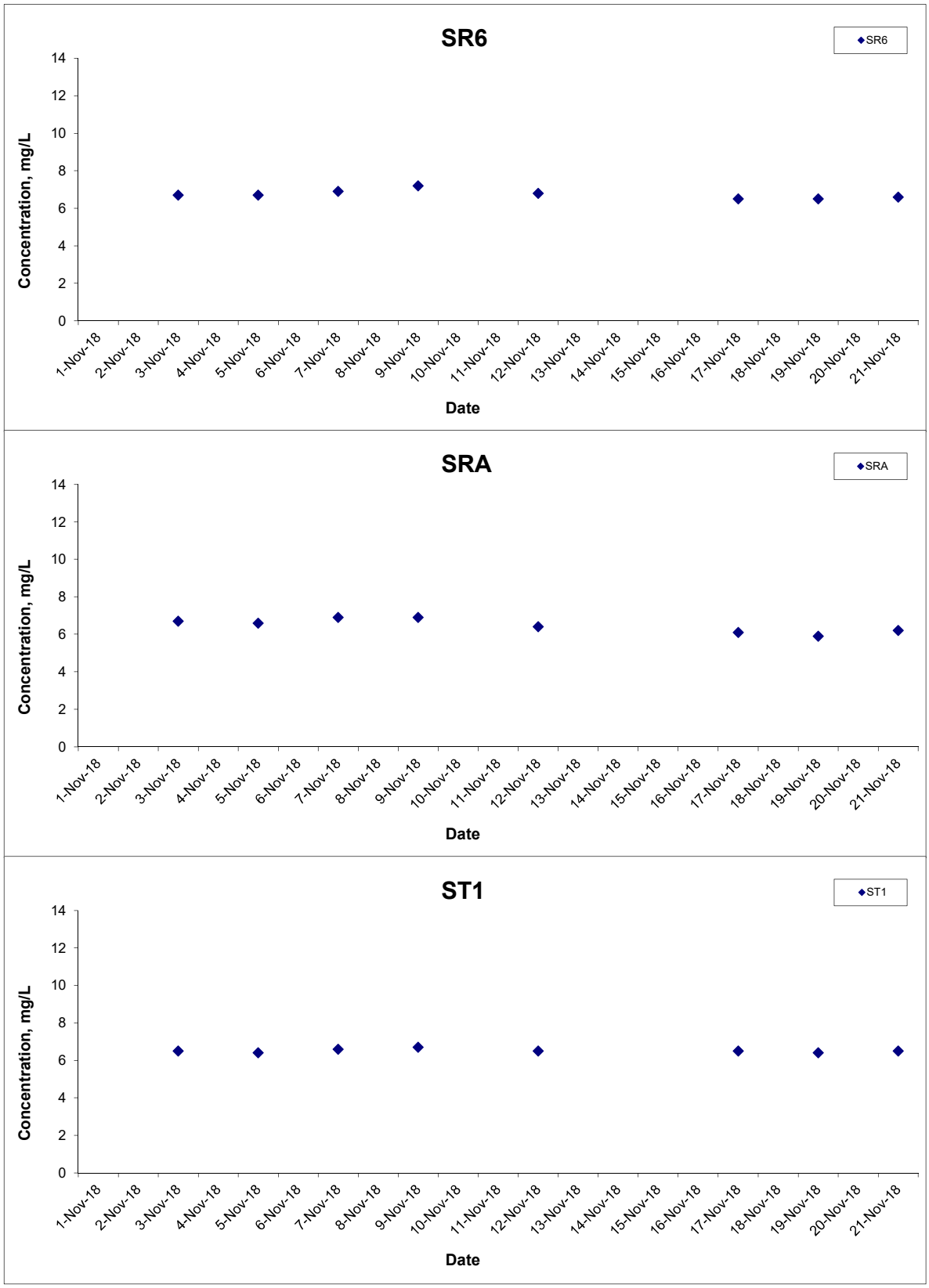
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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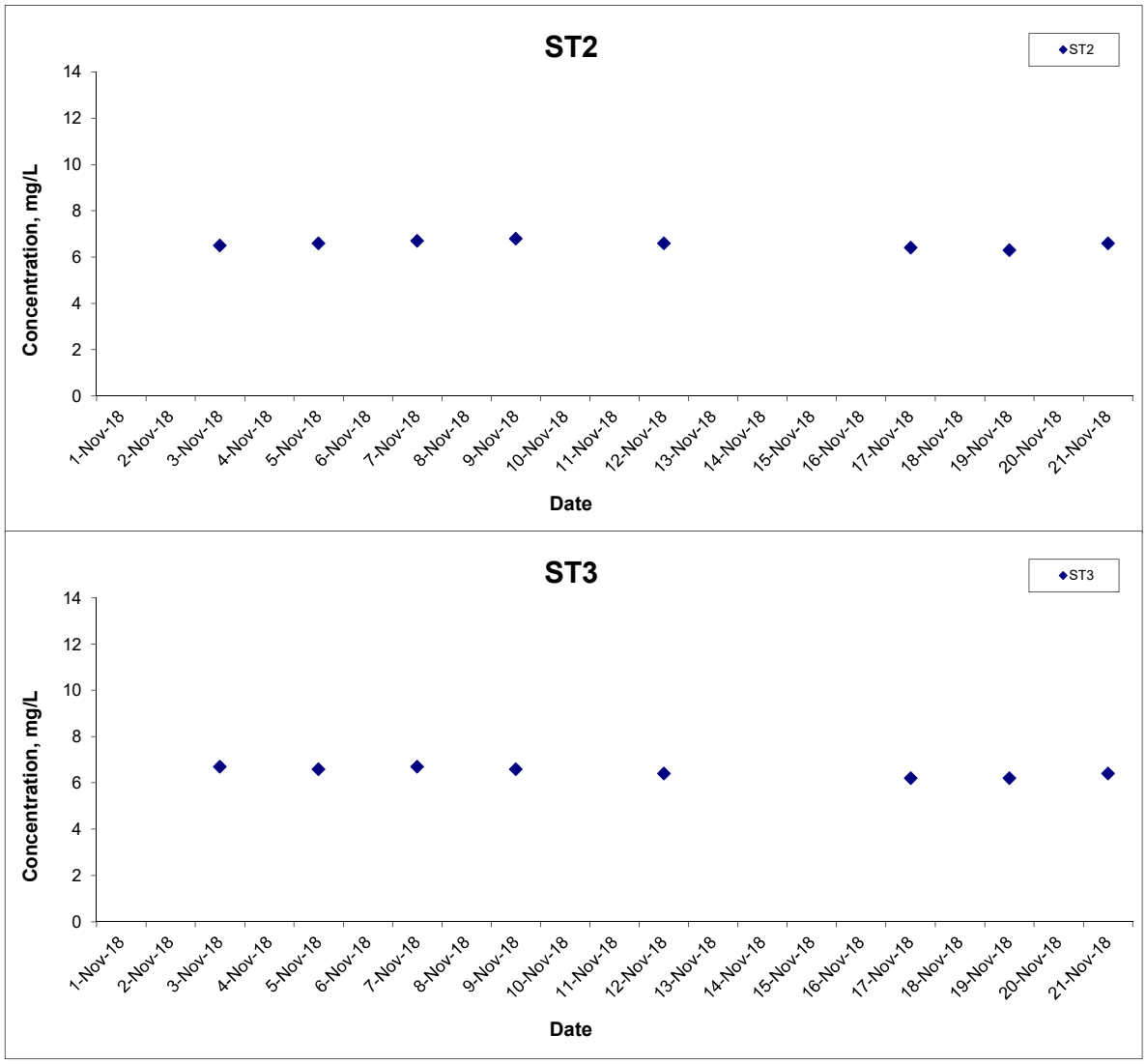
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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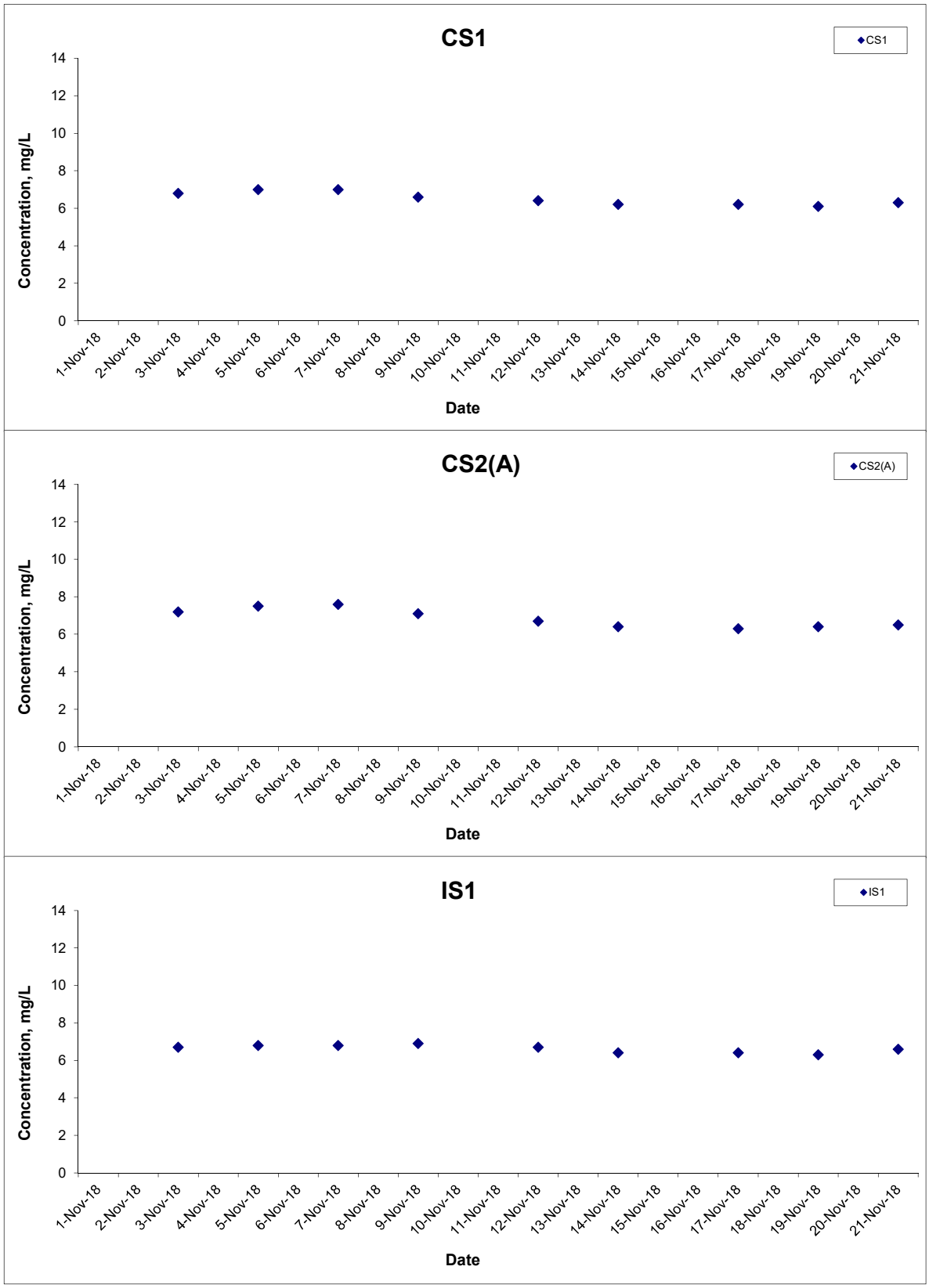
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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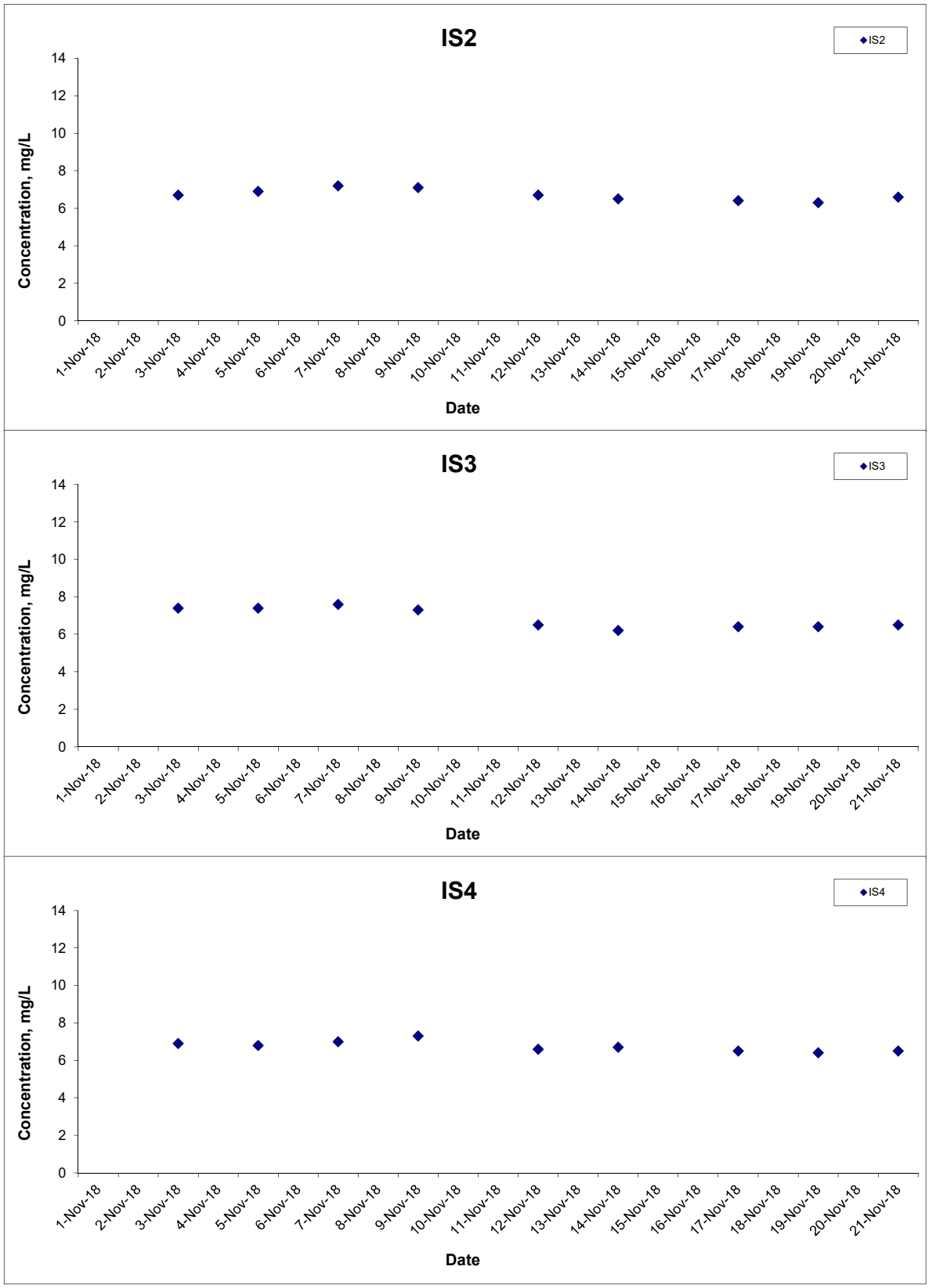
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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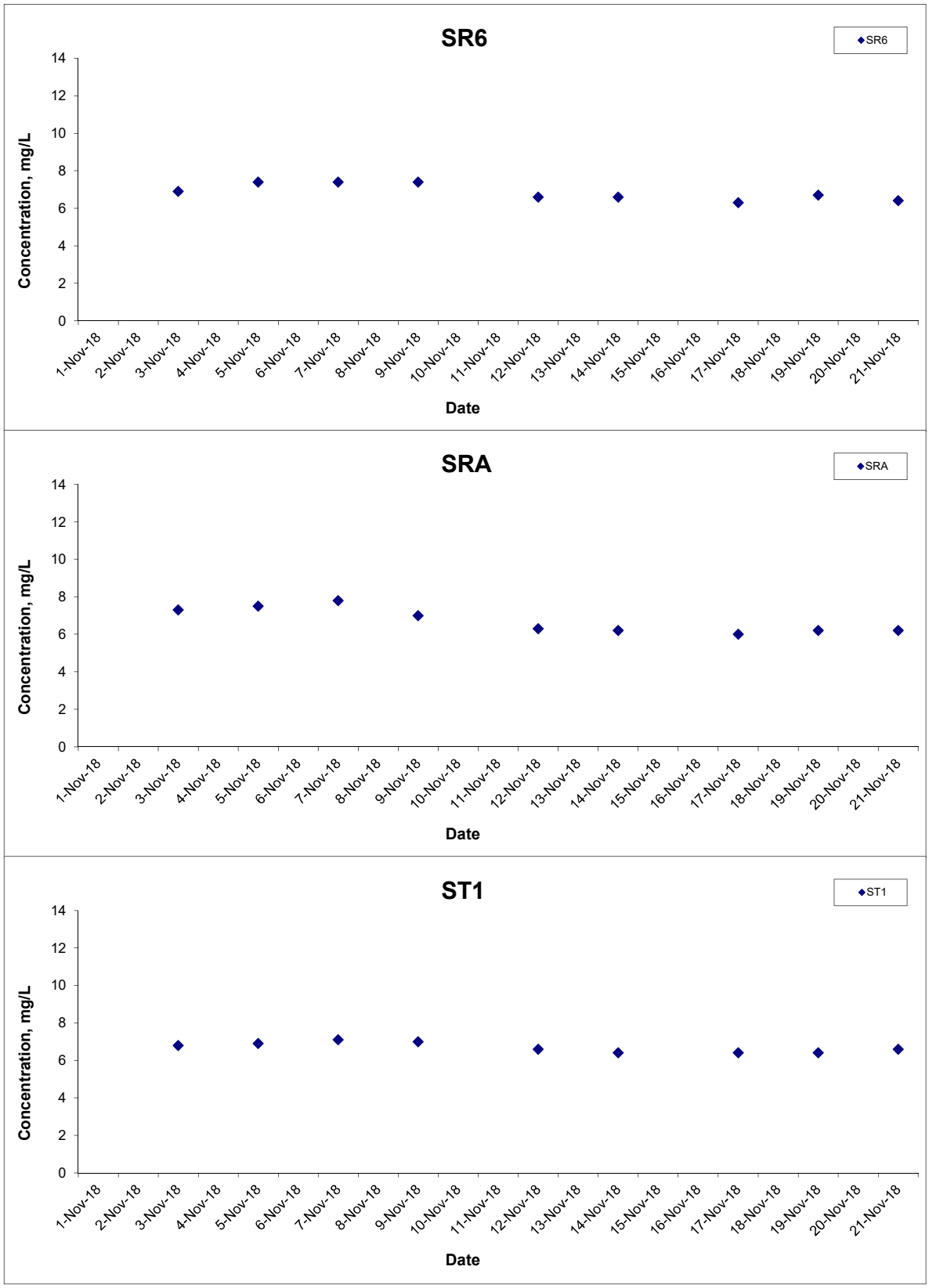
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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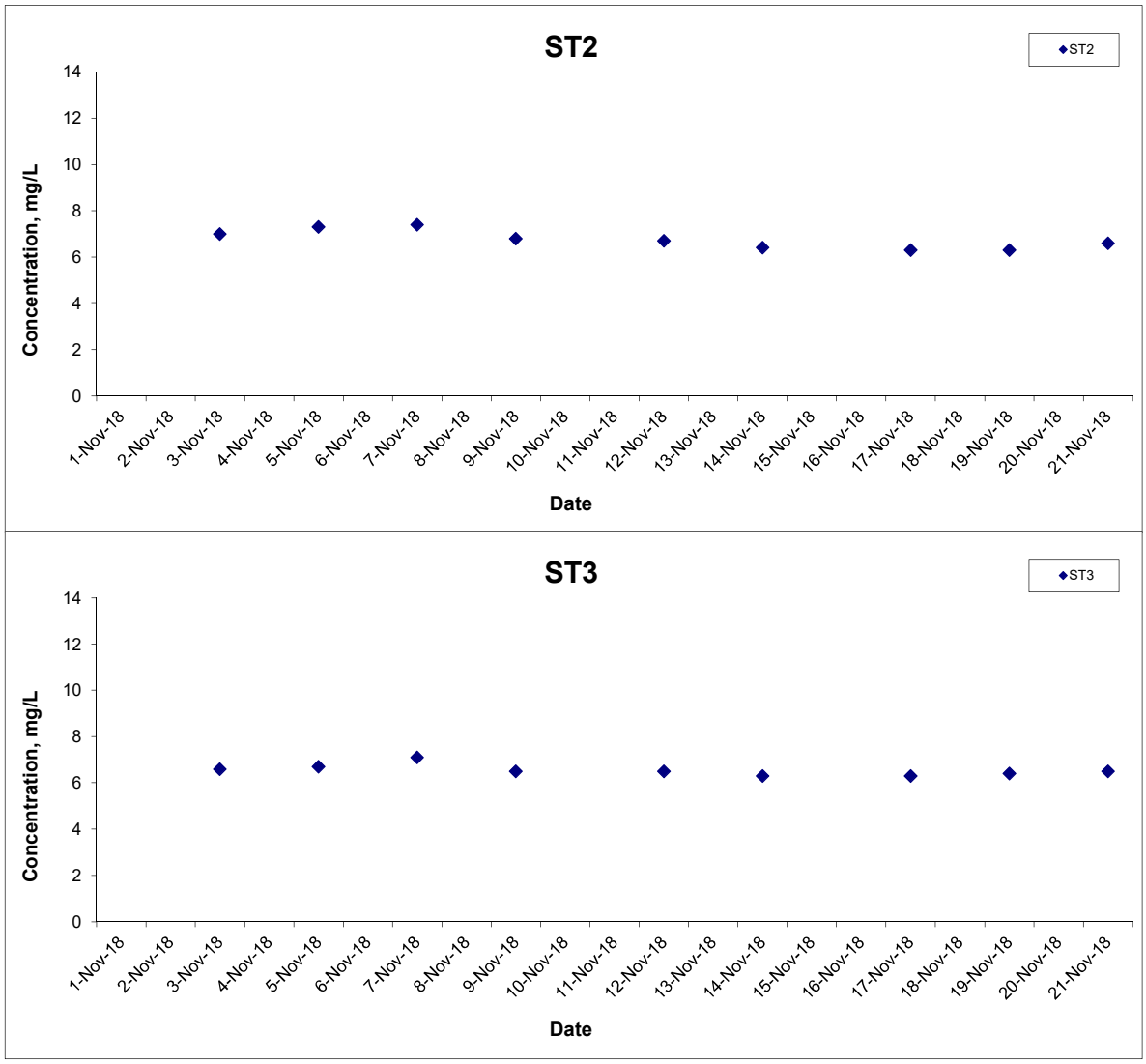
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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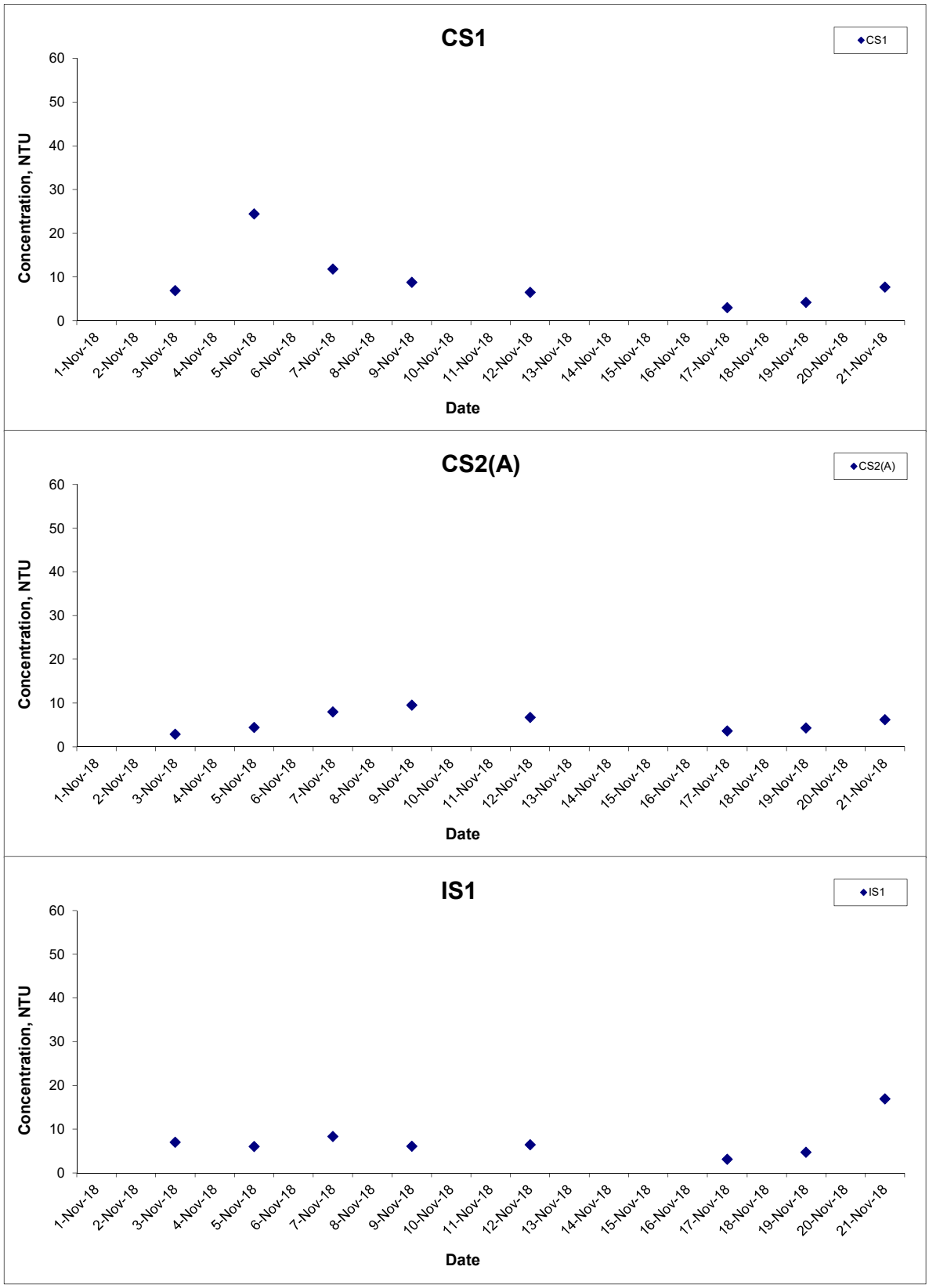
Turbidity (Depth-averaged) at Mid-Ebb Tide



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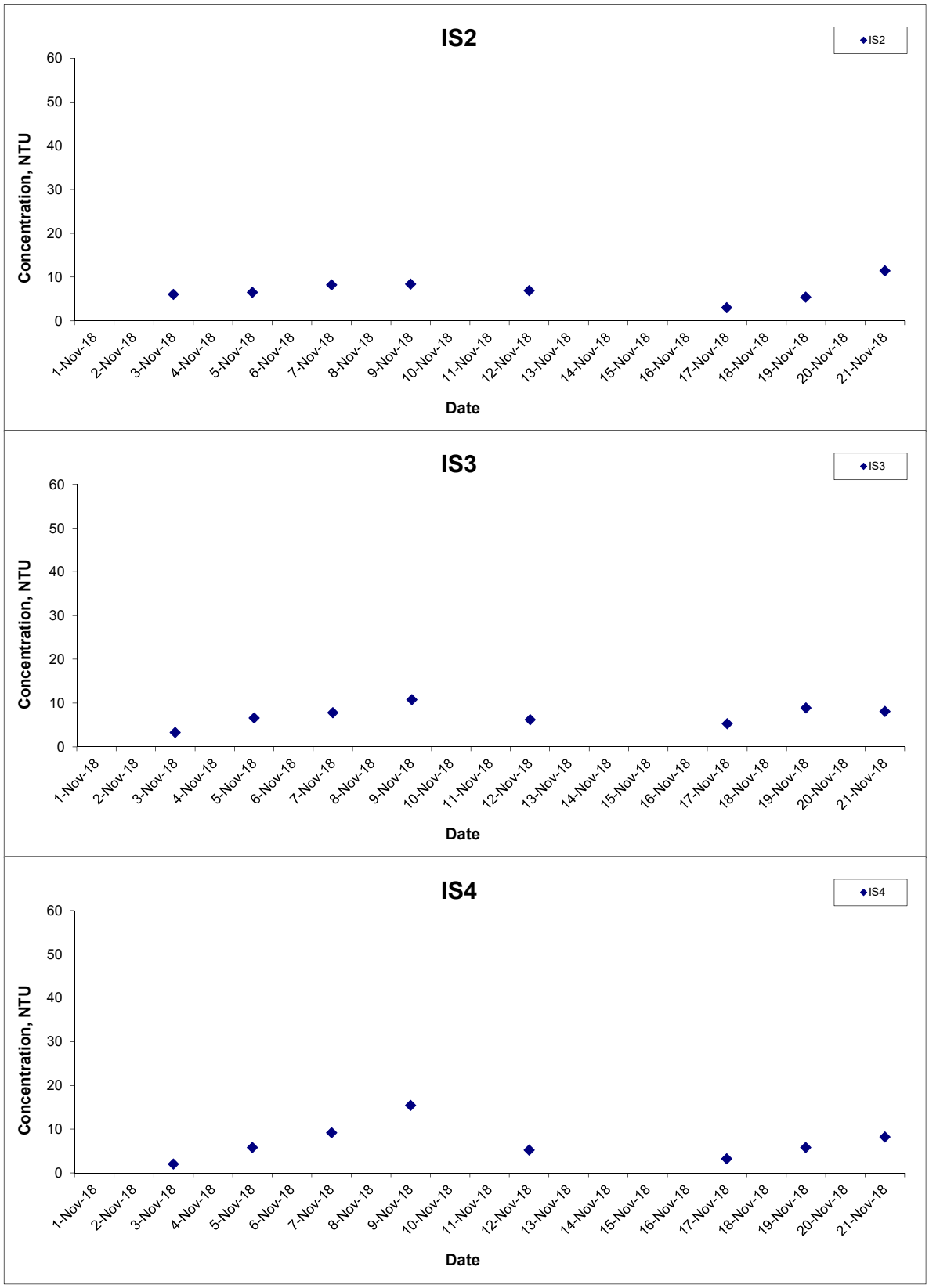
Turbidity (Depth-averaged) at Mid-Ebb Tide



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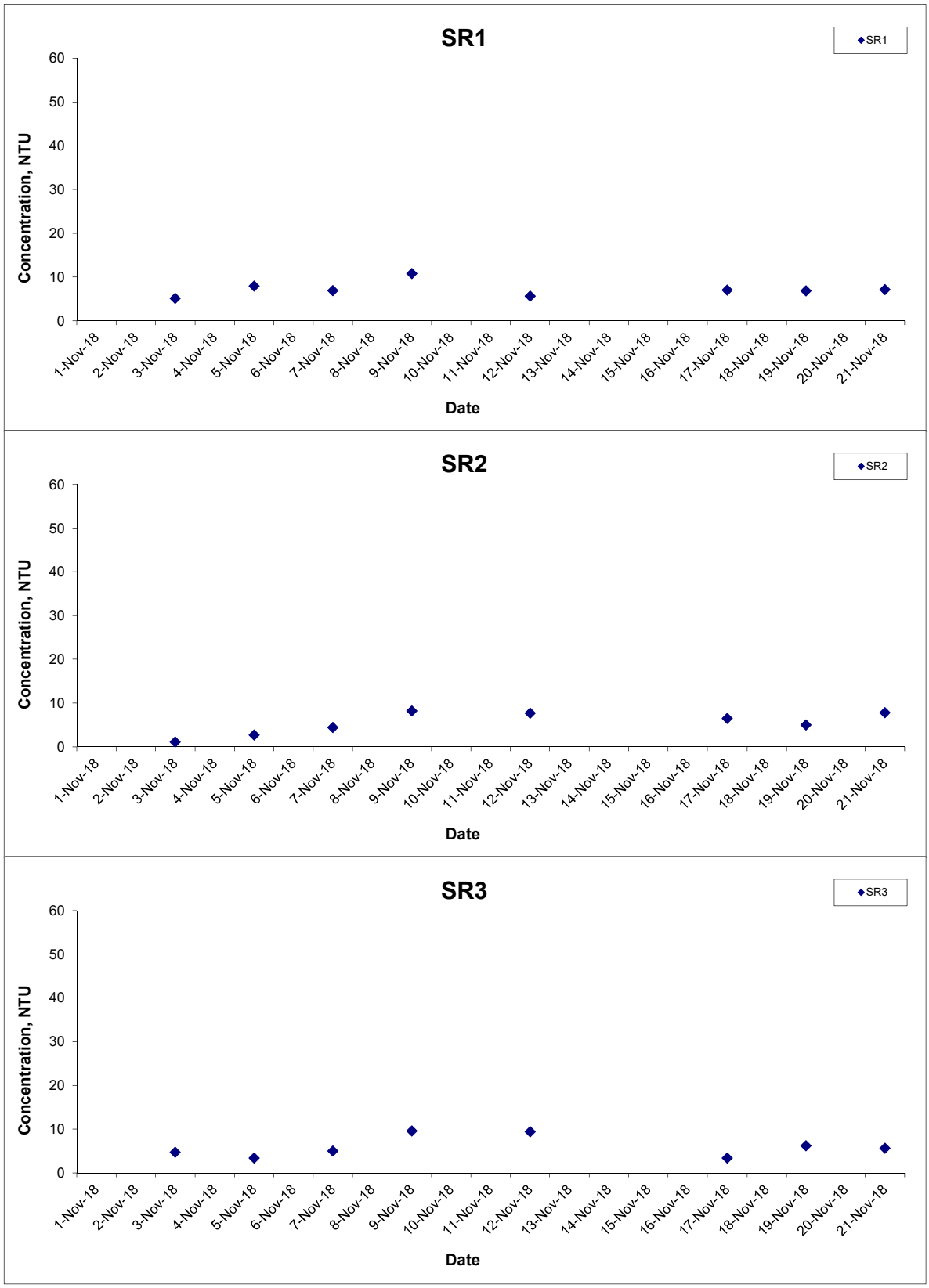
Turbidity (Depth-averaged) at Mid-Ebb Tide



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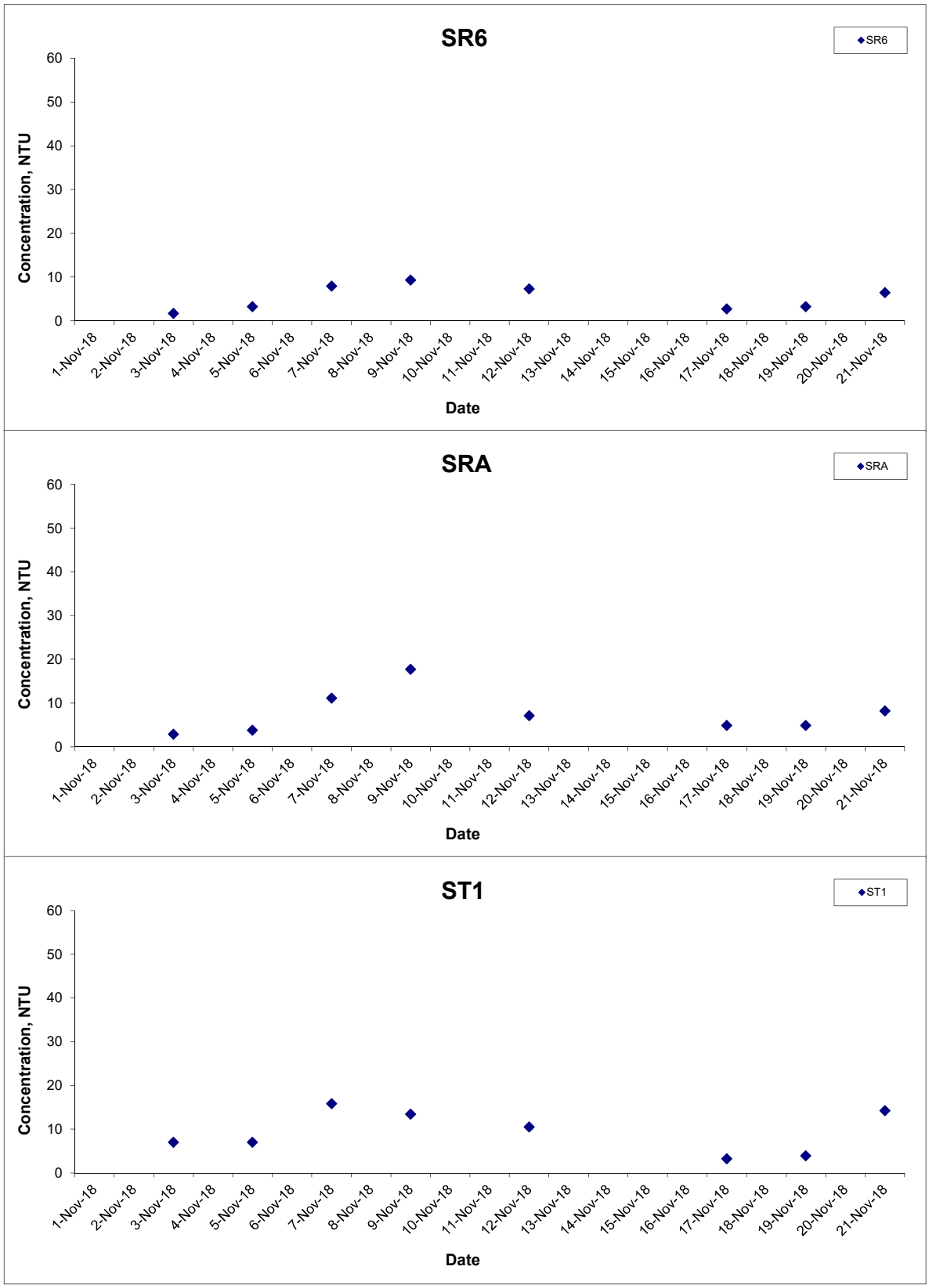
Turbidity (Depth-averaged) at Mid-Ebb Tide



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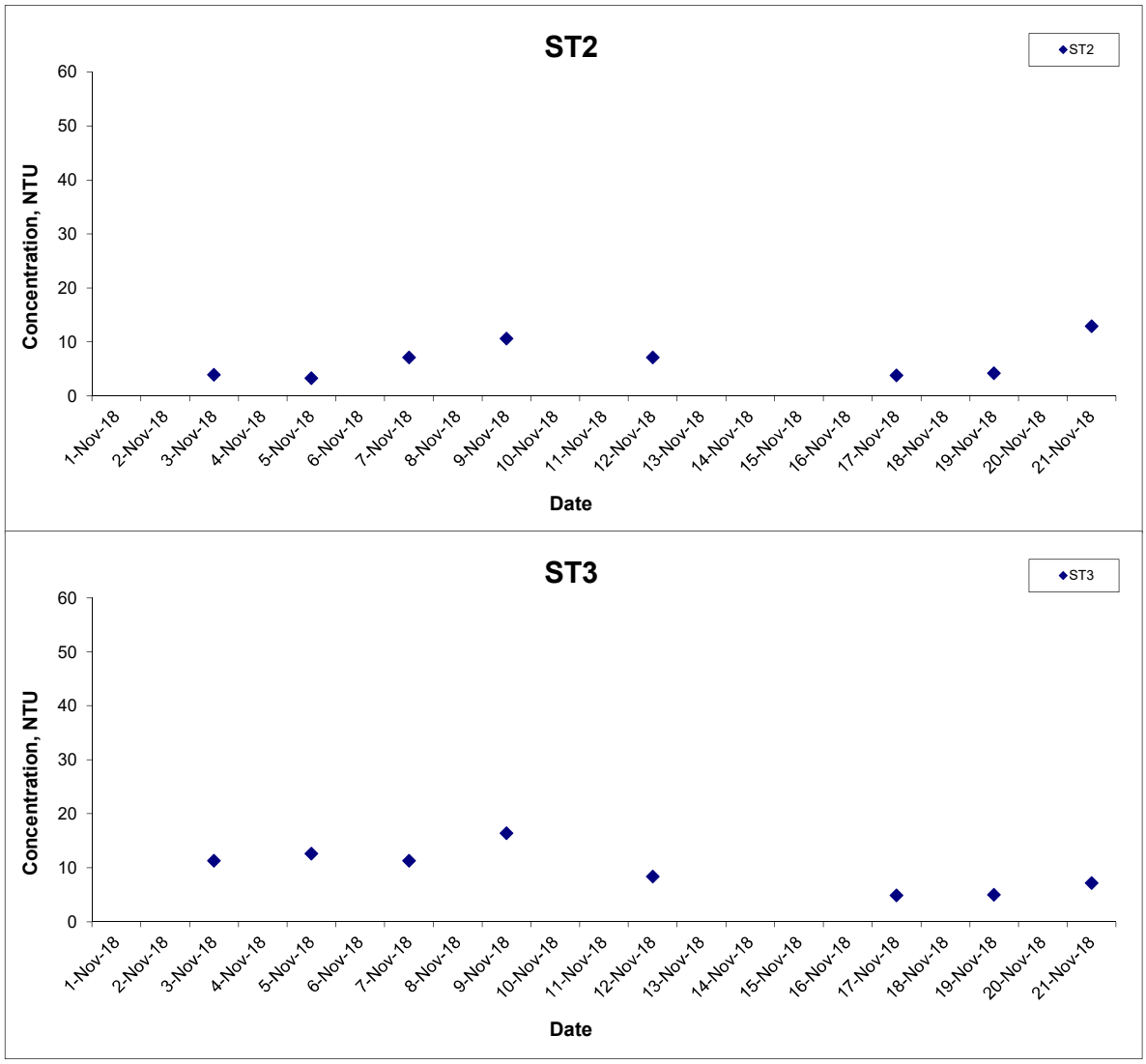
Turbidity (Depth-averaged) at Mid-Ebb Tide



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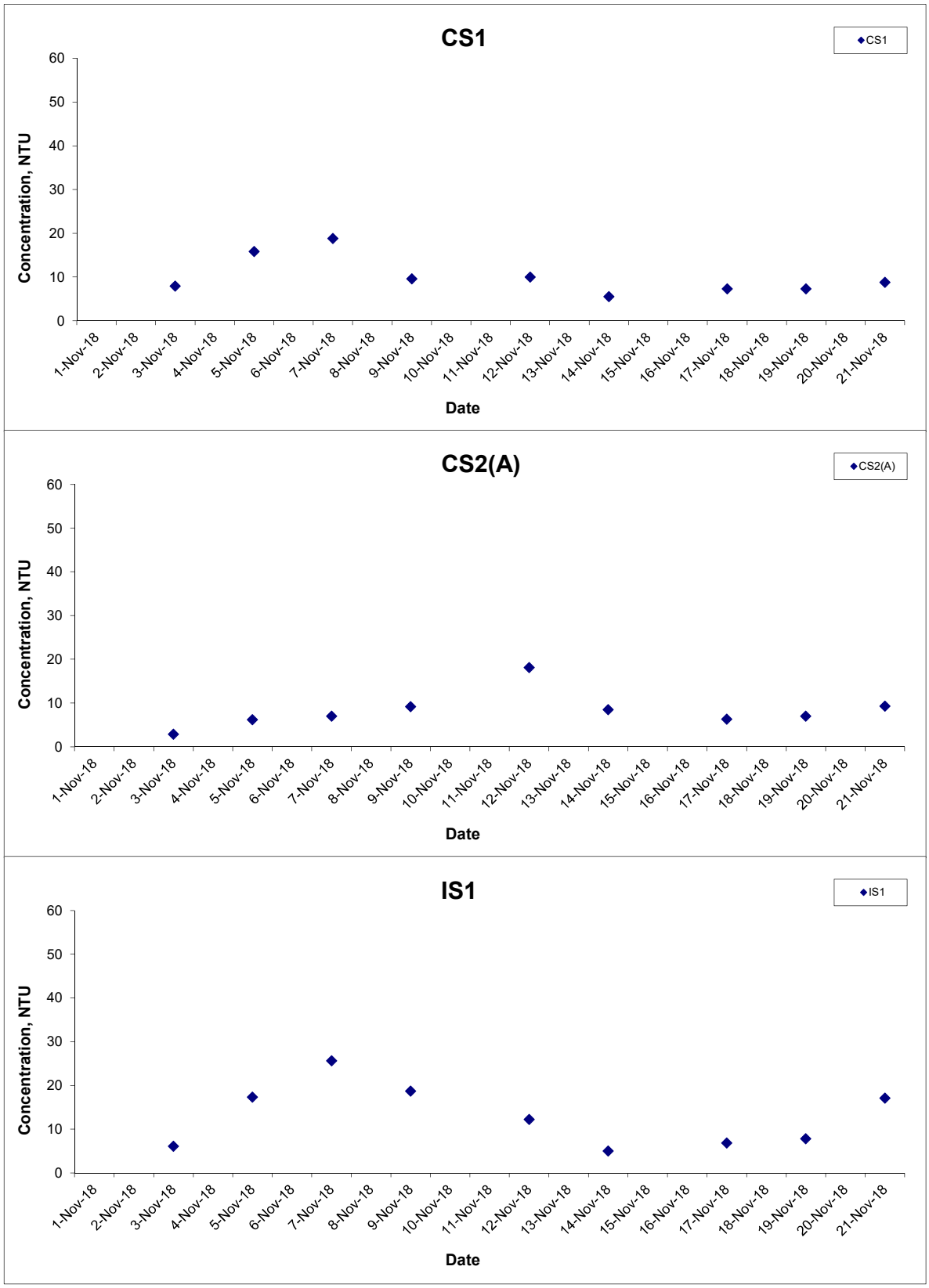
Turbidity (Depth-averaged) at Mid-Flood Tide



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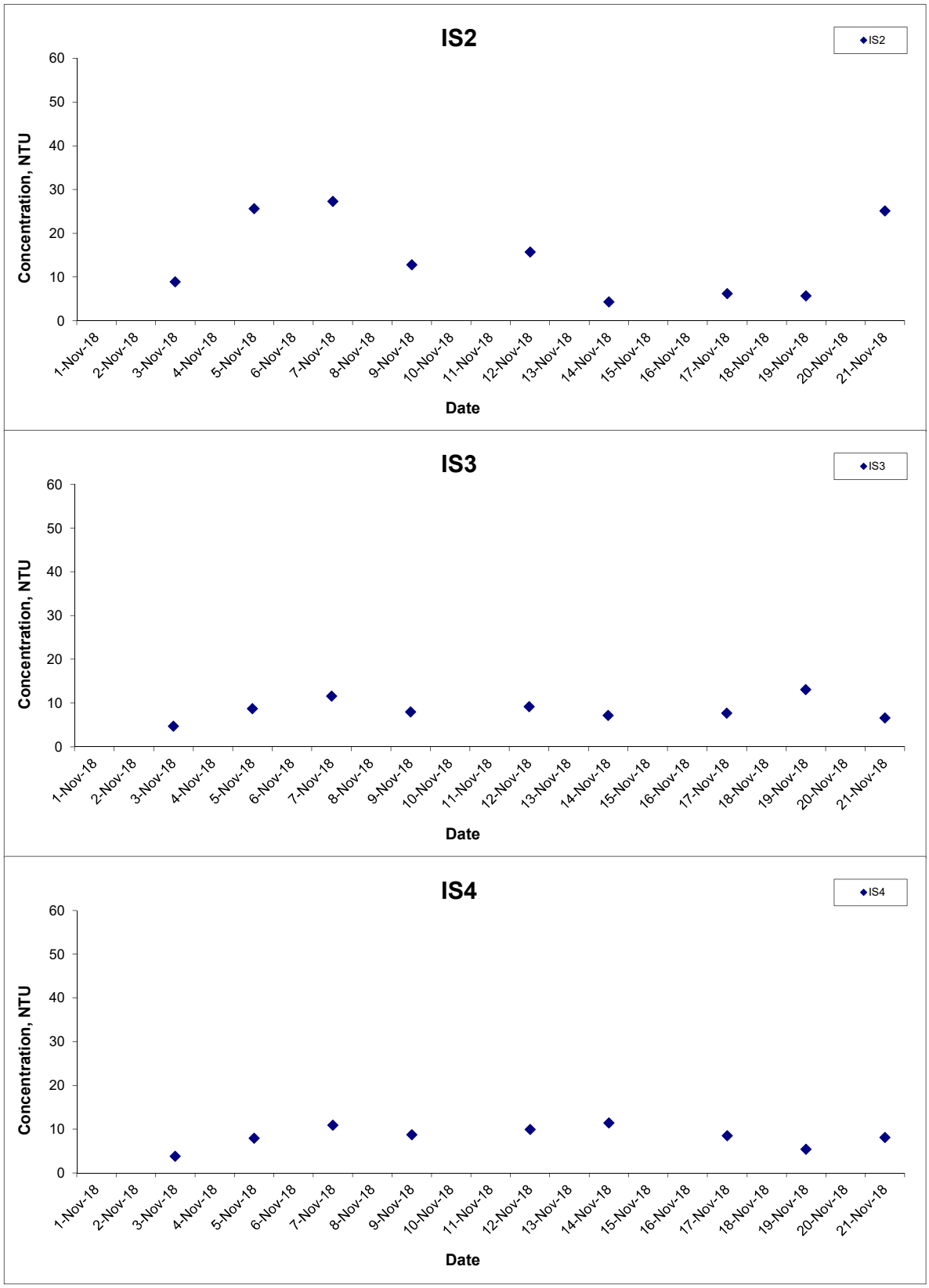
Turbidity (Depth-averaged) at Mid-Flood Tide



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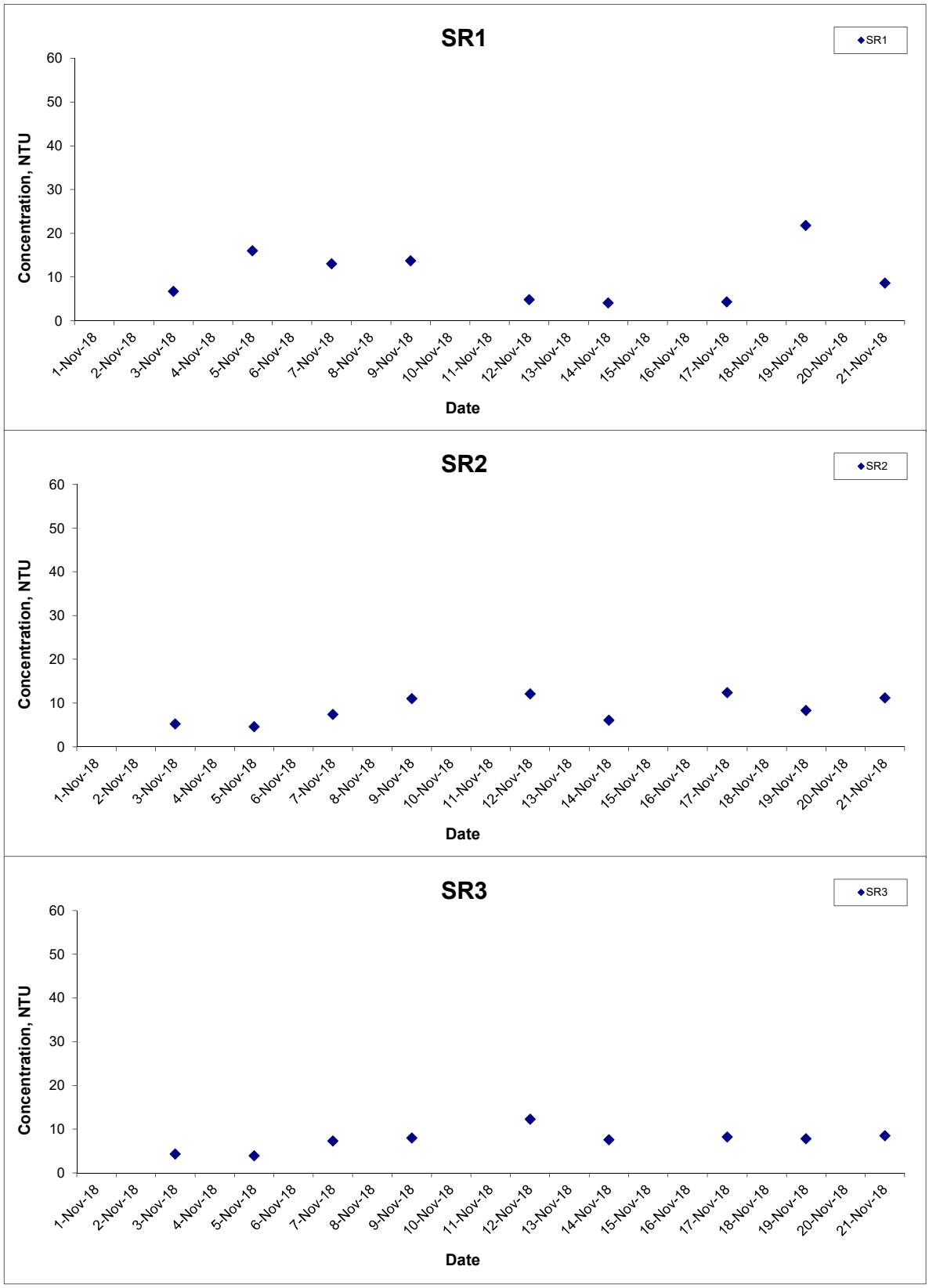
Turbidity (Depth-averaged) at Mid-Flood Tide



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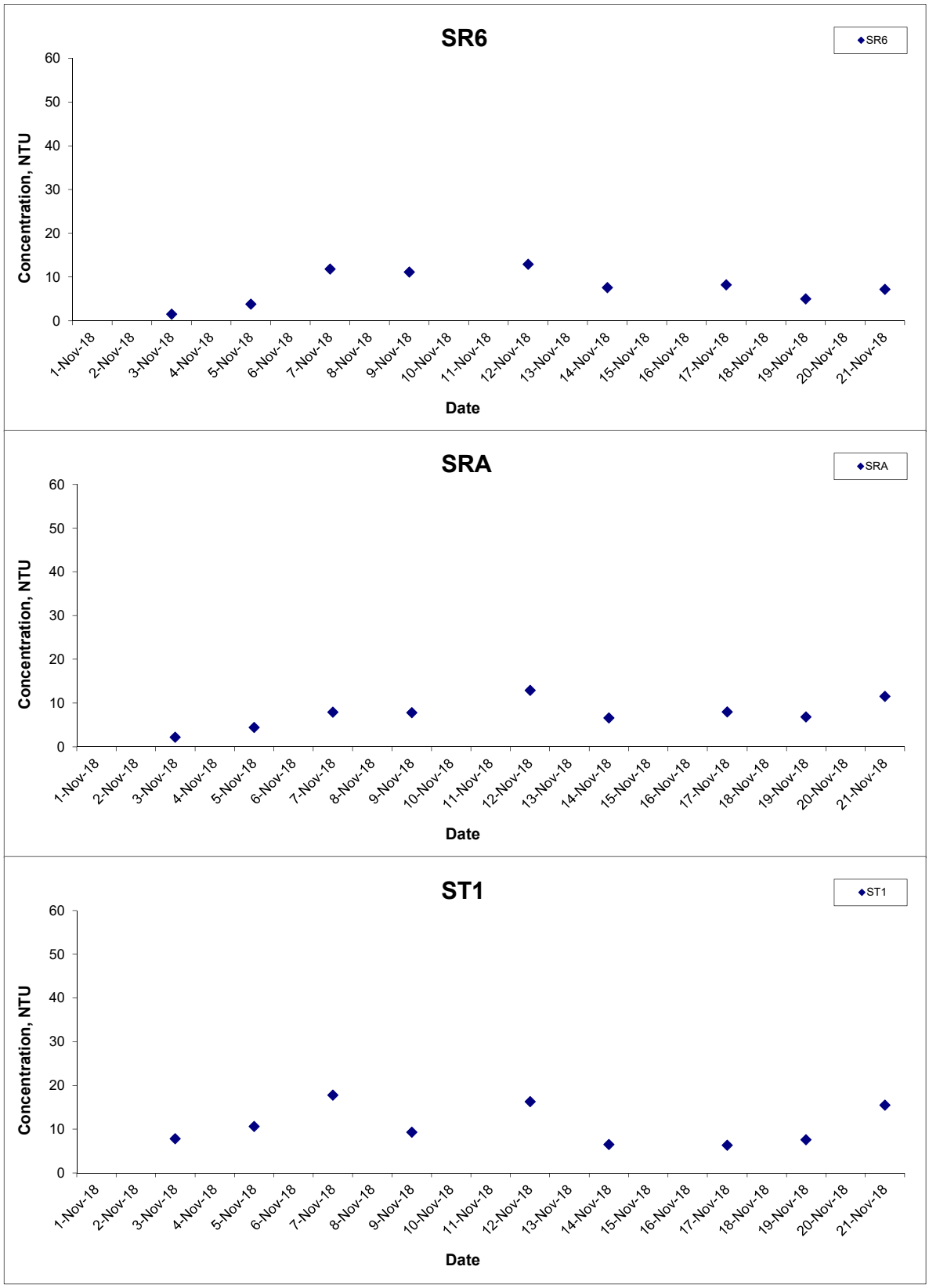
Turbidity (Depth-averaged) at Mid-Flood Tide



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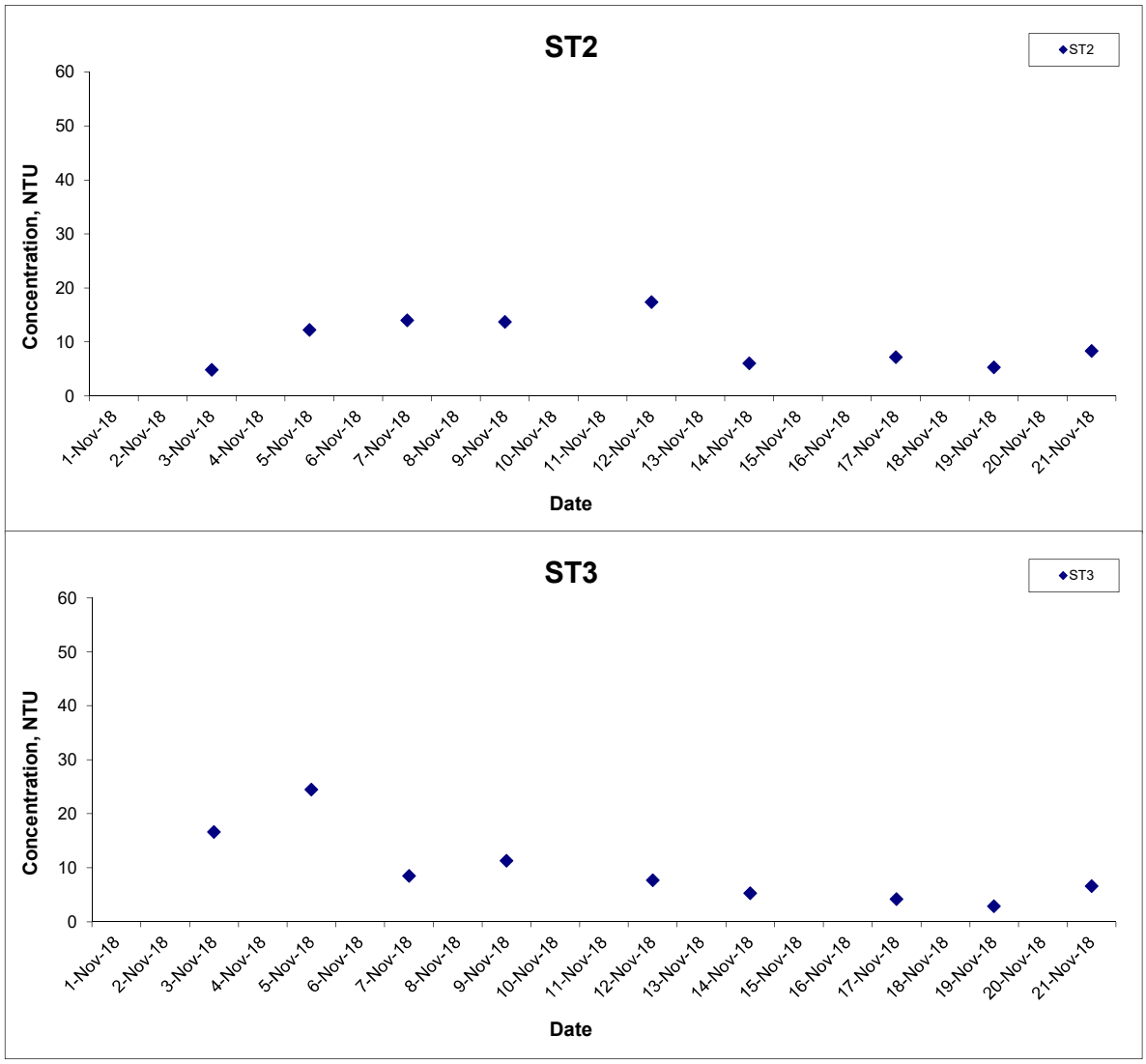
Turbidity (Depth-averaged) at Mid-Flood Tide



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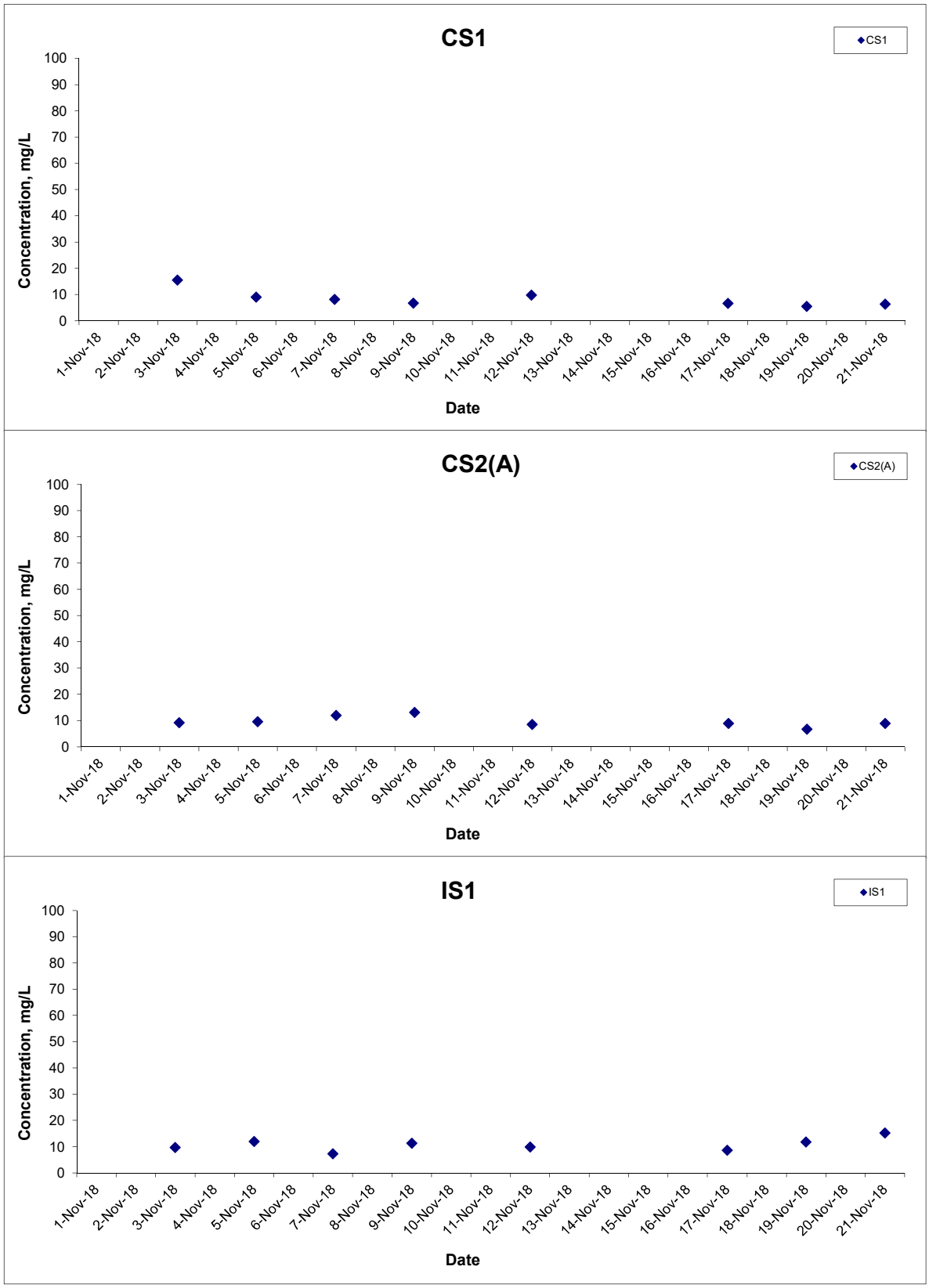
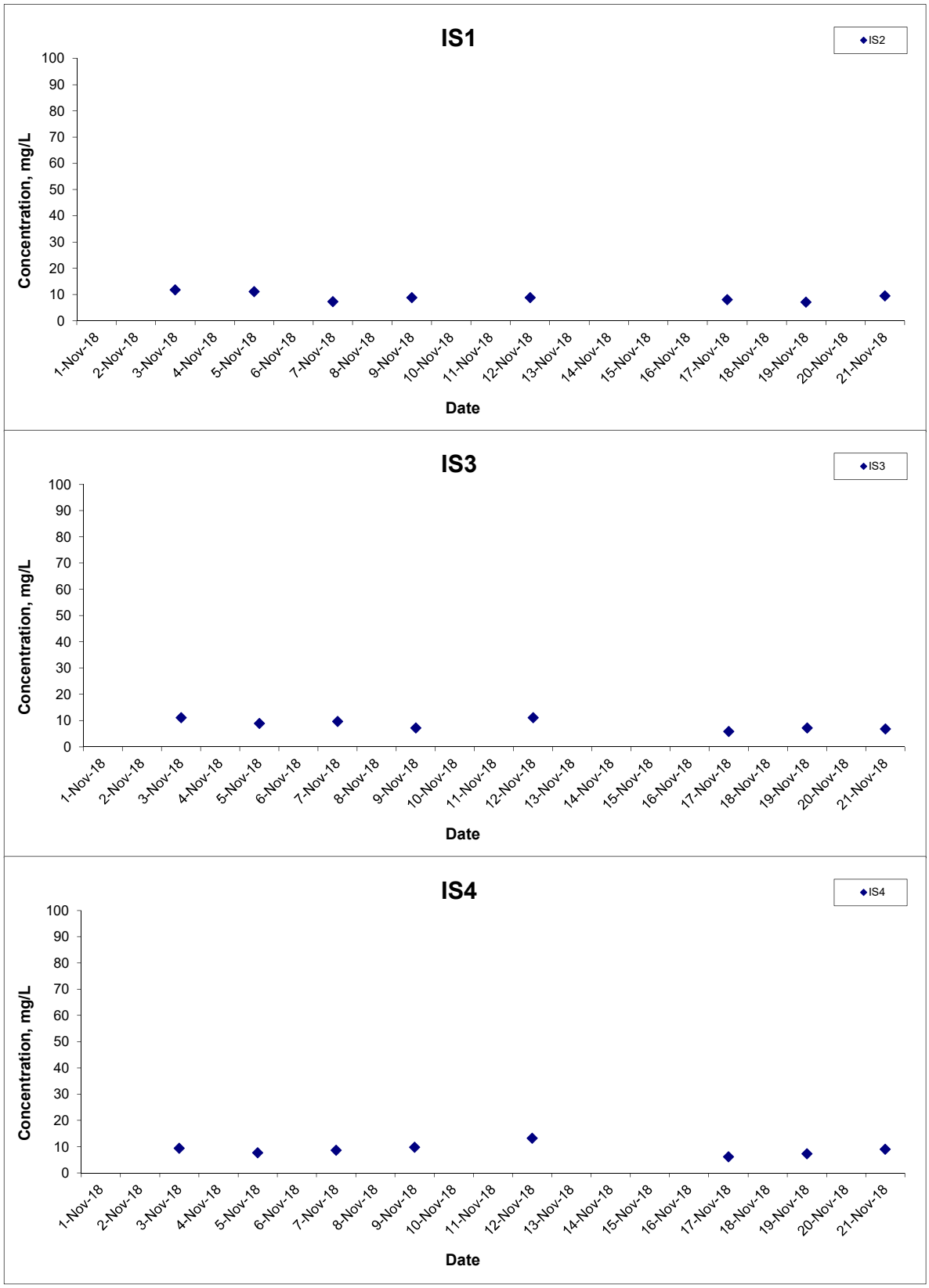
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



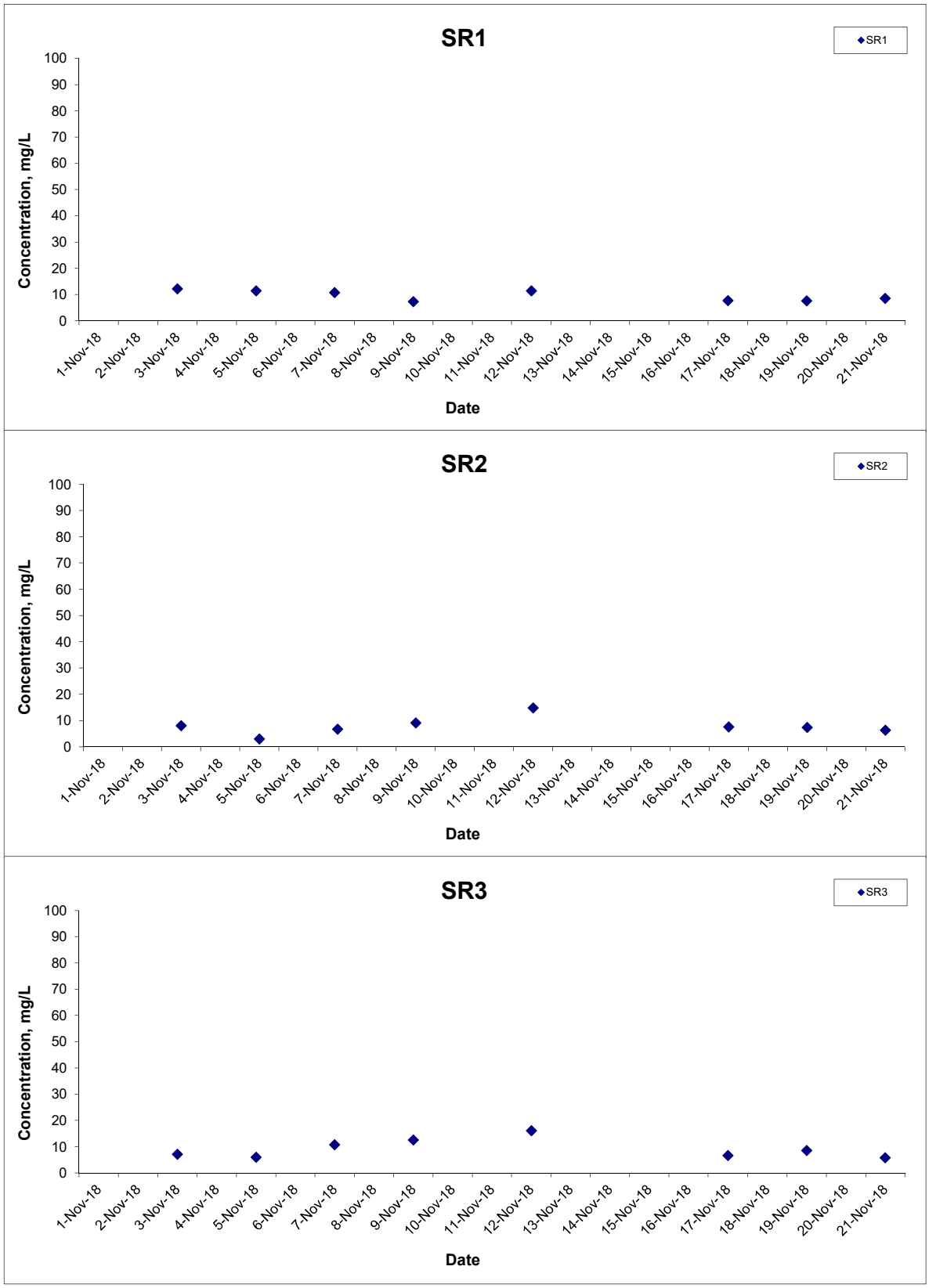
Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
		Date Nov 18	Appendix D	

Suspended Solids (Depth-averaged) at Mid-Ebb Tide



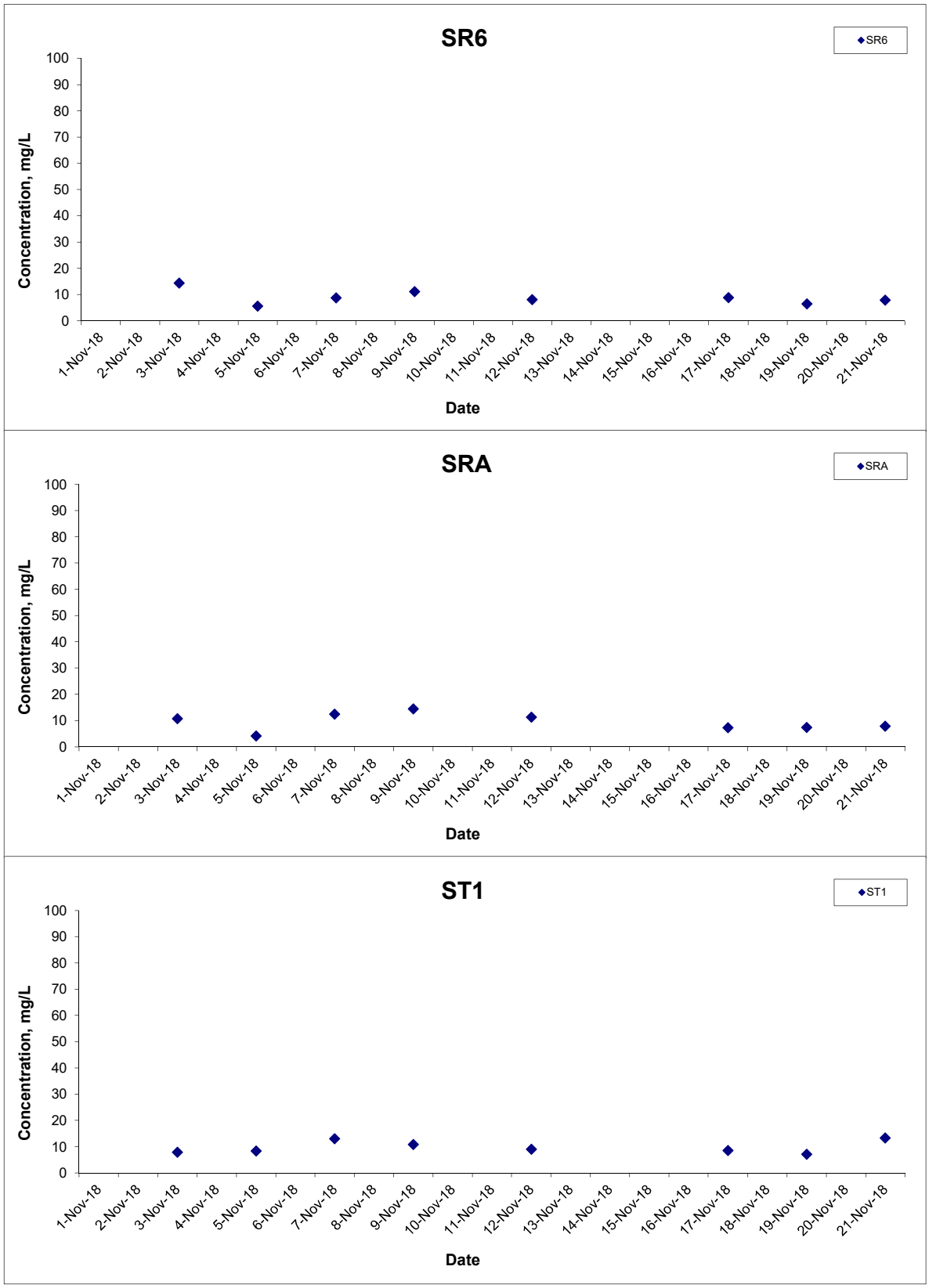
Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
		Date Nov 18	Appendix D	

Suspended Solids (Depth-averaged) at Mid-Ebb Tide



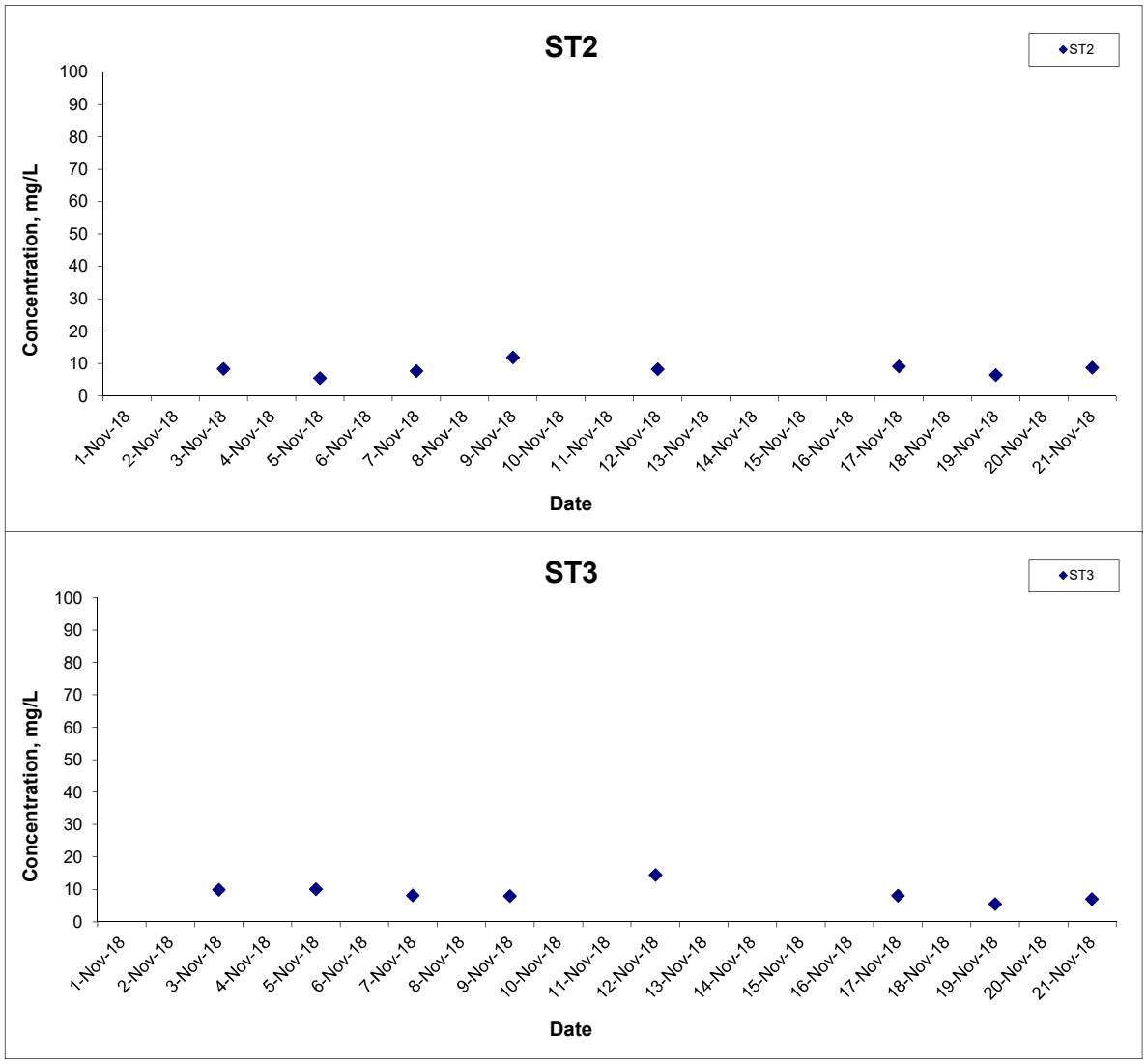
Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA12014	CINOTECH
		Date: Nov 18	Appendix: D	

Suspended Solids (Depth-averaged) at Mid-Ebb Tide



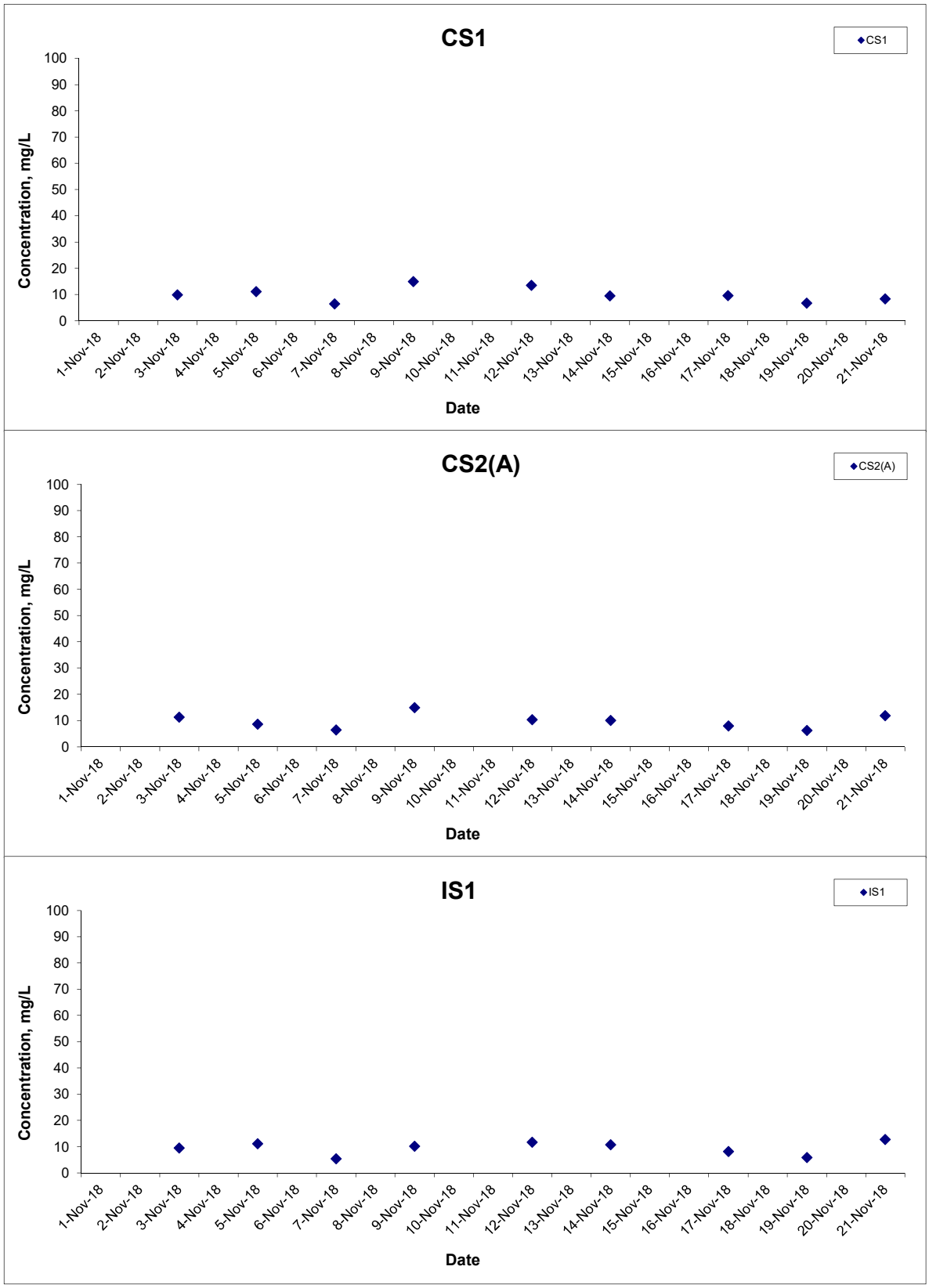
Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
		Date Nov 18	Appendix D	

Suspended Solids (Depth-averaged) at Mid-Ebb Tide



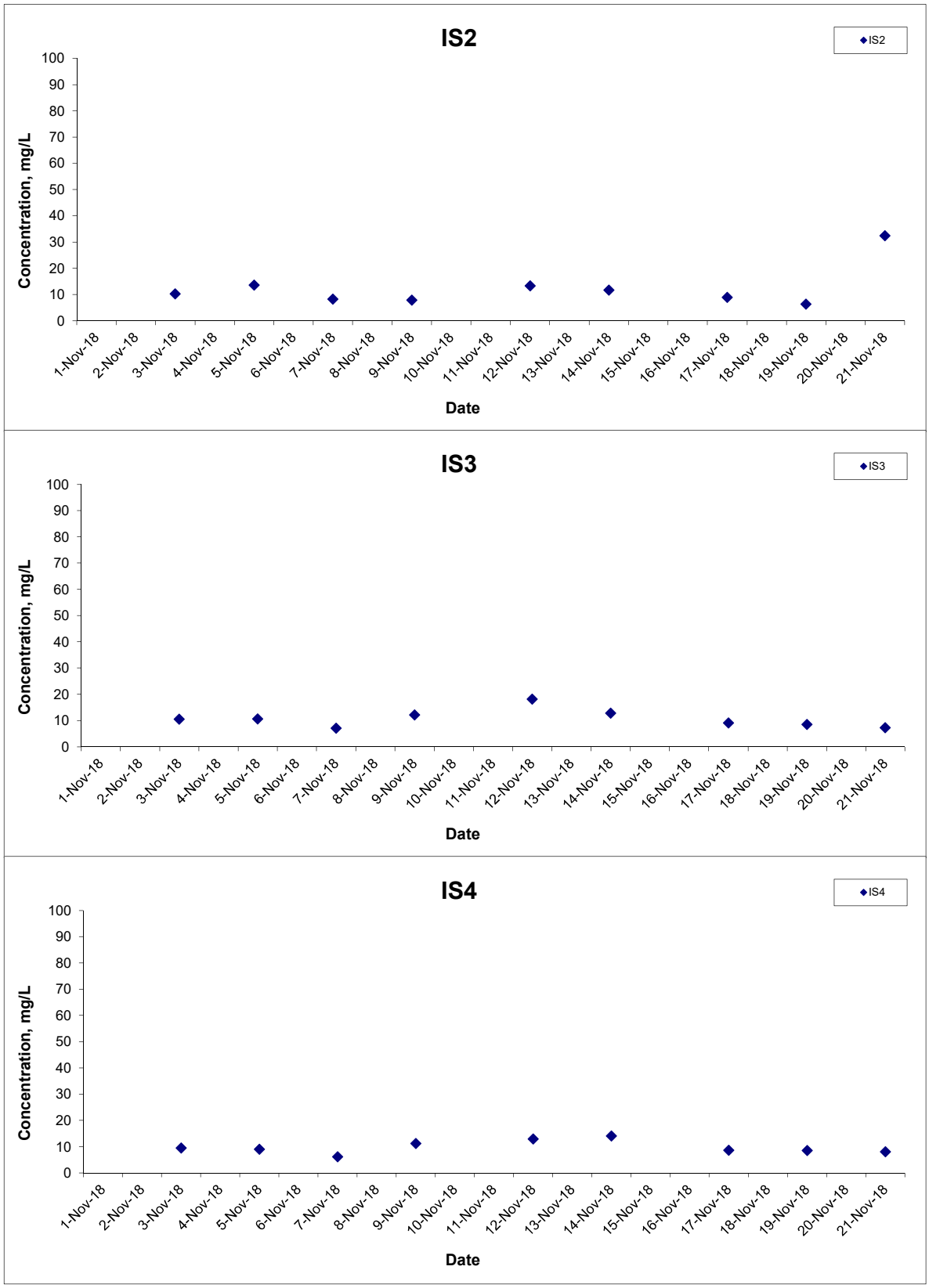
Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA12014	CINOTECH
		Date: Nov 18	Appendix: D	

Suspended Solids (Depth-averaged) at Mid-Flood Tide



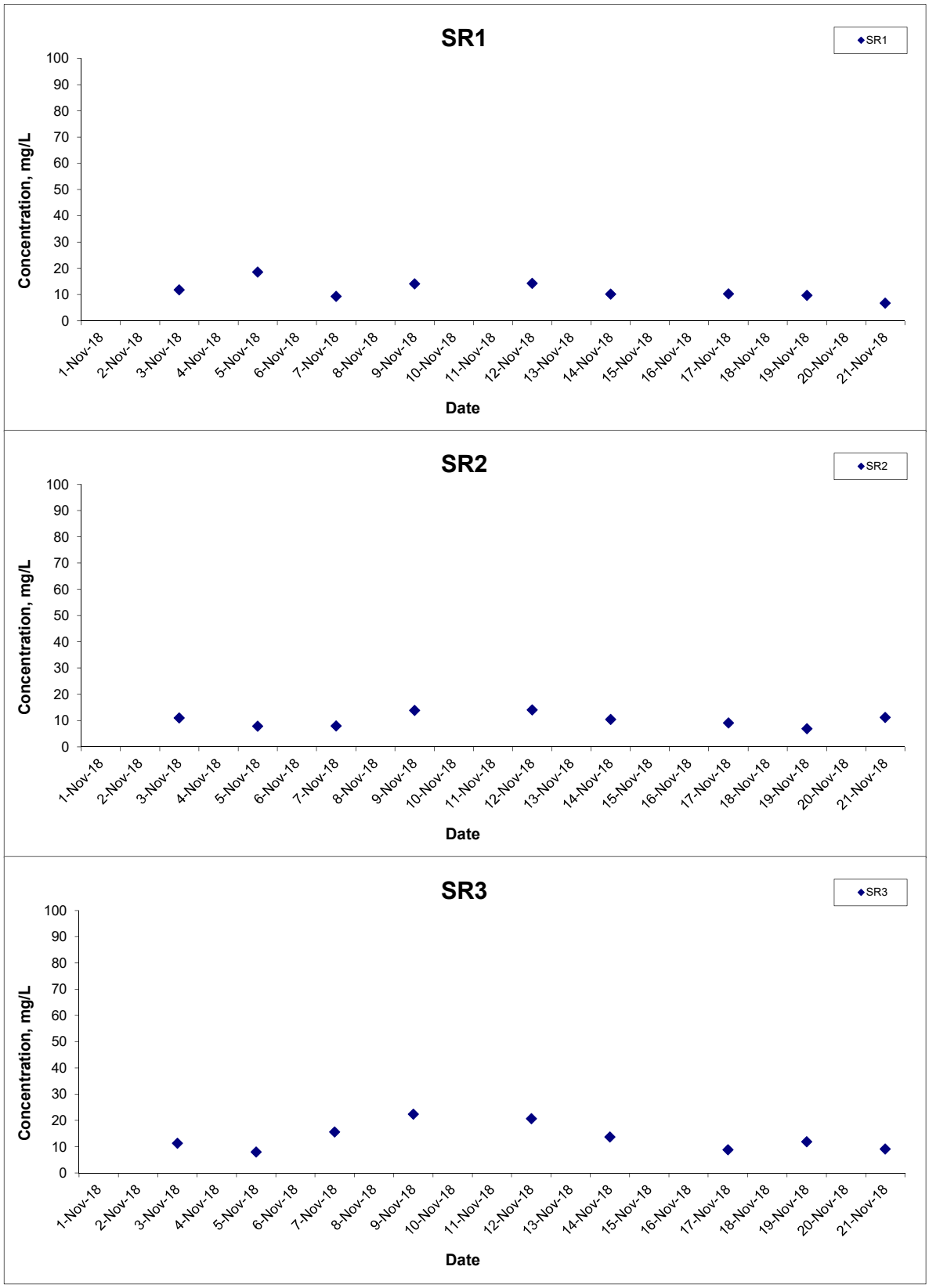
Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
		Date Nov 18	Appendix D	

Suspended Solids (Depth-averaged) at Mid-Flood Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA12014	CINOTECH
		Date: Nov 18	Appendix: D	

Suspended Solids (Depth-averaged) at Mid-Flood Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA12014	CINOTECH
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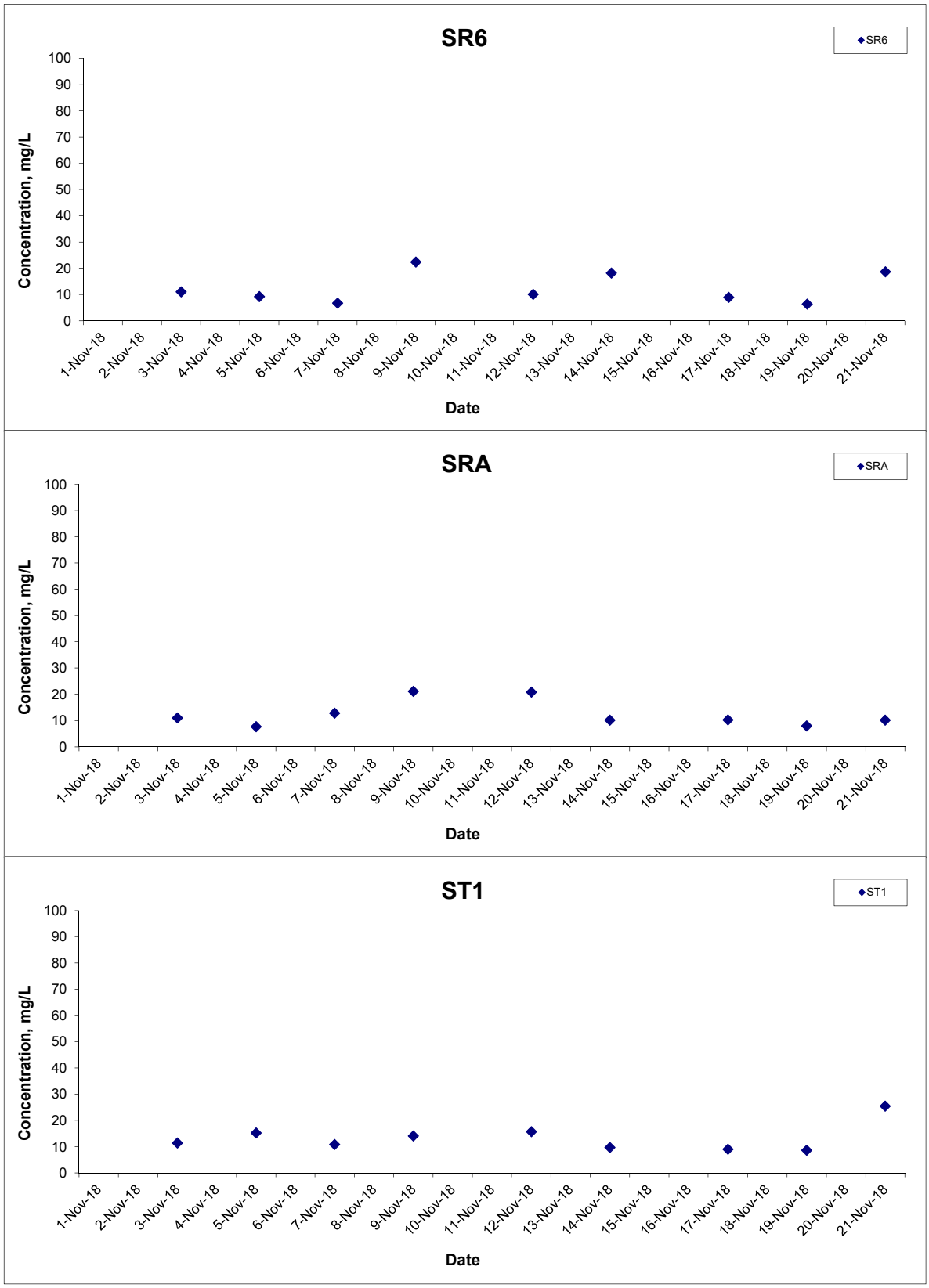
Suspended Solids (Depth-averaged) at Mid-Flood Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
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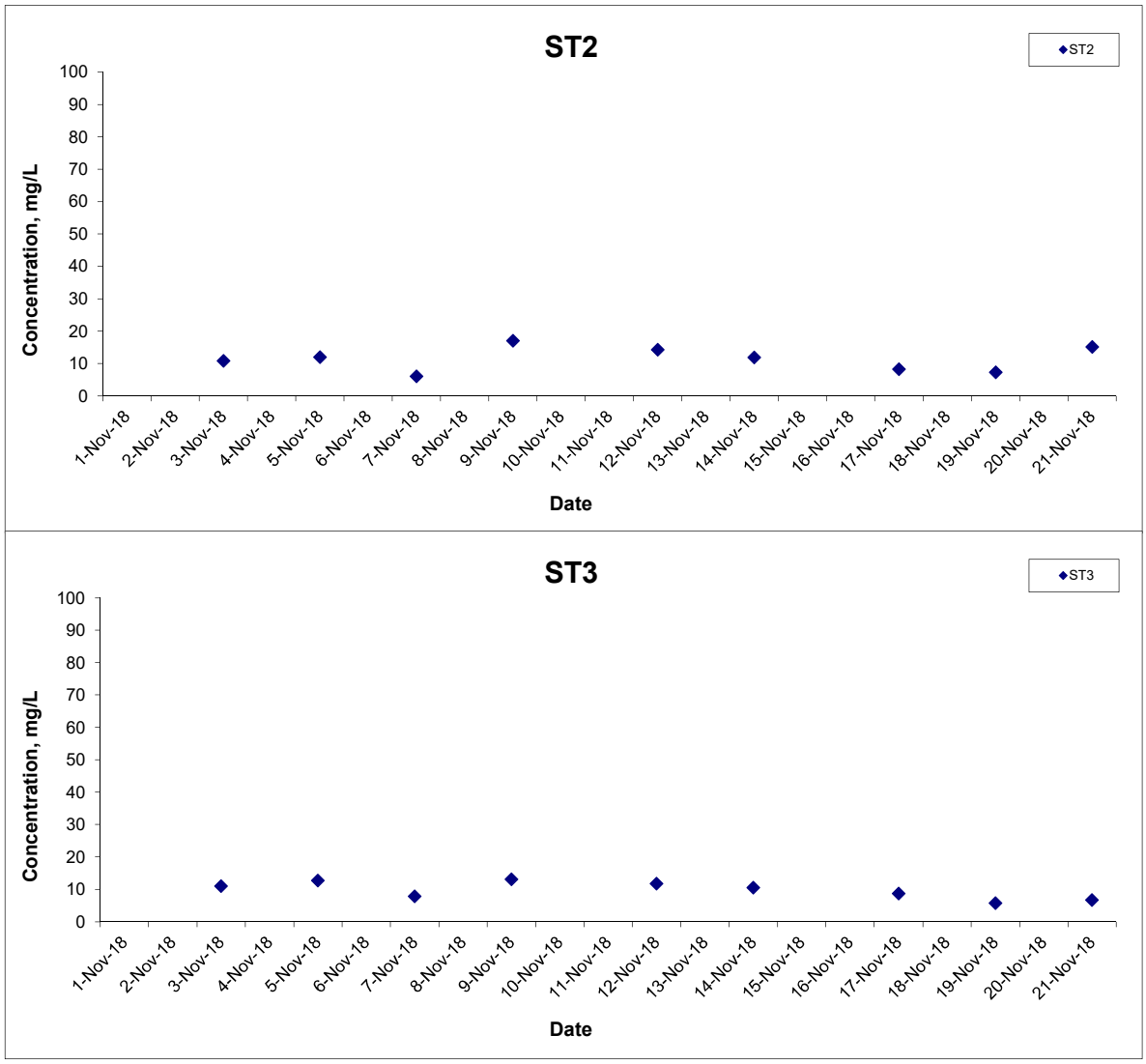
Suspended Solids (Depth-averaged) at Mid-Flood Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA12014	CINOTECH
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APPENDIX I
SUMMARY OF WEATHER CONDITIONS

Appendix I – Weather Conditions During Monitoring Period

Reporting Month	General Weather Conditions
February 2013	Cloudy and Sunny
March 2013	Cloudy and Sunny
April 2013	Cloudy, Rainy and Sunny
May 2013	Cloudy, Rainy and Sunny
June 2013	Cloudy, Rainy and Sunny
July 2013	Cloudy, Rainy and Sunny
August 2013	Cloudy, Rainy and Sunny
September 2013	Cloudy, Rainy and Sunny
October 2013	Cloudy and Sunny
November 2013	Cloudy and Sunny
December 2013	Cloudy, Rainy and Sunny
January 2014	Cloudy and Sunny
February 2014	Cloudy and Sunny
March 2014	Cloudy and Sunny
April 2014	Cloudy and Sunny
May 2014	Cloudy, Rainy and Sunny
June 2014	Cloudy and Sunny
July 2014	Sunny
August 2014	Cloudy, Rainy and Sunny
September 2014	Cloudy and Sunny
October 2014	Cloudy and Sunny
November 2014	Sunny
December 2014	Cloudy
January 2015	Cloudy and Sunny
February 2015	Cloudy and Sunny
March 2015	Cloudy and Sunny
April 2015	Cloudy and Sunny
May 2015	Cloudy, Windy and Sunny
June 2015	Cloudy, Rainy and Sunny
July 2015	Cloudy, Rainy and Sunny
August 2015	Cloudy, Rainy and Sunny
September 2015	Cloudy and Sunny
October 2015	Sunny
November 2015	Cloudy and Sunny
December 2015	Cloudy and Sunny
January 2016	Cloudy, Rainy and Sunny
February 2016	Cloudy and Sunny
March 2016	Cloudy, Windy and Sunny
April 2016	Cloudy, Rainy and Sunny
May 2016	Cloudy and Sunny
June 2016	Cloudy and Sunny

July 2016	Sunny
August 2016	Cloudy, Rainy and Sunny
September 2016	
October 2016	Cloudy and Sunny
November 2016	Cloudy and Sunny
December 2016	Cloudy and Sunny
January 2017	Cloudy and Sunny
February 2017	Cloudy and Sunny
March 2017	Cloudy and Sunny
April 2017	Cloudy and Sunny
May 2017	Cloudy and Sunny
June 2017	Cloudy, Rainy and Sunny
July 2017	Cloudy, Rainy and Sunny
August 2017	Cloudy and Sunny
September 2017	Cloudy and Sunny
October 2017	Cloudy and Sunny
November 2017	Cloudy and Sunny
December 2017	Cloudy and Sunny
January 2018	Cloudy and Sunny
February 2018	Cloudy and Sunny
March 2018	Cloudy, Rainy and Sunny
April 2018	Cloudy, Rainy and Sunny
May 2018	Cloudy and Sunny
June 2018	Cloudy, Rainy and Sunny
July 2018	Cloudy, Rainy and Sunny
August 2018	Cloudy and Sunny
September 2018	Cloudy and Sunny
October 2018	Cloudy, Rainy and Sunny