RAMBOLL

Ref.: HYDHZMBEEM00_0_7806L.19

24 December 2019

By Fax (3468 2076) and By Post

AECOM Asia Co. Ltd.
The PRE's Office
550 Cheung Tung Road, Lantau
Hong Kong

Attention: Mr. Joseph Yau

Dear Sir,

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/2013/01
HZMB HKBCF – Passenger Clearance Building
Quarterly EM&A Report No. 17 for September 2018 to November 2018

Reference is made to the Environmental Team's submission of Quarterly EM&A Report No. 17 for September 2018 to November 2018 (Revision 2) certified by the ET Leader (ET's ref.: "5126871/19.10/OC160/KC/RL" dated 23 December 2019) and provided to us via e-mail on 23 December 2019.

We are pleased to inform you that we have no adverse comments on the captioned Quarterly EM&A Report for September 2018 to November 2018.

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

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

Ray Yan
Independent Environmental Checker

c.c.	HyD	Mr. Cheng Pan	(By Fax: 3188 6614)
	HyD	Ms. Iris Ng	(By Fax: 3188 6614)
	Atkins	Mr. Keith Chau	(By Fax: 2890 6343)
	LCWJV	Mr. Owen Leung	(By Fax: 3621 0180)

Internal: DY, YH, HW, ENPO Site

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HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處
Hong Kong - Zhuhai - Macao Bridge
Hong Kong Project Management Office

Contract No. HY/2013/01

Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Quarterly EM&A Report No. 17
(Covering the Period from 1 September 2018 to 30 November 2018)

17 December 2019

Revision 2

Main Contractor

LEIGHTON 禮頓
俊和 CHUN WO
Leighton - Chun Wo Joint Venture

Environmental Team

ATKINS
Member of the SNC-Lavalin Group

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Executive Summary

This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract HY/2013/01 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) – Passenger Clearance Building (hereafter referred to as "the Contract") (includes the construction works of Contract No. HY/2013/06 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Automatic Vehicle Clearance Support System within Contract No. HY/2013/01 works area) for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to Leighton – Chun Wo Joint Venture (construction works of Contract No. HY/2013/06 was awarded to ATAL Technologies Limited within Contract No. HY/2013/01 works area) (hereafter referred to as "the Contractor") and Atkins China Limited was appointed as the Environmental Team (ET) by the Contractor

The Contract is part of Hong Kong – Zhuhai – Macao Bridge HKBCF which is a "Designated Project", under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/K for HKBCF was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Site preparation works of the Contract started on 26 September 2014 and the construction works of the Contract commenced on 6 October 2014. The construction works of the Contract No. HY/2013/06 within Contract No. HY/2013/01 works area commenced on 20 February 2018.

Atkins China Limited has been appointed by the Contractor to implement the Environmental Monitoring & Audit (EM&A) programme for the Contract in accordance with the Updated EM&A Manual for HKBCF (Version1.0) and will be providing environmental team services to the Contract.

This is the seventeenth Quarterly EM&A Report for the Contract which summaries findings of the EM&A works during the reporting period from 1 September 2018 to 30 November 2018. (includes the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/01 works area)

Landscape Checklist is shown in **Appendix A**.

Environmental Monitoring and Audit Progress

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). The air quality, noise, water quality and dolphin monitoring works under Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works were suspended from 1 September 2017. The ET of Contract No. HY/2013/01 is required and continues the same implementation of environmental monitoring commencing on 1 September 2017. It should be noted that the air quality monitoring station (AMS6) is covered by Contract No. HY/2011/03 Hong Kong-Zhuhai Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF. Noise monitoring station (NMS3C) and air quality monitoring station (AMS3C) are covered by Contract No. HY/2013/04– Hong Kong-Zhuhai-Macao Bridge HKBCF - Infrastructure Works Stage II (Southern Portion) (since 20 August 2018). Noise monitoring station (NMS2), air quality monitoring station (AMS7B), water quality monitoring and Chinese white dolphin monitoring responsibility under the EM&A programme for the HZMB HKBCF Project has been changed from Contract No. HY/2013/01 to Contract No. HY/2013/04 since 1 October 2018.

A summary of the monitoring activities during the reporting period are listed below:

Monitoring Items	Date		
	September 2018	**October 2018(*)**	**November 2018(*)**
1-hour TSP Monitoring	3, 5, 6, 7, 11, 12, 13, 17, 18, 19, 21, 24, 27 and 28	N/A	N/A
24-hour TSP Monitoring	3(i), 5, 6, 11, 12, 17, 21, 24(ii), 26(iii), 27 and 28	N/A	N/A
Noise Monitoring	4, 5, 10, 11, 17, 20, 26 and 27	N/A	N/A

Water Quality Monitoring	3, 5, 7, 10, 12(iv), 14, 17(v), 19, 21, 24, 26 and 28	N/A	N/A
Chinese White Dolphin Monitoring	10, 14(vi), 19(vi) and 24(vi)	N/A	N/A
Environmental Site Inspection	5, 12, 19 and 26	5, 10, 18, 24 and 31(**)	N/A(**)

Remark (*): Noise monitoring at station (NMS2), air quality monitoring at station (AMS7B), water quality monitoring and Chinese White Dolphin monitoring responsibility under the EM&A programme for the HZMB HKBCF Project has been changed from Contract No. HY/2013/01 to Contract No. HY/2013/04 since 1 October 2018.
(**): The works area in Hong Kong-Zhuhui-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site area was changed to closed area, no site inspection was conducted for the Contract No. HY/2013/01 in November 2018.
(i) 24-hour TSP air quality monitoring at AMS7B on 31 August 2018 was rescheduled to 3 September 2018 due to unstable power supply.
(ii)24-hour TSP air quality monitoring at AMS7B on 18 September 2018 was rescheduled to 24 September 2018 due to unstable power supply.
(iii) An additional 24-hour TSP air quality monitoring at AMS7B was conducted on 26 September 2018.
(iv) Due to the typhoon signal was hoisted, the water quality monitoring (mid-ebb tide) on 12 September 2018 was cancelled.
(v) Due to the typhoon signal was hoisted, the water quality monitoring on 17 September 2018 was cancelled.
(vi) Due to the typhoon issue, the dolphins monitoring on 18, 20 and 26 September 2018 were rescheduled to 14, 19 and 24 September 2018.

Breaches of Action and Limit Levels :

A summary of environmental exceedances for the reporting period are listed below:

Environmental Monitoring	Parameters	Action Level (AL)(*)			Limit Level (LL)(*)		
		Sep 2018	Oct 2018	Nov 2018	Sep 2018	Oct 2018	Nov 2018
Air Quality	1-hr TSP	-	-	-	-	-	-
	24-hr TSP	-	-	-	-	-	-
Noise	$L_{eq\ (30\ min)}$	-	-	-	-	-	-
Water Quality	Suspended solids level (SS)	2	1	5	-	-	-
	Turbidity level	-	1	-	-	-	-
	Dissolved oxygen level (DO)	153	-	-	29	-	-
Dolphin Monitoring	Quarterly Analysis	-			1		
Total		162			30		

Remark(*): Based on the investigation results, all exceedances in September 2018 are found that not related to Contract No. HY/2013/01. The exceedances in October and November 2018 can be referred to the corresponding monthly EM&A Report prepared under Contract No. HY/2013/04.

Implementation of Environmental Measures

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. Potential environmental impacts due to the construction activities were monitored and reviewed.

Complaint Log

There was no complaint received in relation to the environmental impact during reporting period.

Notifications of Summons and Successful Prosecutions

There was no notification of summon or prosecution received during this reporting period.

Reporting Change

The entire environmental monitoring responsibility under the EM&A programme for the HZMB HKBCF Project has been changed from Contract No. HY/2013/01 to Contract No. HY/2013/04 since 1 October 2018.

The works area in Hong Kong-Zhuhai-Macao Bridge was handed over to the owner since 24 October 2018.

1 Introduction

1.1 Basic Project Information

1.1.1 This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract HY/2013/01 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building (hereafter referred to as "the Contract") (includes the construction works of Contract No. HY/2013/06 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Automatic Vehicle Clearance Support System within Contract No. HY/2013/01 works area) for the Highways Department of Hong Kong Special Administrative Region. The Contract was awarded to Leighton – Chun Wo Joint Venture (construction works of Contract No. HY/2013/06 was awarded to ATAL Technologies Limited within Contract No. HY/2013/01 works area) (hereafter referred to as "the Contractor") and Atkins China Limited was appointed as the Environmental Team (ET) by the Contractor.

1.1.2 The Contract is part of Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) which is a "Designated Project", under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499). An Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/K for HKBCF was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Site preparation work of the Contract started on 26 September 2014 and the construction works of the Contract commenced on 6 October 2014. The construction works of the Contract No. HY/2013/06 within Contract No. HY/2013/01 works area commenced on 20 February 2018. The works areas of the Contract are shown in **Appendix B**.

1.1.3 This is the seventeenth Quarterly EM&A Report for the Contract which summarizes the audit findings of the EM&A programme during the reporting period from 1 September 2018 to 30 November 2018.

1.2 Project Organisation

1.2.1 The project organization structure and lines of communication with respect to the on-site environmental management structure is shown in **Appendix C**. The key personnel contact names and numbers are summarized in **Table 1.1**.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
For Contract No. HY/2013/01				
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	Chief Resident Engineer	Malcolm Sage	3958 7330	3468 2076
Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited)	Environmental Project Office Leader	Y. H. Hui	3465 2888	3465 2899
	Independent Environmental Checker	Raymond Dai	3465 2888	3465 2899
Contractor (Leighton – Chun Wo Joint Venture)	Project Manager	Owen Leung	9232 5750	3621 0180
	Environmental Officer	Stephen Tsang	9686 0787	3621 0180

Environmental Team (Atkins China Limited)	Environmental Team Leader	Keith Chau	2972 1721	2890 6343
24 hours complaint hotline	---	---	3958 7300	---
For Contract No. HY/2013/06 within Contract No. HY/2013/01 works area				
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	Chief Registered Architect	Malcolm Sage	3958 7330	3468 2076
Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited)	Environmental Project Office Leader	Y. H. Hui	3465 2888	3465 2899
	Independent Environmental Checker	Raymond Dai	3465 2888	3465 2899
Contractor (ATAL Technologies Limited)	Site Agent	Mr. Eric Yim	2565 3355	3162 5217
	Environmental Officer	Mr. W. Li	2565 3137	3162 5217
Environmental Team (Atkins China Limited)	Environmental Team Leader	Keith Chau	2972 1721	2890 6343
24 hours complaint hotline	---	---	6509 0375	---

1.3 Construction Programme

1.3.1 A copy of the Contractor's construction programme is provided in **Appendix D**.

1.4 Construction Works Undertaken During the Reporting Period

1.4.1 A summary of the construction activities undertaken during this reporting period is shown below:

For Contract No. HY/2013/01

Land-Based Work and Marine Based work (September and October 2018)

- According to information from the Contractor, the construction works of Contract No. HY/2013/01 have been completed. The related completion certificate (Ref.: BWLM: TTHK: mlmp:60313494/C1/M15/905/M1422-2018009635T) dated 9 August 2018 was issued by Engineer's Representative.
- Landscape works.
- Maintenance works.

For Contract No. HY/2013/06 within Contractor No. HY/2013/01 works area (September and October 2018)

- According to information from Contractor, no construction works will be conducted by Contract No. HY/2013/06 except System Testing and Commissioning at ELV & Sever Room, and Zone E PCB

1.4.2 As all the sections under Contract No. HY/2013/01 and HY/2013/06 were handed over to the relevant authorities on 24 October 2018 and the site had been changed to closed area, no construction works undertaken in November 2018.

2 EM&A Requirement

2.1 Summary of EM&A Requirements

2.1.1 The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1). The air quality, noise, water quality and dolphin monitoring works under Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works were suspended from 1 September 2017. The ET of Contract No. HY/2013/01 is required and continues the same implementation of environmental monitoring commencing on 1 September 2017. It should be noted that the air quality monitoring station (AMS 6) is covered by Contract No. HY/2011/03 Hong Kong-Zhuhai Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF.

2.1.2 The permission to carry out impact air quality monitoring work at AMS7 (Hong Kong SkyCity Marriott Hotel) was not granted after 31 January 2015. The impact air quality monitoring location (AMS7) was relocated to a nearby air sensitive receiver, Chu Kong Air-Sea Union Transportation Co. Ltd. (AMS7A), from 5 February 2015 to 30 December 2015. The alternative location at Chu Kong Air-Sea Union Transportation Co. Ltd. was approved by EPD on 5 February 2015. However, AMS7A was relocated back to its original location (AMS7-Hong Kong SkyCity Marriott Hotel) on 30 December 2015. The relocation of air quality monitoring location, AMS7A, back to AMS7 was approved by EPD on 21 December 2015. The baseline and action/limit level for air quality as derived from the baseline monitoring data recorded at Hong Kong SkyCity Marriott Hotel (AMS7) was adopted for the air quality monitoring location. As the permission to carry out air quality monitoring at Hong Kong SkyCity Marriott Hotel was not granted after the end of January 2018, as such, a proposal for the monitoring location relocated to 3RS Site Office(AMS7B) was justified by the ET Leader for Contract No. HY/2013/01 on 22 January 2018; verified by the IEC on 24 January 2018; and submitted to EPD on 30 January 2018, and the AQM has been carrying out at AMS7B with EPD's consent since 6 February 2018.

2.1.3 The air quality and meteorological monitoring station at AMS3B and noise monitoring station at NMS3B have been relocated and renamed as AMS3C and NMS3C respectively. The monitoring stations AMS3C and NMS3C are covered by Contract No. HY/2013/04 – Hong Kong-Zhuhai-Macao Bridge HKBCF - Infrastructure Works Stage II (Southern Portion) since 20 August 2018. The air quality monitoring station AMS2 and AMS7B and noise monitoring station NMS2 are covered by Contract No. HY/2013/04 since 1 October 2018. The ET of the Contract or another ET of the HZMB project is required to conduct air quality stations (AMS2, AMS3C and AMS7B) and noise monitoring stations (NMS2 and NMS3C) are no longer covered under Contract No. HY/2013/04.

2.1.4 A summary of air and noise monitoring locations are presented in **Table 2.1**. The location of air quality and noise monitoring stations are shown as in **Figure 2.1**.

Table 2.1 Summary of Impact EM&A Requirements

Environmental Monitoring	ID	Location Description
Air Quality	AMS2(2)(3)	Tung Chung Development Pier
	AMS3C(1)(3)	Ying Tung Estate Market Rooftop
	AMS6(3)	Dragonair/CNAC (Group) Building
	AMS7B(2)(3)(4)	3RS Site Office
Noise	NMS2(5)(8)	Seaview Crescent
	NMS3C(5)(6)(7)	Ying Tung Estate Refuse Collection Point

Remarks:

(1) Air quality monitoring at AMS3C has been undertaking by the ET for Contract No. HY/2013/04 since 20 August 2018.
(2) Air quality monitoring at AMS2 and AMS7B have been undertaking by the ET for Contract No. HY/2013/04 since 1 October 2018.
(3) The ET of this Contract should conduct impact air quality monitoring at the Air Monitoring Station listed in the table as part of EM&A programme according to the latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.
(4) The original monitoring location was at Hong Kong SkyCity Marriott Hotel (AMS7). As the permission to carry out air quality monitoring at Hong Kong SkyCity Marriott Hotel was not granted after 31 January 2015, the monitoring location was relocated to Chu Kong Air-Sea Union Transportation Co. Ltd. (AMS7A) from 5 February 2015 to 30 December 2015. The alternative monitoring location at Chu Kong Air-Sea Union Transportation Co. Ltd. was approved by EPD on 5 February 2015. However, AMS7A was relocated back to its original location (AMS7-Hong Kong SkyCity Marriott Hotel) on 30 December 2015. The relocation of air quality monitoring location, AMS7A, back to AMS7 was approved by EPD on 21 December 2015. As the permission to carry out air quality monitoring at Hong Kong SkyCity Marriott Hotel was not granted after the end of January 2018, as such, a proposal for the monitoring location relocated to 3RS Site Office(AMS7B) was justified by the ET Leader for Contract No. HY/2013/01 on 22 January 2018; verified by the IEC on 24 January 2018; and submitted to EPD on 30 January 2018, and the AQM has been carrying out at AMS7B with EPD's consent since 6 February 2018.
(5) The ET of this Contract should conduct impact noise monitoring at the Noise Monitoring Station listed in the table as part of EM&A programme according to the latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.
(6) Limit Level for schools will be applied for NMS3C. Day time noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period.
(7) Noise Monitoring at NMS3C has been undertaking by the ET for Contract No. HY/2013/04 since 20 August 2018.
(8) Noise Monitoring at NMS2 has been undertaking by the ET for Contract No. HY/2013/04 since 1 October 2018.

2.1.5 The water quality monitoring works for the Contract before 1 September 2017 are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works. The water quality works under Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works were suspended from 1 September 2017. Water quality monitoring works are covered by the ET of Contract No. HY/2013/01 from 1 September 2017 to 30 September 2018. The ET of Contract No. HY/2013/04 are required and continues the same implementation of water quality monitoring works commencing since 1 October 2018. A total of twenty-one stations (nine Impact Stations (IS), seven Sensitive Receiver Stations (SR) and five Control/Far Field Stations (CS)) are covered by the current EM&A programme.

2.1.6 The water quality monitoring stations at CS(Mf)3 (Coordinate: 809989E, 821117N), IS10 (Coordinate: 812577E, 820670N) and SR5 (811489E, 820455N) have been occupied by the marine work of a designated project - Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project). The alternative water quality monitoring station at CS(Mf)3(N) (Coordinate: 808814E, 822355N), IS10(N) (Coordinate: 812942E, 820881N) and SR5(N) (812569E, 8201475N) were justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.

2.1.7 There are construction activities of work bridge near SR4(N), the water quality monitoring team were unable to access station SR4(N) in September 2018 due to safety reason. The water quality monitoring for SR4(N) were conducted at the nearest location of SR4(N) as much as practical.

2.1.8 The impact water quality monitoring requirements are detailed in the monthly EM&A Reports prepared by Contract No. HY/2013/04 since 1 October 2018. If exceedance(s) at these survey transect(s) is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the monthly EM&A Report.

2.1.9 **Table 2.2** and **Figure 2.2** show the locations of water quality monitoring stations.

Table 2.2 Impact Water Quality Monitoring Stations

Station	Description	East	North
IS5	Impact Station (Close to HKBCF construction site)	811579	817106
IS(Mf)6	Impact Station (Close to HKBCF construction site)	812101	817873

IS7	Impact Station (Close to HKBCF construction site)	812244	818777
IS8	Impact Station (Close to HKBCF construction site)	814251	818412
IS(Mf)9	Impact Station (Close to HKBCF construction site)	813273	818850
IS10	Impact Station (Close to HKBCF construction site)	812577	820670
IS10(N)*	Impact Station (Close to HKBCF construction site)	812942	820881
IS(Mf)11	Impact Station (Close to HKBCF construction site)	813562	820716
IS(Mf)16	Impact Station (Close to HKBCF construction site)	814328	819497
IS17	Impact Station (Close to HKBCF construction site)	814539	820391
SR3(N) ^	Sensitive receivers (San Tau SSSI)	810689	816591
SR4(N)@	Sensitive receivers (Tai Ho)	814705	817859
SR5	Sensitive receivers (Artificial Reef in NE Airport)	811489	820455
SR5(N)*	Sensitive receiver (Artificial Reef in NE Airport)	812569	821475
SR6	Sensitive receivers (Sha Chau and Lung Kwu Chau Marine Park)	805837	821818
SR7	Sensitive receivers (Tai Mo Do)	814293	821431
SR10A(N) ^	Sensitive receivers (Ma Wan FCZ) 1	823644	823484
SR10B(N2) ^	Sensitive receivers (Ma Wan FCZ) 2	823689	823159
CS(Mf)3	Control Station	809989	821117
CS(Mf)3(N)*	Control Station	808814	822355
CS(Mf)5	Control Station	817990	821129
CS4	Control Station	810025	824004
CS6	Control Station	817028	823992
CSA	Control Station	818103	823064

Remarks:
* Alternative water quality monitoring stations at CS(Mf)3(N), SR5(N) and IS10(N) were justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.
^ Alternative water quality monitoring stations at SR3, SR10A and SR10B(N) were justified by the ET Leader on 8 November 2017 and verified by IEC on 13 November 2017; and submitted to EPD on 29 November 2017 and it was approved by EPD on 22 December 2017.
@ There are construction activities of work bridge near SR4(N). the water quality monitoring team were unable to access station SR4(N) in September 2018 due to safety reason. The water quality monitoring for SR4(N) were conducted at the nearest location of SR4(N) as much as practical.

2.1.10 The dolphin monitoring works for the Contract before 1 September 2017 are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works. The dolphin monitoring works under Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works were suspended from 1 September 2017. The ET of Contract No. HY/2013/01 (September 2018) and the ET of Contract No. HY/2013/04 (since 1 October 2018) are required to conduct dolphin monitoring at the twenty-four transects. The monitoring requirements are detailed in the corresponding monthly EM&A Reports prepared by Contract No. HY/2013/01 and Contract No. HY/2013/04.

2.1.11 The dolphin monitoring should adopt line-transect vessel survey method. The survey follows pre-set and fixed transect lines in the two areas defined by AFCD as: Northeast Lantau survey area; and Northwest Lantau survey area. The change of transect lines 2, 3, 4, 5, 6 and 7 and new vessel-based transect line 24 for dolphin monitoring have been proposed due to the marine work of a designated project - Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project). It was justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.

2.1.12 The co-ordinates for the transect lines showing the transect lines and are shown in **Table 2.3** and **Figure 2.3** shows the layout map.

Table 2.3 Impact Dolphin Monitoring Line Transect Co-ordinates

Transect ID	HK Grid System	
	East	North
1*	804671	815456
	804671	831404
2	805476	820800
	805476	826654
3	806464	821150
	806464	822911
4	807518	821500
	807518	829230
5	808504	821850
	808504	828602
6	809490	822150
	809490	825352
7	810499	822000
	810499	824613
8*	811508	821123
	811508	824254
9*	812516	821303
	812516	824254
10*	813525	820827
	813525	824657
11#	814556	818853
	814556	820992
12	815542	818807
	815542	824882
13	816506	819480
	816506	824859
14	817537	820220
	817537	824613
15	818568	820735
	818568	824433
16	819532	821420
	819532	824209
17	820451	822125
	820451	823671
18	821504	822371
	821504	823761
19	822513	823268
	822513	824321
20	823477	823402
	823477	824613
21	805476	827081
	805476	830562
22	806464	824033
	806464	829598
23	814559	821739
	814559	824768
24	805476	815900

	805476	819100

Remarks:

(a) * Due to the presence of deployed silt curtain systems at the site boundaries of the Contract, some of the transect lines shown in Figure 5.1 could not be fully surveyed during the regular survey. Transect 10 is reduced from 6.4km to approximately 3.6km in length due to the HKBCF construction site. Therefore the total transect length for both NEL and NWL combined is reduced to approximately 108km

(b) # Coordinates for transect lines 1, 8, 9 and 11 have been updated in respect to the Proposal for Alteration of Transect Line for Dolphin Monitoring approved by EPD on 19 August 2015.

(c) The change of transect lines 2, 3, 4, 5, 6 and 7 and new vessel-based transect line 24 for dolphin monitoring have been proposed due to the marine work of a designated project-Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project). It was justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.

(d) Due to marine work of the Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project), original transect lines of dolphin monitoring 2, 3, 4, 5, 6 and 7 are enclosed by works boundary of 3RS Project. Alternative dolphin monitoring transect lines 2, 3,4, 5, 6, 7 and 24 are adopted starting from 17 May 2017 to replace the original transect lines.

2.2 Monitoring Requirements

2.2.1 The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the corresponding monthly EM&A report for Contract No. HY/2013/01 (September 2018 of reporting period) and Contract No. HY/2013/04 (October and November 2018 of reporting period).

2.3 Action and Limit Levels

2.3.1 The Action and Limit Level for 1-hr TSP and 24-hr TSP are provided in **Table 2.4** and **Table 2.5**, respectively.

Table 2.4 Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level, µg/m³	Limit Level, µg/m³
AMS2 – Tung Chung Development Pier	374	500
AMS3C - Ying Tung Estate Market Rooftop AMS3C - Ying Tung Estate Market Rooftop	368	
AMS6 – Dragonair/CNAC (Group) Building (HKIA)	360	
AMS7B – 3RS Site Office	370	

Table 2.5 Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level, µg/m³	Limit Level, µg/m³
AMS2 – Tung Chung Development Pier	176	260
AMS3C - Ying Tung Estate Market Rooftop	167	
AMS6 – Dragonair/CNAC (Group) Building (HKIA)	173	
AMS7B – 3RS Site Office	183	

2.3.2 The Action and Limit Levels for construction noise are defined in **Table 2.6**.

Table 2.6 Action and Limit Level for Construction Noise

Monitoring Station	Time Period	Action Level	Limit Level
NMS2	0700-1900 hours on normal weekdays	When one documented complaint is received.	75 dB(A)
NMS3C(i)			70/65 dB(A)(*)

Notes :
If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.
(i) Noise monitoring at NMS3C has been undertaking by the ET for Contract No. HY/2013/04 since 20 August 2018.
(*) Reduce to 70 dB(A) for schools and 65 dB(A) during school examination period. The Limit Level for schools will be applied for NMS3C. Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period.

2.3.3 The Action and Limit Levels for water quality are provided in **Table 2.7**.

Table 2.7 Action and Limit Levels for Water Quality

Parameters	Action	Limit
DO in mg L^{-1} (Surface, Middle & Bottom)	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4 .2 (except 5 mg/L for FCZ) Bottom 3.6
SS in mg L^{-1} (depth-averaged) at all monitoring stations and control stations	23.5 and 120% of upstream control station's SS at the same tide of the same day*	34.4 and 130% of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes*
Turbidity in NTU (depth-averaged)	27.5 and 120% of upstream control station's turbidity at the same tide of the same day*	47.0 and 130% of upstream control station's turbidity at the same tide of the same day*

* Remarks: Reference is made to EPD approval of adjustment of water quality assessment criteria issued and became effective on 18 February 2013.

Notes:
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 limits occurs when monitoring result is lower than the limits.
3. For turbidity, SS, non-compliance of the water quality limits occurs 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 4.2 mg/L and 3.6 mg/L respectively.

2.3.4 The Action and Limit Levels for Chinese White Dolphin Monitoring are provided in **Table 2.8** and **Table 2.9**, respectively.

Table 2.8 Action and Limit Levels for Chinese White Dolphin Monitoring - Approach to Define Action Level (AL) and Limit Level (LL)

	North Lantau Social Cluster	
	NEL	NWL

Action Level	(STG < 70% of baseline) & (ANI < 70% of baseline)	(STG < 70% of baseline) & (ANI < 70% of baseline)
Limit Level	[(STG < 40% of baseline) & (ANI < 40% of baseline)] AND [(STG < 40% of baseline) & (ANI < 40% of baseline)]	

Table 2.9 Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring

	North Lantau Social Cluster	
	NEL	**NWL**
Action Level	(STG < 4.2) & (ANI < 15.5)	(STG < 6.9) & (ANI < 31.3)
Limit Level	[(STG < 2.4) & (ANI <8.9)] AND [(STG < 3.9) & (ANI < 17.9)]	

2.4 Event Action Plans

2.4.1 The Event Actions Plans for air quality, noise, water quality and dolphin monitoring are provided in **Appendix E.**

2.5 Mitigation Measures

2.5.1 Environmental mitigation measures for the Contract were recommended in the approved EIA Report. **Appendix F** lists the recommended mitigation measures and the implementation status.

3 Environmental Monitoring and Audit

3.1 Air Quality Monitoring Results

3.1.1 In accordance with the Contract Specific EM&A Manual, impact 1-hour Total Suspended Particulates (TSP) monitoring was conducted for at least three times every 6 days, while impact 24-hour TSP monitoring was carried out for at least once every 6 days at the 4 monitoring stations (AMS2, AMS3C, AMS6 and AMS7B).

3.1.2 Confirmed by ENPO, the air quality monitoring (both 1-hr and 24-hr TSP) have been undertaking by the ET for Contract No. HY/2013/04 at AMS3C respectively since 20 August 2018. The responsible contract for the air quality monitoring at station AMS7B under the EM&A programme for the HZMB HKBCF Project has been changed from Contract No. HY/2013/01 to Contract No. HY/2013/04 since 1 October 2018.

3.1.3 The graphical plots of the monitoring results are presented in **Appendix G**. No specific trend of the monitoring results or existence of persistent pollution source was noted.

3.1.4 A severe typhoon Mangkhut was marked in September 2018, the month was wetter than usual which mainly attributing to the rainfall brought by Mangkhut. The weather in Hong Kong was mainly cloudy with occasional showers in early of September 2018. Meanwhile, the weather in Hong Kong became windy with squally heavy rain in mid of September 2018. The weather in Hong Kong became generally fine, slight cooler and dry towards the end of September 2018. Under the influence of the northeast monsoon, the local weather was generally fine and dry and a few rain patches in early of October 2018. The associated northeast monsoon brought some rain and slightly cooler weather in mid of October 2018. Meanwhile, under the influence of anticyclone aloft and the dry northeast monsoon, the weather in Hong Kong became brighter with sunny and very dry with cooler in end of October 2018. Under the combined effect of the northeast monsoon and tropical cyclone Yutu, it was windy and dry with sunny periods in Hong Kong on the first day of November. While local winds subsided gradually, it was mainly cloudy with a few rain patches in next few days. The weather of Hong Kong turned cloudier and windier with light rain in mid of November 2018. The weather of Hong Kong became appreciably cooler and drier with sunny periods in end of November 2018.

3.1.5 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A Reports (for September 2018 to November 2018) prepared by Contract No. HY/2011/03.

3.1.6 The number of exceedances recorded during the reporting period are presented in the **Table 3.1**. The monitoring results for 1-hour and 24-hour are summarized in **Table 3.2** and **Table 3.3** respectively.

Table 3.1 Summary of number of exceedances for 1-hr and 24-hr TSP Monitoring

Monitoring Station	September 2018	
	Action Level	Limit Level
AMS2	-	-
AMS3C	-	-
AMS6	-	-
AMS7B	-	-

Remark: Confirmed by ENPO, the air quality monitoring (both 1-hr and 24-hr TSP) have been undertaking by the ET for Contract No. HY/2013/04 at AMS3C respectively since 20 August 2018. The responsible contract for the air quality monitoring at station AMS7B under the EM&A programme for the HZMB HKBCF Project has been changed from Contract No. HY/2013/01 to Contract No. HY/2013/04 since 1 October 2018.

Table 3.2 Summary of 1-hour TSP Monitoring Results in September 2018

Reporting month	Monitoring Station	Average (μg/m³)	Range (μg/m³)	Action Level (μg/m³)	Limit Level (μg/m³)
September 2018	AMS2	38	11 – 57	374	500
	AMS3C	40	26 – 75	368	
	AMS7B	39	11 - 65	370	

Remark: Confirmed by ENPO, the air quality monitoring (1-hr TSP) have been undertaking by the ET for Contract No. HY/2013/04 at AMS3C respectively since 20 August 2018. The responsible contract for the air quality monitoring at station AMS7B under the EM&A programme for the HZMB HKBCF Project has been changed from Contract No. HY/2013/01 to Contract No. HY/2013/04 since 1 October 2018.

Table 3.3 Summary of 24-hour TSP Monitoring Results in September 2018

Reporting month	Monitoring Station	Average (μg/m³)	Range (μg/m³)	Action Level (μg/m³)	Limit Level (μg/m³)
September 2018	AMS2	50	33 – 79	176	260
	AMS3C	44	32 – 67	167	
	AMS7B	76	44 - 170	183	

Remark: Confirmed by ENPO, the air quality monitoring (24-hr TSP) have been undertaking by the ET for Contract No. HY/2013/04 at AMS3C respectively since 20 August 2018. The responsible contract for the air quality monitoring at station AMS7B under the EM&A programme for the HZMB HKBCF Project has been changed from Contract No. HY/2013/01 to Contract No. HY/2013/04 since 1 October 2018.

3.1.7 No Action and Limit Level exceedances of 1-hour TSP were recorded at AMS2, AMS3C and AMS7B in September 2018.

3.1.8 No Action and Limit Level exceedances of 24-hour TSP were recorded at AMS2, AMS3C and AMS7B in September 2018.

3.1.9 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

3.1.10 The monitoring results for 1-hr TSP level and 24-hr TSP level at AMS2, AMS3C and AMS7B are reported in the monthly EM&A report that prepared by Contract No. HY/2013/04 since October 2018. No air quality exceedances were recorded at stations AMS2, AMS3C and AMS7B by the ET of the Contract No. HY/2013/04 in October and November 2018.

3.2 Noise Monitoring Results

3.2.1 In accordance with the Contract Specific EM&A Manual, impact noise monitoring was conducted for at least once per week during the construction phase of the Contract.

3.2.2 The graphical plots of the monitoring results are presented in **Appendix G**. No specific trend of the monitoring results or existence of persistent pollution source was noted.

3.2.3 The number of exceedances recorded during the reporting period are presented in the **Table 3.4**. The monitoring results for construction noise are summarized in **Table 3.5**.

Table 3.4 Summary of number of exceedances for Impact Noise Monitoring

Monitoring Station (2)	September 2018	
	Action Level	Limit Level
NMS2(1)	-	-
NMS3C(1)(2)	-	-

Remark: (1) Confirmed by ENPO, the noise monitoring (NMS3C) have been undertaking by the ET for Contract No. HY/2013/04 at NMS3C respectively since 20 August 2018. The responsible contract for the noise monitoring at station NMS2 under the EM&A programme for the HZMB HKBCF Project has been changed from Contract No. HY/2013/01 to Contract No. HY/2013/04 since 1 October 2018.
(2) The Limit Level for schools will be applied for NMS3C. Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period.

Table 3.5 Summary of Construction Noise Monitoring Results in September 2018

Reporting month	Monitoring Station	Average, dB(A) $L_{eq\ (30\ mins)}$	Range, dB(A) $L_{eq\ (30\ mins)}$	Limit Level, dB(A) $L_{eq\ (30\ mins)}$
September 2018	NMS2(1)	65	63 - 66	75
	NMS3C(1) (2)	70	69- 70	70/65

Remark: (1) Confirmed by ENPO, the noise monitoring (NMS3C) have been undertaking by the ET for Contract No. HY/2013/04 at NMS3C respectively since 20 August 2018. The responsible contract for the noise monitoring at station NMS2 under the EM&A programme for the HZMB HKBCF Project has been changed from Contract No. HY/2013/01 to Contract No. HY/2013/04 since 1 October 2018.
(2) The Limit Level for schools will be applied for NMS3C. Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period.

3.2.4 No Action and Limit Level exceedances of noise monitoring were recorded at NMS2 and NMS3C in September 2018.

3.2.5 The event and action plan is provided in **Appendix E.**

3.2.6 The monitoring results for NMS2 and NMS3C are reported in the monthly EM&A Reports that prepared by Contract No. HY/2013/04 since October 2018. No noise exceedances were recorded at stations NMS2 and NMS3C by the ET of the Contract No. HY/2013/04 in October and November 2018.

3.3 Water Quality Monitoring Results

3.3.1 Impact water quality monitoring was carried out to ensure that any deterioration of water quality was detected, and that timely action was taken to rectify the situation. For impact water quality monitoring, measurement were taken in accordance with the Contract Specific EM&A Manual.

3.3.2 For impact water quality monitoring, number of exceedances recorded during reporting period at each impact station are summarised in **Table 3.6**.

3.3.3 No Action Level and Limit Level exceedances of turbidity were recorded at mid-ebb tide and mid-flood tide in September 2018. One Action Level exceedance of turbidity was recorded at mid-ebb tide on 24 October 2018 by the ET of Contract No. HY/2013/04 while no Action Level exceedance of turbidity at mid-flood tide was recorded by the ET of Contract No. HY/2013/04 during October and November 2018. No Limit Level exceedances of turbidity was recorded by the ET of Contract No. HY/2013/04 during October and November 2018.

3.3.4 73 Action Level exceedances of dissolved oxygen were recorded at mid-ebb tide on 3, 5, 7, 10 and 14 September 2018 while 80 Action Level exceedances of dissolved oxygen were recorded

at mid-flood tide on 3, 5, 7, 10, 12, 14 and 28 September 2018. 12 Limit Level exceedances of dissolved oxygen were recorded at mid-ebb tide on 3, 5, 10 and 14 September 2018 while 17 Limit Level exceedances of dissolved oxygen were recorded at mid-flood tide on 3, 5, 7, 10, 12, 14 and 28 September 2018. No Action Level and Limit Level exceedances of dissolved oxygen were recorded at mid-ebb tide and mid-flood tide by the ET of Contract No. HY/2013/04 during October and November 2018.

3.3.5 Two Action Level exceedances of suspended solid were recorded at mid-flood tide on 10 and 12 September 2018. No Action Level exceedances of suspended solid were recorded at mid-ebb tide and no Limit Level exceedances of suspended solid in September 2018. Six Action Level exceedances of suspended solid were recorded at mid-flood tide on 10 October 2018 and 23 and 26 November 2018 by the ET of Contract No. HY/2013/04 during October and November 2018. No Action Level exceedances of suspended solid were recorded at mid-ebb tide and no Limit Level exceedances of suspended solid was recorded by the ET of Contract No. HY/2013/04 during October and November 2018.

Table 3.6 Summary of Water Quality Exceedances

Station	Exceedance Level	DO (S&M)		DO (Bottom)		Turbidity		SS	
		Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood
IS5	Action Level	2018-09-03; 2018-09-05; 2018-09-07	2018-09-03; 2018-09-10; 2018-09-12	2018-09-03; 2018-09-07; 2018-09-10	2018-09-03; 2018-09-05; 2018-09-10				
	Limit Level	2018-09-10		2018-09-05					
IS(Mf)6	Action Level	2018-09-10	2018-09-10; 2018-09-12			2018-10-24			
	Limit Level								
IS7	Action Level	2018-09-10	2018-09-10; 2018-09-12						
	Limit Level								
IS8	Action Level	2018-09-10	2018-09-10; 2018-09-12	2018-09-03; 2018-09-07; 2018-09-10	2018-09-10; 2018-09-12				
	Limit Level								
IS(Mf)9	Action Level	2018-09-10	2018-09-12	2018-09-03; 2018-09-05; 2018-09-10	2018-09-10; 2018-09-12				
	Limit Level		2018-09-10						
IS10(N)	Action Level	2018-09-03; 2018-09-05; 2018-09-07; 2018-09-10	2018-09-03; 2018-09-05; 2018-09-10; 2018-09-12	2018-09-03; 2018-09-05; 2018-09-07; 2018-09-10	2018-09-03; 2018-09-05; 2018-09-07; 2018-09-10; 2018-09-12				2018-11-23
	Limit Level								
IS(Mf)11	Action Level	2018-09-03; 2018-09-05; 2018-09-07; 2018-09-10	2018-09-03; 2018-09-10; 2018-09-12	2018-09-03; 2018-09-05; 2018-09-07; 2018-09-10	2018-09-03; 2018-09-05; 2018-09-07; 2018-09-10; 2018-09-12				2018-11-23
	Limit Level								
IS(Mf)16	Action Level	2018-09-03; 2018-09-14	2018-09-10; 2018-09-12	2018-09-03; 2018-09-05; 2018-09-07; 2018-09-10	2018-09-03; 2018-09-10; 2018-09-12				
	Limit Level	2018-09-10							
IS17	Action Level	2018-09-03; 2018-09-05; 2018-09-14	2018-09-03; 2018-09-12; 2018-09-14	2018-09-03; 2018-09-10; 2018-09-14	2018-09-07; 2018-09-10; 2018-09-12				

Station	Exceedance Level	DO (S&M)		DO (Bottom)		Turbidity		SS	
		Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood
	Limit Level	2018-09-10	2018-09-10	2018-09-05					
SR3(N)	Action Level	2018-09-10	2018-09-10; 2018-09-12	2018-09-07; 2018-09-10	2018-09-10; 2018-09-12				
	Limit Level								
SR4(N)	Action Level	2018-09-03; 2018-09-05; 2018-09-07; 2018-09-10	2018-09-10; 2018-09-12; 2018-09-14	2018-09-03; 2018-09-07; 2018-09-10	2018-09-03; 2018-09-10; 2018-09-12				
	Limit Level			2018-09-05					
SR5(N)	Action Level	2018-09-03; 2018-09-05; 2018-09-07; 2018-09-10	2018-09-10; 2018-09-12	2018-09-03; 2018-09-05; 2018-09-07; 2018-09-10	2018-09-05; 2018-09-10; 2018-09-12				
	Limit Level								
SR6	Action Level	2018-09-07	2018-09-05; 2018-09-07; 2018-09-12	2018-09-07; 2018-09-10	2018-09-03; 2018-09-07; 2018-09-10; 2018-09-12				2018-09-10; 2018-09-12; 2018-10-10
	Limit Level	2018-09-10	2018-09-03; 2018-09-10						
SR7	Action Level	2018-09-03; 2018-09-10	2018-09-10; 2018-09-12	2018-09-10	2018-09-10; 2018-09-12				2018-11-23
	Limit Level								
SR10A(N)	Action Level			2018-09-05; 2018-09-10	2018-09-03; 2018-09-05; 2018-09-07; 2018-09-10; 2018-09-12				2018-11-26
	Limit Level	2018-09-10; 2018-09-14	2018-09-03; 2018-09-05; 2018-09-07; 2018-09-10; 2018-09-12; 2018-09-14						
SR10B (N2)	Action Level			2018-09-03; 2018-09-05; 2018-09-10	2018-09-03; 2018-09-05; 2018-09-12; 2018-09-14				2018-11-26
	Limit Level	2018-09-03; 2018-09-10; 2018-09-14	2018-09-03; 2018-09-05; 2018-09-10; 2018-09-12; 2018-09-14; 2018-09-28		2018-09-10				
Total	Action Level	32	34	41	46	1	0	0	6
		162							
	Limit Level	9	16	3	1	0	0	0	0
		29							

3.3.6 As confirmed by the Contractor, no marine transportation and marine-based work was conducted when water quality monitoring was conducted in September 2018 for Contract No. HY/2013/01. Therefore, it is concluded that the exceedances were not related the Contract. The detailed investigation results of these exceedances recorded are shown in **Appendix L.** For investigations and the findings with respect to October and November 2018 can be referred to the corresponding monthly EM&A Report prepared for Contract No. HY/2013/04.

3.4 Dolphins Monitoring Results

Data Analysis

3.4.1 Distribution Analysis – The line-transect survey data was integrated with the Geographic Information System (GIS) in order to visualize and interpret different spatial and temporal patterns of dolphin distribution using sighting positions. Location data of dolphin groups were plotted on map layers of Hong Kong using a desktop GIS (ArcView© 3.1) to examine their distribution patterns in details. The dataset was also stratified into different subsets to examine distribution patterns of dolphin groups with different categories of group sizes, young calves and activities.

3.4.2 Encounter rate analysis – Encounter rates of Chinese white dolphins (number of on-effort sightings per 100 km of survey effort, and total number of dolphins sighted on-effort per 100 km of survey effort) were calculated in NEL and NWL survey areas in relation to the amount of survey effort conducted during each month of monitoring survey. Dolphin encounter rates were calculated in two ways for comparisons with the HZMB baseline monitoring results as well as to AFCD long-term marine mammal monitoring results.

3.4.3 Notably, throughout the present quarterly progress report, the previous monitoring data obtained under Contract No. HY/2011/03 (i.e. HKLR03) are referenced and compared to the present quarterly monitoring data collected for the HKBCF-PCB project, as both HKBCF-PCB and HKLR03 project data was collected by the same HKCRP survey team, to ensure 100% consistency in monitoring methodology including vessel survey method as well as various analyses. On the contrary, the previous monitoring data collected under HZMB HKBCF-Reclamation Works contract (Contract No. HY/2010/02) was from a different survey team that have adopted different survey methodology (e.g. two observers and one data recorder under HKBCF-Reclamation Works contract, as compared to one primary observer and one data recorder under HKLR03 and HKBCF-PCB contract). Therefore, the previous HKLR03 monitoring data was adopted for comparison with the present quarterly findings. This approach was also adopted in previous four verified quarterly reports (i.e. EM&A quarterly reports no. 13th, 14th, 15th and 16th).

3.4.4 Firstly, for the comparison with the HZMB baseline monitoring results, the encounter rates were calculated using primary survey effort alone, and only data collected under Beaufort 3 or below condition would be used for encounter rate analysis. The average encounter rate of sightings (STG) and average encounter rate of dolphins (ANI) were deduced based on the encounter rates from six events during the present quarter (i.e. six sets of line-transect surveys in North Lantau), which was also compared with the one deduced from the six events during the baseline period (i.e. six sets of line-transect surveys in North Lantau).

3.4.5 Secondly, the encounter rates were calculated using both primary and secondary survey effort collected under Beaufort 3 or below condition as in AFCD long-term monitoring study. The encounter rate of sightings and dolphins were deduced by dividing the total number of on-effort sightings (STG) and total number of dolphins (ANI) by the amount of survey effort for the present quarterly period.

3.4.6 Quantitative grid analysis on habitat use – To conduct quantitative grid analysis of habitat use, positions of on-effort sightings of Chinese White Dolphins collected during the quarterly impact phase monitoring period were plotted onto 1-km^2 grids among NWL and NEL survey areas on GIS. Sighting densities (number of on-effort sightings per km^2) and dolphin densities (total number of dolphins from on-effort sightings per km^2) were then calculated for each 1 km by 1 km grid with the aid of GIS. Sighting density grids and dolphin density grids were then further normalized with the amount of survey effort conducted within each grid. The total amount of survey effort spent on each grid was calculated by examining the survey coverage on each line-transect survey to determine how many times the grid was surveyed during the study period. For example, when the survey boat traversed through a specific grid 50 times, 50 units of survey effort were counted for that grid. With the amount of survey effort calculated for each grid, the sighting density and dolphin density of each grid were then normalized (i.e. divided by the unit of survey effort).

3.4.7 The newly-derived unit for sighting density was termed SPSE, representing the number of on-effort sightings per 100 units of survey effort. In addition, the derived unit for actual dolphin density was termed DPSE, representing the number of dolphins per 100 units of survey effort. Among the 1-km^2 grids that were partially covered by land, the percentage of sea area was calculated using GIS tools, and their SPSE and DPSE values were adjusted accordingly. The following formulae were used to estimate SPSE and DPSE in each 1-km2 grid within the study area:

$$SPSE = ((S / E) \times 100) / SA\%$$
$$DPSE = ((D / E) \times 100) / SA\%$$

where S = total number of on-effort sightings
D = total number of dolphins from on-effort sightings
E = total number of units of survey effort
SA% = percentage of sea area

3.4.8 Behavioural analysis – When dolphins were sighted during vessel surveys, their behaviour was observed. Different activities were categorized (i.e. feeding, milling/resting, traveling, socializing) and recorded on sighting datasheets. This data was then input into a separate database with sighting information, which can be used to determine the distribution of behavioural data with a desktop GIS. Distribution of sightings of dolphins engaged in different activities and behaviours would then be plotted on GIS and carefully examined to identify important areas for different activities of the dolphins.

3.4.9 Ranging pattern analysis – Location data of individual dolphins that occurred during the 3-month impact phase monitoring period were obtained from the dolphin sighting database and photo-identification catalogue. To deduce home ranges for individual dolphins using the fixed kernel methods, the program Animal Movement Analyst Extension, was loaded as an extension with ArcView© 3.1 along with another extension Spatial Analyst 2.0. Using the fixed kernel method, the program calculated kernel density estimates based on all sighting positions, and provided an active interface to display kernel density plots. The kernel estimator then calculated and displayed the overall ranging area at 95% UD level.

Summary of Survey Effort and Dolphin Sightings

3.4.10 During the period of September 2018 to November 2018, six sets of systematic line-transect vessel surveys were conducted for the HKBCF project to cover all transect lines in NWL and NEL survey areas twice per month. The monitoring results for dolphin monitoring in September 2018 are reported in the monthly EM&A Reports (September 2018) prepared for Contract No. HY/2013/01.

3.4.11 The impact dolphin monitoring results at all transects in October and November 2018 are reported in the Monthly EM&A Reports prepared by Contract No. HY/2013/04. The quarterly analysis of dolphin monitoring data for September 2018 to November 2018 is summarized in the quarterly EM&A report (October 2018 to November 2018) prepared for Contract No. HY/2013/04.

Action Level / Limit Level Exceedance

3.4.12 There was one Limit Level exceedance of dolphin monitoring for the quarterly monitoring data (between September 2018 – November 2018).

3.4.13 The details of the dolphin monitoring exceedances can be referred to in the Quarterly EM&A reports under Contract No. HY/2013/04.

3.5 Implementation of Environmental Measures

3.5.1 In response to the site audit findings, the Contractor carried out corrective actions. Details of site audit findings and the corrective actions during the reporting period are presented in **Appendix H**.

3.5.2 All exposed site area has been paved expect planting area, thus, watering of exposed spoil was not required during reporting period.

3.5.3 The marine traffic records and geographical plots of all the vessels tracks will be submitted by the Contractor to ER, ETL and IEC/ENPO within 3 weeks after the reporting month. As informed by Contractor, there was no marine transportation since 30 January 2018.

3.5.4 Regarding the implementation of dolphin monitoring and protection measures (i.e. implementation of Dolphin Watching Plan, Dolphin Exclusion Zone and Silt Curtain integrity check), regular checking were conducted by the dolphin watcher(s) / dolphin observer(s) within the works area to ensure no dolphin was trapped by the enclosed silt curtain systems. No dolphin spotted within the enclosed silt curtain systems was reported and recorded during the reporting period. Silt curtain systems were also inspected timely in accordance to the submitted plan. All inspection records were kept properly.

3.5.5 Training was provided for barge operators in accordance with the Regular Marine Travel Routes Plan and relevant records were kept properly.

3.5.6 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix F**. Most of the necessary mitigation measures were implemented properly.

3.6 Advice on the Solid and Liquid Waste Management Status

3.6.1 The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.

3.6.2 No marine sediment was generated/treated and no treated marine sediment was reused in the reporting period. As informed by the Contractor in May 2016, the transfer of treated marine sediment to Contract no. HY/2010/02 has been discontinued since July 2015.

3.6.3 The summary of waste flow table is detailed in **Appendix I**.

3.6.4 The Contractor was reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*.

3.6.5 The work site area of Contract No. HY/2013/01 was handed over to the relevant authorities since 24 October 2018 and no chemical waste and general refuse were generated in November 2018.

3.7 Environmental Licenses and Permits

3.7.1 The valid environmental licenses and permits in September and October 2018 are summarized in **Appendix J**.

3.7.2 The work site area of Contract No. HY/2013/01 was handed over to the relevant authorities since 24 October 2018, therefore, no environmental licenses and permits is required in November 2018.

4 Summary of Exceedance, Complaint, Notification of Summons and Successful Prosecution

4.1 Summary of Exceedance of the Environmental Quality Performance Limit

4.1.1 For air quality monitoring, no Action and Limit Level exceedances of 1-hour TSP were recorded at AMS2, AMS3C and AMS7B in September 2018. No Action and Limit Level exceedances of 24-hour TSP were recorded at AMS2, AMS3C and AMS7B in September 2018.

4.1.2 No Action and Limit level exceedance of 1-hr TSP level and 24-hr TSP level recorded AMS7B by the Environmental Team of Contract No. HY/2013/04 in October and November 2018.

4.1.3 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A Reports (for September to November 2018) prepared by Contract No. HY/2011/03.

4.1.4 There were no Action and Limit Level exceedance for noise recorded at NMS2 and NMS3C by the ET of Contract No. HY/2013/01 (for September 2018) and the ET of Contract No. HY/2013/04 (for October and November 2018).

4.1.5 For water quality monitoring in September 2018, no Action Level and Limit Level exceedances of turbidity were recorded at mid-ebb tide and mid-flood tide by the ET of Contract No. HY/2013/01. One Action Level exceedance of turbidity was recorded at mid-ebb tide on 24 October 2018 by the ET of Contract No. HY/2013/04 while no Action Level exceedances of turbidity were recorded at mid-flood tide by the ET of Contract No. HY/2013/04 during October and November 2018. No Limit Level exceedances of turbidity was recorded by the ET of Contract No. HY/2013/04 during October and November 2018.

4.1.6 73 Action Level exceedances of dissolved oxygen were recorded at mid-ebb tide on 3, 5, 7, 10, and 14 September 2018 while 80 Action Level exceedances of dissolved oxygen were recorded at mid-flood tide on 3, 5, 7, 10, 12, 14 and 28 September 2018 by the ET of Contract No. HY/2013/01. 12 Limit Level exceedances of dissolved oxygen were recorded at mid-ebb tide on 3, 5, 10 and 14 September 2018 while 17 Limit Level exceedances of dissolved oxygen were recorded at mid-flood tide on 3, 5, 7, 10, 12, 14, and 28 September 2018 by ET of Contract No. HY/2013/01. No Action Level and Limit Level exceedance of dissolved oxygen were recorded at mid-ebb tide and mid-flood tide by the ET of Contract No. HY/2013/04 during October and November 2018.

4.1.7 Two Action Level exceedances of suspended solid were recorded at mid-flood tide on 10 and 12 September 2018 while no Action Level exceedances of suspended solid were recorded at mid-ebb tide and no Limit Level exceedances of suspended solid were recorded by the ET of Contract No. HY/2013/01 in September 2018. Six Action Level exceedances of suspended solid were recorded at mid-flood tide on 10 October 2018, 23 and 26 November 2018 by the ET of Contract No. HY/2013/04. No Action Level exceedances of suspended solid were recorded at mid-ebb tide and no Limit Level exceedances of suspended solid were recorded by the ET of Contract No. HY/2013/04 during October and November 2018.

4.1.8 As confirmed by the Contractor, no marine transportation and marine-based work was conducted during the reporting period. Therefore, it is concluded that the exceedances were not related the Contract No. HY/2013/01.

4.1.9 Impact dolphin monitoring results at all transects are reported in the EM&A Reports prepared for Contract No. HY/2013/01 (September 2018) and Contract No. HY/2013/04 (October and November 2018). 1 Limit Level exceedance of dolphin monitoring was recorded in the quarterly report prepared for Contract No. HY/2013/04.

4.2 Summary of Complaints, Notification of Summons and Successful Prosecution

4.2.1 There was no complaint received in relation to the environmental impact during the reporting period. The details of cumulative statistics of Environmental Complaints are provided in **Appendix K**.

4.2.2 No notification of summons and prosecution was received during the reporting period.

4.2.3 Statistics on notifications of summons and successful prosecutions are summarized in **Appendix K**.

5 Comments, Recommendations and Conclusion

5.1 Comments

5.1.1 No particular environmental issue was recorded during the site inspections carried out on 5, 12, 19, and 26 September 2018 and 5, 10, 18, 24 and 31 October 2018.

5.1.2 The works area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site area was changed to closed area, no site inspection was conducted for the Contract No. HY/2013/01 in November 2018.

5.1.3 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix F**. Most of the necessary mitigation measures were implemented properly.

5.2 Recommendations

5.2.1 With implementation of the recommended environmental mitigation measures, the contract's environmental impacts were considered environmentally acceptable. The weekly environmental site inspections ensured that all the environmental mitigation measures recommended were effectively implemented.

5.2.2 The recommended environmental mitigation measures, as included in the EM&A programme, effectively minimize the potential environmental impacts from the contract. Also, the EM&A programme effectively monitored the environmental impacts from the construction activities and ensure the proper implementation of mitigation measures. No particular recommendation was advised for the improvement of the programme.

5.3 Conclusions

5.3.1 The site preparation work of the Contract started on 26 September 2014 and the construction works of the Contract commenced on 6 October 2014. The construction works of the Contract No. HY/2013/06 within Contractor No. HY/2013/01 works area commenced on 20 February 2018. This is the seventeenth Quarterly EM&A Report summaries findings of the EM&A works during the reporting period from 1 September to 30 November 2018(included the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/01 works area). The works area in Hong Kong-Zhuhai-Macao Bridge was handed over to the owner since 24 October 2018.

5.3.2 For air quality monitoring, no Action and Limit Level exceedances of 1-hour TSP were recorded at AMS2, AMS3C and AMS7B in September 2018. No Action and Limit Level exceedances of 24-hour TSP were recorded at AMS2, AMS3C and AMS7B in September 2018.

5.3.3 No Action and Limit level exceedance of 1-hr TSP level and 24-hr TSP level recorded AMS7B by the Environmental Team of Contract No. HY/2013/04 in October and November 2018.

5.3.4 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A Reports (for September to November 2018) prepared by Contract No. HY/2011/03.

5.3.5 There were no Action and Limit Level exceedance for noise recorded at NMS2 and NMS3C by the ET of Contract No. HY/2013/01 (for September 2018) and the ET of Contract No. HY/2013/04 (for October and November 2018).

5.3.6 For water quality monitoring in September 2018, no Action Level and Limit Level exceedances of turbidity were recorded at mid-ebb tide and mid-flood tide by the ET of Contract No. HY/2013/01. One Action Level exceedance of turbidity was recorded at mid-ebb tide on 24 October 2018 by the ET of Contract No. HY/2013/04 while no Action Level exceedances of turbidity were recorded at mid-flood tide by the ET of Contract No. HY/2013/04 during October and November 2018. No Limit Level exceedances of turbidity was recorded by the ET of Contract No. HY/2013/04 during October and November 2018.

5.3.7 73 Action Level exceedances of dissolved oxygen were recorded at mid-ebb tide on 3, 5, 7, 10, and 14 September 2018 while 80 Action Level exceedances of dissolved oxygen were recorded at mid-flood tide on 3, 5, 7, 10, 12, 14 and 28 September 2018 by the ET of Contract No. HY/2013/01. 12 Limit Level exceedances of dissolved oxygen were recorded at mid-ebb tide on 3, 5, 10 and 14 September 2018 while 17 Limit Level exceedances of dissolved oxygen were recorded at mid-flood tide on 3, 5, 7, 10, 12, 14, and 28 September 2018 by ET of Contract No. HY/2013/01. No Action Level and Limit Level exceedance of dissolved oxygen were recorded at mid-ebb tide and mid-flood tide by the ET of Contract No. HY/2013/04 during October and November 2018.

5.3.8 Two Action Level exceedances of suspended solid were recorded at mid-flood tide on 10 and 12 September 2018 while no Action Level exceedances of suspended solid were recorded at mid-ebb tide and no Limit Level exceedances of suspended solid were recorded by the ET of Contract No. HY/2013/01 in September 2018. Six Action Level exceedances of suspended solid were recorded at mid-flood tide on 10 October 2018, 23 and 26 November 2018 by the ET of Contract No. HY/2013/04. No Action Level exceedances of suspended solid were recorded at mid-ebb tide and no Limit Level exceedances of suspended solid were recorded by the ET of Contract No. HY/2013/04 during October and November 2018.

5.3.9 As confirmed by the Contractor, no marine transportation and marine-based work was conducted during the reporting period. Therefore, it is concluded that the exceedances were not related the Contract No. HY/2013/01.

5.3.10 Impact dolphin monitoring results at all transects are reported in the EM&A Reports prepared for Contract No. HY/2013/01 (September 2018) and Contract No. HY/2013/04 (October and November 2018). 1 Limit Level exceedance of dolphin monitoring was recorded in the quarterly report prepared for Contract No. HY/2013/04.

5.3.11 Environmental site inspections were carried out on 5, 12, 19, and 26 September 2018 and 5, 10, 18, 24 and 31 October 2018 for the Contract No. HY/2013/01 (includes the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/01 works area). Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site inspections.

5.3.12 The works area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site area was changed to closed area, no site inspection was conducted for the Contract No. HY/2013/01 in November 2018. Landscape Checklist is shown in **Appendix A**.

5.3.13 There was no complaint received in relation to the environmental impact during the reporting period.

5.3.14 No notification of summons and successful prosecution was received during the reporting period.

FIGURES

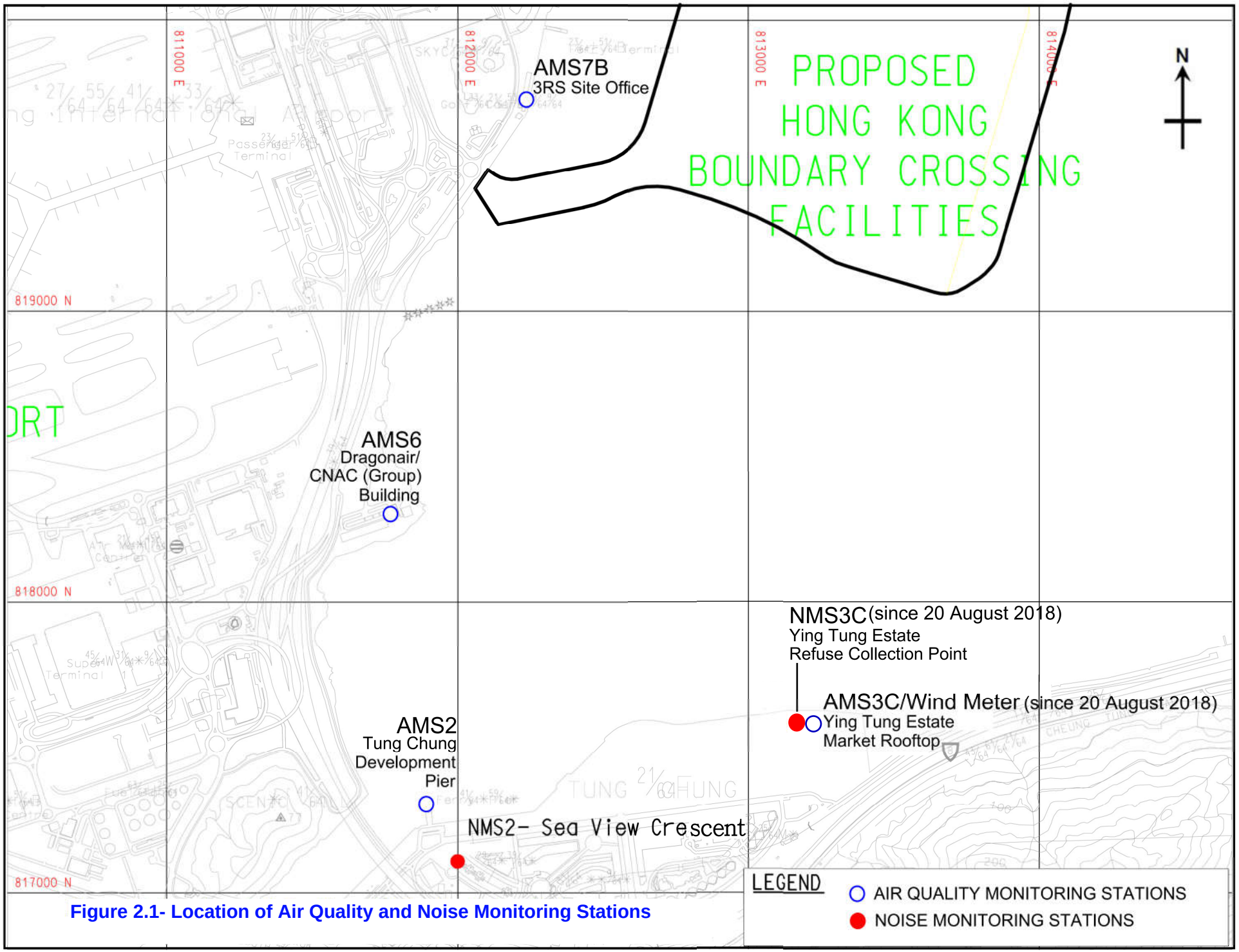
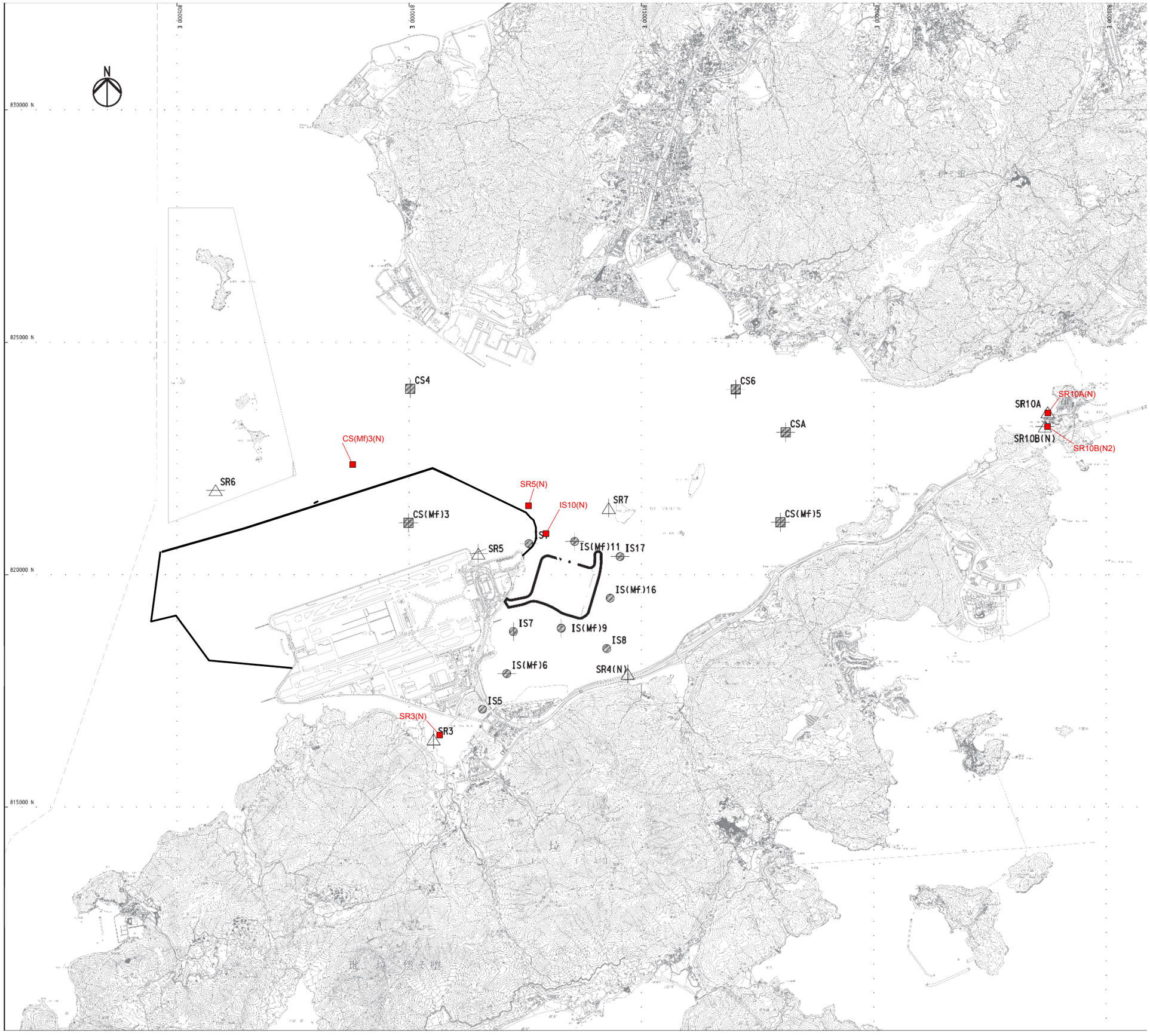


Figure 2.1- Location of Air Quality and Noise Monitoring Stations



Station	East	North
IS5	811579	817106
IS(Mf)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(Mf)9	813273	818850
IS10(N)	812942	820881
IS(Mf)11	813562	820716
IS(Mf)16	814328	819497
IS17	814539	820391
SR3(N)	810689	816591
SR4(N)	814705	817859
SR5(N)	812569	821475
SR6	805837	821818
SR7	814293	821431
SR10A(N)	823644	823484
SR10B(N2)	823689	823159
CS(Mf)3(N)	808814	822355
CS(Mf)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

Figure 2.2 – LOCATION OF WATER QUALITY MONITORING STATIONS

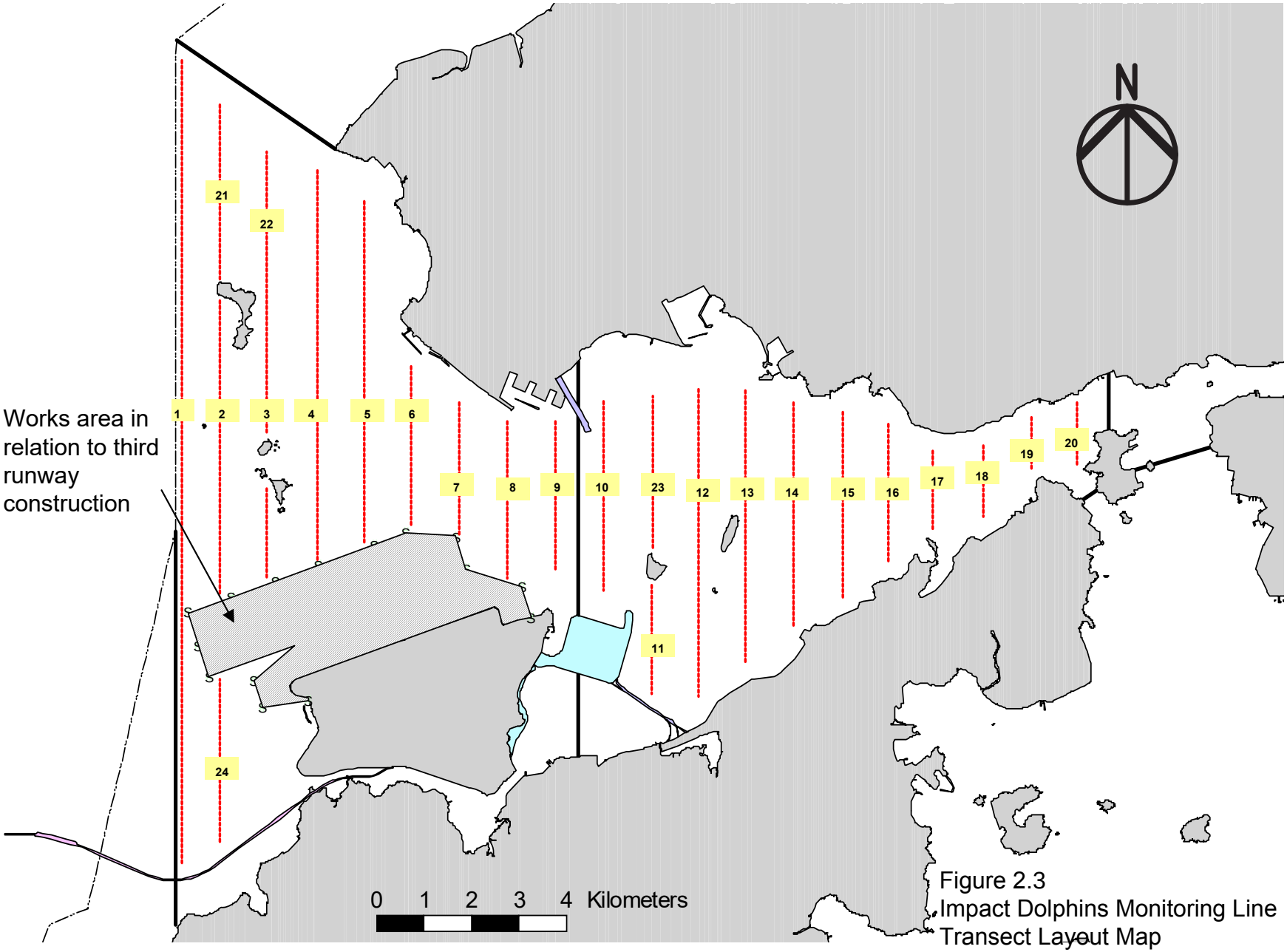


Figure 2.3
Impact Dolphins Monitoring Line Transect Layout Map

APPENDIX A

Landscape Checklist

Covering Period: No.01: 24 Oct 2018 to 23 Dec 2018 **Reported By:** Keith Chau

Time: --- **Weather Condition:** ---

1	At-grade planting west of Passenger Clearance Building	N/A or not observed	Yes	No	Remarks / Photo
1.1	Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?	☐	☒	☐	Remark [1]
1.2	Are tree stakes, guys and ties provided properly for safety and avoid chaffing of bark?	☐	☒	☐	Remark [1]
1.3	Are trees or limb overhanging branches pruned?	☐	☒	☐	Remark [1]
1.4	After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?	☐	☒	☐	Remark [1]
1.5	Are litter and debris removed?	☐	☒	☐	Remark [1]
1.6	Are planting areas matched with the approved landscape plan?	☐	☒	☐	Remark [1]
1.7	Is planting pattern matched with the approved landscape plan?	☐	☒	☐	Remark [1]
1.8	Are planting locations and spacing matched with the approved landscape plan?	☐	☒	☐	Remark [1]
1.9	Are the planting species on site matched with Figure 3.6 of the approved landscape plan?	☐	☒	☐	Remark [1]
1.10	Are the plants in satisfied condition?	☐	☒	☐	Remark [1]

2	At-grade planting east of Passenger Clearance Building	N/A or not observed	Yes	No	Remarks / Photo
2.1	Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?	☐	☒	☐	Remark [1]
2.2	Are tree stakes, guys and ties provided properly for safety and avoid chaffing of bark?	☐	☒	☐	Remark [1]
2.3	Are trees or limb overhanging branches pruned?	☐	☒	☐	Remark [1]
2.4	After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?	☐	☒	☐	Remark [1]
2.5	Are litter and debris removed?	☐	☒	☐	Remark [1]
2.6	Are planting areas matched with the approved landscape plan?	☐	☒	☐	Remark [1]
2.7	Is planting pattern matched with the approved landscape plan?	☐	☒	☐	Remark [1]
2.8	Are planting locations and spacing matched with the approved landscape plan?	☐	☒	☐	Remark [1]
2.9	Are the planting species on site matched with Figure 3.6 of the approved landscape plan?	☐	☒	☐	Remark [1]
2.10	Are the plants in satisfied condition?	☐	☒	☐	Remark [1]

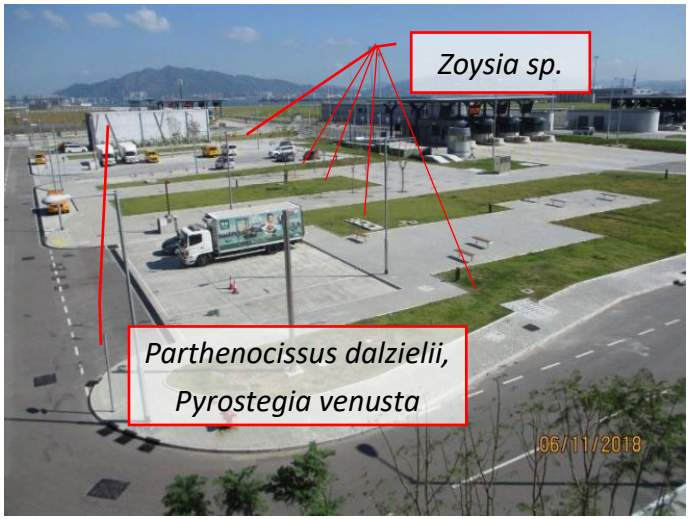
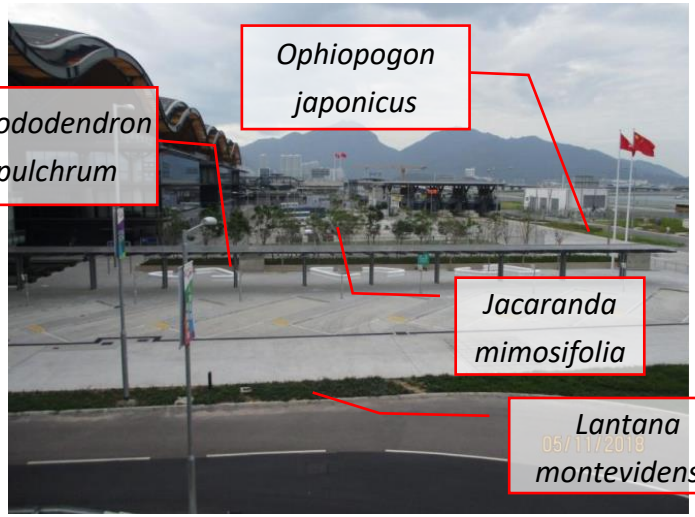
3	Planting in Outdoor Planters of Passenger Clearance Building	N/A or not observed	Yes	No	Remarks / Photo
3.1	Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?	☐	☒	☐	Remark [1]
3.2	Are tree stakes, guys and ties provided properly for safety and avoid chaffing of bark?	☐	☒	☐	Remark [1]
3.3	Are trees or limb overhanging branches pruned?	☐	☒	☐	Remark [1]
3.4	After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?	☐	☒	☐	Remark [1]
3.5	Are litter and debris removed?	☐	☒	☐	Remark [1]
3.6	Are planting areas matched with the approved landscape plan?	☐	☒	☐	Remark [1]
3.7	Is planting pattern matched with the approved landscape plan?	☐	☒	☐	Remark [1]
3.8	Are planting locations and spacing matched with the approved landscape plan?	☐	☒	☐	Remark [1]
3.9	Are the planting species on site matched with Figure 3.6 of the approved landscape plan?	☐	☒	☐	Remark [1]
3.10	Are the plants in satisfied condition?	☐	☒	☐	Remark [1]

4	Planting in Indoor Planters of Passenger Clearance Building	N/A or not observed	Yes	No	Remarks / Photo
4.1	Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?	☐	☒	☐	Remark [1]
4.2	Are tree stakes, guys and ties provided properly for safety and avoid chaffing of bark?	☐	☒	☐	Remark [1]
4.3	Are trees or limb overhanging branches pruned?	☐	☒	☐	Remark [1]
4.4	After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?	☐	☒	☐	Remark [1]
4.5	Are litter and debris removed?	☐	☒	☐	Remark [1]
4.6	Are planting areas matched with the approved landscape plan?	☐	☒	☐	Remark [1]
4.7	Is planting pattern matched with the approved landscape plan?	☐	☒	☐	Remark [1]
4.8	Are planting locations and spacing matched with the approved landscape plan?	☐	☒	☐	Remark [1]
4.9	Are the planting species on site matched with Figure 3.6 of the approved landscape plan?	☐	☒	☐	Remark [1]
4.10	Are the plants in satisfied condition?	☐	☒	☐	Remark [1]

10	General Document	N/A or not observed	Yes	No	Remarks / Photo
11.1	Are the records of watering, fertilizing, weeding, pruning and mowing kept for checking?	☐	☒	☐	Remark [1]

Follow up actions for previous Site Audit: **N/A**
Observations: **N/A**
Corrective Actions (if any): **N/A**
Remark: [1] This Checklist is prepared based on the information from "Soft Landscape works – Monthly Maintenance Report (16 October 2018 to 15 November 2018" (*CSF No.: H2620-CSF-LCJ-CON-007674*) and "Soft Landscape works – Monthly Maintenance Report (16 November 2018 to 15 December 2018" (*CSF No.: H2620-CSF-LCJ-CON-007662*), which prepared by Contractor and submitted to Engineer's Representative.
General Conclusion: 1. A standby signal no. 1 was hoisted on 31 October 2018 for 28 hours; a strong wind signal no. 3 was hoisted on 1 November 2018 for 13 hours and 30 minutes; and a standby signal no. 1 was hoisted on 2 November 2018 for six hours during the reporting period. 2. A number of trees were affected by Typhoon Manghut (Typhoon signal No.10) on 16 September 2018. Close monitoring and necessary maintenance actions has been carried out. All trees in reasonably good condition. 3. All plants (shrubs, ground cover and turf) were in reasonably good condition. 4. The establishment works followed the maintenance programme.

Reported by (ET's Representative):	Keith Chau	Title:	ET Leader
Signature:	Keith	Date:	15 July 2019
Reviewed by (AECOM Landscape Representative):	CHAN Pak Kin	Title:	RSFo (2)
Signature:		Date:	15 JUL 2019
Contractor's Representative:	Stephen Tsang	Title:	Environmental Officer
Signature:		Date:	15 July 2019
Checked by (IEC's Representative):	Harris Wong	Title:	ESS
Signature:		Date:	30 July 2019

Location	Photo Record [1]
At-grade planting of Passenger Clearance Building Photo 1 / Photo 2 / Photo 3	  

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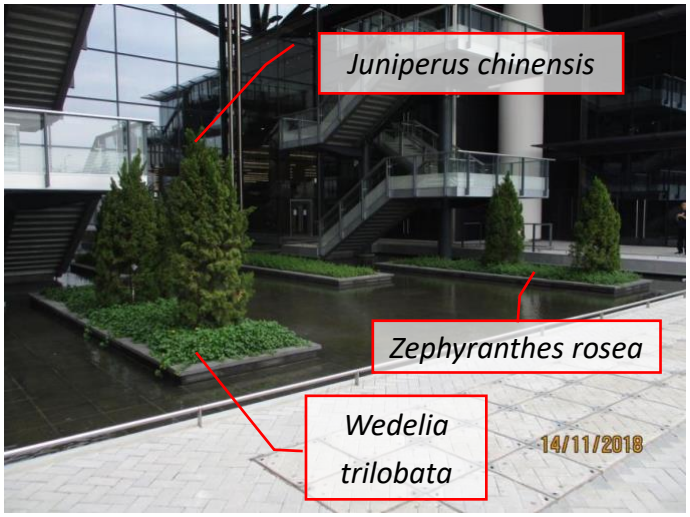
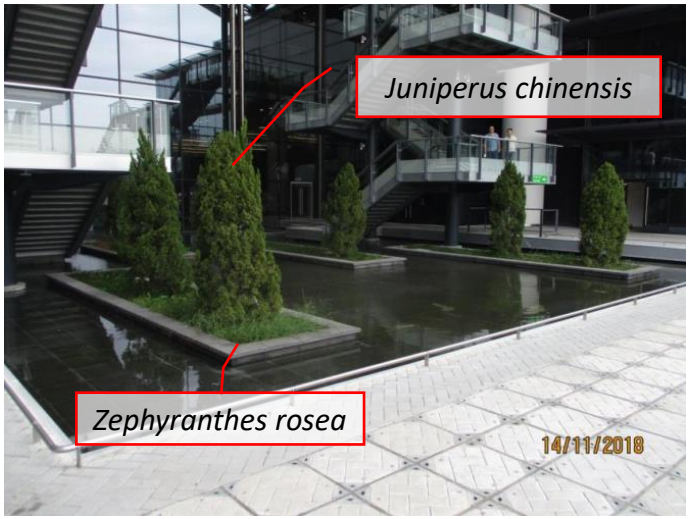
<table><tr><td>Photo 4</td><td>Photo 5</td></tr></table></td><td> 
</td><td> 
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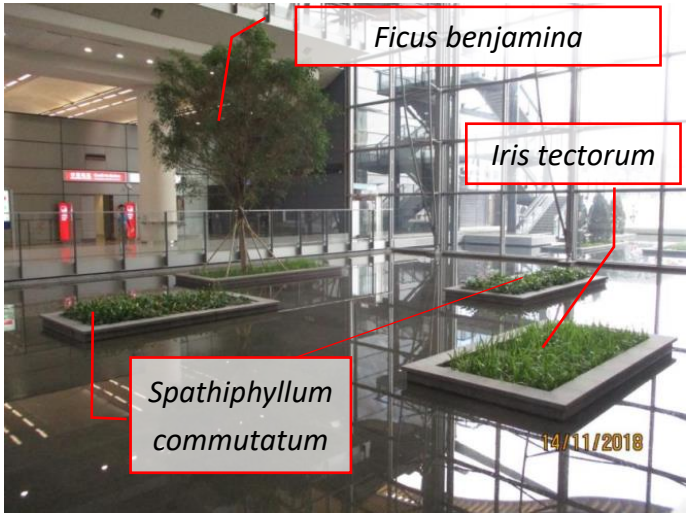
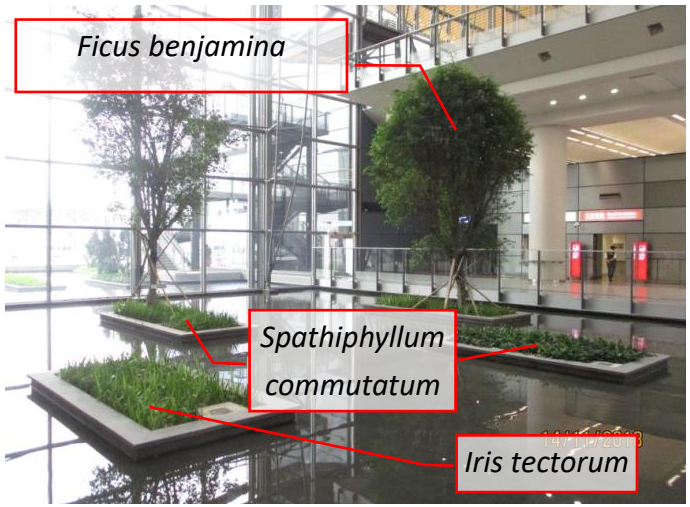
<tr><td>Planting in Indoor Planters of Passenger Clearance Building
<table><tr><td>Photo 6</td><td>Photo 7</td></tr><tr><td>Photo 8</td><td>Photo 9</td></tr></table></td><td> 
</td><td> 
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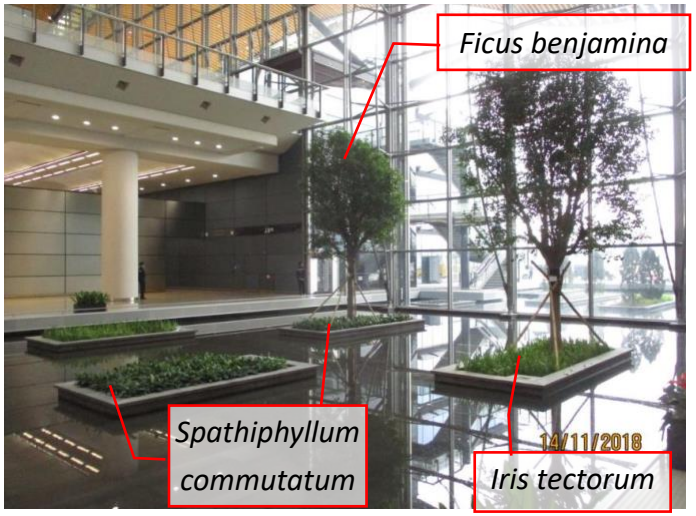
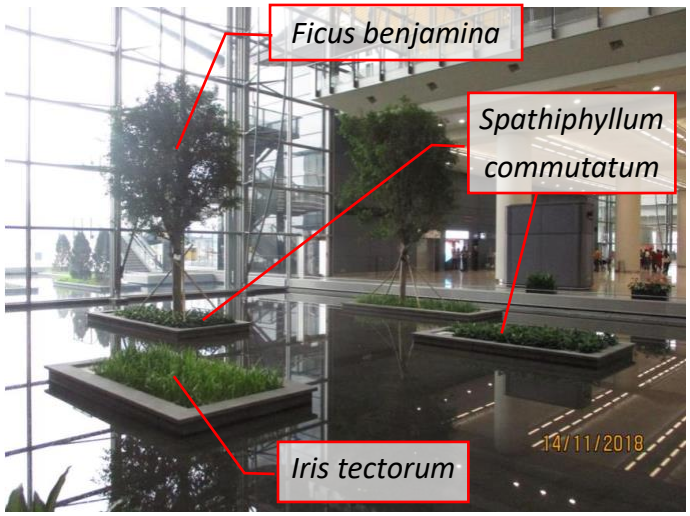
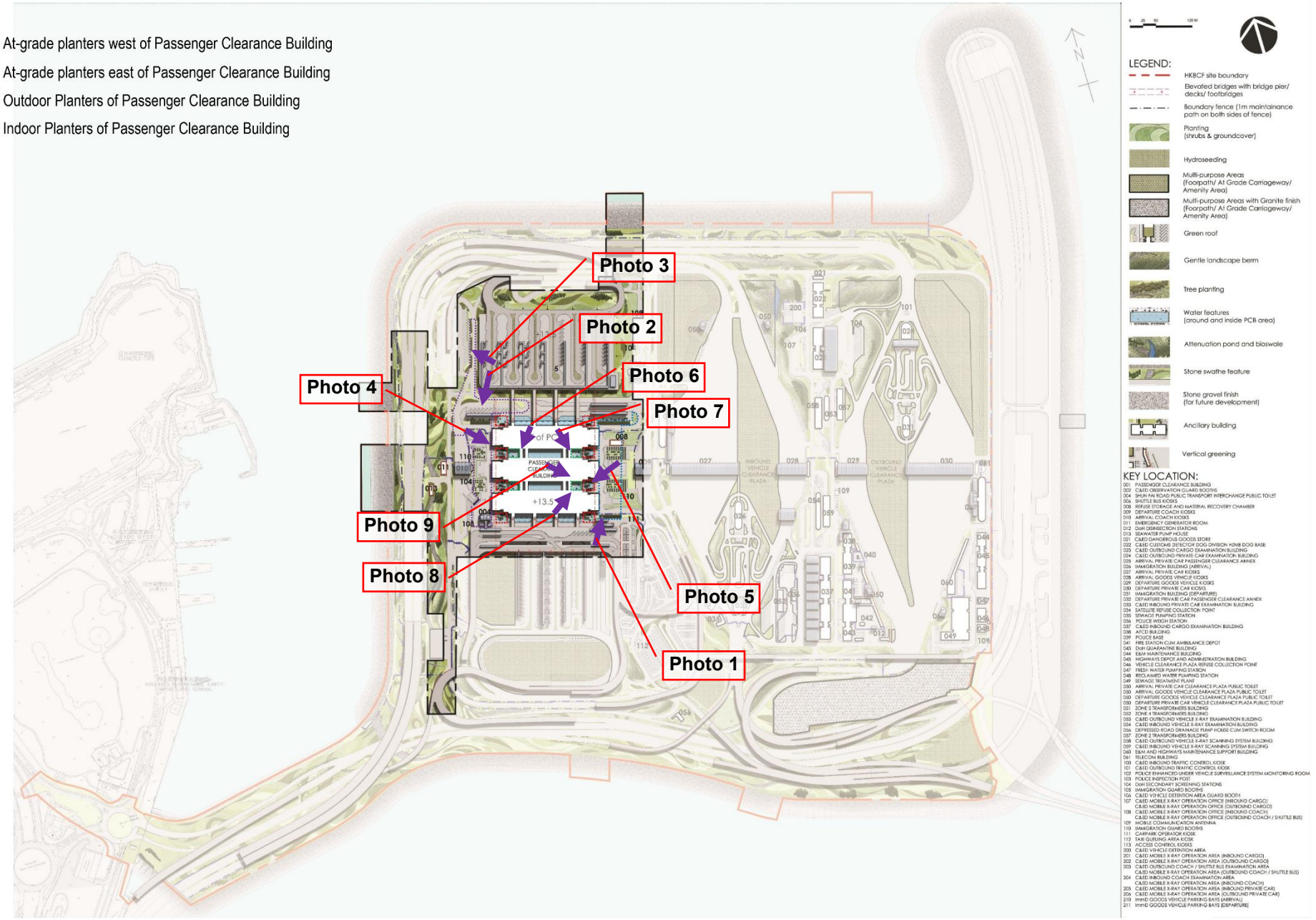
Location	Photo Record [1]	
		

Note: [1] Extract from "Soft Landscape works – Monthly Maintenance Report (16 October 2018 to 15 November 2018" (*CSF No.: H2620-CSF-LCJ-CON-007674*) and "Soft Landscape works – Monthly Maintenance Report (16 November 2018 to 15 December 2018" (*CSF No.: H2620-CSF-LCJ-CON-007662*), which prepared by Contractor and submitted to Engineer's Representative.

- At-grade planters west of Passenger Clearance Building
- At-grade planters east of Passenger Clearance Building
- Outdoor Planters of Passenger Clearance Building
- Indoor Planters of Passenger Clearance Building



LEGEND:

- HKBCF site boundary
- Elevated bridges with bridge pier/ decks/ footbridges
- Boundary fence (1m maintainance path on both sides of fence)
- Planting (shrubs & groundcover)
- Hydroseeding
- Multi-purpose Areas (Footpath/ At Grade Carriageway/ Amenity Area)
- Multi-purpose Areas with Granite finish (Footpath/ At Grade Carriageway/ Amenity Area)
- Green roof
- Gentle landscape berm
- Tree planting
- Water features (around and inside PCB area)
- Attenuation pond and bioswale
- Stone swathe feature
- Stone gravel finish (for future development)
- Ancillary building
- Vertical greening

KEY LOCATION:

001 PASSENGER CLEARANCE BUILDING
002 C&ED OBSERVATION GUARD BOOTHS
004 SHUN PAI ROAD PUBLIC TRANSPORT INTERCHANGE PUBLIC TOILET
00a SHUTTLE BUS KIOSKS
008 REFUSE STORAGE AND MATERIAL RECOVERY CHAMBER
009 DEPARTURE COACH KIOSKS
010 ARRIVAL COACH KIOSKS
011 EMERGENCY GENERATOR ROOM
012 DoH DISINSECTION STATIONS
013 SEAWATER PUMP HOUSE
021 C&ED DANGEROUS GOODS STORE
022 C&ED CUSTOMS DETECTOR DOG DIVISION KENNEL DOG BASE
023 C&ED OUTBOUND CARGO EXAMINATION BUILDING
024 C&ED OUTBOUND PRIVATE CAR EXAMINATION BUILDING
025 ARRIVAL PRIVATE CAR PASSENGER CLEARANCE ANNEX
02a IMMIGRATION BUILDING (ARRIVAL)
027 ARRIVAL PRIVATE CAR KIOSKS
028 ARRIVAL GOODS VEHICLE KIOSKS
029 DEPARTURE GOODS VEHICLE KIOSKS
030 DEPARTURE PRIVATE CAR KIOSKS
031 IMMIGRATION BUILDING (DEPARTURE)
032 DEPARTURE PRIVATE CAR PASSENGER CLEARANCE ANNEX
033 C&ED INBOUND PRIVATE CAR EXAMINATION BUILDING
034 SATELLITE REFUSE COLLECTION POINT
035 SEWAGE PUMPING STATION
036 POLICE WEIGH STATION
037 C&ED INBOUND CARGO EXAMINATION BUILDING
038 AFCD BUILDING
039 POLICE BASE
041 FIRE STATION CUM AMBULANCE DEPOT
043 DoH QUARANTINE BUILDING
044 E&M MAINTENANCE BUILDING
045 HIGHWAYS DEPOT AND ADMINISTRATION BUILDING
046 VEHICLE CLEARANCE PLAZA REFUSE COLLECTION POINT
047 FRESH WATER PUMPING STATION
048 RECLAIMED WATER PUMPING STATION
049 SEWAGE TREATMENT PLANT
050 ARRIVAL PRIVATE CAR CLEARANCE PLAZA PUBLIC TOILET
050 ARRIVAL GOODS VEHICLE CLEARANCE PLAZA PUBLIC TOILET
050 DEPARTURE GOODS VEHICLE CLEARANCE PLAZA PUBLIC TOILET
050 DEPARTURE PRIVATE CAR VEHICLE CLEARANCE PLAZA PUBLIC TOILET
051 ZONE 5 TRANSFORMERS BUILDING
052 ZONE 4 TRANSFORMERS BUILDING
053 C&ED OUTBOUND VEHICLE X-RAY EXAMINATION BUILDING
054 C&ED INBOUND VEHICLE X-RAY EXAMINATION BUILDING
056 DEPRESSED ROAD DRAINAGE PUMP HOUSE CUM SWITCH ROOM
057 ZONE 2 TRANSFORMERS BUILDING
058 C&ED OUTBOUND VEHICLE X-RAY SCANNING SYSTEM BUILDING
059 C&ED INBOUND VEHICLE X-RAY SCANNING SYSTEM BUILDING
060 E&M AND HIGHWAYS MAINTENANCE SUPPORT BUILDING
061 TELECOM BUILDING
100 C&ED INBOUND TRAFFIC CONTROL KIOSK
101 C&ED OUTBOUND TRAFFIC CONTROL KIOSK
102 POLICE ENHANCED UNDER VEHICLE SURVEILLANCE SYSTEM MONITORING ROOM
103 POLICE INSPECTION POST
104 DoH SECONDARY SCREENING STATIONS
105 IMMIGRATION GUARD BOOTHS
106 C&ED VEHICLE DETENTION AREA GUARD BOOTH
107 C&ED MOBILE X-RAY OPERATION OFFICE (INBOUND CARGO)
C&ED MOBILE X-RAY OPERATION OFFICE (OUTBOUND CARGO)
108 C&ED MOBILE X-RAY OPERATION OFFICE (INBOUND COACH)
C&ED MOBILE X-RAY OPERATION OFFICE (OUTBOUND COACH / SHUTTLE BUS)
109 MOBILE COMMUNICATION ANTENNA
110 IMMIGRATION GUARD BOOTHS
111 CARPARK OPERATOR KIOSK
112 TAXI QUEUING AREA KIOSK
113 ACCESS CONTROL KIOSKS
200 C&ED VEHICLE DETENTION AREA
201 C&ED MOBILE X-RAY OPERATION AREA (INBOUND CARGO)
202 C&ED MOBILE X-RAY OPERATION AREA (OUTBOUND CARGO)
203 C&ED OUTBOUND COACH / SHUTTLE BUS EXAMINATION AREA
C&ED MOBILE X-RAY OPERATION AREA (OUTBOUND COACH / SHUTTLE BUS)
204 C&ED INBOUND COACH EXAMINATION AREA
C&ED MOBILE X-RAY OPERATION AREA (INBOUND COACH)
205 C&ED MOBILE X-RAY OPERATION AREA (INBOUND PRIVATE CAR)
206 C&ED MOBILE X-RAY OPERATION AREA (OUTBOUND PRIVATE CAR)
210 ImmD GOODS VEHICLE PARKING BAYS (ARRIVAL)
211 ImmD GOODS VEHICLE PARKING BAYS (DEPARTURE)

AECOM Aedas
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI

AGREEMENT No. CE 13/2010 (CE)
HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG BOUNDARY CROSSING FACILITIES
(SUPERSTRUCTURES AND INFRASTRUCTURES) - DESIGN AND CONSTRUCTION
MASTER LANDSCPE PLAN FOR CONTRACT NO. HY/2013/01 (C1) (LEVEL: FIRST FLOOR)

SCALE	NA	DATE	APR 2018
CHECK	ELK	DRAWN	TRT
JOB No.	AECMP01	DRAWING No.	B.1b
		REV	-

TREE PLANTING [1]

SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]	SPACING [m]
AL **	*Albizia lebbeck*	大葉合歡	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
BV	*Bauhinia variegata*	宮粉羊蹄甲	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
CV	*Callistemon viminalis*	串錢柳	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
CS **	*Cassia siamea*	鐵刀木	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
GR	*Grevillea robusta*	銀樺	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
JA	*Jacaranda mimosifolia*	藍花楹	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
JC **	*Juniperus chinensis*	龍柏	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
TP *, **	*Thespesia populnea*	恒春黃槿	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4

SHRUB PLANTING [1]

SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]	SPACING [mm]
Aod	*Aglaia odorata*	米仔蘭	700(H) x 500(SP)	400
Cha	*Calliandra haematocephala*	紅絨球	700(H) x 500(SP)	400
Fmi **	*Ficus microcarpa 'golden leaves'*	黃金榕	1000(H) x 700(SP)	600
Ite	*Iris tectorum*	鳶尾	300(H) x 200(SP)	150
Ich *	*Ixora chinensis*	龍船花	500(H) x 400(SP)	350
Mar	*Malvaviscus arboreus*	大紅袍	700(H) x 500(SP)	450
Mfi	*Michelia figo*	含笑	800(H) x 500(SP)	400
Pmy	*Phyllanthus myrtifolius*	瘤腺葉下珠	400(H) x 300(SP)	250
Rpu	*Rhododendron pulchrum*	錦繡杜鵑	600(H) x 400(SP)	300
Rsi *	*Rhododendron simsii*	紅杜鵑	600(H) x 400(SP)	300
Sco	*Spathiphyllum commutatum*	白掌	300(H) x 300(SP)	200
Sre	*Strelitzia reginae*	天堂鳥蕉	500(H) x 400(SP)	350

GREEN ROOF GROUND COVER PLANTING [1]

SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]	SPACING [mm]
Zan	*Zephyranthes candida*	蕥蓮	100(H) x 100(SP)	100

CLIMBER PLANTING [1]

SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]	SPACING [mm]
Pda	*Parthenocissus dalzielii*	異葉爬山虎	300(H) x 250(SP)	250
Pve **	*Pyrostegia venusta*	炮仗花	300(H) x 250(SP)	250

GROUND COVER PLANTING [1]

SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]	SPACING [mm]
Aag	*Agave angustifolia*	狹葉龍舌蘭	200(H) x 300(SP)	200
Aam	*Agave americana*	龍舌蘭	100(H) x 100(SP)	100
Asl	*Aglaonema 'Silver King'*	銀王粗肋草	150(H) x 150(SP)	100
Ave	*Alternanthera versicolor*	錦繡莧, 紅草	100(H) x 100(SP)	100
Ite	*Iris tectorum*	鳶尾	100(H) x 100(SP)	100
Lmo	*Lantana montevidensis*	鋪地臭金鳳	200(H) x 300(SP)	200
Lsp *	*Liriope spicata*	山麥冬	100(H) x 100(SP)	100
Nex *	*Nephrolepis hirsutula*	毛葉腎蕨	150(H) x 200(SP)	150
Oja *	*Ophiopogon japonicus*	麥冬	150(H) x 150(SP)	100
Rds	*Rhoeo discolor*	紫背萬年青	150(H) x 200(SP)	100
Spo **	*Syngonium podophyllum*	合果芋	200(H) x 200(SP)	150
Wtr **	*Wedelia trilobata*	蟛蜞菊	100(H) x 100(SP)	100
Zan	*Zephyranthes candida*	蕥蓮	100(H) x 100(SP)	100
Zro	*Zephyranthes rosea*	玫瑰蕥蓮	150(H) x 200(SP)	100

TURFING [1]

SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]
Zja **	*Zoysia sp.*	朝鮮草	25(H)

HYDROSEEDING [1],[2]

SPECIES CODE	BOTANICAL NAME	CHINESE NAME
Cda *, **	*Cynodon dactylon*	百慕達草
Pno	*Paspalum notatum*	百喜草
Eop * / Lpe	*Eremochloa ophiuroides / Lolium perenne*	假儉草 / 黑麥草

INDOOR PLANTING IN PASSENGER CLEARANCE BUILDING [1]

SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]	SPACING [m]
TREE				
FB **	*Ficus benjamina*	垂榕	5000(H) x 4000(SP) x 150(DBH)	N.A.
SHRUB				
Ite	*Iris tectorum*	鳶尾	300(H) x 200(SP)	150
Sco	*Spathiphyllum commutatum*	白掌	300(H) x 300(SP)	200

NOTES:

[1] All proposed plant species and specifications are subject to change during construction to suit the site conditions.

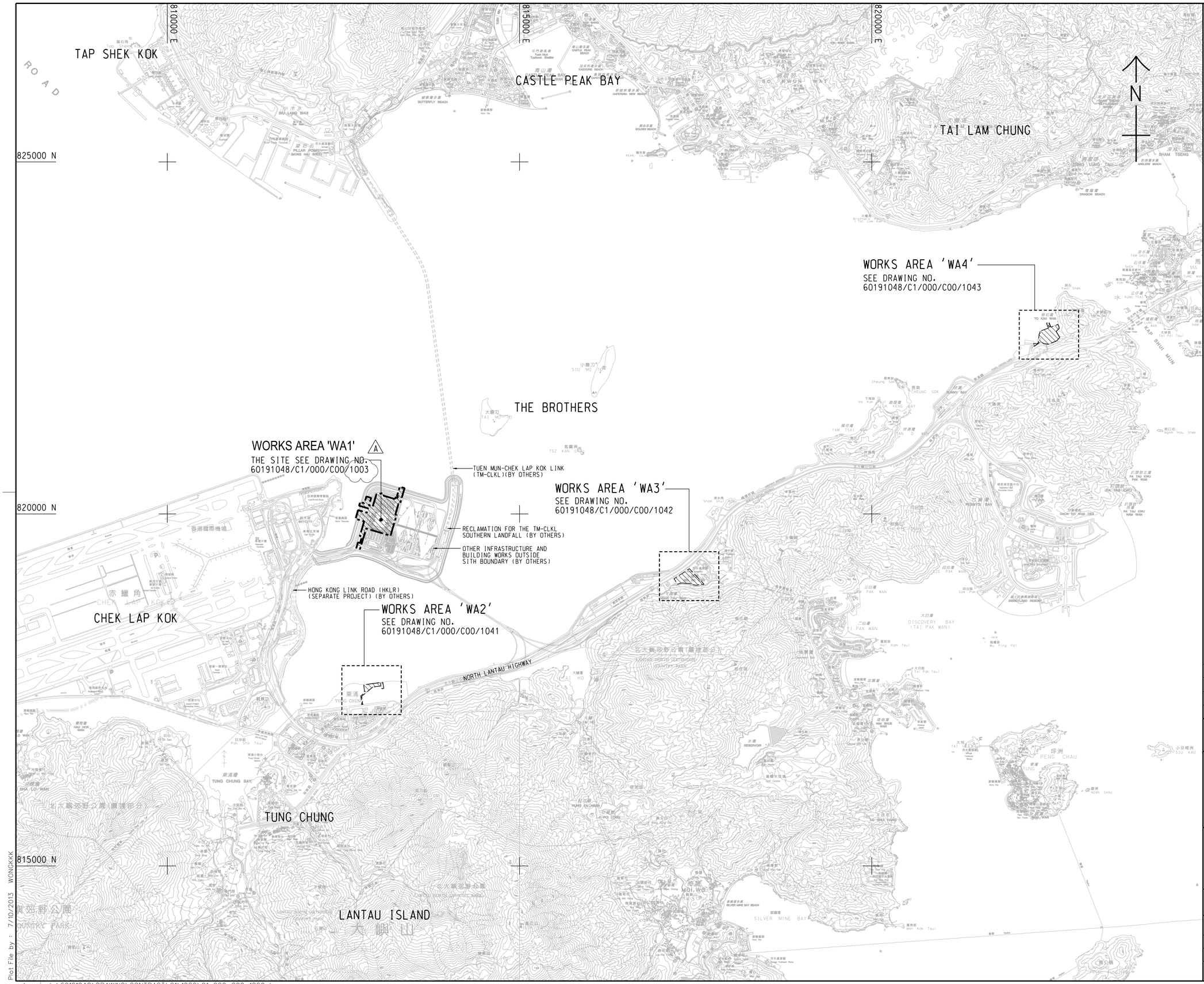
[2] Minimum requirement of grass seed mix for hydroseeding shall follow General Specification for Civil Engineering Works Clause 3.26(3).

* Species native to Hong Kong according to the Hong Kong Herbarium website <http://www.herbarium.gov.hk>

** Species which is salt spray tolerant

APPENDIX B

Location of Works Areas



NOTES:

1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C1/000/C00/1041 TO 1043.

LEGEND: A

SITE BOUNDARY

WORKS AREA

REV. 修訂	DESCRIPTION 內容摘要	D.E. P.E. CHECKED 查核	DATE 日期
B	WORKING DRAWING	BWCW SCI	JUN.14
A	TENDER ADDENDUM NO. 1	BWCW SCI	OCT.13
-	TENDER DRAWING	BWCW SCI	SEP.13

路政署 HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PASSENGER CLEARANCE BUILDING

SITE LOCATION PLAN

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI

Aedas

DRG.NO. 圖紙編號 60191048/C1/000/C00/1000B

DESIGNED BY 設計	BWCW	CONTRACT NO. 合約編號	HY/2013/01
DRAWN BY 繪圖	WSY	P. Dir. APPROVED 負責人	TKH
SCALE 比例	A1 1 : 25000	STATUS 階段	WORKING DRAWING
DIMENSIONS ARE IN 尺寸單位	METRES		

Plot File by : 7/10/2013 WONGKKK

p:\projects\60191048\DRAWING\CONTRACT\C1\1000\C1_000_C00_1000.dgn

812500 E

813000 E

813500 E

820500 N

820000 N

819500 N

SKYCITY

GATE 2 TO BE CONSTRUCTED
WHEN HY/2013/02 CONTRACTOR
TAKE OVER PORTION 1

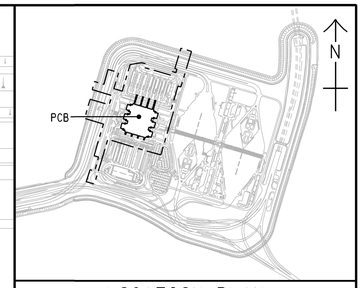
HAUL ROAD TO BE CONSTRUCTED
DIVERTED, MANAGED AND MAINTAINED
BY HY/2013/01 CONTRACT

C3

GATE TO BE CONSTRUCTED
BY CLP

MARINE LOADING AND UNLOADING
POINTS, EXACT LOCATION AND
EXTENT TO BE LIAISED AND
CONFIRMED WITH HY/2013/02
CONTRACTOR

GATE 1 TO BE CONSTRUCTED
AT THE COMMENCEMENT OF THE CONTRACT



LOCATION PLAN
SCALE 1 : 20000

NOTES:

1. COORDINATES ARE BASED ON HONG KONG METRIC GRID (1980) UNLESS OTHERWISE NOTED.
2. LEVELS ARE IN METRES RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD) UNLESS OTHERWISE NOTED.
3. DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
4. SETTING OUT, DIMENSIONS, LEVELS, COORDINATES ARE TO BE CALCULATED BY THE CONTRACTOR. NO INFORMATION SHOULD BE SCALED PHYSICALLY OR ELECTRONICALLY FROM THE DRAWINGS OR FILES.
5. SITE ACCESS SHALL BE HARD PAVED WITH PROPER DRAINAGE PROVIDED. IT SHALL BE KEPT UNOBSTRUCTED AND UNDISRUPTED AT ALL TIMES.

LEGEND:

SITE BOUNDARY

7.3m CLEAR WIDTH CONSTRUCTION HAUL ROAD

INDICATIVE 20m WIDE VEHICULAR ACCESS BY RECLAMATION CONTRACT HY/2010/02

REV. 修訂	DESCRIPTION 內容摘要	D.E.	P.E. CHECKED 查核	DATE 日期
-	TENDER DRAWING	BWCW	SCI	SEP.13

路政署 HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PASSENGER CLEARANCE BUILDING

WORKS AREA WA1

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C1/000/C00/1044

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 負責人
BWCW	HY/2013/01	EMSC
DRAWN BY 繪圖 WSY	STATUS 編改	
SCALE 比例 A1 1 : 2500		
DIMENSIONS ARE IN 尺寸單位 METRES		

Plot File by : 2013/9/10 WANGSY

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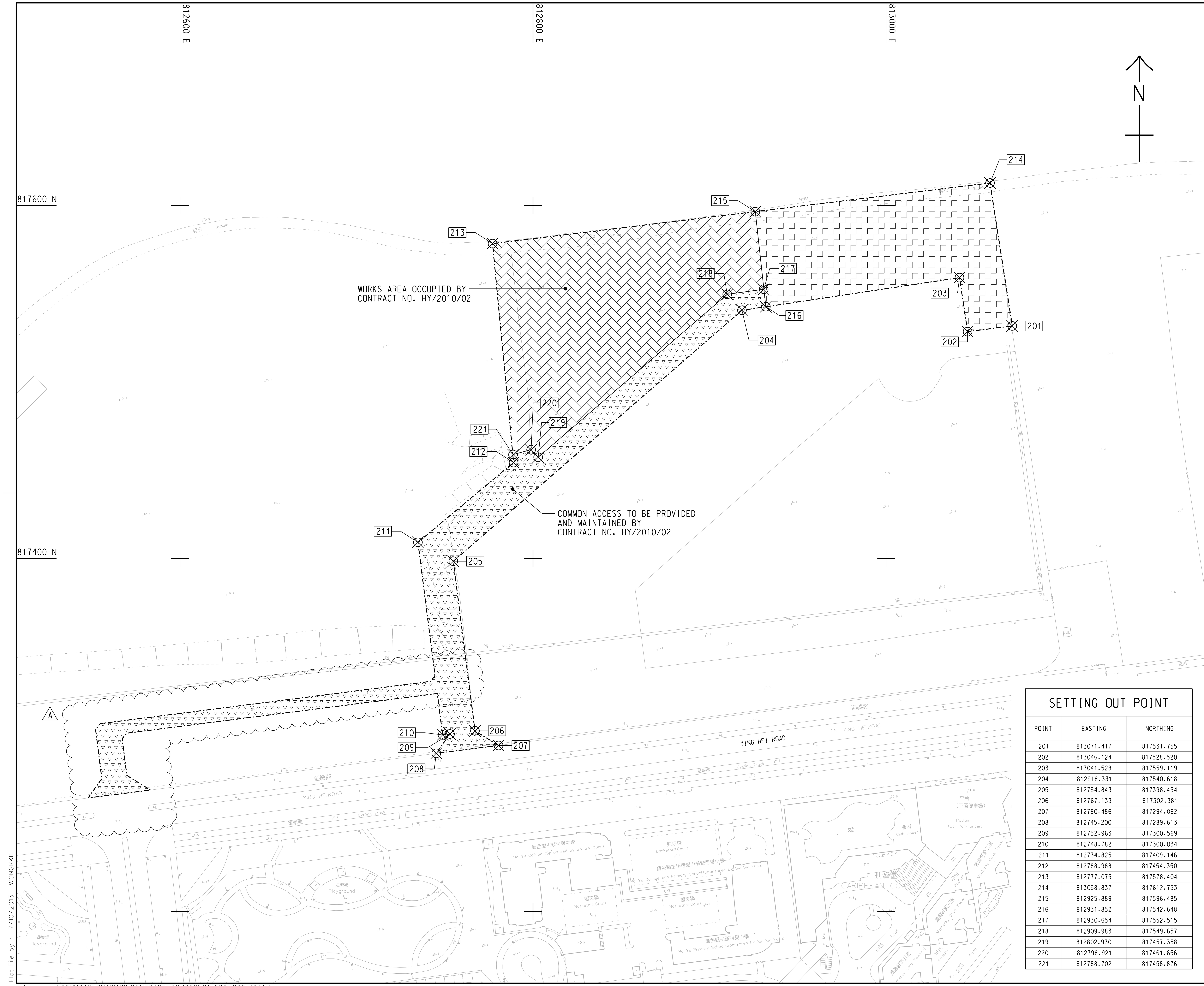

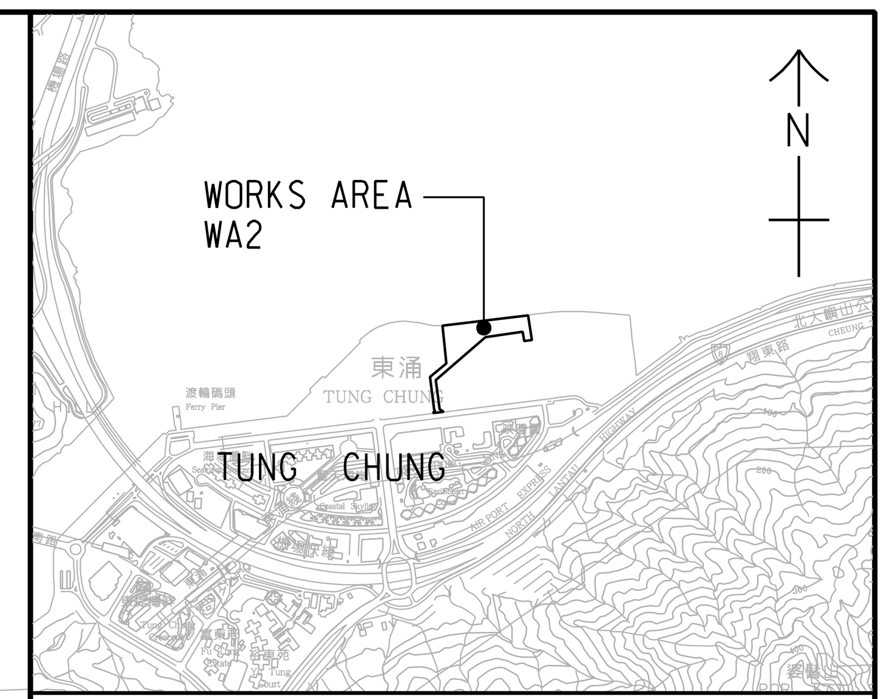

LOCATION PLAN

SCALE 1 : 25000

NOTES:

1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.

LEGEND:

- WORKS AREA BOUNDARY
- PORTION 2.1
- PORTION 2.2
- PORTION 2.3

SETTING OUT POINT

POINT	EASTING	NORTHING
201	813071.417	817531.755
202	813046.124	817528.520
203	813041.528	817559.119
204	812918.331	817540.618
205	812754.843	817398.454
206	812767.133	817302.381
207	812780.486	817294.062
208	812745.200	817289.613
209	812752.963	817300.569
210	812748.782	817300.034
211	812734.825	817409.146
212	812788.988	817454.350
213	812777.075	817578.404
214	813058.837	817612.753
215	812925.889	817596.485
216	812931.852	817542.648
217	812930.654	817552.515
218	812909.983	817549.657
219	812802.930	817457.358
220	812798.921	817461.656
221	812788.702	817458.876

REV. 修訂	DESCRIPTION 內容摘要	CHECKED 複核 D.E.	CHECKED 複核 P.E.	DATE 日期
B	WORKING DRAWING	BWCW	SCI	JUN.14
A	TENDER ADDENDUM NO. 1	BWCW	SCI	OCT.13
-	TENDER DRAWING	BWCW	SCI	SEP.13

路政署
HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處
Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PASSENGER CLEARANCE BUILDING

WORKS AREA WA2

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C1/000/C00/1041B

DESIGNED BY 設計: BWCW	CONTRACT NO. 合約編號: HY/2013/01	P. Dir. APPROVED 批准人: TKH
DRAWN BY 繪圖: WSY	STATUS 階段: WORKING DRAWING	
SCALE 比例: A1 1 : 1000		
DIMENSIONS ARE IN 尺寸單位: METRES		

SETTING OUT POINT

POINT	EASTING	NORTHING
301	817467.265	819162.683
302	817314.741	819069.828
303	817327.338	819049.295
304	817440.865	819117.811
305	817340.825	819027.314
306	817387.350	819023.403
307	817387.861	819043.396
308	817466.133	819091.047
309	817469.783	819087.181
310	817513.449	819113.764
311	817347.717	819016.082
312	817526.774	819020.578
313	817531.659	819021.641
314	817531.154	819001.065
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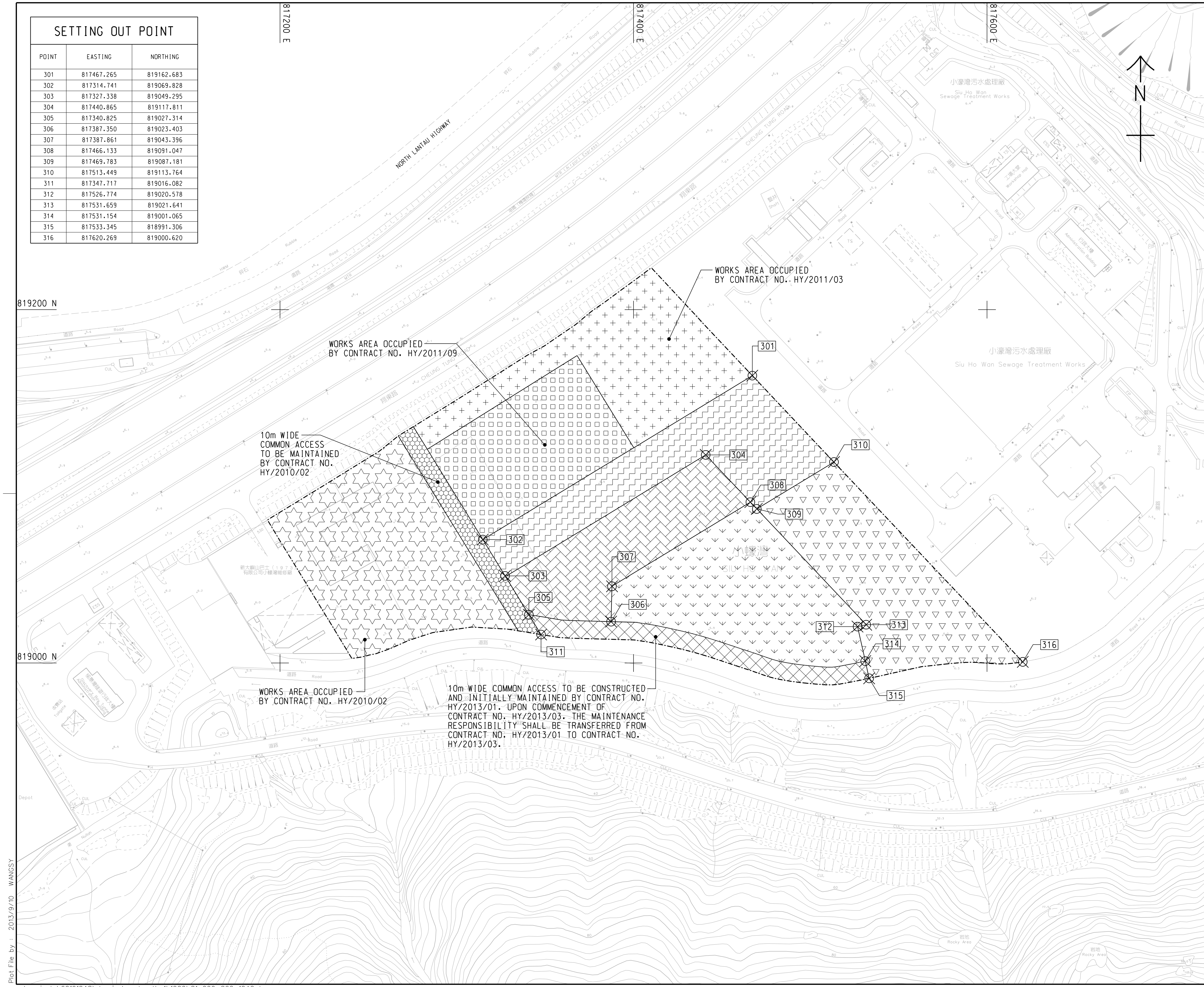

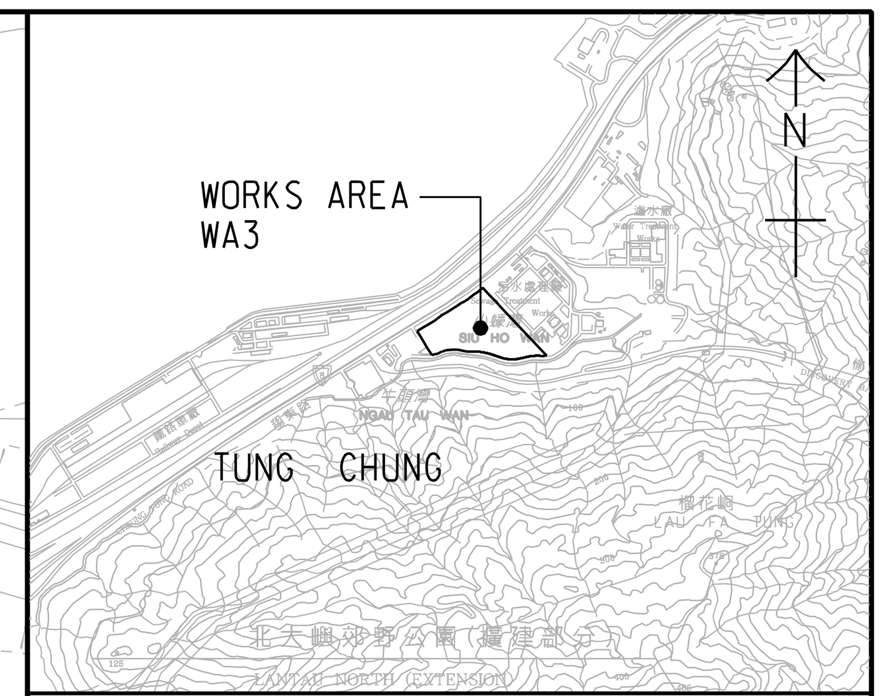

LOCATION PLAN

SCALE 1 : 25000

NOTES:

1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.

LEGEND:

- WORKS AREA BOUNDARY
- PORTION 3.1
- PORTION 3.2
- PORTION 3.3
- PORTION 3.4
- PORTION 3.5
- PORTION 3.6
- PORTION 3.7
- PORTION 3.8
- PORTION 3.9

REV. 修訂	DESCRIPTION 內容摘要	CHECKED 複核 D.E.	CHECKED 複核 P.E.	DATE 日期
A	WORKING DRAWING	BWCW	SCI	JUN.14
-	TENDER DRAWING	BWCW	SCI	SEP.13

路政署
HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處
Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PASSENGER CLEARANCE BUILDING

WORKS AREA WA3

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C1/000/C00/1042A

DESIGNED BY 設計 BWCW	CONTRACT NO. 合約編號 HY/2013/01	P. Dir. APPROVED 批准人 TKH
DRAWN BY 繪圖 WSY	STATUS 階段 WORKING DRAWING	
SCALE 比例 A1 1 : 1000		
DIMENSIONS ARE IN 尺寸單位 METRES		

Plot File by : 2013/9/10 WANGSY

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SETTING OUT POINT

POINT	EASTING	NORTHING
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403	822515.608	822559.848
404	822610.940	822599.642
405	822629.428	822607.359
406	822526.988	822529.813
407	822618.348	822567.950
408	822542.232	822489.581
409	822584.983	822507.426
410	822606.866	822516.561
411	822560.278	822441.956
412	822602.949	822460.010
413	822621.914	822467.959
414	822624.130	822470.998
415	822651.725	822508.856

822400 E

822600 E

822600 N

822400 N

TO KAU WAN

401 402 403 404 405 406 407 408 409 410 411 412 413 414 415

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2011/03

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2011/09

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2013/05

9m WIDE COMMON ACCESS TO BE CONSTRUCTED AND MAINTAINED BY CONTRACT NO. HY/2013/01

9m WIDE COMMON ACCESS TO BE MAINTAINED BY CONTRACT NO.HY/2013/01

NORTH LANTAU HIGHWAY

大青洲 TAI TSING CHAU

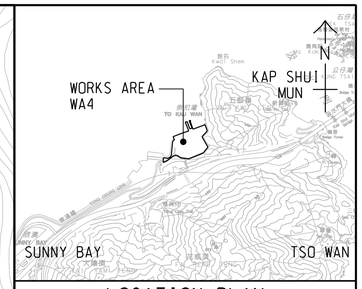
船廠 Shipyard

海堤 Seawall

碎石 Rubble

道路 Road

隧道 Tunnel



LOCATION PLAN
SCALE 1 : 25000

NOTES:

1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.

LEGEND:

- WORKS AREA BOUNDARY
- PORTION 4.1
- PORTION 4.2
- PORTION 4.3
- PORTION 4.4
- PORTION 4.5
- PORTION 4.6
- PORTION 4.7
- PORTION 4.8

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 複核	DATE 日期
-	TENDER DRAWING	BWCW	SCI	SEP.13

路政署 HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PASSENGER CLEARANCE BUILDING

WORKS AREA WA4

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C1/000/C00/1043

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
BWCW	HY/2013/01	EMSC
DRAWN BY 繪圖 WSY	STATUS 階段	
SCALE 比例 A1 1 : 1000		
DIMENSIONS ARE IN 尺寸單位 METRES	© COPYRIGHT RESERVED 版 權 所 有	

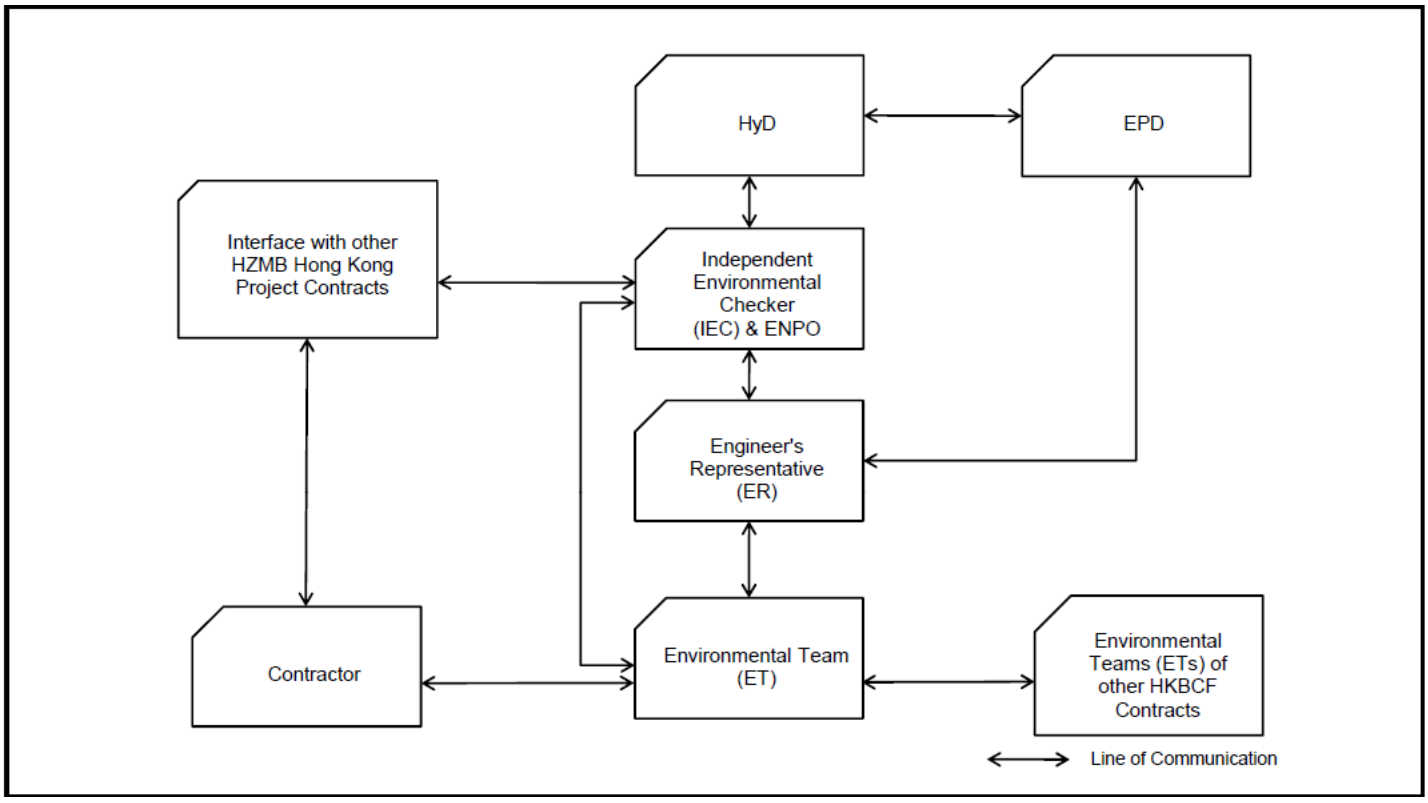
Plot File by : 2013/9/10 WANGSY

P:\Projects\60191048\DRAWING\CONTRACT\C1\1000\C1_000_C00_1043.dgn

APPENDIX C

Project Organization for Environmental Works

Project Organisation for Environmental Works



APPENDIX D

Construction Programme

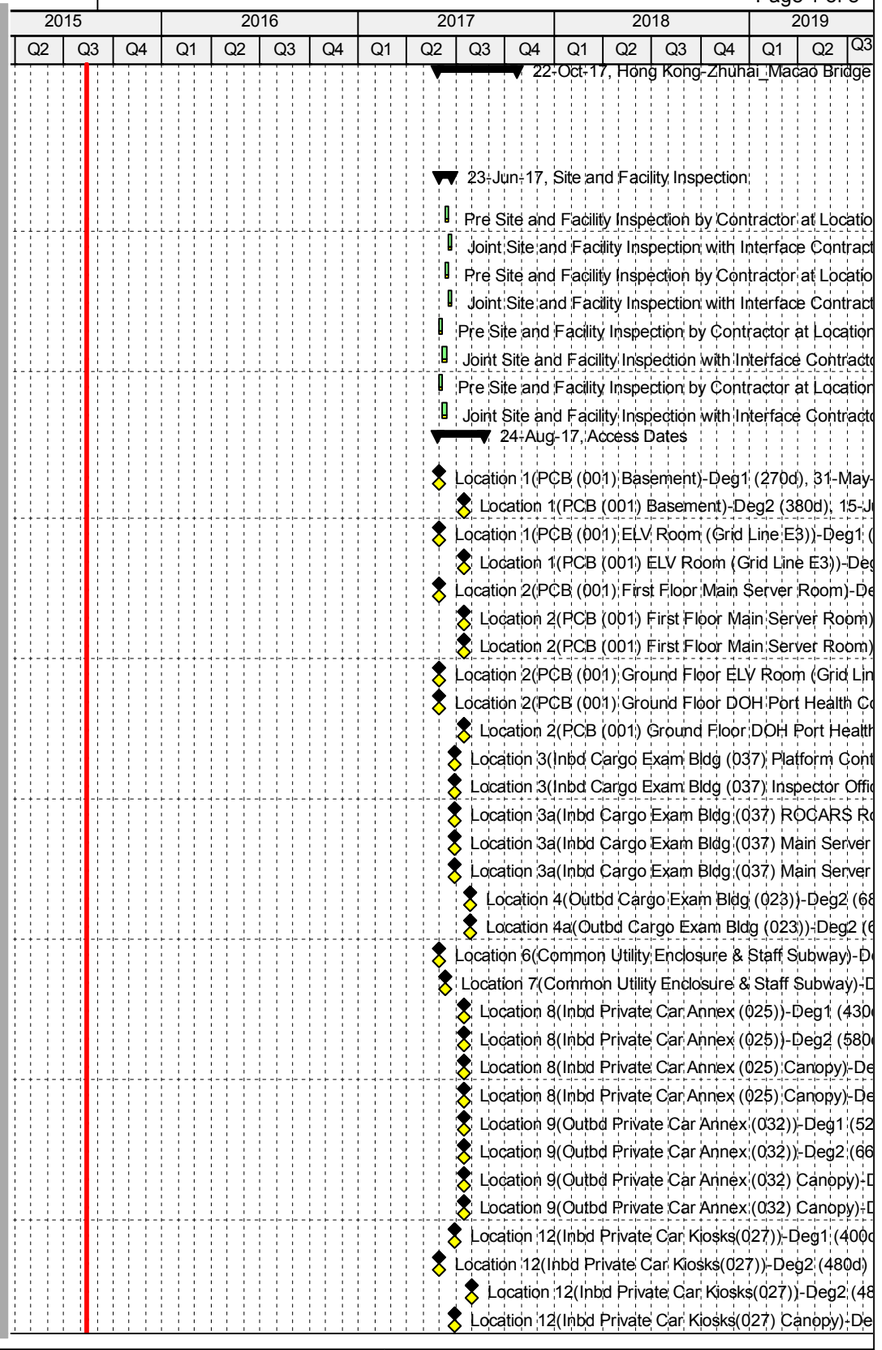
CONSTRUCTION SCHEDULE

Leighton - Chun Wo Joint Venture

TASK DESCRIPTION	2018		
	Sep	Oct	Nov
Remaining Work			
Maintenance Work upon request			

Updated in October 2018

Activity ID	Activity Name
	Hong Kong-Zhuhai_Macao Bridge Hong Kong Boundary Crossing F
	Key Dates
	Interface Activities
	Site and Facility Inspection
JS1200	Pre Site and Facility Inspection by Contractor at Location 4 - Deg2
JS1210	Joint Site and Facility Inspection with Interface Contractor at Location 4 - Deg2
JS1620	Pre Site and Facility Inspection by Contractor at Location 14 - Deg2
JS1630	Joint Site and Facility Inspection with Interface Contractor at Location 14 - Deg2
JS1760	Pre Site and Facility Inspection by Contractor at Location 18 - Deg1
JS1770	Joint Site and Facility Inspection with Interface Contractor at Location 18 - Deg1
JS1780	Pre Site and Facility Inspection by Contractor at Location 18 - Deg2
JS1790	Joint Site and Facility Inspection with Interface Contractor at Location 18 - Deg2
	Access Dates
AD1000	Location 1(PCB (001) Basement)-Deg1 (270d)
AD1010	Location 1(PCB (001) Basement)-Deg2 (380d)
AD1020	Location 1(PCB (001) ELV Room (Grid Line E3))-Deg1 (270d)
AD1030	Location 1(PCB (001) ELV Room (Grid Line E3))-Deg2 (380d)
AD1040	Location 2(PCB (001) First Floor Main Server Room)-Deg1 (330d)
AD1050	Location 2(PCB (001) First Floor Main Server Room)-Deg2 (380d)
AD1060	Location 2(PCB (001) First Floor Main Server Room) - For Server Installation - Deg2 (3
AD1070	Location 2(PCB (001) Ground Floor ELV Room (Grid Line E3)) - Deg1 (330d)
AD1080	Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BD5)) -
AD1090	Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BD5)) -
AD1130	Location 3(Inbd Cargo Exam Bldg (037) Platform Control Room)-Deg2 (500d)
AD1150	Location 3(Inbd Cargo Exam Bldg (037) Inspector Offices 128,129,130,131,128,129,14
AD1170	Location 3a(Inbd Cargo Exam Bldg (037) ROCARS Room)-Deg2 (480d)
AD1190	Location 3a(Inbd Cargo Exam Bldg (037) Main Server Room)-Deg2 (480d)
AD1200	Location 3a(Inbd Cargo Exam Bldg (037) Main Server Room) - For Server installation -
AD1220	Location 4(Outbd Cargo Exam Bldg (023))-Deg2 (680d)
AD1240	Location 4a(Outbd Cargo Exam Bldg (023))-Deg2 (630d)
AD1270	Location 6(Common Utility Enclosure & Staff Subway)-Deg1 (400d)
AD1290	Location 7(Common Utility Enclosure & Staff Subway)-Deg1 (270d)
AD1300	Location 8(Inbd Private Car Annex (025))-Deg1 (430d)
AD1310	Location 8(Inbd Private Car Annex (025))-Deg2 (580d)
AD1320	Location 8(Inbd Private Car Annex (025) Canopy)-Deg1 (430d)
AD1330	Location 8(Inbd Private Car Annex (025) Canopy)-Deg2 (580d)
AD1340	Location 9(Outbd Private Car Annex (032))-Deg1 (520d)
AD1350	Location 9(Outbd Private Car Annex (032))-Deg2 (660d)
AD1360	Location 9(Outbd Private Car Annex (032) Canopy)-Deg1 (520d)
AD1370	Location 9(Outbd Private Car Annex (032) Canopy)-Deg2 (660d)
AD1501	Location 12(Inbd Private Car Kiosks(027))-Deg1 (400d) Phase 2
AD1510	Location 12(Inbd Private Car Kiosks(027))-Deg2 (480d) Phase 1
AD1511	Location 12(Inbd Private Car Kiosks(027))-Deg2 (480d) Phase 2
AD1521	Location 12(Inbd Private Car Kiosks(027) Canopy)-Deg1 (400d) Phase 2



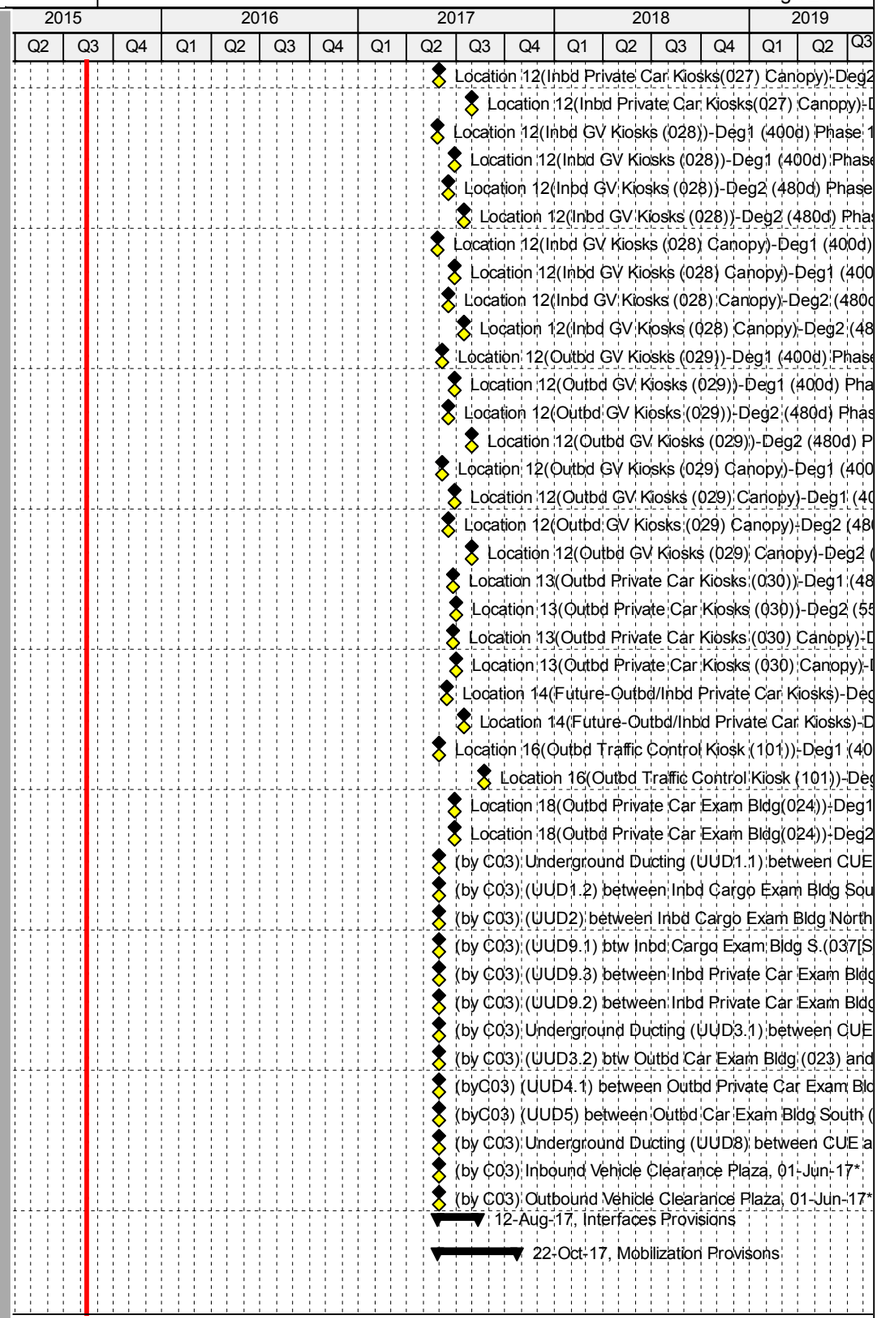
Programme No.: HZMB-DWP
Data Date: 14-Aug-15

Actual Level of Effort
Primary Baseline
Actual Work
Remaining Work
Critical Remaining Work
Baseline Milestone
Milestone
summary

Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)

Date	Revision	Checked	Approved
14-Nov-16	Rev.: 0	WC	LC
10-Mar-17	Rev.: 1.0a	WC	LC
5-May-17	Rev.: 1.0b	WC	LC

Activity ID	Activity Name
AD1530	Location 12(Inbd Private Car Kiosks(027) Canopy)-Deg2 (480d) Phase 1
AD1531	Location 12(Inbd Private Car Kiosks(027) Canopy)-Deg2 (480d) Phase 2
AD1540	Location 12(Inbd GV Kiosks (028))-Deg1 (400d) Phase 1
AD1541	Location 12(Inbd GV Kiosks (028))-Deg1 (400d) Phase 2
AD1550	Location 12(Inbd GV Kiosks (028))-Deg2 (480d) Phase 1
AD1551	Location 12(Inbd GV Kiosks (028))-Deg2 (480d) Phase 2
AD1560	Location 12(Inbd GV Kiosks (028) Canopy)-Deg1 (400d) Phase 1
AD1561	Location 12(Inbd GV Kiosks (028) Canopy)-Deg1 (400d) Phase 2
AD1570	Location 12(Inbd GV Kiosks (028) Canopy)-Deg2 (480d) Phase 1
AD1571	Location 12(Inbd GV Kiosks (028) Canopy)-Deg2 (480d) Phase 2
AD1580	Location 12(Outbd GV Kiosks (029))-Deg1 (400d) Phase 1
AD1581	Location 12(Outbd GV Kiosks (029))-Deg1 (400d) Phase 2
AD1590	Location 12(Outbd GV Kiosks (029))-Deg2 (480d) Phase 1
AD1591	Location 12(Outbd GV Kiosks (029))-Deg2 (480d) Phase 2
AD1600	Location 12(Outbd GV Kiosks (029) Canopy)-Deg1 (400d) Phase 1
AD1601	Location 12(Outbd GV Kiosks (029) Canopy)-Deg1 (400d) Phase 2
AD1610	Location 12(Outbd GV Kiosks (029) Canopy)-Deg2 (480d) Phase 1
AD1611	Location 12(Outbd GV Kiosks (029) Canopy)-Deg2 (480d) Phase 2
AD1620	Location 13(Outbd Private Car Kiosks (030))-Deg1 (480d) Phase 1
AD1630	Location 13(Outbd Private Car Kiosks (030))-Deg2 (550d) Phase 1
AD1640	Location 13(Outbd Private Car Kiosks (030) Canopy)-Deg1 (480d) Phase 1
AD1650	Location 13(Outbd Private Car Kiosks (030) Canopy)-Deg2 (550d) Phase 1
AD1660	Location 14(Future-Outbd/Inbd Private Car Kiosks)-Deg1 (610d)
AD1670	Location 14(Future-Outbd/Inbd Private Car Kiosks)-Deg2 (680d)
AD1700	Location 16(Outbd Traffic Control Kiosk (101))-Deg1 (400d)
AD1710	Location 16(Outbd Traffic Control Kiosk (101))-Deg2 (480d)
AD1740	Location 18(Outbd Private Car Exam Bldg(024))-Deg1 (-)
AD1750	Location 18(Outbd Private Car Exam Bldg(024))-Deg2 (670d)
AD1780	(by C03) Underground Ducting (UUD1.1) between CUE and Inbd Cargo Exam Bldg (0
AD1790	(by C03) (UUD1.2) between Inbd Cargo Exam Bldg South (037[S]) and DOH Cargo C
AD1800	(by C03) (UUD2) between Inbd Cargo Exam Bldg North (037[N]) and Inbd Vehicle Cle
AD1810	(by C03) (UUD9.1) btw Inbd Cargo Exam Bldg S.(037[S]) & Inbd PC Exam Bldg(033) &
AD1820	(by C03) (UUD9.3) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clear
AD1830	(by C03) (UUD9.2) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clear
AD1840	(by C03) Underground Ducting (UUD3.1) between CUE to Outbd Cargo Exam Bldg (0
AD1850	(by C03) (UUD3.2) btw Outbd Car Exam Bldg (023) and Outbd PC Exam Bldg (024) an
AD1860	(byC03) (UUD4.1) between Outbd Private Car Exam Bldg (024) and Outbd Vehicle Cle
AD1870	(byC03) (UUD5) between Outbd Car Exam Bldg South (023[S]) and Outbd Vehicle Cle
AD1880	(by C03) Underground Ducting (UUD8) between CUE and Outbd PCA (032)
AD1910	(by C03) Inbound Vehicle Clearance Plaza
AD1920	(by C03) Outbound Vehicle Clearance Plaza
Interfaces Provisions	
Mobilization Provisons	
WA4 Site Erection & Servicing	



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Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities - Automatic Vehicle Clearance Support System (AVCSS)

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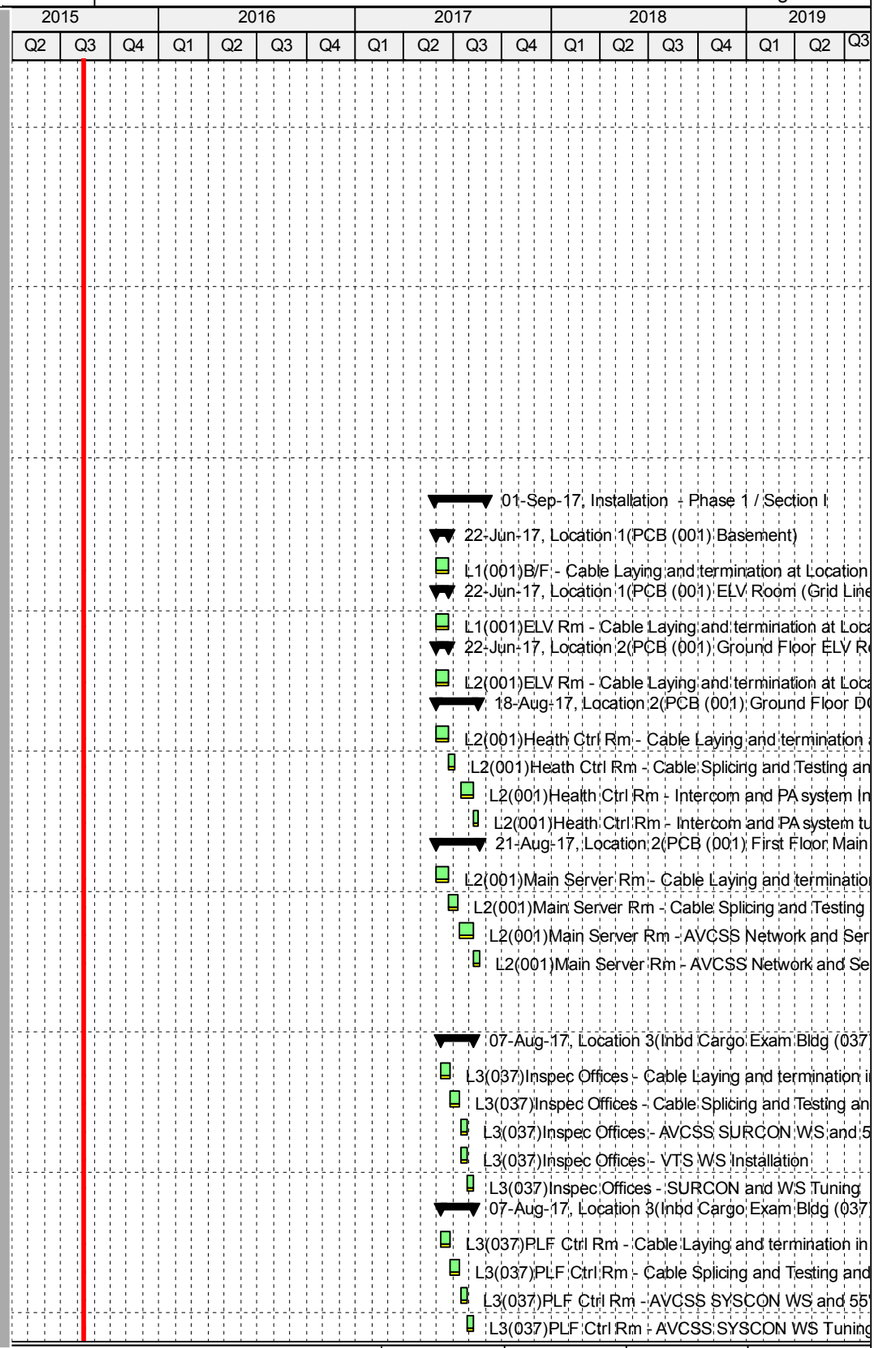
Activity ID	Activity Name
	Detailed Design Specification
	Contruction Design and Management
	Supply/Manufacture Mock-up items
	Supply/Manufacture prototypes
	Software Design, Coding and Testing
	Coding
	Software System Inetgration
	Prototype & Software Simulation Tests
	Procurement - Phase 1 / Section I
	Supply/Manufacture products for FAT
	Factory Acceptance Test (FAT)
	Supply/Manufacture Equipment
	Delivery and Bench Acceptance Test for Phase 1/ Section I
	Installation - Phase 1 / Section I
	Location 1(PCB (001) Basement)
EM1920	L1(001)B/F - Cable Laying and termination at Location 1 and Location 2
	Location 1(PCB (001) ELV Room (Grid Line E3))
EM1940	L1(001)ELV Rm - Cable Laying and termination at Location 1 and Location 2
	Location 2(PCB (001) Ground Floor ELV Room (Grid Line E3))
EM1960	L2(001)ELV Rm - Cable Laying and termination at Location 1 and Location 2
	Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BD5))
EM1080	L2(001)Heath Ctrl Rm - Cable Laying and termination at Location 1 and Location 2
EM1100	L2(001)Heath Ctrl Rm - Cable Splicing and Testing and Labeling
EM1120	L2(001)Health Ctrl Rm - Intercom and PA system Installation
EM1140	L2(001)Heath Ctrl Rm - Intercom and PA system tuning
	Location 2(PCB (001) First Floor Main Server Room)
EM1000	L2(001)Main Server Rm - Cable Laying and termination at Location 1 and Location 2
EM1020	L2(001)Main Server Rm - Cable Splicing and Testing and Labeling
EM1040	L2(001)Main Server Rm - AVCSS Network and Server Installation
EM1060	L2(001)Main Server Rm - AVCSS Network and Server Tuning
	Location 3(Inbd Cargo Exam Bldg (037) MDF Room)
	Location 3(Inbd Cargo Exam Bldg (037) ELV Room)
	Location 3(Inbd Cargo Exam Bldg (037) Inspector Offices 128,129,130,131,128,129,14
EM2020	L3(037)Inspec Offices - Cable Laying and termination in Location 3 and Location 3a
EM2040	L3(037)Inspec Offices - Cable Splicing and Testing and Labeling
EM2060	L3(037)Inspec Offices - AVCSS SURCON WS and 55" LCD Installation
EM2080	L3(037)Inspec Offices - VTS WS Installation
EM2100	L3(037)Inspec Offices - SURCON and WS Tuning
	Location 3(Inbd Cargo Exam Bldg (037) Platform Control Room)
EM1160	L3(037)PLF Ctrl Rm - Cable Laying and termination in Location 3 and Location 3a
EM1180	L3(037)PLF Ctrl Rm - Cable Splicing and Testing and Labeling
EM1200	L3(037)PLF Ctrl Rm - AVCSS SYSCON WS and 55" TV Wall Installation
EM1220	L3(037)PLF Ctrl Rm - AVCSS SYSCON WS Tuning



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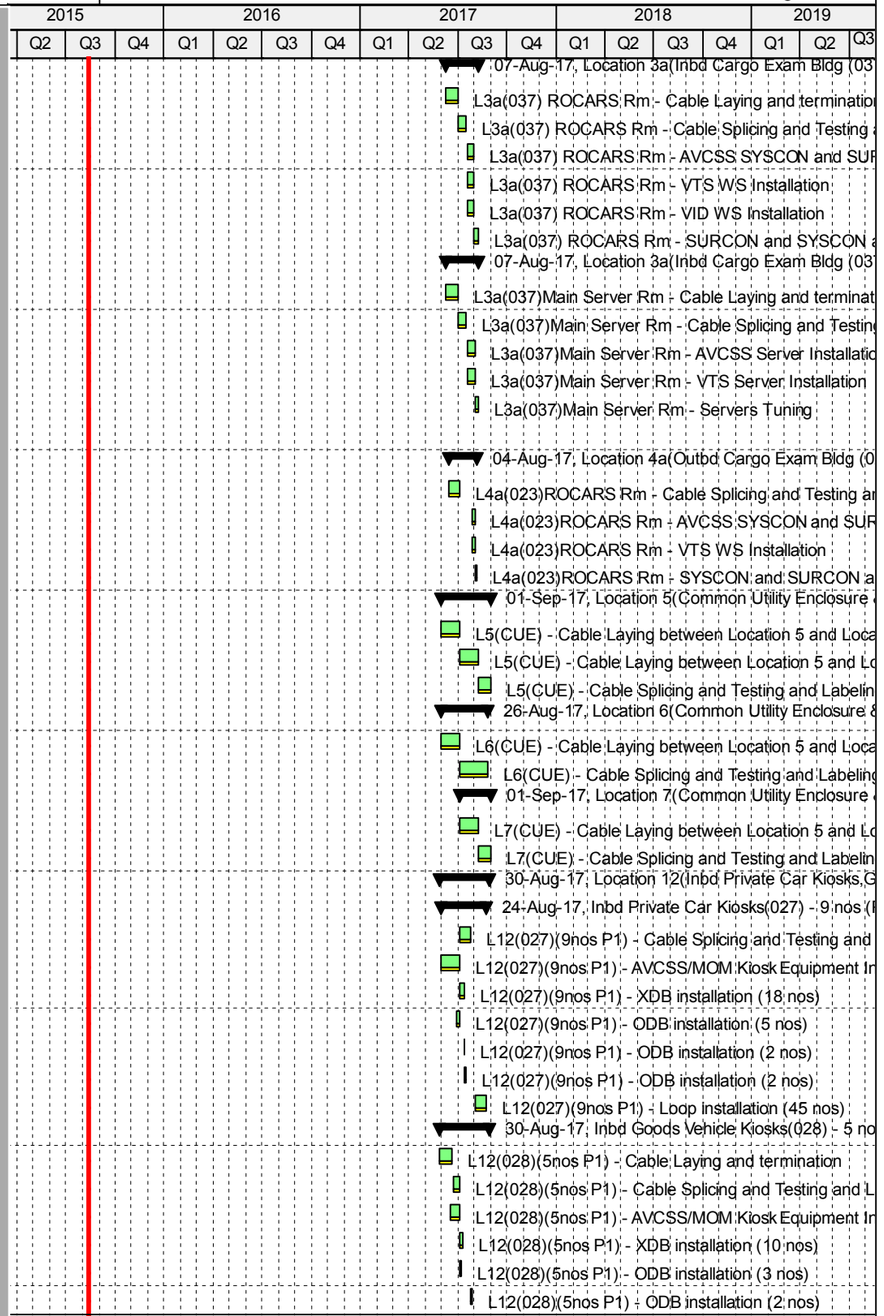
Location 3a(Inbd Cargo Exam Bldg (037) ROCARS Room)	
EM1240	L3a(037) ROCARS Rm - Cable Laying and termination in Location 3 and Location 3a
EM1260	L3a(037) ROCARS Rm - Cable Splicing and Testing and Labeling
EM1280	L3a(037) ROCARS Rm - AVCSS SYSCON and SURCON and Intercom Installation
EM1300	L3a(037) ROCARS Rm - VTS WS Installation
EM1320	L3a(037) ROCARS Rm - VID WS Installation
EM1340	L3a(037) ROCARS Rm - SURCON and SYSCON and WS Tuning
Location 3a(Inbd Cargo Exam Bldg (037) Main Server Room)	
EM2120	L3a(037)Main Server Rm - Cable Laying and termination in Location 3 and Location 3a
EM2140	L3a(037)Main Server Rm - Cable Splicing and Testing and Labeling
EM2160	L3a(037)Main Server Rm - AVCSS Server Installation
EM2180	L3a(037)Main Server Rm - VTS Server Installation
EM2200	L3a(037)Main Server Rm - Servers Tuning
Location 4(Outbd Cargo Exam Bldg (023) MDF Room)	
Location 4a(Outbd Cargo Exam Bldg (023) ROCARS Room)	
EM2240	L4a(023)ROCARS Rm - Cable Splicing and Testing and Labeling
EM2260	L4a(023)ROCARS Rm - AVCSS SYSCON and SURCON and Intercom Installation
EM2280	L4a(023)ROCARS Rm - VTS WS Installation
EM2300	L4a(023)ROCARS Rm - SYSCON and SURCON and WS Tuning
Location 5(Common Utility Enclosure & Staff Subway)	
EM2341	L5(CUE) - Cable Laying between Location 5 and Location 6
EM2361	L5(CUE) - Cable Laying between Location 5 and Location 7
EM2380	L5(CUE) - Cable Splicing and Testing and Labeling
Location 6(Common Utility Enclosure & Staff Subway)	
EM2400	L6(CUE) - Cable Laying between Location 5 and Location 6
EM2420	L6(CUE) - Cable Splicing and Testing and Labeling
Location 7(Common Utility Enclosure & Staff Subway)	
EM2440	L7(CUE) - Cable Laying between Location 5 and Location 7
EM2460	L7(CUE) - Cable Splicing and Testing and Labeling
Location 12(Inbd Private Car Kiosks,GV Kiosks (027,028,029))	
Inbd Private Car Kiosks(027) - 9 nos (Phase 1)	
EM1500	L12(027)(9nos P1) - Cable Splicing and Testing and Labeling
EM1520	L12(027)(9nos P1) - AVCSS/MOM Kiosk Equipment Installation (9 nos)
EM1541	L12(027)(9nos P1) - XDB installation (18 nos)
EM1542	L12(027)(9nos P1) - ODB installation (5 nos)
EM1543	L12(027)(9nos P1) - ODB installation (2 nos)
EM1544	L12(027)(9nos P1) - ODB installation (2 nos)
EM1560	L12(027)(9nos P1) - Loop installation (45 nos)
Inbd Goods Vehicle Kiosks(028) - 5 nos (Phase 1)	
EM1620	L12(028)(5nos P1) - Cable Laying and termination
EM1640	L12(028)(5nos P1) - Cable Splicing and Testing and Labeling
EM1660	L12(028)(5nos P1) - AVCSS/MOM Kiosk Equipment Installation (5 nos)
EM1681	L12(028)(5nos P1) - XDB installation (10 nos)
EM1682	L12(028)(5nos P1) - ODB installation (3 nos)
EM1683	L12(028)(5nos P1) - ODB installation (2 nos)



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Hong Kong Boundary Crossing Facilities - Automatic Vehicle Clearance Support System (AVCSS)

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Activity ID	Activity Name
EM1700	L12(028)(5nos P1) - AIOP Installation (5 nos)
EM1720	L12(028)(5nos P1) - Loop installation (25 nos)
Outbd Goods Vehicle Kiosks(029) - 5 nos (Phase 1)	
EM1740	L12(029)(5nos P1) - Cable Containment in Kiosks
EM1760	L12(029)(5nos P1) - Cable Laying and termination
EM1780	L12(029)(5nos P1) - Cable Splicing and Testing and Labeling
EM1800	L12(029)(5nos P1) - AVCSS/MOM Kiosk Equipment Installation (5 nos)
EM1821	L12(029)(5nos P1) - XDB installation (5 nos)
EM1822	L12(029)(5nos P1) - ODB installation (4 nos)
EM1823	L12(029)(5nos P1) - ODB installation (1 nos)
EM1840	L12(029)(5nos P1) - AIOP Installation (5 nos)
Location 13(Outbd Private Car Kiosks (030)) - 9 nos (Phase 1)	
EM2520	L13(030)(9nos P1) - Cable Containment in Kiosks
EM2540	L13(030)(9nos P1) - Cable Laying and termination
EM2560	L13(030)(9nos P1) - Cable Splicing and Testing and Labeling
EM2580	L13(030)(9nos P1) - AVCSS/MOM Kiosk Equipment Installation (9 nos)
EM2601	L13(030)(9nos P1) - XDB installation (9 nos)
EM2602	L13(030)(9nos P1) - ODB installation (7 nos)
Location 14(Future-Outbd/Inbd Private Car Kiosks) - 6+6 nos	
EM1440	L14 - Cable Laying and termination at ELV Room in CUE
Location 15(Inbd Traffic Control Kiosk (100))	
Location 16(Outbd Traffic Control Kiosk (101))	
EM2760	L16(101) - Cable Laying and termination
EM2780	L16(101) - Cable Splicing and Testing and Labeling
EM2800	L16(101) - AVCSS SYSCON and SURCON Installation
EM2820	L16(101) - VTS WS and 55" LCD Installation
Location 17(Inbd Private Car Exam Bldg(033) Operational Office)	
Location 18 (Outbd Private Car Exam Bldg(024) Operational Office)	
EM2940	L18(024) - Cable Laying and termination
EM2960	L18(024) - Cable Splicing and Testing and Labeling
EM2980	L18(024) - AVCSS SURCON and 55" LCD Installation
EM3000	L18(024) - SURCON Tuning
Location 19 (DOH Cargo Clearance Bldg(043))	
EM1360	L19(043) - Cable Laying and termination
EM1380	L19(043) - Cable Splicing and Testing and Labeling
EM1400	L19(043) - PA and Intercom Installation
EM1420	L19(043) - PA and Intercom Tuning
Inbd Vehicle Clearance Plaza - 8 nos VID, 7 nos VTS, 4 nos TLS	
EM3020	Inbound VID cabling from pillar box to VID field equipment
EM3040	Inbound VTS cabling from pillar box to VTS field equipment
EM3060	Inbound TLS cabling from pillar box to TLS field equipment
EM3080	Inbound VID field equipment installation (8 VID)
EM3100	Inbound VTS field equipment installation (4 RFID + 3 Cameras)
EM3120	Inbound TLS field equipment installation (4 TLS)
EM3140	Inbound VID and VTS and TLS field equipment tuning

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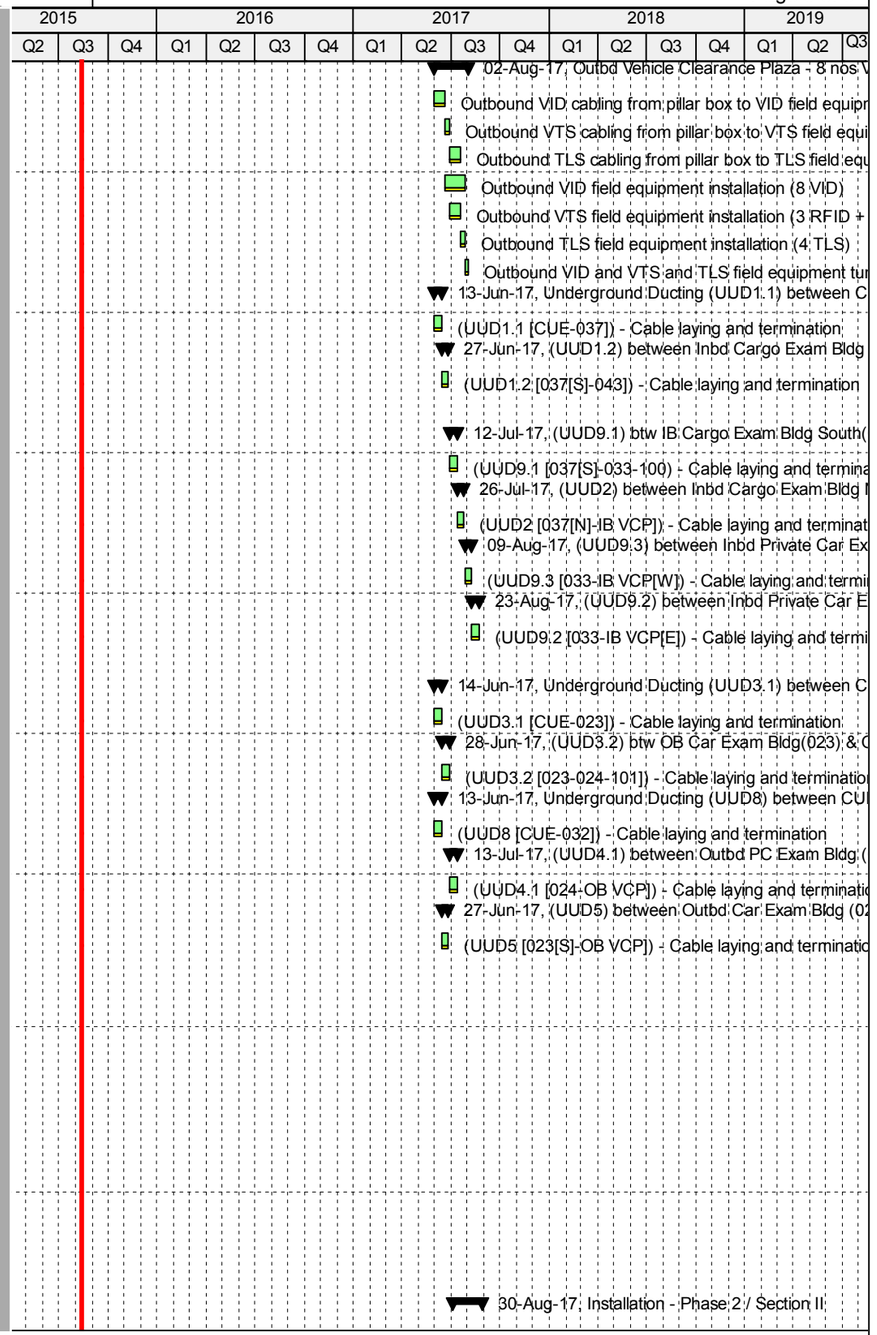
Activity ID	Activity Name
	Outbd Vehicle Clearance Plaza - 8 nos VID, 6 nos VTS, 4 nos TLS
EM3160	Outbound VID cabling from pillar box to VID field equipment
EM3180	Outbound VTS cabling from pillar box to VTS field equipment
EM3200	Outbound TLS cabling from pillar box to TLS field equipment
EM3220	Outbound VID field equipment installation (8 VID)
EM3240	Outbound VTS field equipment installation (3 RFID + 3 Cameras)
EM3260	Outbound TLS field equipment installation (4 TLS)
EM3280	Outbound VID and VTS and TLS field equipment tuning
	Underground Ducting (UUD1.1) between CUE and Inbd Cargo Exam Bldg (037)
UD1000	(UUD1.1 [CUE-037]) - Cable laying and termination
	(UUD1.2) between Inbd Cargo Exam Bldg South (037[S]) and DOH Cargo Clearance Bl
UD1060	(UUD1.2 [037[S]-043]) - Cable laying and termination
	Underground Ducting (UUD6) between CUE and Shuttle Bus Kiosk (006) and Inbd Priv
	(UUD9.1) btw IB Cargo Exam Bldg South(037[S]) & IB PC Exam Bldg(033) & IB Traffic
UD1040	(UUD9.1 [037[S]-033-100) - Cable laying and termination
	(UUD2) between Inbd Cargo Exam Bldg North (037[N]) to Inbd VCP
UD1010	(UUD2 [037[N]-IB VCP]) - Cable laying and termination
	(UUD9.3) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clearance Plaza
UD1070	(UUD9.3 [033-IB VCP[W]) - Cable laying and termination
	(UUD9.2) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clearance Plaza
UD1020	(UUD9.2 [033-IB VCP[E]) - Cable laying and termination
	Underground Ducting (UUD7) between PCB(001) and Inbd Coach Kiosks(010)
	Underground Ducting (UUD3.1) between CUE and Outbd Cargo Exam Bldg (023)
UD1030	(UUD3.1 [CUE-023]) - Cable laying and termination
	(UUD3.2) btw OB Car Exam Bldg(023) & OB PC Exam Bldg(024) & OB Traffic Control I
UD1050	(UUD3.2 [023-024-101]) - Cable laying and termination
	Underground Ducting (UUD8) between CUE and Outbd PCA (032)
UD1100	(UUD8 [CUE-032]) - Cable laying and termination
	(UUD4.1) between Outbd PC Exam Bldg (024) and Outbd Vehicle Clearance Plaza
UD1080	(UUD4.1 [024-OB VCP]) - Cable laying and termination
	(UUD5) between Outbd Car Exam Bldg (023[S]) and Outbd Vehicle Clearance Plaza
UD1090	(UUD5 [023[S]-OB VCP]) - Cable laying and termination
	Initial On-Site Test and Commissioning / Pre-SAT (Phase 1 / Section I)
	Site Acceptance Test (Phase 1 / Section I)
	Security Risk Assessment and Audit
	Operability Period Test (Phase 1 / Section I)
	Completion (Phase 1 /Section I)
	Training and Document (Phase 1 /Section I)
	Operation (Phase 1 /Section I)
	Engineering Support for Phase 1 / Section I
	Procurement - Phase 2 / Section II
	Delivery and Bench Acceptance Test for Phase 2/Section II
	Installation - Phase 2 / Section II



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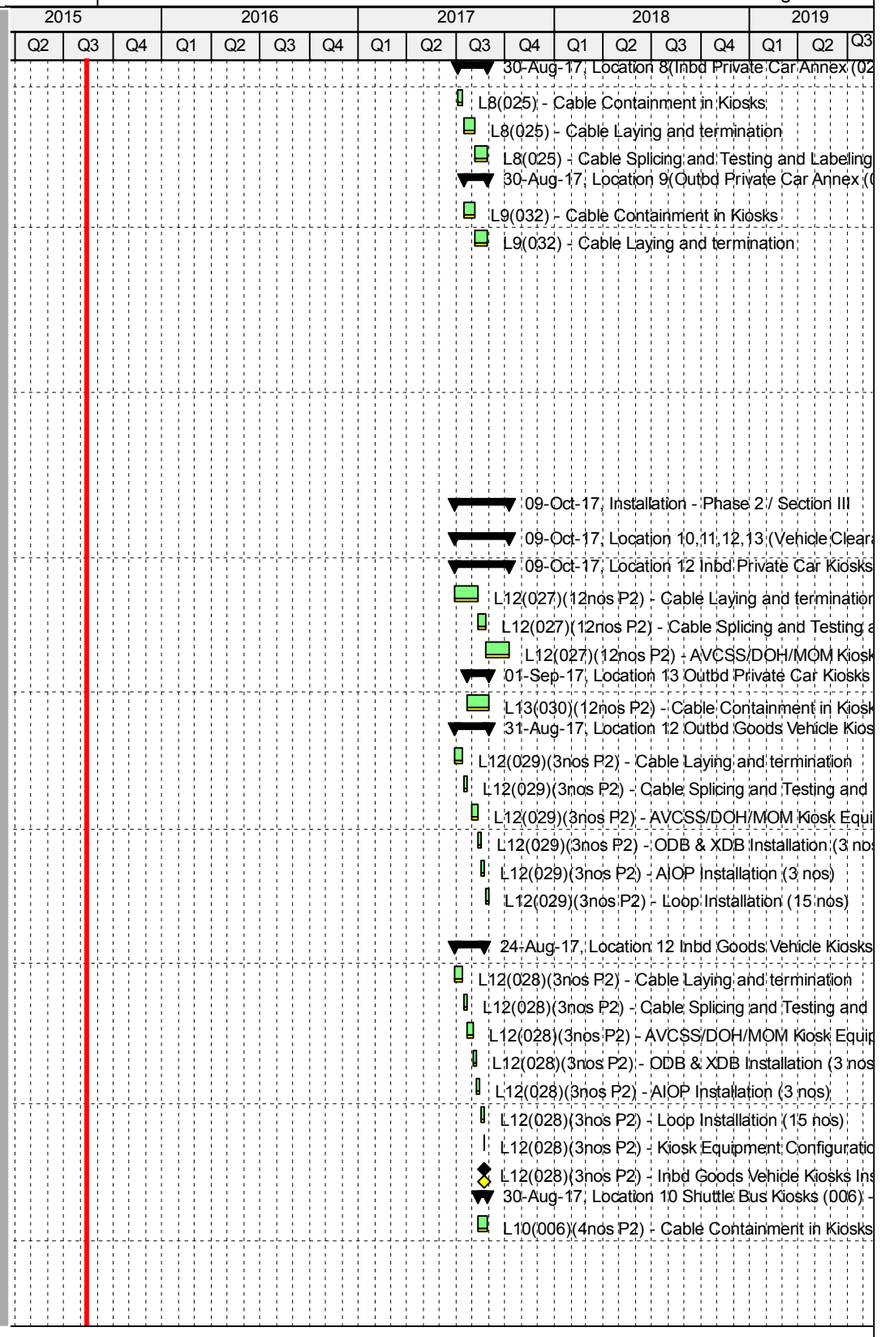
Activity ID	Activity Name
	Location 8(Inbd Private Car Annex (025)) (Phase 2)
EM3370	L8(025) - Cable Containment in Kiosks
EM3380	L8(025) - Cable Laying and termination
EM3400	L8(025) - Cable Splicing and Testing and Labeling
	Location 9(Outbd Private Car Annex (032)) (Phase 2)
EM3500	L9(032) - Cable Containment in Kiosks
EM3520	L9(032) - Cable Laying and termination
	Initial On-Site Test and Commissioning / Pre-SAT (Phase 2 / Section II)
	Site Acceptance Test (Phase 2 / Section II)
	Operability Period Test (Phase 2 / Section II)
	Completion (Phase 2 / Section II)
	Engineering Support for Phase 2 / Section II
	Procurement for Phase2 / Section III
	Delivery and Bench Acceptance Test for Phase2 / Section III
	Installation - Phase 2 / Section III
	Location 10,11,12,13 (Vehicle Clearance Kiosks)
	Location 12 Inbd Private Car Kiosks (027) - 12 nos (Phase 2)
EM4440	L12(027)(12nos P2) - Cable Laying and termination
EM4460	L12(027)(12nos P2) - Cable Splicing and Testing and Labeling
EM4480	L12(027)(12nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (12 nos)
	Location 13 Outbd Private Car Kiosks (030) - 12 nos (Phase 2)
EM4560	L13(030)(12nos P2) - Cable Containment in Kiosks
	Location 12 Outbd Goods Vehicle Kiosks (029) - 3 nos (Phase 2)
EM4880	L12(029)(3nos P2) - Cable Laying and termination
EM4900	L12(029)(3nos P2) - Cable Splicing and Testing and Labeling
EM4920	L12(029)(3nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos)
EM4940	L12(029)(3nos P2) - ODB & XDB Installation (3 nos)
EM4960	L12(029)(3nos P2) - AIOP Installation (3 nos)
EM4980	L12(029)(3nos P2) - Loop Installation (15 nos)
	Location 11 Outbd Coach Kiosks (009) - 4 nos (Phase 2)
	Location 12 Inbd Goods Vehicle Kiosks (028) - 3 nos (Phase 2)
EM4720	L12(028)(3nos P2) - Cable Laying and termination
EM4740	L12(028)(3nos P2) - Cable Splicing and Testing and Labeling
EM4760	L12(028)(3nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos)
EM4780	L12(028)(3nos P2) - ODB & XDB Installation (3 nos)
EM4800	L12(028)(3nos P2) - AIOP Installation (3 nos)
EM4820	L12(028)(3nos P2) - Loop Installation (15 nos)
EM4840	L12(028)(3nos P2) - Kiosk Equipment Configuration (3 nos)
EM5120	L12(028)(3nos P2) - Inbd Goods Vehicle Kiosks Installation Complete
	Location 10 Shuttle Bus Kiosks (006) - 4 nos (Phase 2)
EM4000	L10(006)(4nos P2) - Cable Containment in Kiosks
	Location 11 Inbd Coach Kiosks (010) - 2 nos (Phase 2)-1
	Location 11 Inbd Coach Kiosks (010) - 2 nos (Phase 2)-2
	Initial On-Site Test and Commissioning / Pre-SAT (Phase 2 / Section III)



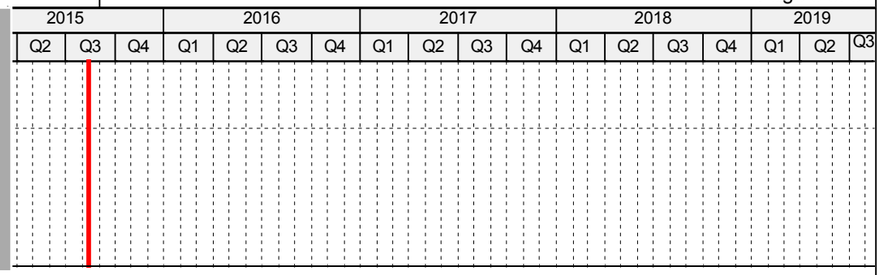
Programme No.: HZMB-DWP
Data Date: 14-Aug-15

Actual Level of Effort
Primary Baseline
Actual Work
Remaining Work
Critical Remaining Work
Baseline Milestone
Milestone
summary

Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities - Automatic Vehicle Clearance Support System (AVCSS)

Date	Revision	Checked	Approved
14-Nov-16	Rev.: 0	WC	LC
10-Mar-17	Rev.: 1.0a	WC	LC
5-May-17	Rev.: 1.0b	WC	LC

Activity ID	Activity Name
	Site Acceptance Test (Phase 2 / Section III)
	Operability Period Test (Phase 2 / Section III)
	Completion (Phase 2 / Section III)
	Operation (Phase 2 / Section III)
	Defect Liability Period (DLP)
	Document Submission (Phase 2 / Section III)



Programme No.: HZMB-DWP
Data Date: 14-Aug-15

Actual Level of Effort
Primary Baseline
Actual Work
Remaining Work
Critical Remaining Work
Baseline Milestone
Milestone
summary

Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)

Date	Revision	Checked	Approved
14-Nov-16	Rev.: 0	WC	LC
10-Mar-17	Rev.: 1.0a	WC	LC
5-May-17	Rev.: 1.0b	WC	LC

APPENDIX E

Event and Action Plan

Event/Action Plan for Air Quality Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 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 ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurement s 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 ER; 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 ER 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. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, 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 ER 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 ER 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, ER, 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 ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	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; 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.	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 ER until the exceedance is abated.

Event / Action Plan for Construction Noise Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	1. Notify IEC and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Report the results of investigation to the IEC, ER 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 ER 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. Inform IEC, ER, EPD and Contractor; 2. Identify source; 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; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER 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 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.	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 ER until the exceedance is abated.

Event / Action Plan for Water Quality Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	1. Repeat in situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Repeat measurement on next day of exceedance to confirm findings.	1. Check monitoring data submitted by ET and Contractor's working methods; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of non-compliance in writing; 2. Discuss with IEC on the proposed mitigation measures; 3. Make agreement on mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER; 5. Implement the agreed mitigation measures. 6. Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling days	1. Repeat in situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Action level; 8. Repeat measurement on next day of exceedance to confirm findings.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of non-compliance in writing; 2. Discuss with IEC on the proposed mitigation measures; 3. Make agreement on mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented; 5. Assess the effectiveness of the implemented mitigation measures.	1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER within 3 working days of notification; 5. Implement the agreed mitigation measures; 6. Amend working methods if appropriate.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Limit level being exceeded by one sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Ensure mitigation measures are properly implemented; 5. Assess the effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 5. Implement the agreed mitigation measures; 6. Amend working methods if appropriate.
Limit level being exceeded by two or more consecutive sampling days	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Make agreement on the mitigation measures to be implemented; 5. Ensure mitigation measures are properly implemented; 6. Assess the effectiveness of the implemented mitigation measures; 7. 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.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Take immediate action to avoid further exceedance; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 6. Implement the agreed mitigation measures; 7. Resubmit proposals of mitigation measures if problem still not under control; 8. As directed by the Engineer, 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	ACTION			
	ET	IEC	ER	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 measures 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 finding with the ET and the Contractor.	1. Discuss monitoring 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 and propose measures to the IEC and the ER/SOR; 3. Implement the agreed measures.

EVENT	ACTION			
	ET	IEC	ER	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 review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary. 7. If ET proves that the source of impact is caused by any of the construction activity by the works contract, ET to arrange a meeting to discuss with IEC, ER/SOR and Contractor the necessity of additional dolphin monitoring and/or any other potential mitigation measures (e.g., consider to modify the perimeter silt curtain or consider to control/temporarily stop relevant construction activity etc.) and submit to IEC a proposal of additional dolphin monitoring and/or mitigation measures where necessary.	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 any 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 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 the proposals for additional dolphin monitoring and/or any other mitigation measures submitted by ET and Contractor and verified by 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.

APPENDIX F

Implementation Schedule for Environmental Mitigation Measures (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?	What requirements or standards for the measures to achieve?	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	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	√
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; • 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;	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	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	√ √ √ √ √ √ √

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?	What requirements or standards for the measures to achieve?	Implementation Status
S5.5.6.2	A2	• 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 ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; • 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	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	√ √ √ √ √ √
S5.5.6.4	A3	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	To control the dust impact	N/A All site area of C1 have been paved, the watering was not required in reporting month
S5.5.6.5	A4	Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.	Control construction dust	Engineer	All construction sites	Design Stage	Air Pollution Control (Construction Dust) Regulation	√

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?	What requirements or standards for the measures to achieve?	Implementation Status
S5.5.6.5	A5	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	• Air Pollution Control (Construction Dust) Regulation • To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	√ (The dust monitoring works (Station AMS6) under EM&A programme for the Contract is covered by Contract No.HY/2011/03. Monitoring stations AMS2, AMS3C and AMS7B for the Contract are covered by Contract No.HY/2013/01) and Contract No. HY/2013/04.
S5.5.7.1	A6	The following mitigation measures should be adopted to prevent fugitive 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.	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	• Air Pollution Control (Construction Dust) Regulation • To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	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 loadingramp; • 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	Air Pollution Control (Construction Dust) Regulation	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?	What requirements or standards for the measures to achieve?	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	Noise Control Ordinance	√ √ √ √ √ √
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	• Noise Control Ordinance • Annex 5, TM-EIA	N/A
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 sites	Construction stage	• Noise Control Ordinance • Annex 5, TM-EIA • 75dB(A) for residential premises • The movable barrier should achieve at least 5dB(A) and the full enclosure should be designed to achieve 10dB(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?	What requirements or standards for the measures to achieve?	Implementation Status
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	• Noise Control Ordinance & its TM • Annex 5, TM-EIA	√
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	• Noise Control Ordinance • Annex 5, TM-EIA	√
S6.4.14	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	• Noise Control Ordinance • Annex 5, TM-EIA • 75dB(A) for residential premises	√ (Noise monitoring station NMS2 is covered by Contract No. HY/2013/01. Noise monitoring station NMS3C is covered by Contract No. HY/2013/04.)
Sediment								
S7.3	S1	1) The requirements as recommended in ETWB TC 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate.	Develop sediment disposal arrangement	Engineer	All construction sites	Design stage	• Waste Disposal Ordinance • ETW B TC 34/2002	N/A .
Waste Management (Construction Waste)								
S8.3.8	WM1	*Construction and Demolition Material* 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 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	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	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETW BTC 19/2005	√ √ √ √ √

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?	What requirements or standards for the measures to achieve?	Implementation Status
S8.3.8	WM1	• Implement an enhanced Waste Management Plan similar to ETW BTC (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.	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	•	√ √
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 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.	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	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TC 19/2005	√ √
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.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	• Waste Disposal (Chemical Waste) General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	√ √ √

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?	What requirements or standards for the measures to achieve?	Implementation Status
S8.2.12-S8.3.15	WM3	• Disposal of chemical waste should be via a licensed waste 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.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage		√
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	• Waste Disposal Ordinance	√
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 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.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance	√ √ √ √ √

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?	What requirements or standards for the measures to achieve?	Implementation Status
Water Quality (Construction Phase)								
S.9.11.1.7	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 backfilling, as well as protection measures. Details of the measures are provided below: • Reclamation filling for the Project shall not proceed until at least 200m of leading seawall at the reclamation area formed above +2.2mPD, unless otherwise agreement was obtained from EPD, except for the 300m gaps for marine access. All underwater filling works shall be carried out behind seawalls to avoid dispersion of suspended solids outside the Project limit;	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	√
S.9.11.1.7	W1	• Except for the filling of the cellular structures, not more than 15% public fill shall be used for reclamation filling below +2.5mPD during construction of the seawall; • After the seawall is completed except for the 300m marine access as indicated in the EPs, not more than 30% public fill shall be used for reclamation filling below +2.5mPD, unless otherwise agreement from EPD was obtained; • Upon completion of 200m leading seawall, no more than a total of 60 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 60,000 m3 for HKBCF and TMCLKL southern landfall reclamation during the filling operation; and • Upon completion of the whole section of seawall except for the 300m marine access as indicated in the EPs, no more than a total of 190 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 190,000 m3 for the remaining filling operations for HKBCF and TMCLKL southern landfall reclamation. • Floating type perimeter silt curtains shall be around the HKBCF site before the commencement of marine works. Staggered layers of silt curtain shall be provided to prevent sediment loss at navigation accesses. The length of each staggered layers shall be atleast 200m; • Single layer silt curtain to be applied around the North-east airport water intake; • The silt-curtains should be maintained in good condition to ensure the sediment plume generated from filling be confined effectively within the site boundary; • The filling works shall be scheduled to spread the works evenly over a working day; • Cellular structure shall be used for seawallconstruction; • A layer of geotextile shall be placed on top of the seabed before any filling activities take place inside the cellular structures to form theseawall;	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	√ √ √ √ √ √ √ √ √ √ √

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?	What requirements or standards for the measures to achieve?	Implementation Status
S.9.11.1.7	W1	• The conveyor belts shall be fitted with windboards and conveyor release points shall be covered with curtain to prevent any spillage of filling materials onto the surrounding waters; and • An additional layer of silt curtain shall be installed near the active stone column installation points. A layer of geotextile with stone blanket on top shall be placed on the seabed prior to stone column installation works.	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	√ √
S.9.11.1.7	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;	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	√
S.9.11.1.7	W2	• 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 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;	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	√ √ √ √ √ √ √ √

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S9.11.1.7	W2	• 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; • 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.	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	√ √ √ √ √ √ √ √ √
S.9.14	W3	• Implement a water quality monitoring programme.	To control water quality	Contractor	Selected representative water quality monitoring station	Construction stage	• TM-EIAO • Water Pollution Control Ordinance	√ (ET of Contract No. HY/2013/01 is responsible conducting monitoring for entire HKBCF)

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?	What requirements or standards for the measures to achieve?	Implementation Status
Ecology (Construction Phase)								
S10.7	E1	• Install silt curtain during the construction • Limit works fronts • Construct seawall prior to reclamation filling where practicable • Good site practices • Strict enforcement of no marine dumping • Site runoff control • Spill response plan	Prevent Sedimentation from Land-based works areas	Contractor	Seawall, reclamation area	During construction	TM-Water	√ √ √ √ √ √ √
S10.7	E2	• 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	TM-Water	√
S10.7	E3	• 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	TM-Water	√
S10.7	E4	• Dolphin Exclusion Zone • Dolphin Watching plan	Minimise marine traffic disturbance on dolphins	Contractor	Marine Works	During construction	TM-Water	√ √
S10.7	E5	• Decouple compressors and other equipment on working vessels • Proposal on design and implementation of acoustic decoupling measures applied during reclamation works • Avoidance of percussive piling	Minimise marine traffic disturbance on dolphins	Contractor	Marine Works	During construction	TM-Water	√ √ √
S10.7	E6	• Control vessel speed • Skipper training • Predefined and regular routes for working vessels; avoid Brother Islands.	Minimise marine traffic disturbance on dolphins	Contractor	Marine Traffic	During construction	TM-Water	√ √ √
S10.7	E7	• Vessel based dolphin monitoring	Minimise marine traffic disturbance on dolphins	Contractor	Northeast and Northwest Lantau	During construction	TM-Water	√ (ET of Contract No. HY/2013/01 is responsible conducting monitoring for entire HKBCF.)
Fisheries								
S11.7	F1	• Reduce re-suspension of sediments • Limit works fronts • Good site practices • Strict enforcement of no marine dumping • Spill response plan	Minimise impacts on marine water quality impacts	Marine Department	Seawall, reclamation area	During operation		√ √ √ √ √
S11.7	F2	• Install silt-grease trap in the drainage system collecting surface runoff	Minimise impacts on marine water quality impacts	Marine Department	Reclamation area	During operation		√

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S11.7	F4	• Maritime Oil Spill Response Plan (MOSRP); • Contingency plan.	Minimise impacts on marine water quality impacts	Marine Department	HKBCF	During operation		N/A
Landscape & Visual (Detailed Design Phase)								
S14.3.3.1	LV1	General design measures include: • Roadside planting and planting along the edge of the HKBCF Island is proposed; • Transplanting of mature trees in good health and amenity value where appropriate and reinstatement of areas disturbed during construction by compensatory hydro-seeding and planting; • Protection measures for the trees to be retained during construction activities; • Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations; • Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed; • Providing planting area around peripheral of HKBCF for tree planting screening effect; • Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline;	Minimise visual & landscape impact	Detailed designer	HKBCF	Design Stage		N/A
S14.3.3.1	LV1	• For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF; and • Fine-tuning the sizes of the structural members to minimize the bulkiness of buildings and adjustment of building arrangement to minimise disturbance to surrounding vegetation in the HKBCF.	Minimise visual & landscape impact	Detailed designer	HKBCF	Design Stage		N/A

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Landscape & Visual (Construction Phase)								
S14.3.3.3	LV2	Mitigate both Landscape and Visual Impacts • Grass-hydroseed bare soil surface and stock pile areas. • Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic. • Not applicable as this is for HKLR. • For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF. • Vegetation reinstatement and upgrading to disturbed areas • Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed • Providing planting area around peripheral of HKBCF for tree planting screening effect; • Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall. • 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 enchance “natural-look” of the new coastline.	Minimise visual & landscape impact	Contractor	HKBCF	Construction stage		N/A N/A √ N/A √ N/A N/A N/A
S14.3.3.3	LV3	Mitigate Visual Impacts • 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 HKBCF 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		• EIAO Guidance Note No.4/2002 • TM-EIAO	√

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S15.5 - S15.6	EM2	• An Environmental Team needs to be employed as per the EM&A Manual. • Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. • 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		• EIAO Guidance Note No.4/2002 • TM-EIAO	√ √ √

Legends: √ = Implemented; X = Not implemented; N/A = Not applicable

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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	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	√
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; • 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;	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	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	√ √ √ √ √ √ √

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S5.5.6.2	A2	• 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 ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; • 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	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	√ √ √ √ √
S5.5.6.4	A3	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	To control the dust impact	N/A All site area of C1 have been paved, the watering was not required in reporting month.
S5.5.6.5	A4	Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.	Control construction dust	En	construction sites	Design Stage	Air Pollution Control (Construction Dust) Regulation	√

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S5.5.6.5	A5	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	• Air Pollution Control (Construction Dust) Regulation • To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	√ (The dust monitoring works (Station AMS6) under EM&A programme for the Contract is covered by Contract No.HY/2011/03. Monitoring stations AMS7B for the Contract are covered by Contract No.HY/2013/04)
S5.5.7.1	A6	The following mitigation measures should be adopted to prevent fugitive 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.	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	• Air Pollution Control (Construction Dust) Regulation • To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	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	Air Pollution Control (Construction Dust) Regulation	N/A

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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	Noise Control Ordinance	√ √ √ √ √ √
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	• Noise Control Ordinance • Annex 5, TM-EIA	N/A
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 sites	Construction stage	• Noise Control Ordinance • Annex 5, TM-EIA • 75dB(A) for residential premises • The movable barrier should achieve at least 5dB(A) and the full enclosure should be designed to achieve 10dB(A)	N/A

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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	• Noise Control Ordinance & its TM • Annex 5, TM-EIA	√
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	• Noise Control Ordinance • Annex 5, TM-EIA	√
S6.4.14	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	• Noise Control Ordinance • Annex 5, TM-EIA • 75dB(A) for residential premises	√ (Noise monitoring station NMS2 and NMS3C are covered by Contract No. HY/2013/04.)
Sediment								
S7.3	S1	1) The requirements as recommended in ETWB TC 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate.	Develop sediment disposal arrangement	Engineer	All construction sites	Design stage	• Waste Disposal Ordinance • ETW B TC 34/2002	N/A
Waste Management (Construction Waste)								
S8.3.8	WM1	*Construction and Demolition Material* 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 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	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	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETW BTC 19/2005	√ √ √ √ √

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?	What requirements or standards for the measures to achieve?	Implementation Status
S8.3.8	WM1	• Implement an enhanced Waste Management Plan similar to ETW BTC (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.	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	•	√ √
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 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.	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	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TC 19/2005	√ √
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.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	• Waste Disposal (Chemical Waste) General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	√ √ √

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?	What requirements or standards for the measures to achieve?	Implementation Status
S8.2.12-S8.3.15	WM3	• Disposal of chemical waste should be via a licensed waste 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.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage		√
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	• Waste Disposal Ordinance	√
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 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.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance	√ √ √ √ √

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?	What requirements or standards for the measures to achieve?	Implementation Status
Water Quality (Construction Phase)								
S.9.11.1.7	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 backfilling, as well as protection measures. Details of the measures are provided below: • Reclamation filling for the Project shall not proceed until at least 200m of leading seawall at the reclamation area formed above +2.2mPD, unless otherwise agreement was obtained from EPD, except for the 300m gaps for marine access. All underwater filling works shall be carried out behind seawalls to avoid dispersion of suspended solids outside the Project limit;	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	√
S.9.11.1.7	W1	• Except for the filling of the cellular structures, not more than 15% public fill shall be used for reclamation filling below +2.5mPD during construction of the seawall; • After the seawall is completed except for the 300m marine access as indicated in the EPs, not more than 30% public fill shall be used for reclamation filling below +2.5mPD, unless otherwise agreement from EPD was obtained; • Upon completion of 200m leading seawall, no more than a total of 60 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 60,000 m3 for HKBCF and TMCLKL southern landfall reclamation during the filling operation; and • Upon completion of the whole section of seawall except for the 300m marine access as indicated in the EPs, no more than a total of 190 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 190,000 m3 for the remaining filling operations for HKBCF and TMCLKL southern landfall reclamation. • Floating type perimeter silt curtains shall be around the HKBCF site before the commencement of marine works. Staggered layers of silt curtain shall be provided to prevent sediment loss at navigation accesses. The length of each staggered layers shall be atleast 200m; • Single layer silt curtain to be applied around the North-east airport water intake; • The silt-curtains should be maintained in good condition to ensure the sediment plume generated from filling be confined effectively within the site boundary; • The filling works shall be scheduled to spread the works evenly over a working day; • Cellular structure shall be used for seawallconstruction; • A layer of geotextile shall be placed on top of the seabed before any filling activities take place inside the cellular structures to form theseawall;	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	√ √ √ √ √ √ √ √ √ √ √

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?	What requirements or standards for the measures to achieve?	Implementation Status
S.9.11.1.7	W1	• The conveyor belts shall be fitted with windboards and conveyor release points shall be covered with curtain to prevent any spillage of filling materials onto the surrounding waters; and • An additional layer of silt curtain shall be installed near the active stone column installation points. A layer of geotextile with stone blanket on top shall be placed on the seabed prior to stone column installation works.	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	√ √
S.9.11.1.7	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;	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	√
S.9.11.1.7	W2	• 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 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;	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	√ √ √ √ √ √ √ √

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?	What requirements or standards for the measures to achieve?	Implementation Status
S9.11.1.7	W2	• 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; • 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.	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	√ √ √ √ √ √ √ √ √
S.9.14	W3	• Implement a water quality monitoring programme.	To control water quality	Contractor	Selected representative water quality monitoring station	Construction stage	• TM-EIAO • Water Pollution Control Ordinance	√ (Water quality monitoring are covered by Contract No. HY/2013/04.)

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?	What requirements or standards for the measures to achieve?	Implementation Status
Ecology (Construction Phase)								
S10.7	E1	• Install silt curtain during the construction • Limit works fronts • Construct seawall prior to reclamation filling where practicable • Good site practices • Strict enforcement of no marine dumping • Site runoff control • Spill response plan	Prevent Sedimentation from Land-based works areas	Contractor	Seawall, reclamation area	During construction	TM-Water	√ √ √ √ √ √ √
S10.7	E2	• 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	TM-Water	√
S10.7	E3	• 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	TM-Water	√
S10.7	E4	• Dolphin Exclusion Zone • Dolphin Watching plan	Minimise marine traffic disturbance on dolphins	Contractor	Marine Works	During construction	TM-Water	√ √
S10.7	E5	• Decouple compressors and other equipment on working vessels • Proposal on design and implementation of acoustic decoupling measures applied during reclamation works • Avoidance of percussive piling	Minimise marine traffic disturbance on dolphins	Contractor	Marine Works	During construction	TM-Water	√ √ √
S10.7	E6	• Control vessel speed • Skipper training • Predefined and regular routes for working vessels; avoid Brother Islands.	Minimise marine traffic disturbance on dolphins	Contractor	Marine Traffic	During construction	TM-Water	√ √ √
S10.7	E7	• Vessel based dolphin monitoring	Minimise marine traffic disturbance on dolphins	Contractor	Northeast and Northwest Lantau	During construction	TM-Water	√ (Dolphins monitoring are covered by Contract No. HY/2013/04.)
Fisheries								
S11.7	F1	• Reduce re-suspension of sediments • Limit works fronts • Good site practices • Strict enforcement of no marine dumping • Spill response plan	Minimise impacts on marine water quality impacts	Marine Department	Seawall, reclamation area	During operation		√ √ √ √ √
S11.7	F2	• Install silt-grease trap in the drainage system collecting surface runoff	Minimise impacts on marine water quality impacts	Marine Department	Reclamation area	During operation		√

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?	What requirements or standards for the measures to achieve?	Implementation Status
S11.7	F4	• Maritime Oil Spill Response Plan(MOSRP); • Contingency plan.	Minimise impacts on marine water quality impacts	Marine Department	HKBCF	During operation		N/A
Landscape & Visual (Detailed Design Phase)								
S14.3.3.1	LV1	General design measures include: • Roadside planting and planting along the edge of the HKBCF Island is proposed; • Transplanting of mature trees in good health and amenity value where appropriate and reinstatement of areas disturbed during construction by compensatory hydro-seeding and planting; • Protection measures for the trees to be retained during construction activities; • Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations; • Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed; • Providing planting area around peripheral of HKBCF for tree planting screening effect; • Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline;	Minimise visual & landscape impact	Detailed designer	HKBCF	Design Stage		N/A
S14.3.3.1	LV1	• For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF; and • Fine-tuning the sizes of the structural members to minimize the bulkiness of buildings and adjustment of building arrangement to minimise disturbance to surrounding vegetation in the HKBCF.	Minimise visual & landscape impact	Detailed designer	HKBCF	Design 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?	What requirements or standards for the measures to achieve?	Implementation Status
Landscape & Visual (Construction Phase)								
S14.3.3.3	LV2	Mitigate both Landscape and Visual Impacts • Grass-hydroseed bare soil surface and stock pile areas. • Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic. • Not applicable as this is for HKLR. • For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF. • Vegetation reinstatement and upgrading to disturbed areas • Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed • Providing planting area around peripheral of HKBCF for tree planting screening effect; • Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall. • 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 enchance “natural-look” of the new coastline.	Minimise visual & landscape impact	Contractor	HKBCF	Construction stage		N/A N/A √ N/A √ N/A N/A N/A
S14.3.3.3	LV3	<u>Mitigate Visual Impacts</u> • 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 HKBCF 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		• EIAO Guidance Note No.4/2002 • TM-EIAO	√

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S15.5 - S15.6	EM2	• An Environmental Team needs to be employed as per the EM&A Manual. • Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. • 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		• EIAO Guidance Note No.4/2002 • TM-EIAO	√ √ √

Legends: √ = Implemented; X = Not implemented; N/A = Not applicable

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building (November 2018)

Implementation Schedule for Environmental Mitigation Measures

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?	What requirements or standards for the measures to achieve?	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	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
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; • 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;	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	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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S5.5.6.2	A2	• 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 ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; • 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	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S5.5.6.4	A3	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	To control the dust impact	N/A
S5.5.6.5	A4	Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.	Control construction dust	Engineer	All construction sites	Design Stage	Air Pollution Control (Construction Dust) Regulation	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area

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?	What requirements or standards for the measures to achieve?	Implementation Status
S5.5.6.5	A5	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	• Air Pollution Control (Construction Dust) Regulation •To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	✓ (Dust monitoring station AMS6 is covered by Contract No. HY/2011/03. And dust monitoring station AMS7B is covered by Contract No. HY/2013/04)
S5.5.7.1	A6	The following mitigation measures should be adopted to prevent fugitive 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.	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	• Air Pollution Control (Construction Dust) Regulation •To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 μgm^{-3} and 260 μgm^{-3}, respectively)	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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	Air Pollution Control (Construction Dust) Regulation	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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?	What requirements or standards for the measures to achieve?	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	Noise Control Ordinance	N/A The works site area in Hong Kong-Zhuhai -Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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	• Noise Control Ordinance • Annex 5, TM-EIA	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
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 sites	Construction stage	• Noise Control Ordinance • Annex 5, TM-EIA • 75dB(A) for residential premises • The movable barrier should achieve at least 5dB(A) and the full enclosure should be designed to achieve 10dB(A)	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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?	What requirements or standards for the measures to achieve?	Implementation Status
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	• Noise Control Ordinance & its TM • Annex 5, TM-EIA	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
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	• Noise Control Ordinance • Annex 5, TM-EIA	N/A The works site was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S6.4.14	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	• Noise Control Ordinance • Annex 5, TM-EIA • 75dB(A) for residential premises	✓ (Noise monitoring stations NMS2 and NMS3C are covered by Contract No. HY/2013/04.)
Sediment								
S7.3	S1	1) The requirements as recommended in ETWB TC 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate.	Develop sediment disposal arrangement	Engineer	All construction sites	Design stage	• Waste Disposal Ordinance • ETW B TC 34/2002	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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?	What requirements or standards for the measures to achieve?	Implementation Status
Waste Management (Construction Waste)								
S8.3.8	WM1	*Construction and Demolition Material* The following mitigation measures should be implemented in handling the waste: • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • 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 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 ETW BTC (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.	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	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETW BTC 19/2005	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S8.3.8	WM1	• Implement an enhanced Waste Management Plan similar to ETW BTC (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.	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	•	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since24 October 2018 and the site had been changed to a closed area.
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	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	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant

		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 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.					• ETWB TC 19/2005	authorities since24 October 2018 and the site had been changed to a closed area.
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.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	• Waste Disposal (Chemical Waste) General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since24 October 2018 and the site had been changed to a closed area.

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?	What requirements or standards for the measures to achieve?	Implementation Status
S8.2.12-S8.3.15	WM3	• Disposal of chemical waste should be via a licensed waste 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.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage		N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since24 October 2018and the site had been changed to a closed area.
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	• Waste Disposal Ordinance	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
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	• Waste Disposal Ordinance	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

		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.						

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?	What requirements or standards for the measures to achieve?	Implementation Status
Water Quality (Construction Phase)								
S.9.11.1.7	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 backfilling, as well as protection measures. Details of the measures are provided below: • Reclamation filling for the Project shall not proceed until at least 200m of leading seawall at the reclamation area formed above +2.2mPD, unless otherwise agreement was obtained from EPD, except for the 300m gaps for marine access. All underwater filling works shall be carried out behind seawalls to avoid dispersion of suspended solids outside the Project limit;	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S.9.11.1.7	W1	• Except for the filling of the cellular structures, not more than 15% public fill shall be used for reclamation filling below +2.5mPD during construction of the seawall; • After the seawall is completed except for the 300m marine access as indicated in the EPs, not more than 30% public fill shall be used for reclamation filling below +2.5mPD, unless otherwise agreement from EPD was obtained; • Upon completion of 200m leading seawall, no more than a total of 60 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 60,000 m3 for HKBCF and TMCLKL southern landfall reclamation during the filling operation; and • Upon completion of the whole section of seawall except for the 300m marine access as indicated in the EPs, no more than a total of 190 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 190,000 m3 for the remaining filling operations for HKBCF and TMCLKL southern landfall reclamation. • Floating type perimeter silt curtains shall be around the HKBCF site before the commencement of marine works. Staggered layers of silt curtain shall be provided to prevent sediment loss at navigation accesses. The length of each staggered layers shall be at least 200m; • Single layer silt curtain to be applied around the North-east airport water intake; • The silt-curtains should be maintained in good condition to ensure the sediment plume generated from filling be confined effectively within the site boundary; • The filling works shall be scheduled to spread the works evenly over a working day; • Cellular structure shall beused for seawall construction; • A layer of geotextile shall be placed on top of the seabed before any filling activities take place inside the cellular structures to form the seawall;	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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?	What requirements or standards for the measures to achieve?	Implementation Status
S.9.11.1.7	W1	• The conveyor belts shall be fitted with windboards and conveyor release points shall be covered with curtain to prevent any spillage of filling materials onto the surrounding waters; and • An additional layer of silt curtain shall be installed near the active stone column installation points. A layer of geotextile with stone blanket on top shall be placed on the seabed prior to stone column installation works.	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S.9.11.1.7	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;	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018and the site had been changed to a closed area.
S.9.11.1.7	W2	• 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 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)	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018and the site had been changed to a closed area.

		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;						

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?	What requirements or standards for the measures to achieve?	Implementation Status
S9.11.1.7	W2	• 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; • 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.	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S.9.14	W3	• Implement a water quality monitoring programme.	To control water quality	Contractor	Selected representative water quality monitoring station	Construction stage	• TM-EIAO • Water Pollution Control Ordinance	✓ (Water quality monitoring are covered by Contract No. HY/2013/04.)

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?	What requirements or standards for the measures to achieve?	Implementation Status
Ecology (Construction Phase)								
S10.7	E1	• Install silt curtain during the construction • Limit works fronts • Construct seawall prior to reclamation filling where practicable • Good site practices • Strict enforcement of no marine dumping • Site runoff control • Spill response plan	Prevent Sedimentation from Land-based works areas	Contractor	Seawall, reclamation area	During construction	TM-Water	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S10.7	E2	• 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	TM-Water	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S10.7	E3	• 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	TM-Water	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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?	What requirements or standards for the measures to achieve?	Implementation Status
S10.7	E4	• Dolphin Exclusion Zone • Dolphin Watching plan	Minimise marine traffic disturbance on dolphins	Contractor	Marine Works	During construction	TM-Water	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since24 October 2018 and the site had been changed to area.
S10.7	E5	• Decouple compressors and other equipment on working vessels • Proposal on design and implementation of acoustic decoupling measures applied during reclamation works • Avoidance of percussive piling	Minimise marine traffic disturbance on dolphins	Contractor	Marine Works	During construction	TM-Water	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since24 October 2018 and the site had been changed to a closed area.
S10.7	E6	• Control vessel speed • Skipper training • Predefined and regular routes for working vessels; avoid Brother Islands. •	Minimise marine traffic disturbance on dolphins	Contractor	Marine Traffic	During construction	TM-Water	√ √ √
S10.7	E7	Vessel based dolphin monitoring	Minimise marine traffic disturbance on dolphins	Contractor	Northeast and Northwest Lantau	During construction	TM-Water	√ (Dolphins monitoring are covered by Contract No. HY/2013/04.)
Fisheries								

S11.7	F1	• Reduce re-suspension of sediments • Limit works fronts • Good site practices • Strict enforcement of no marine dumping Spill response plan	Minimise impacts on marine water quality impacts	Marine Department	Seawall, reclamation area	During operation		√ √ √ √ √
S11.7	F2	Install silt-grease trap in the drainage system collecting surface runoff	Minimise impacts on marine water quality impacts	Marine Department	Reclamation area	During operation		√
S11.7	F4	• Maritime Oil Spill Response Plan (MOSRP); • Contingency plan.	Minimise impacts on marine water quality impacts	Marine Department	HKBCF	During operation		N/A
Landscape & Visual (Detailed Design Phase)								
S14.3.3.1	LV1	General design measures include: • Roadside planting and planting along the edge of the HKBCF Island is proposed; • Transplanting of mature trees in good health and amenity value where appropriate and reinstatement of areas disturbed during construction by compensatory hydro-seeding and planting; • Protection measures for the trees to be retained during construction activities; • Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations; • Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed; • Providing planting area around peripheral of HKBCF for tree planting screening effect; • Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline;	Minimise visual & landscape impact	Detailed designer	HKBCF	Design Stage		N/A
S14.3.3.1	LV1	• For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF; and • Fine-tuning the sizes of the structural members to minimize the bulkiness of buildings and adjustment of building arrangement to minimise disturbance to surrounding vegetation in the HKBCF.	Minimise visual & landscape impact	Detailed designer	HKBCF	Design 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?	What requirements or standards for the measures to achieve?	Implementation Status
Landscape & Visual (Construction Phase)								
S14.3.3.3	LV2	Mitigate both Landscape and Visual Impacts • Grass-hydroseed bare soil surface and stock pile areas. • Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic. • Not applicable as this is for HKLR. • For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF. • Vegetation reinstatement and upgrading to disturbed areas • Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed • Providing planting area around peripheral of HKBCF for tree planting screening effect; • Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall. • 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 enchance "natural-look" of the new	Minimise visual & landscape impact	Contractor	HKBCF	Construction stage		N/A √ N/A √ N/A √ √ N/A N/A
S14.3.3.3	LV3	<u>Mitigate Visual Impacts</u> • V1.Minimize time for construction activities during construction period. • Not applicable to the Project HKBCF						√ N/A
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		• EIAO Guidance Note No.4/2002 • TM-EIAO	√

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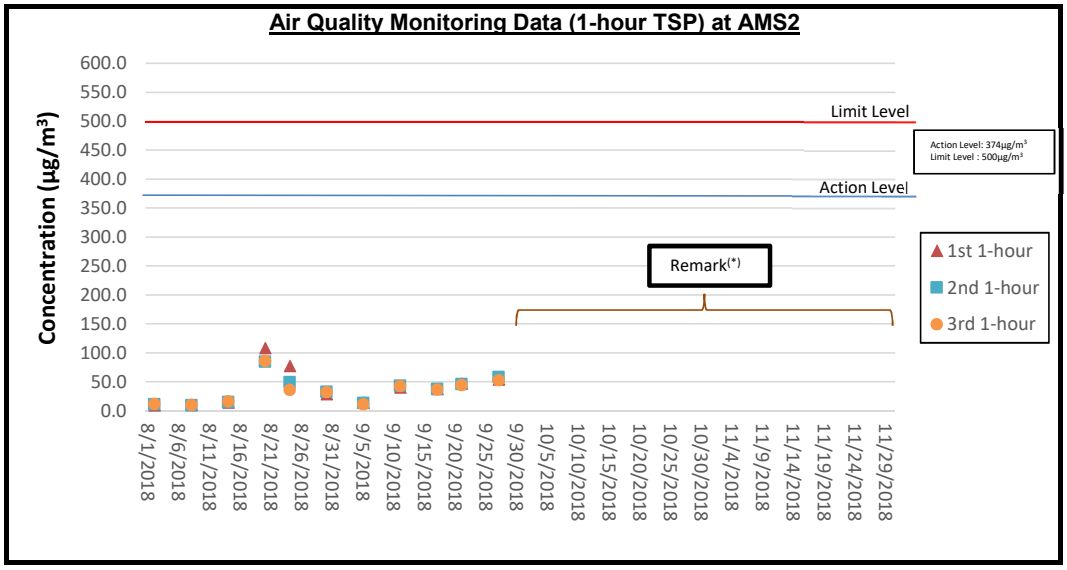
S15.5 - S15.6	EM2	• An Environmental Team needs to be employed as per the EM&A Manual. • Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. • An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Contractor	All construction sites		• EIAO Guidance Note No.4/2002 • TM-EIAO	√ √ √

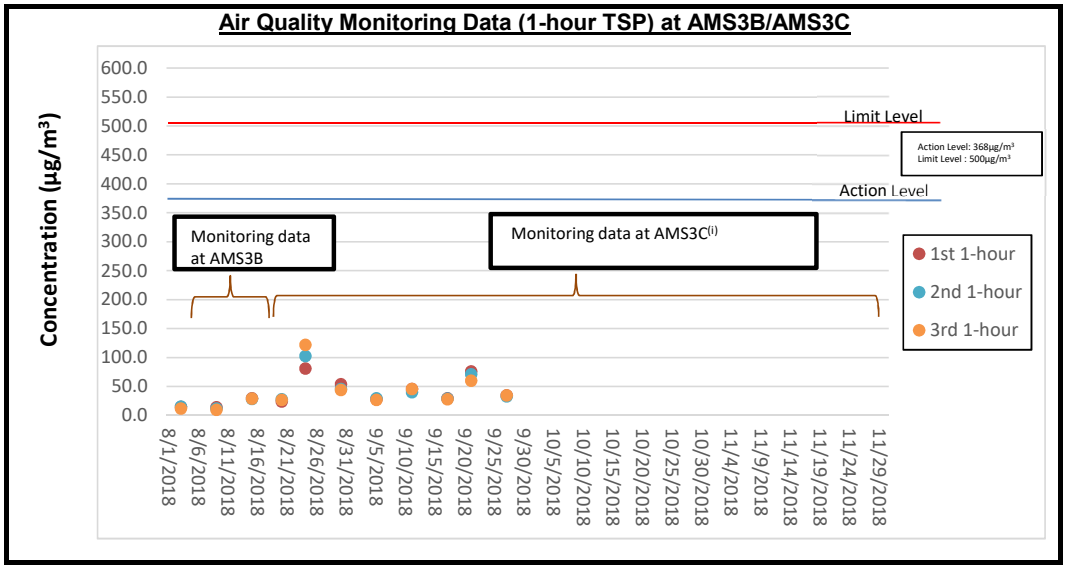
Legends: √ = Implemented; X = Not implemented; N/A = Not applicable

APPENDIX G

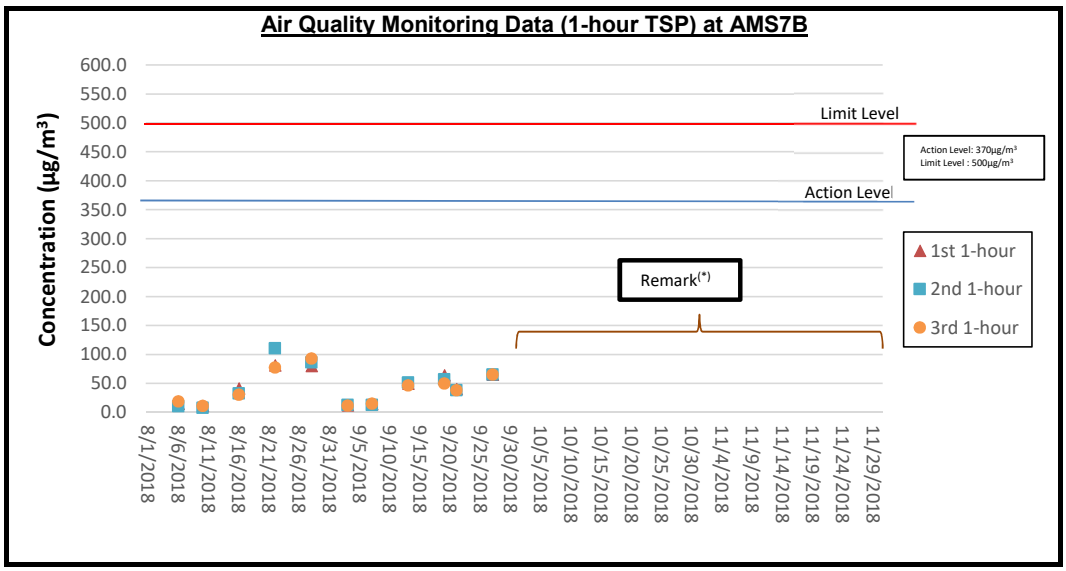
Graphical Plot (Air Quality, Noise and Water Quality)



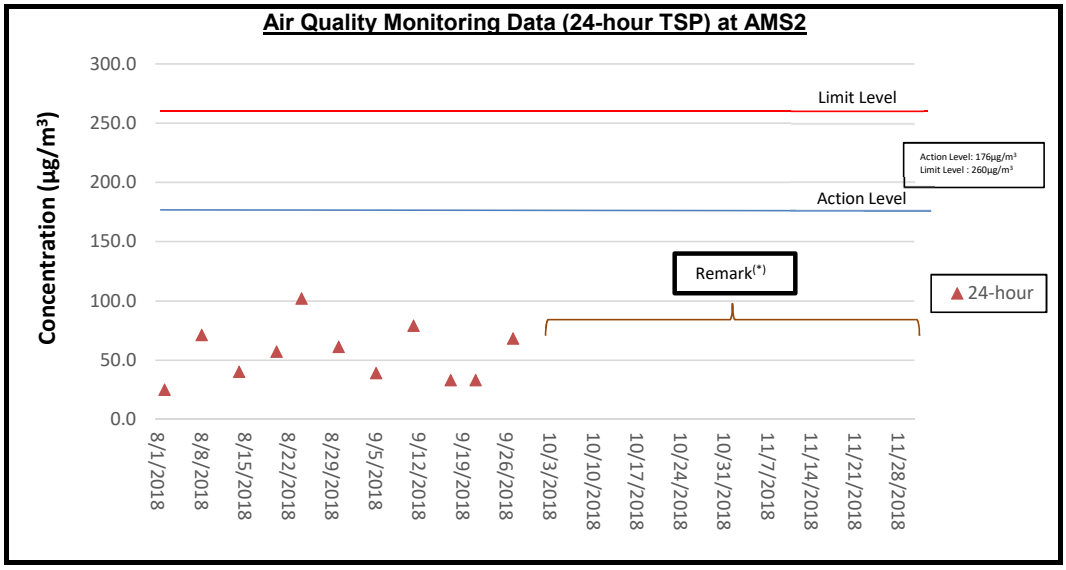
Remark(*): The monitoring results in October and November 2018 for AMS2 are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/04.



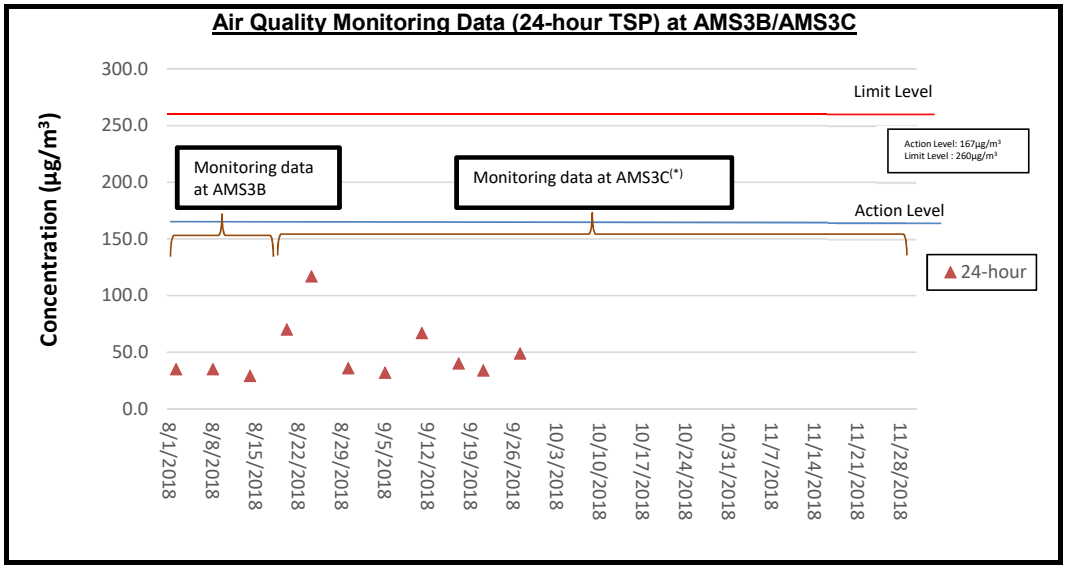
Remark(*): Air Quality Monitoring at AMS3C has been undertaking by the ET for Contract No. HY/2013/04 since 20 August 2018. The monitoring results in October and November 2018 for AMS3C are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/04.



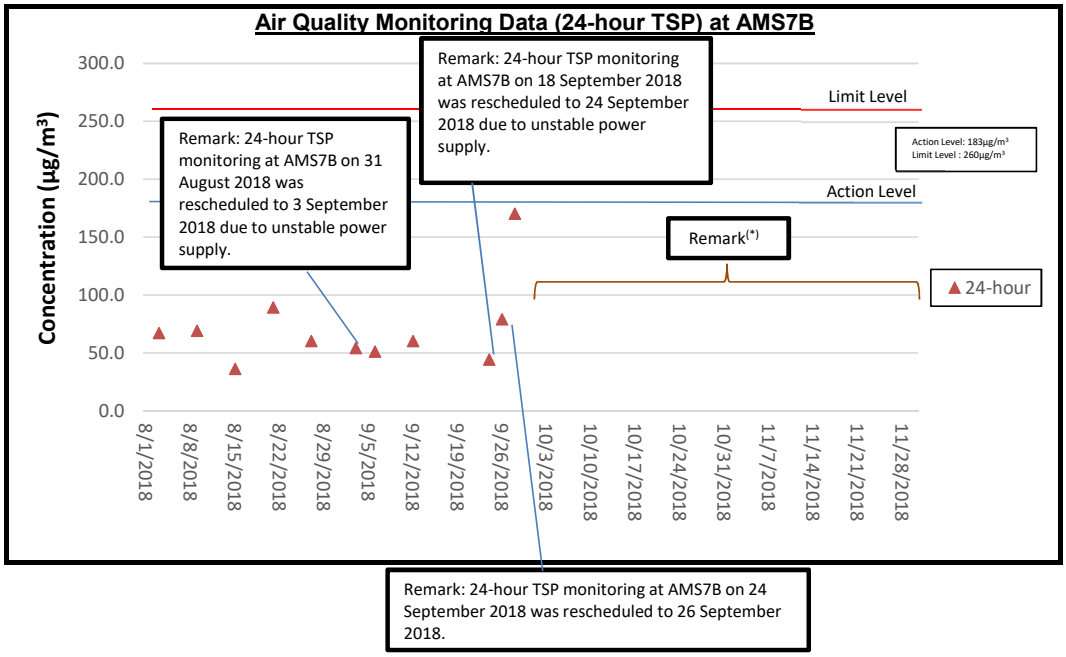
Remark(*): The monitoring results in October and November 2018 for AMS7B are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/04.



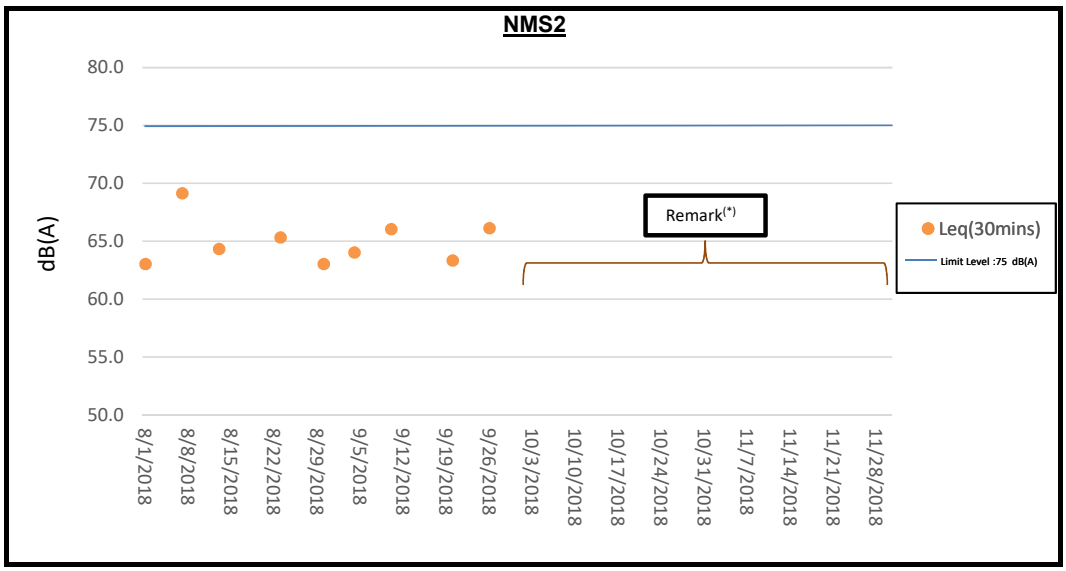
Remark(*): The monitoring results in October and November 2018 for AMS2 are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/04.



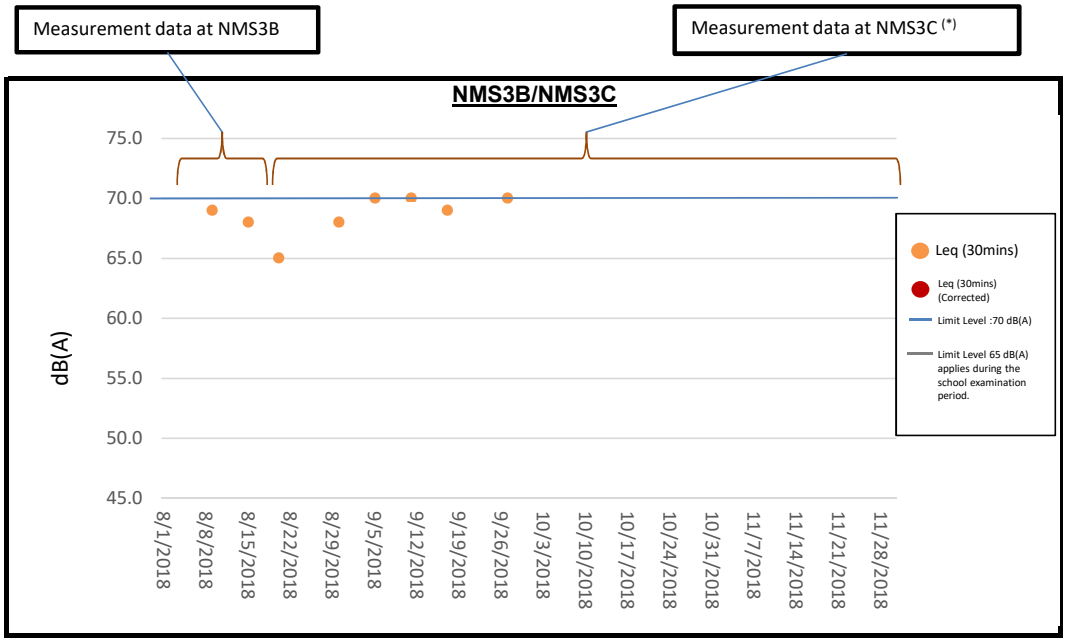
Remark: Air Quality Monitoring at AMS3C has been undertaking by the ET for Contract No. HY/2013/04 since 20 August 2018. The monitoring results in October and November 2018 for AMS3C are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/04.



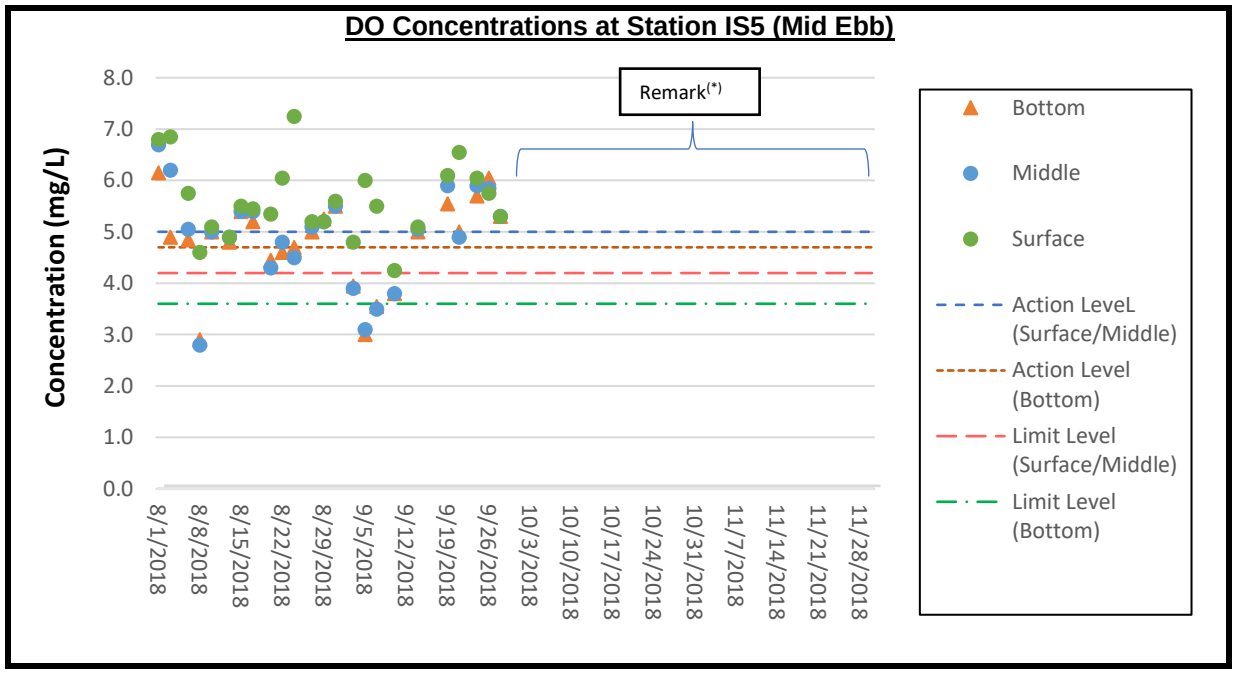
Remark(*): The monitoring results in October and November 2018 for AMS7B are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/04.

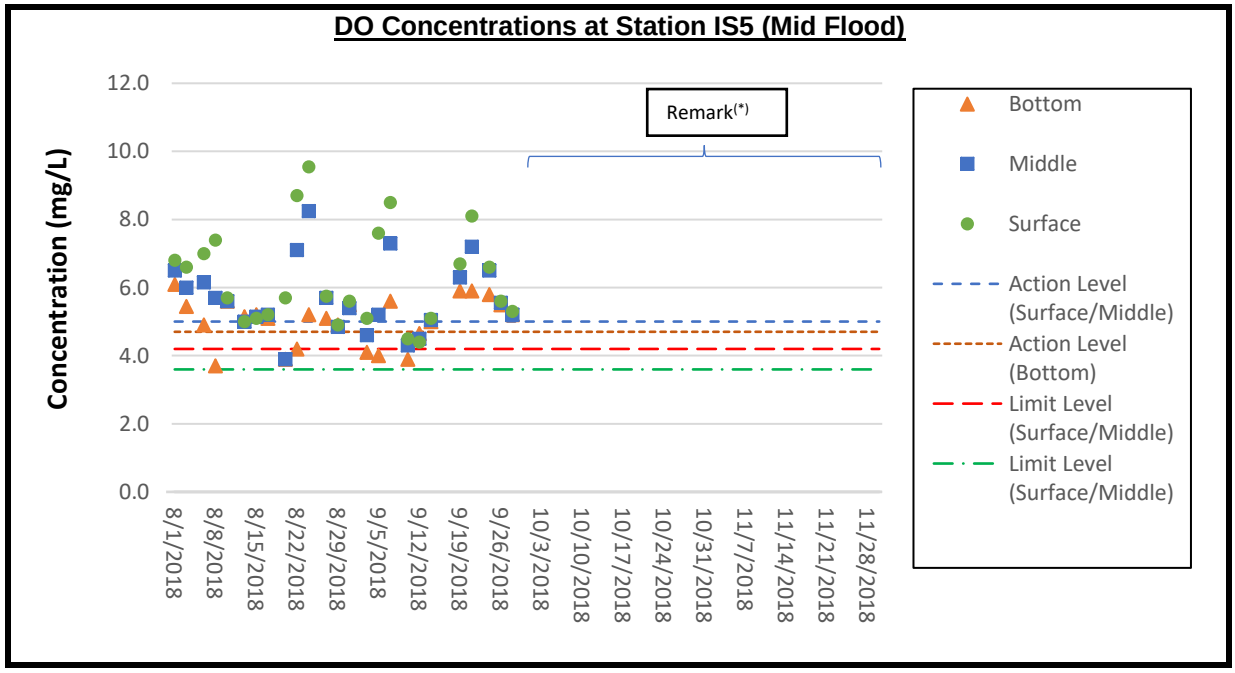


Remark(*): The monitoring results in October and November 2018 for MNS2 are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/04.



Remark(*): Noise Monitoring at NMS3C has been undertaking by the ET for Contract No. HY/2013/04 since 20 August 2018. The monitoring results in October and November 2018 for MNS3C are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/04.





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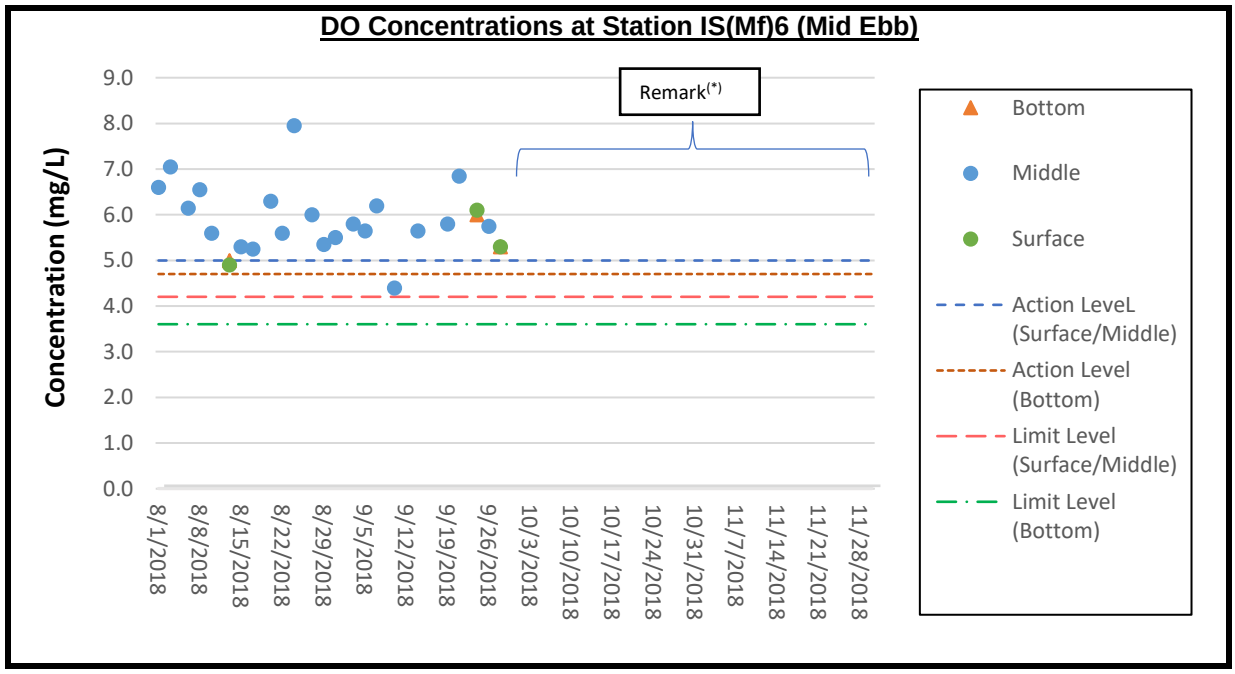

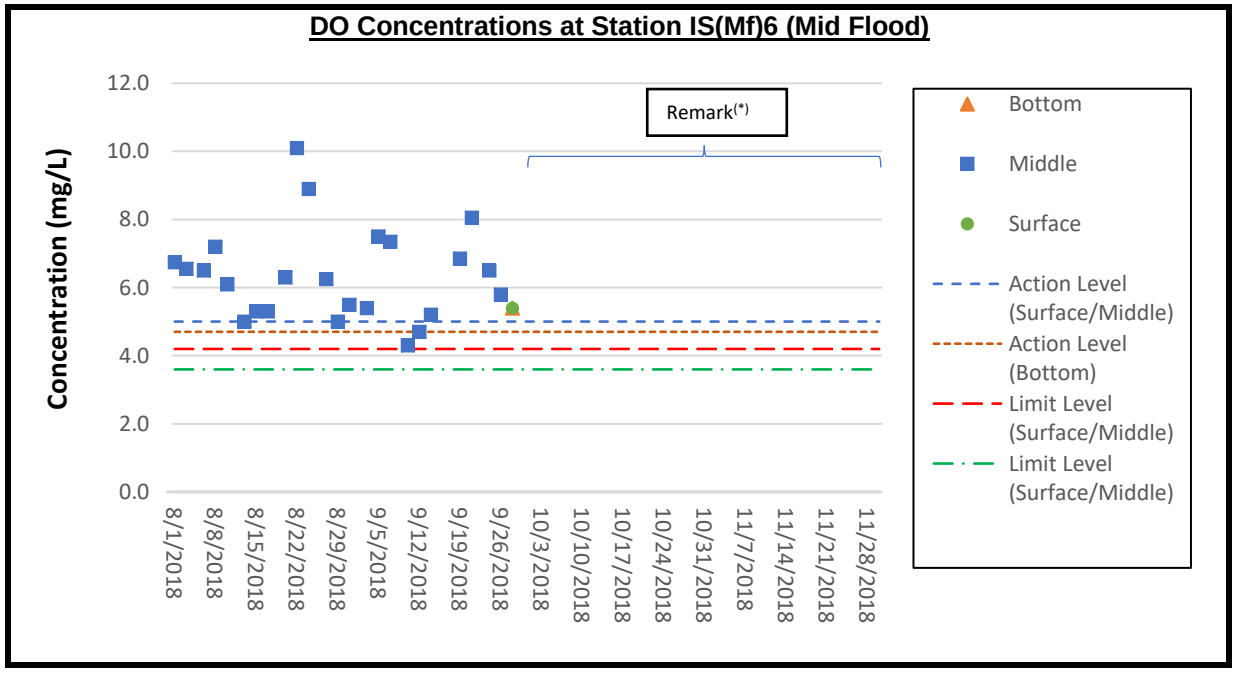

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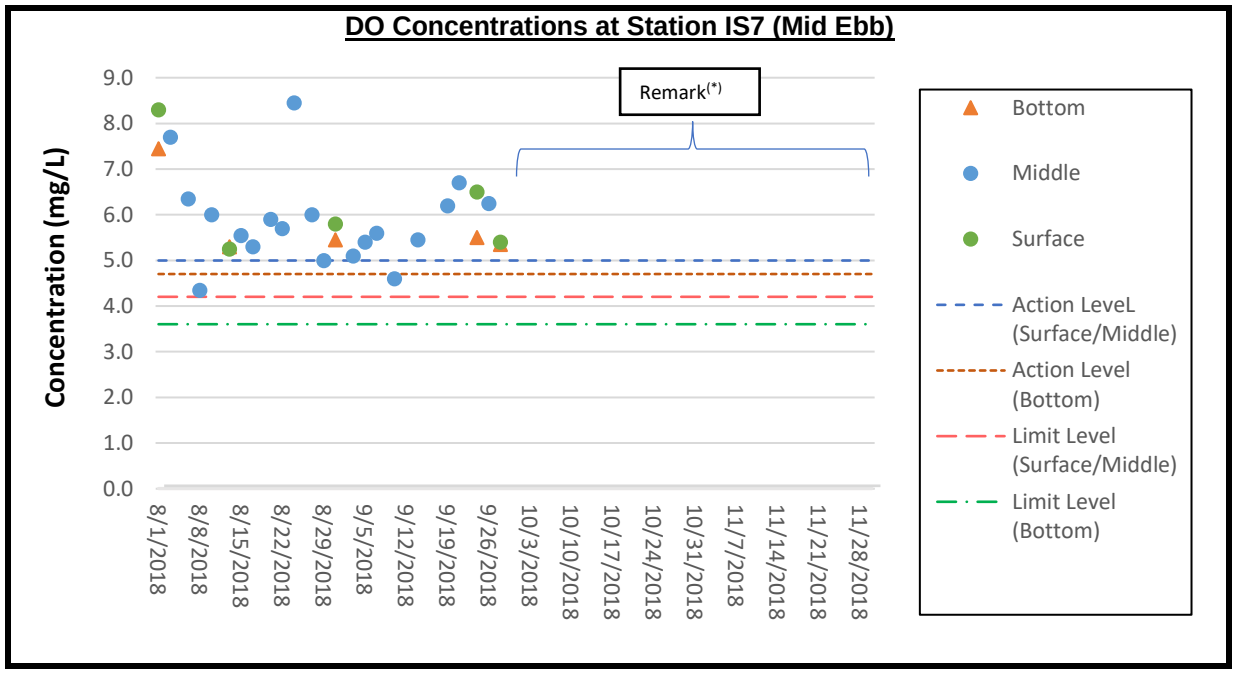

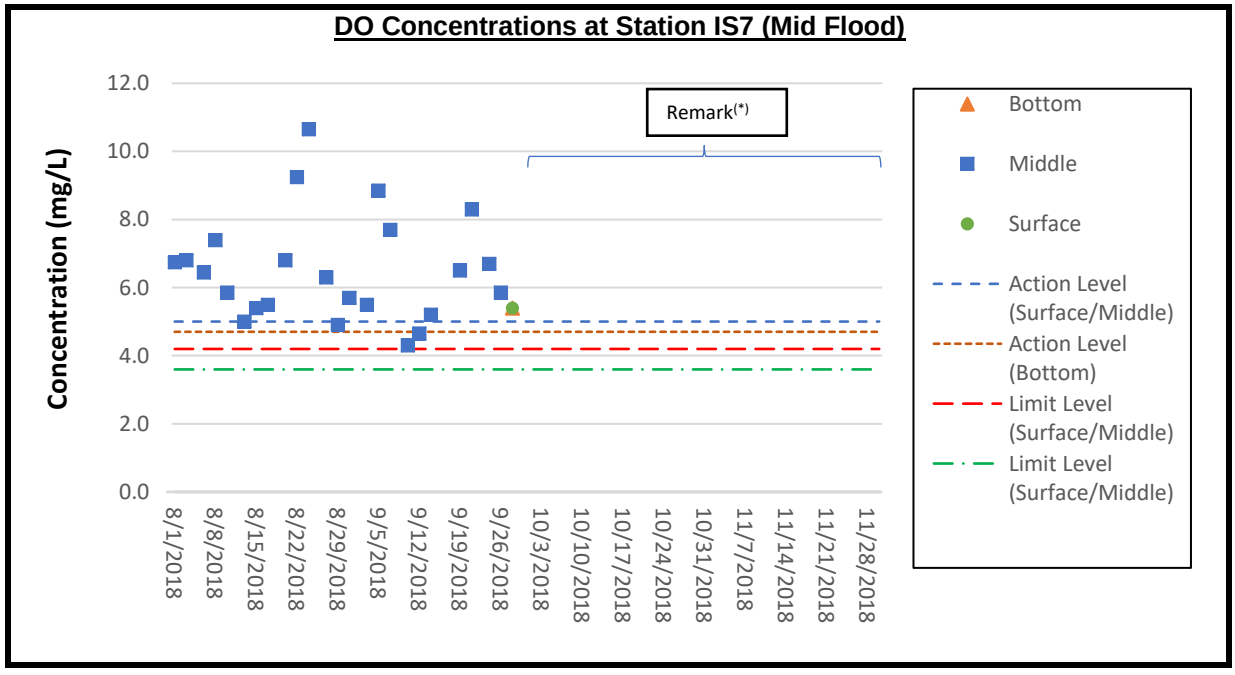

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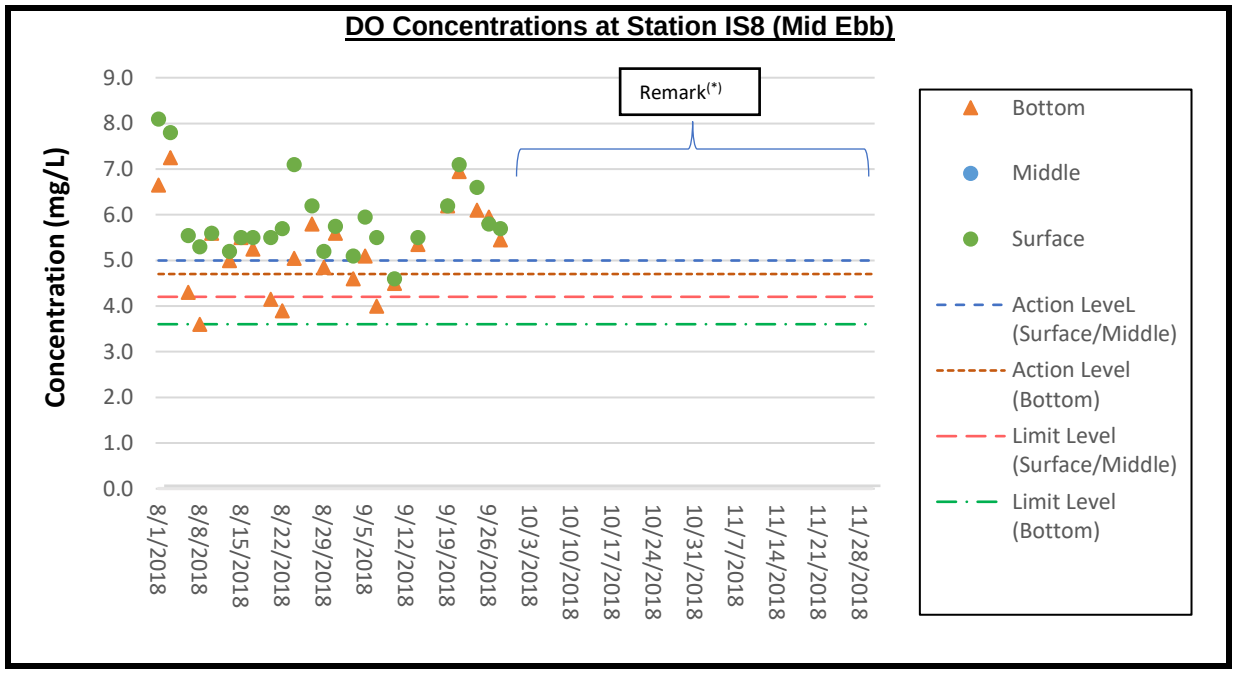

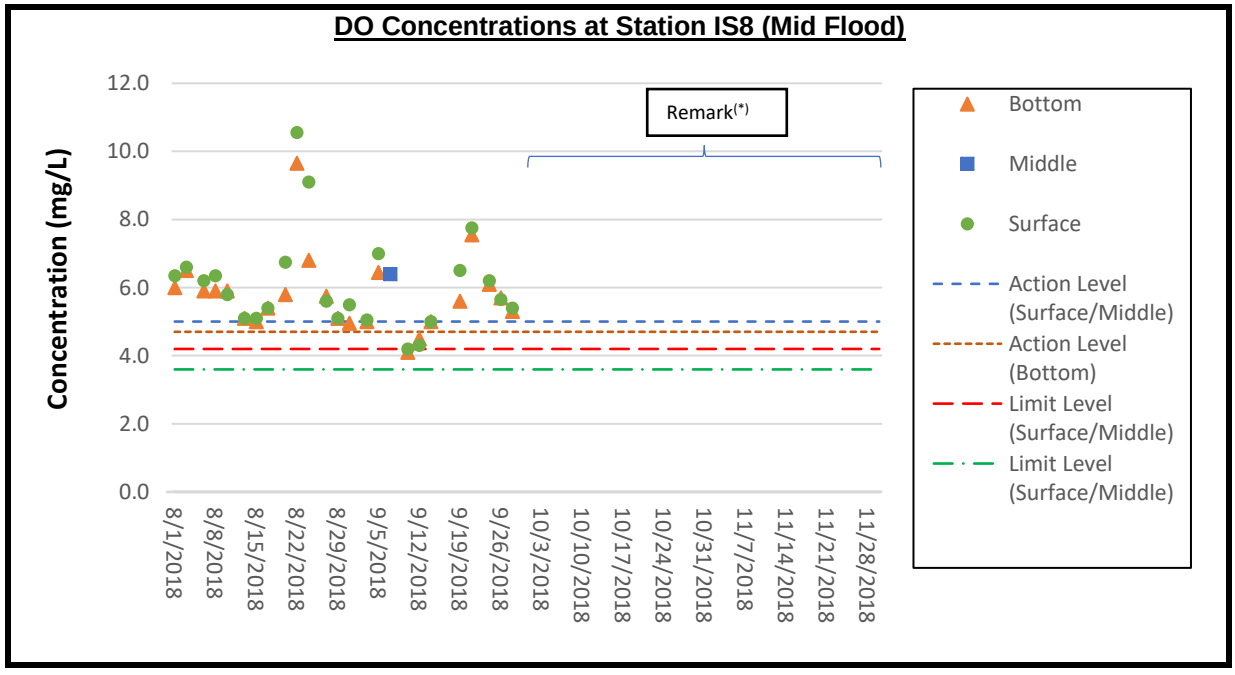

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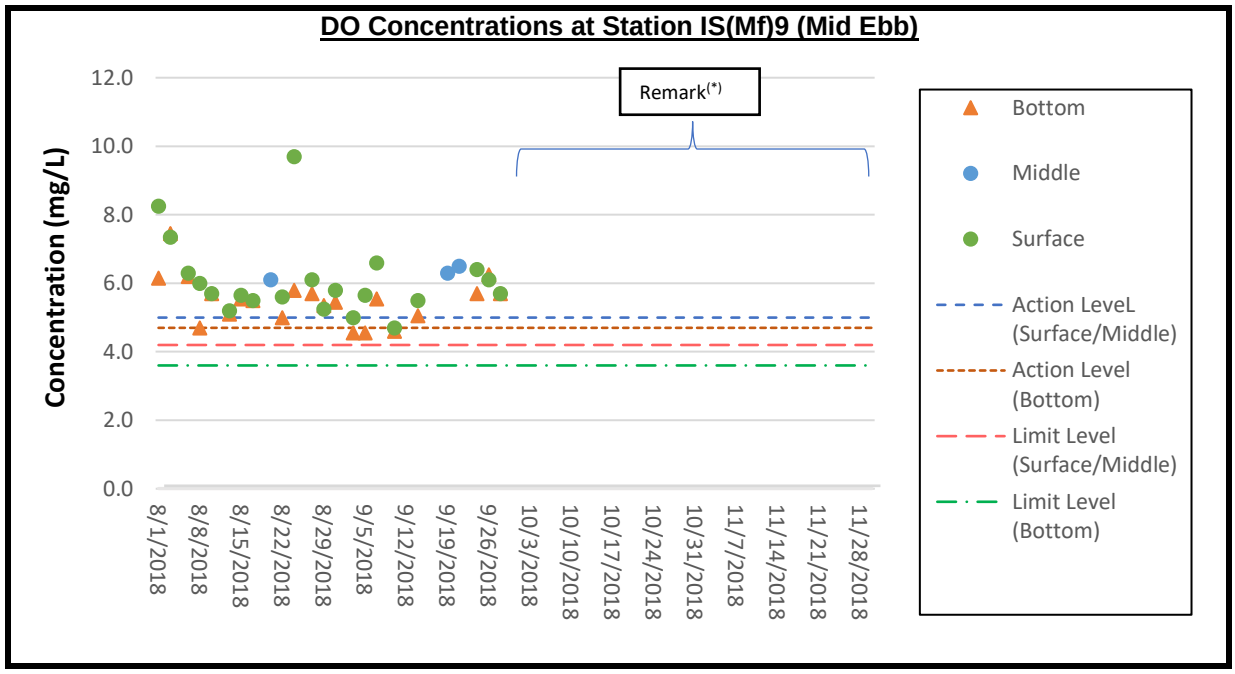

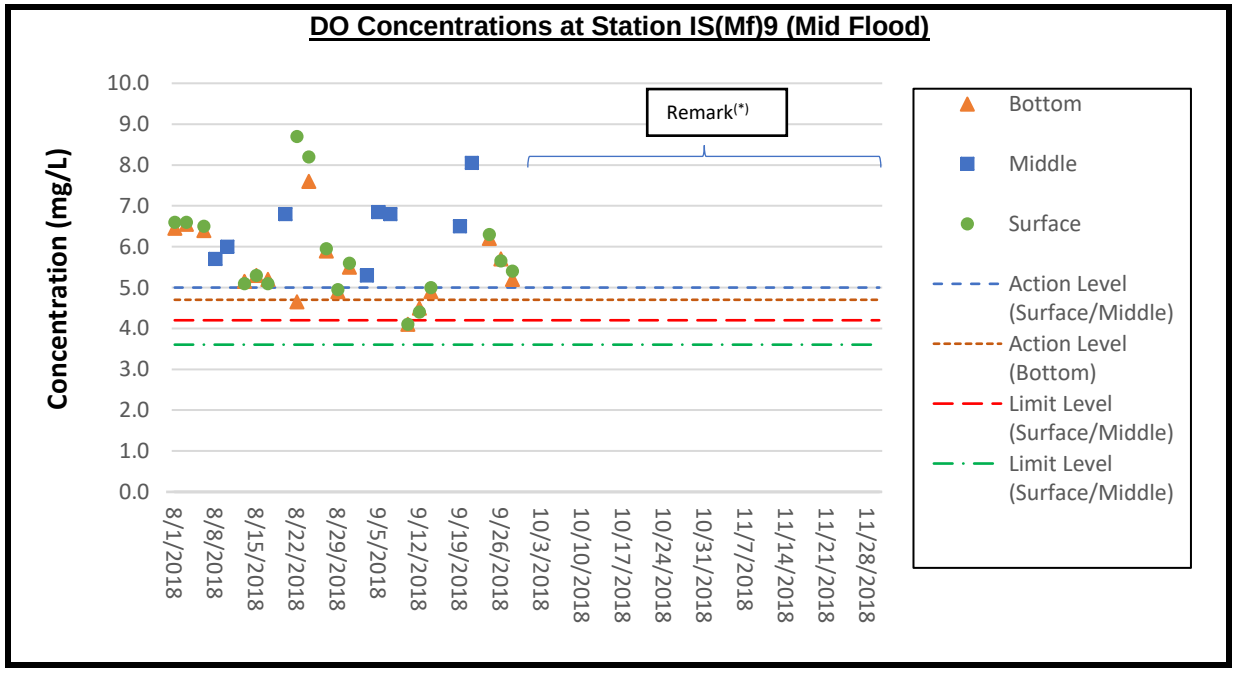

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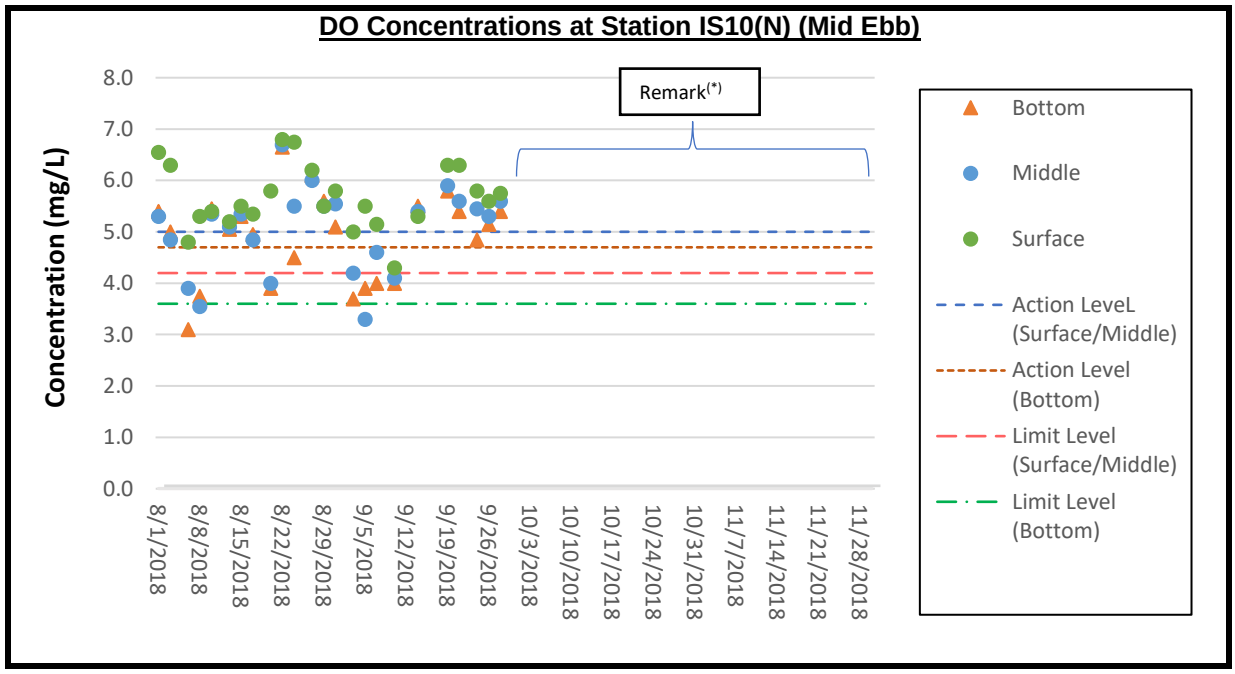

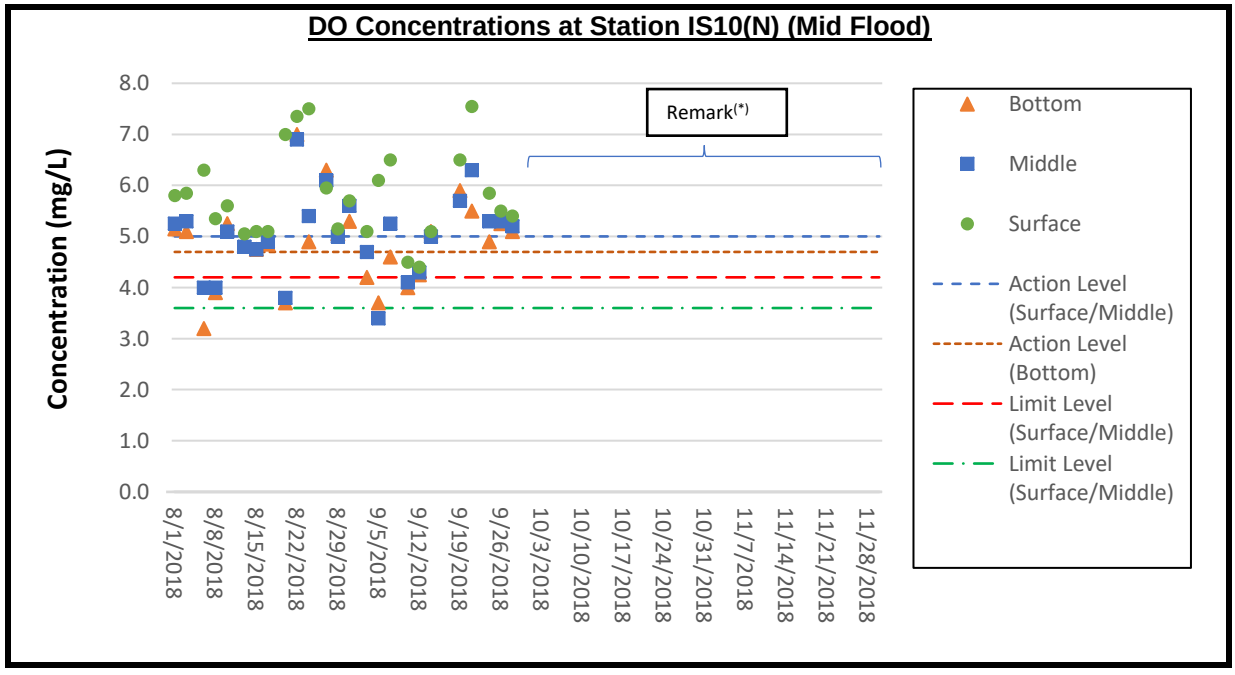

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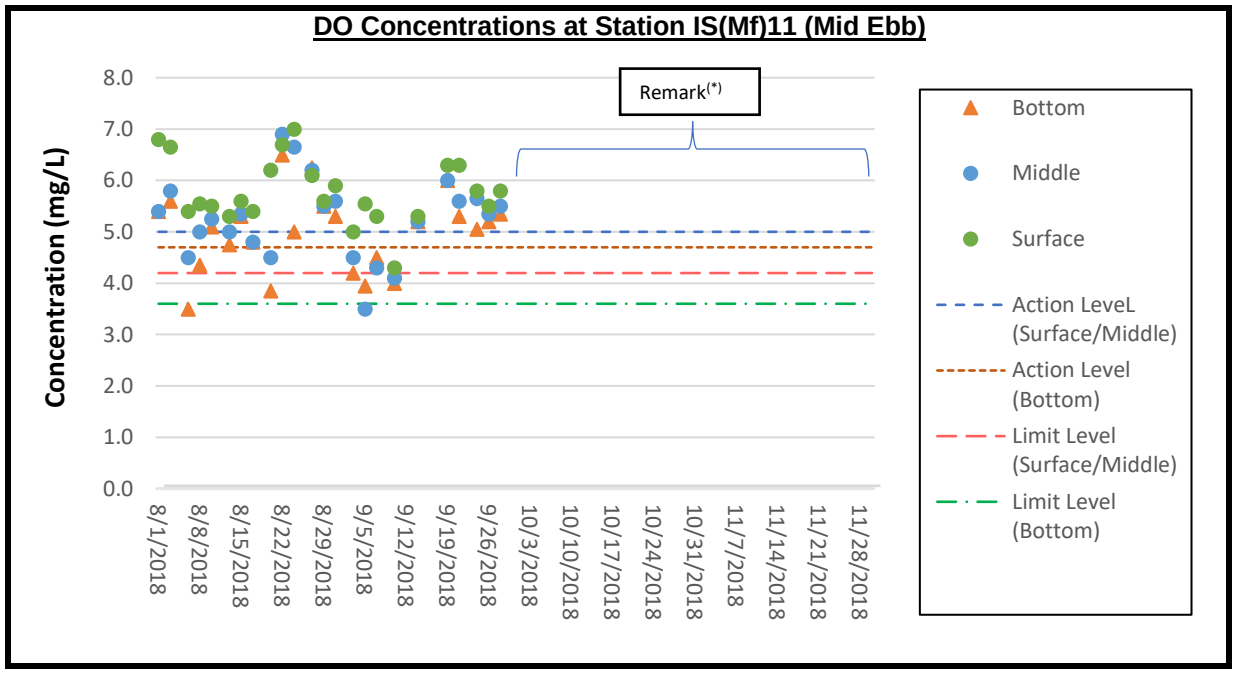

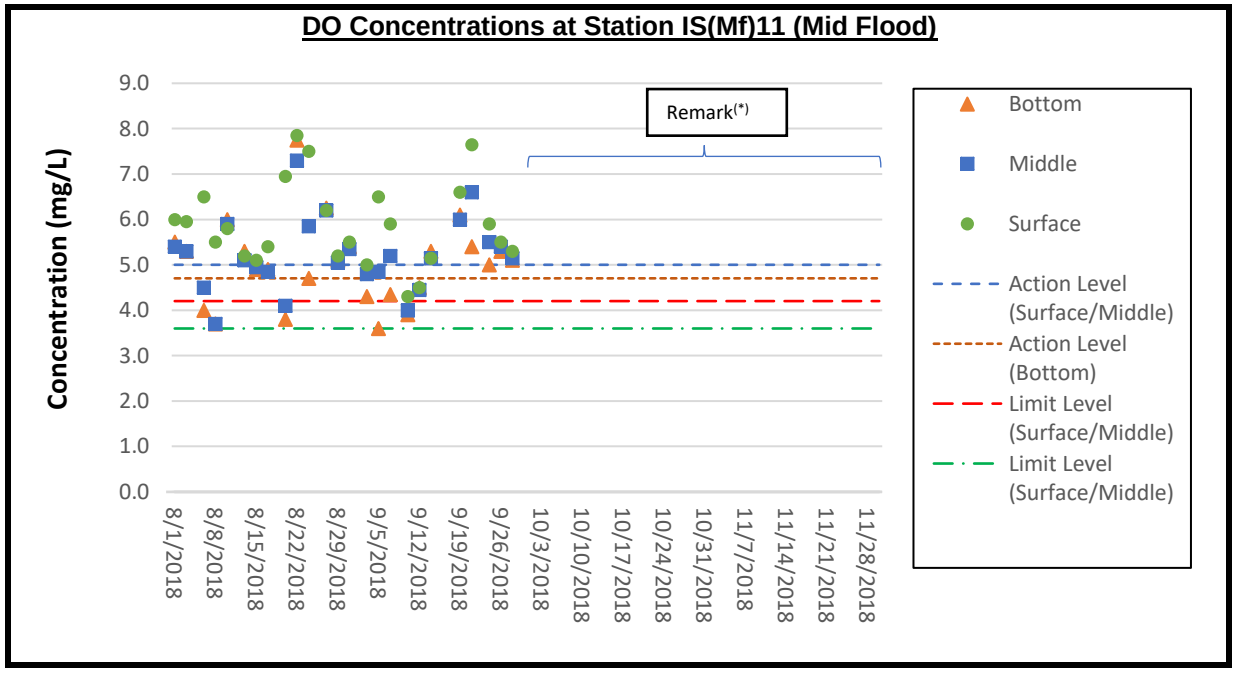

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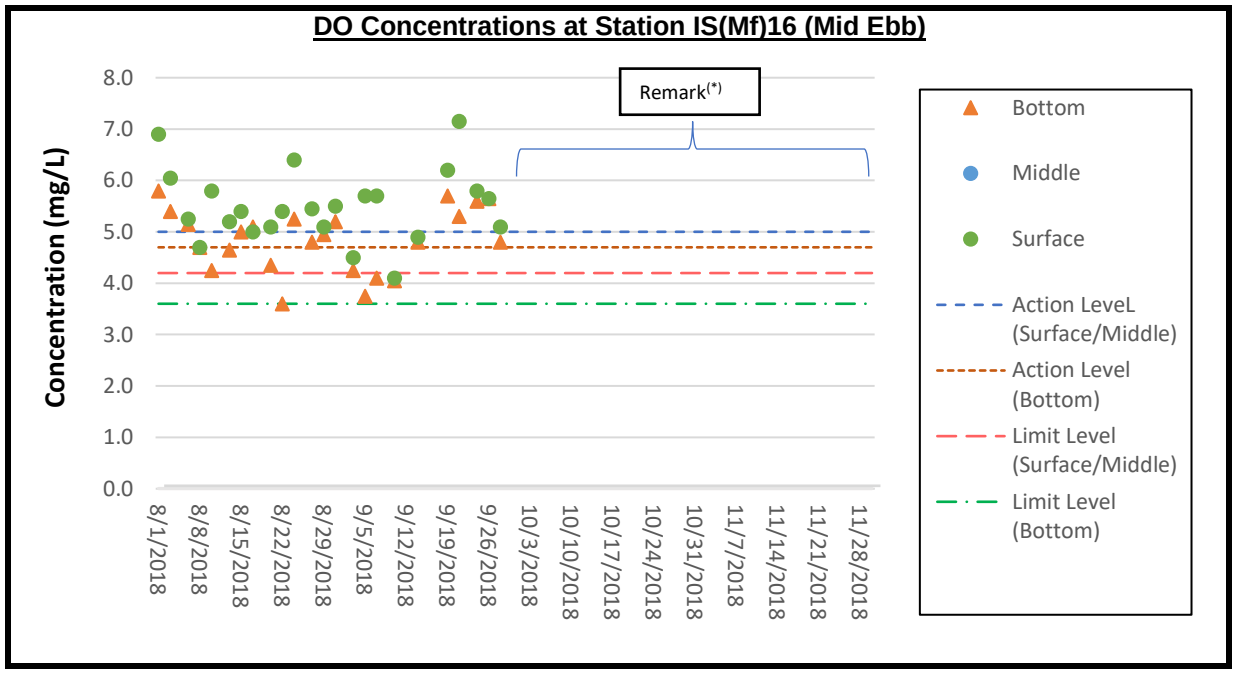

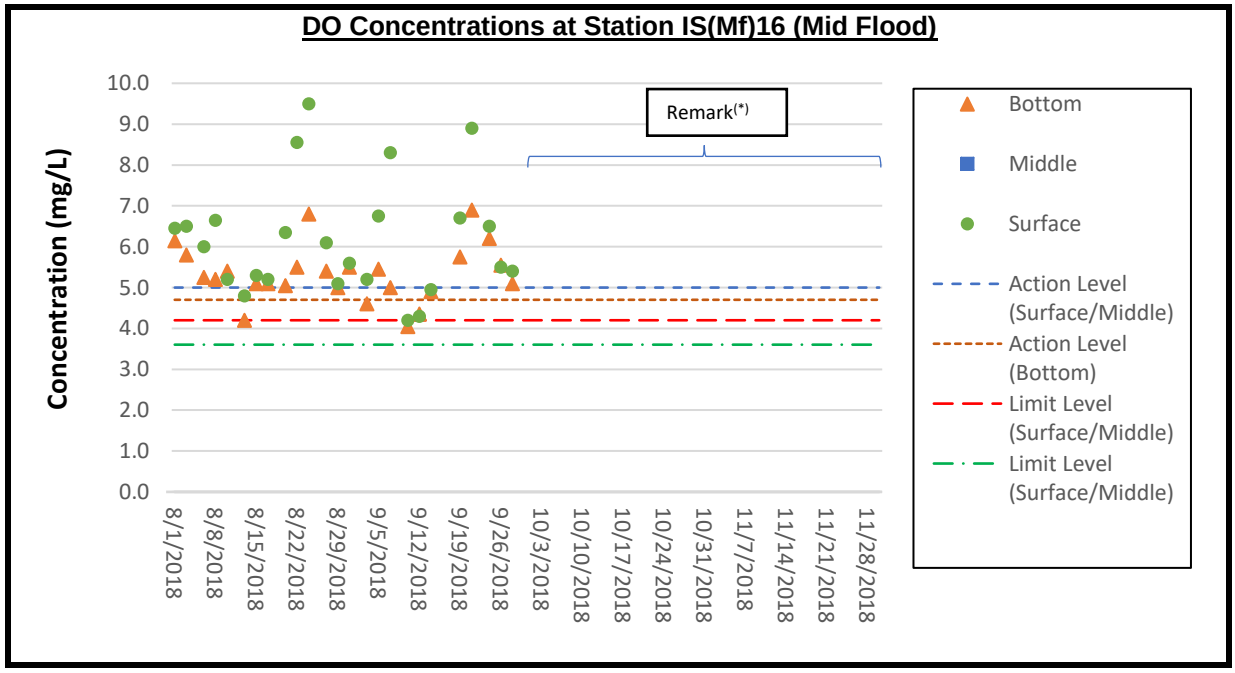

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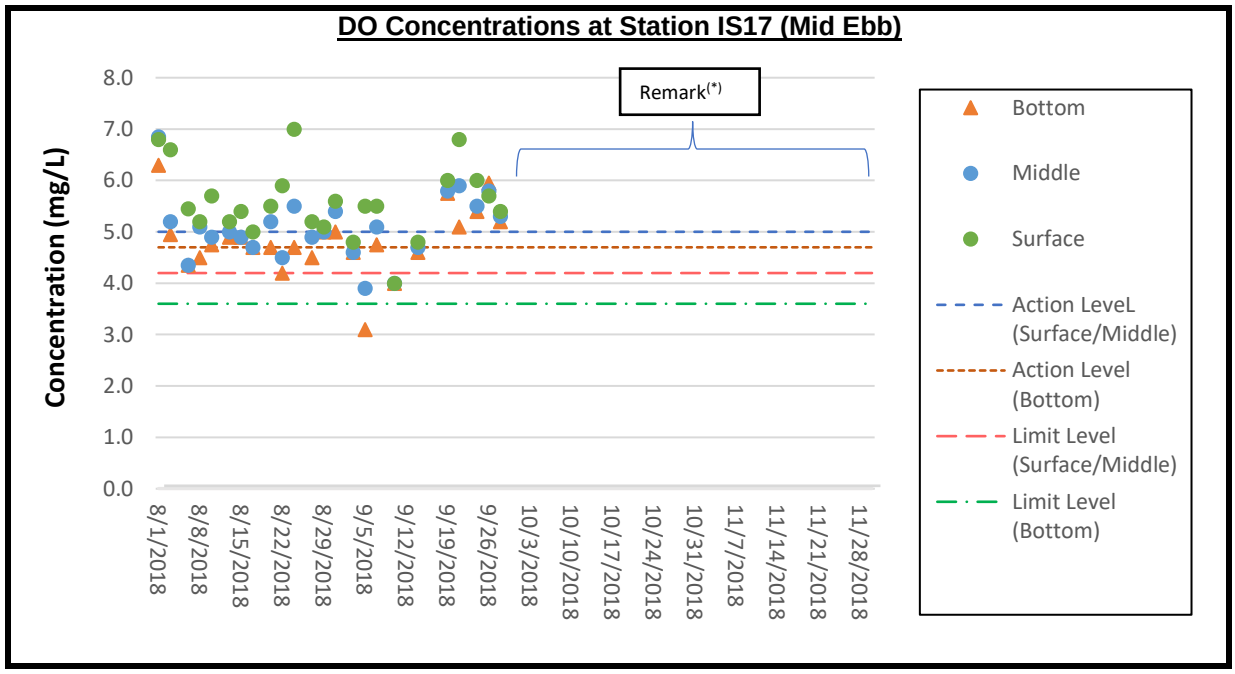

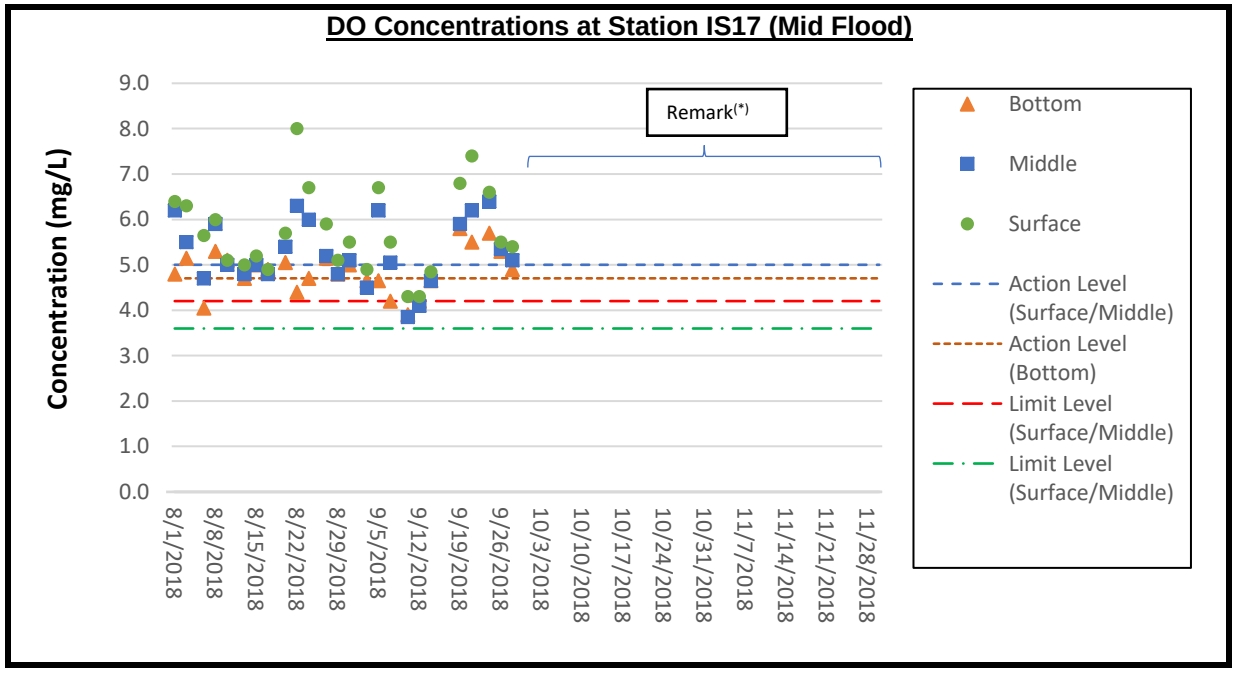

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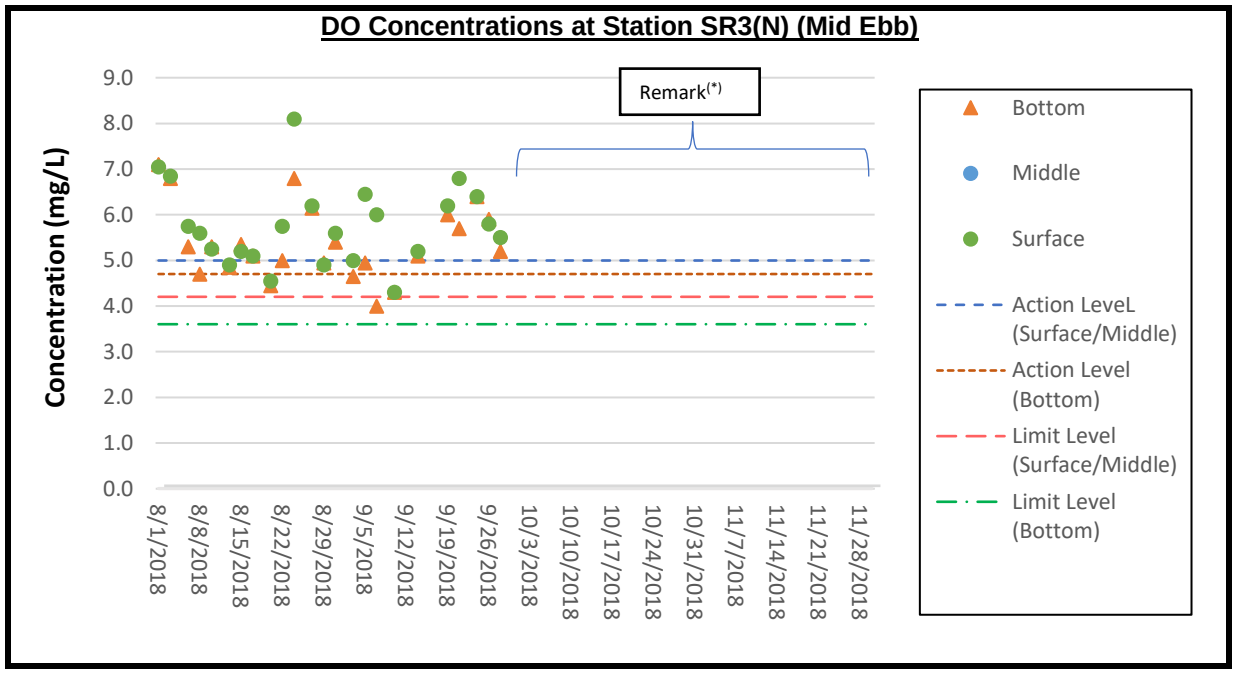

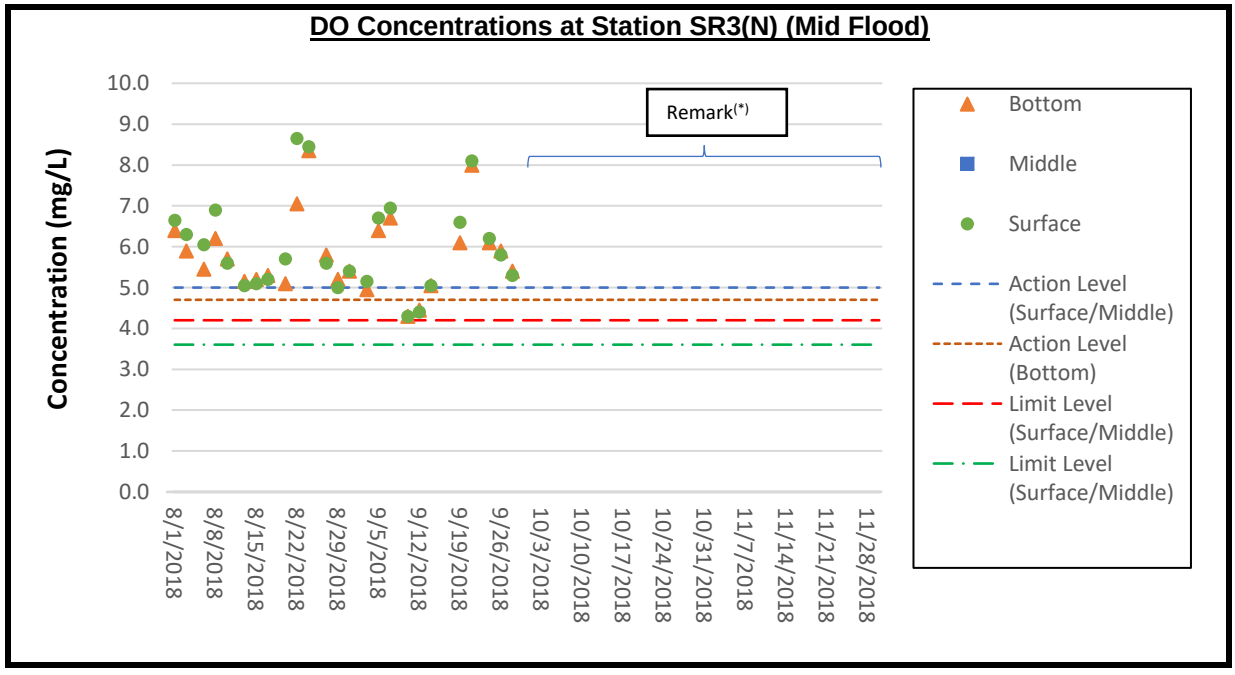

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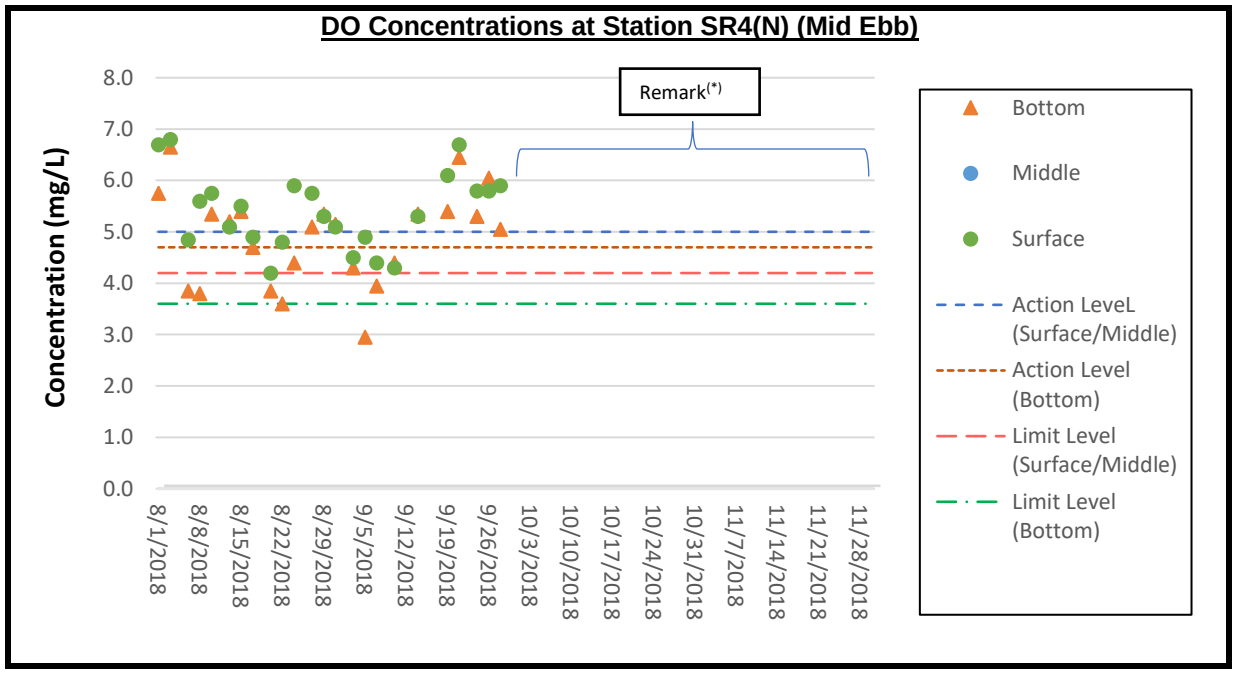

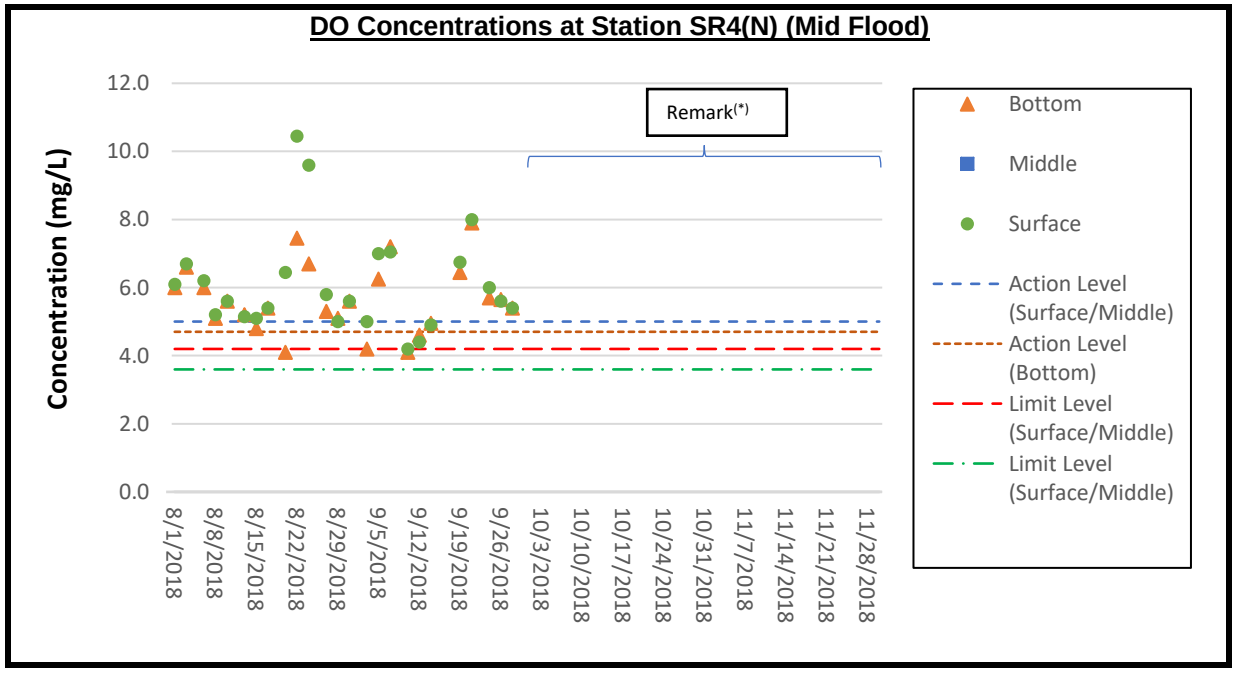

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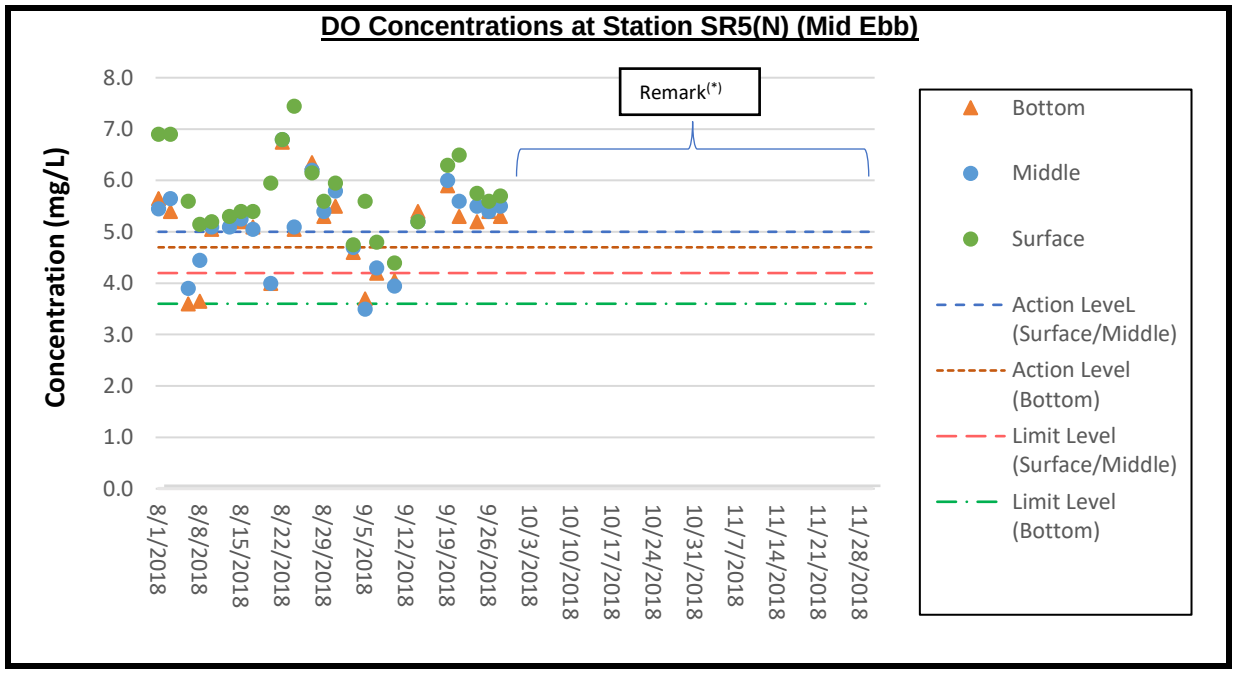

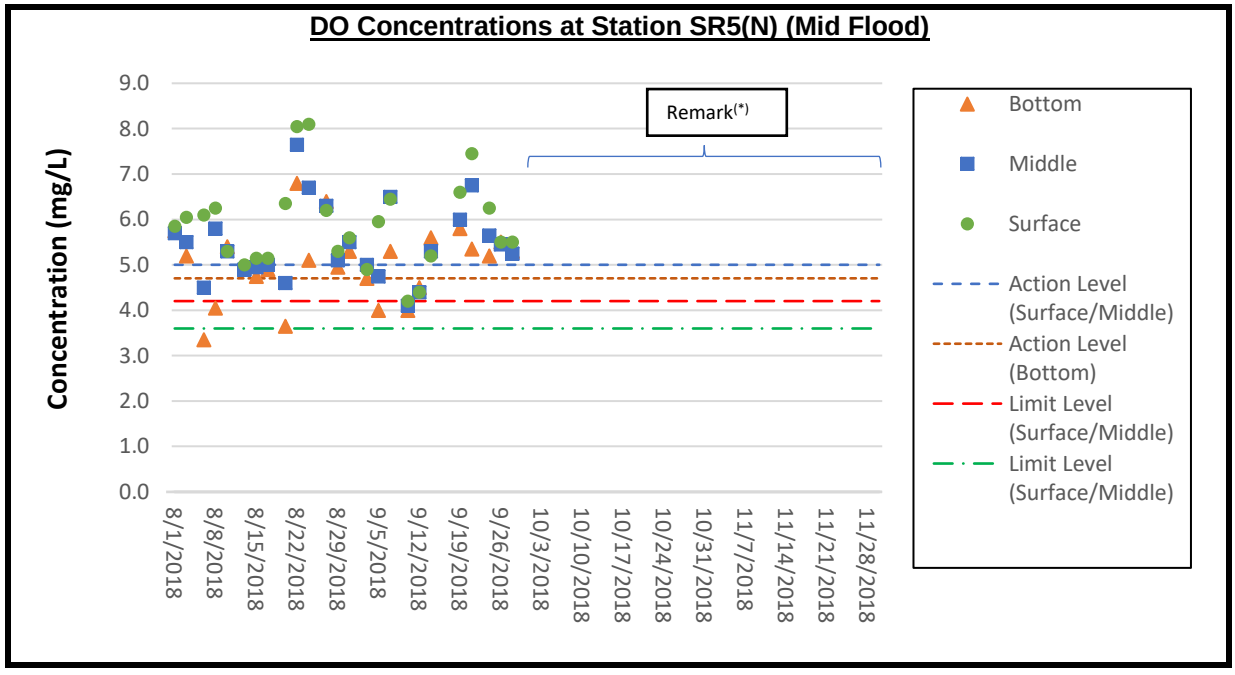

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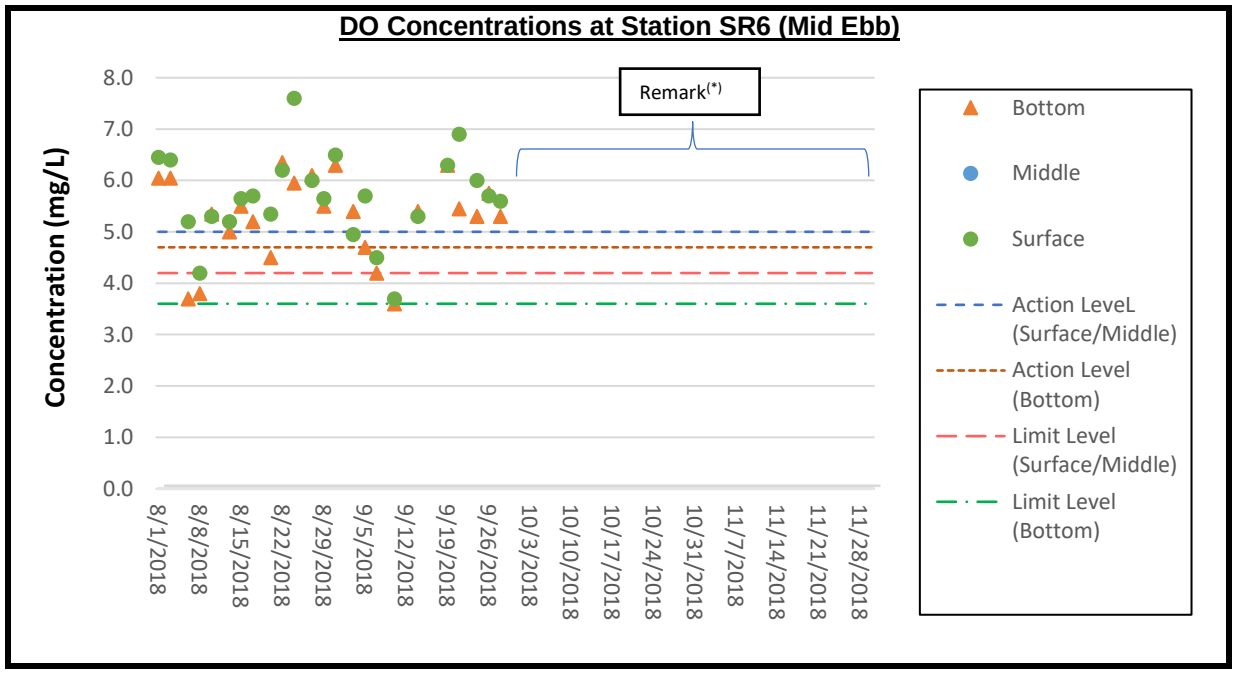

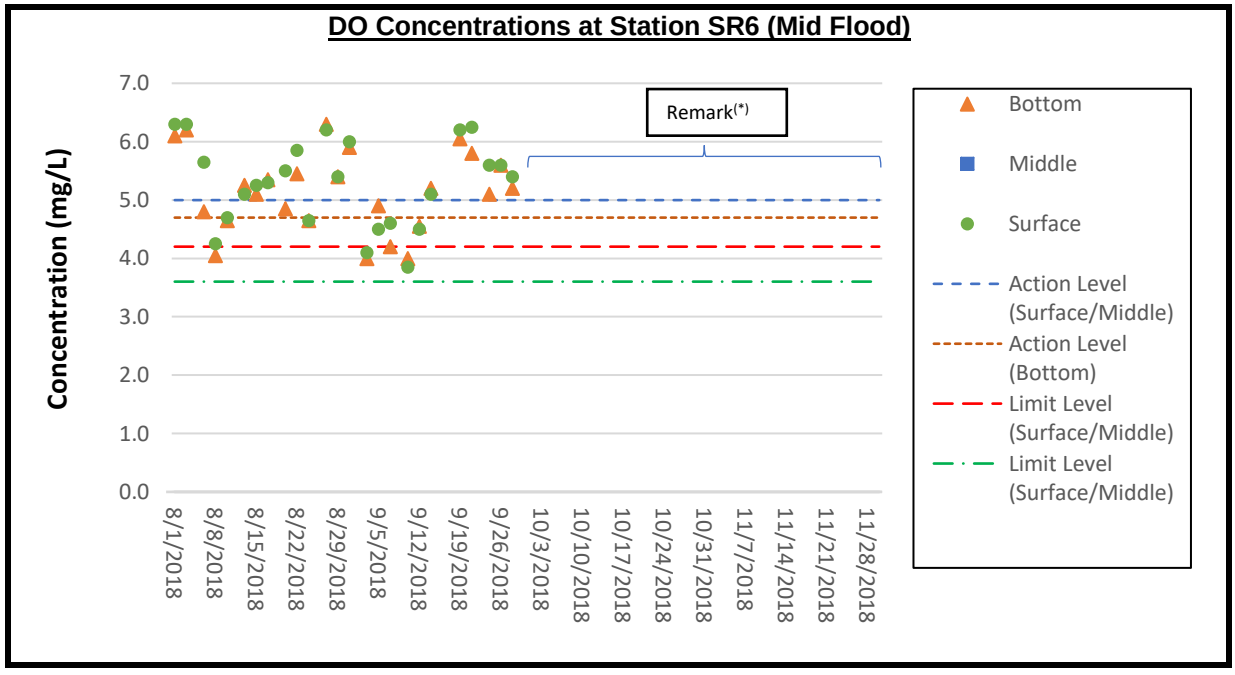

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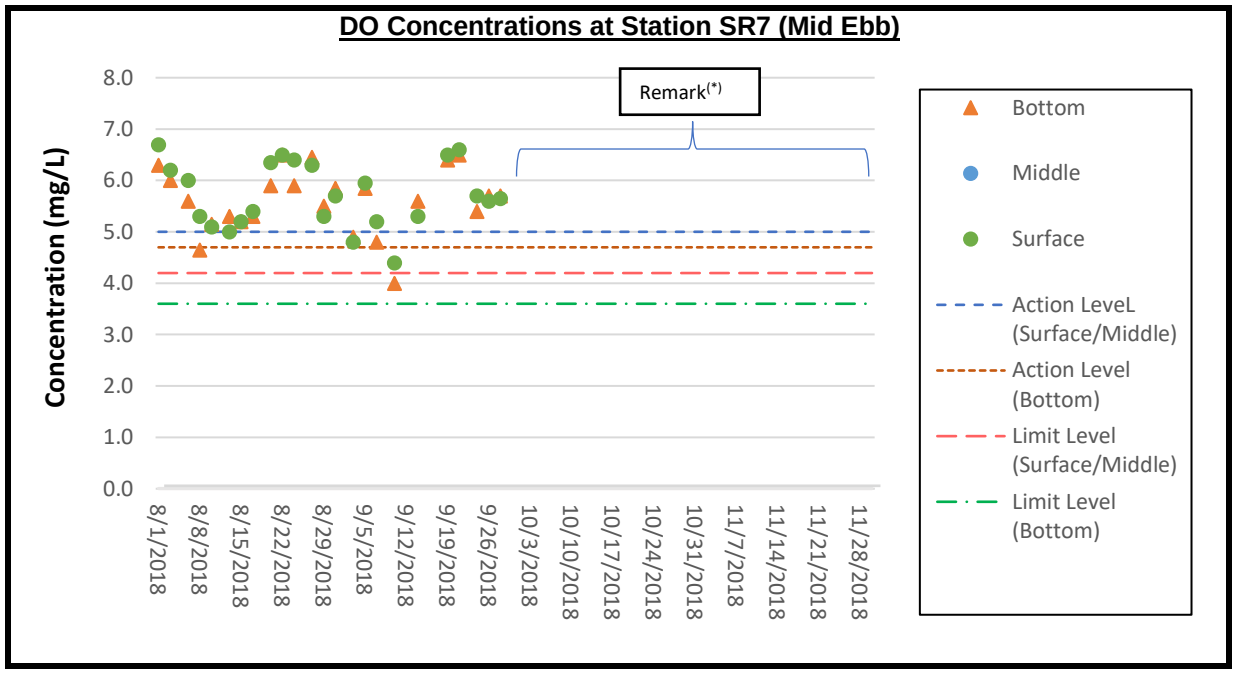

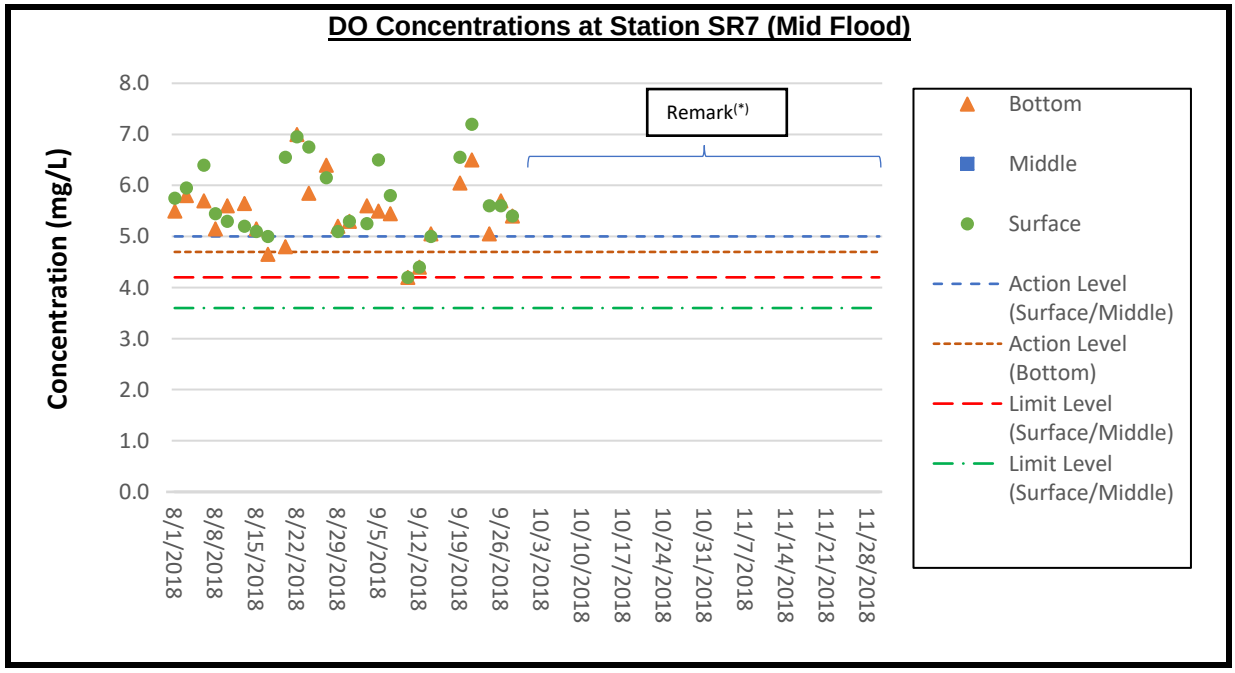

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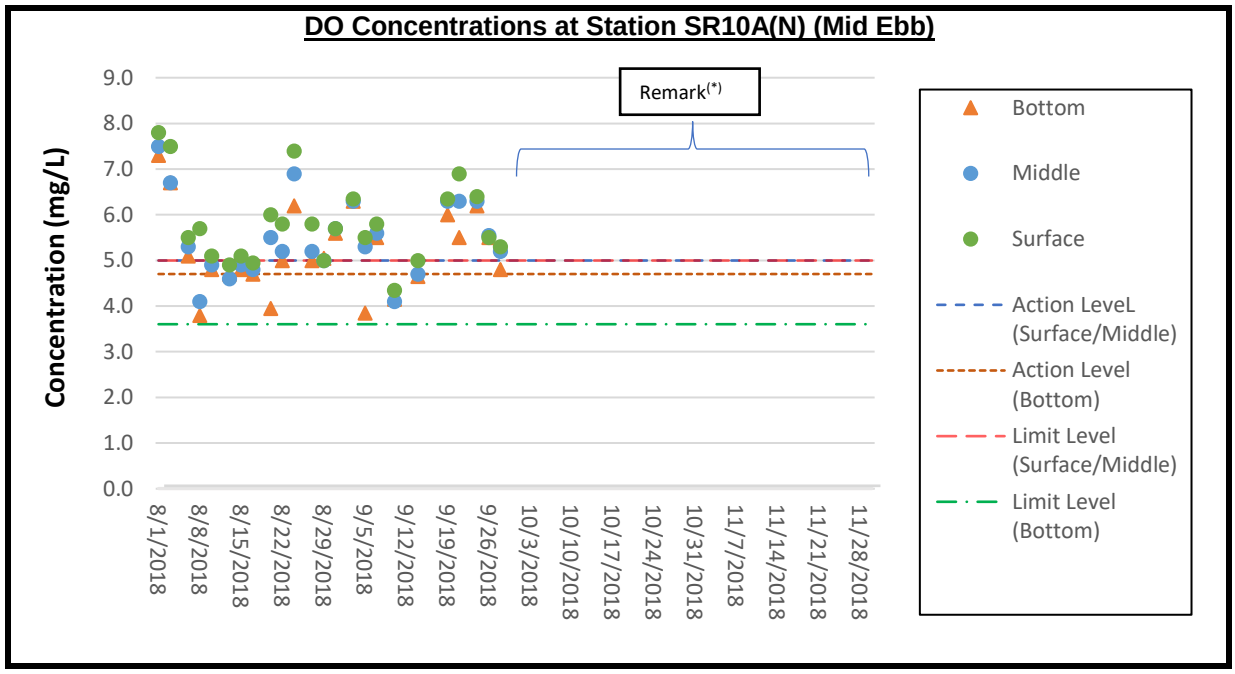

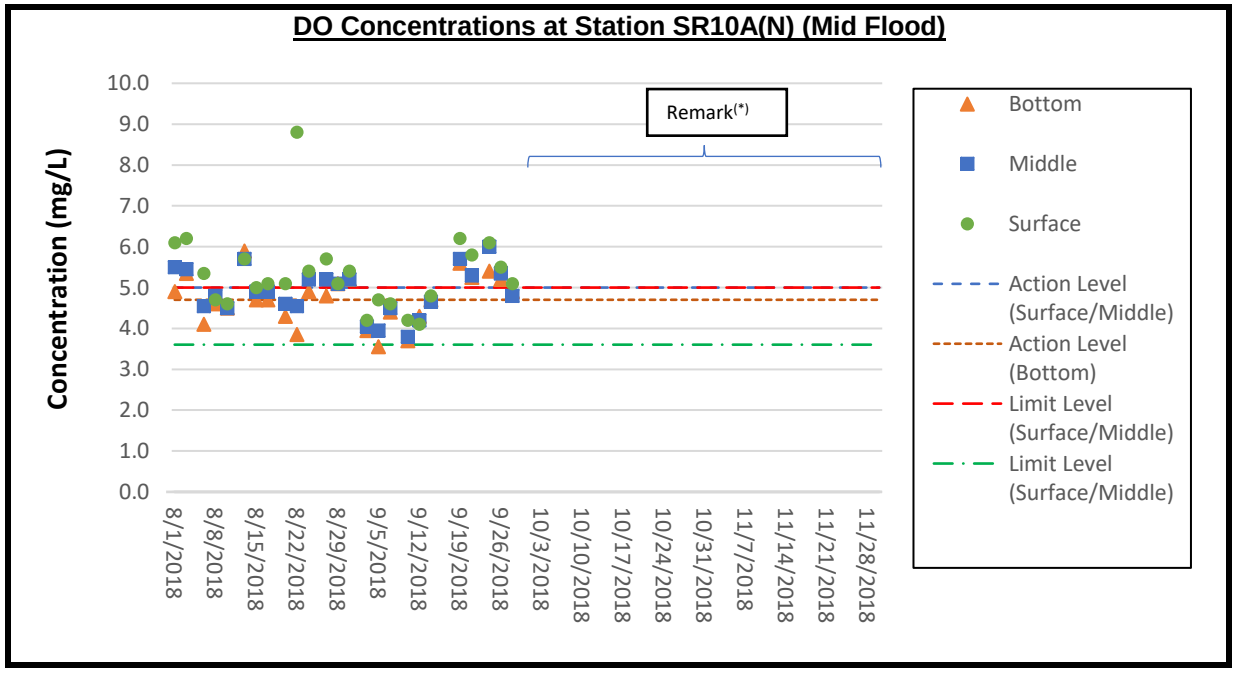

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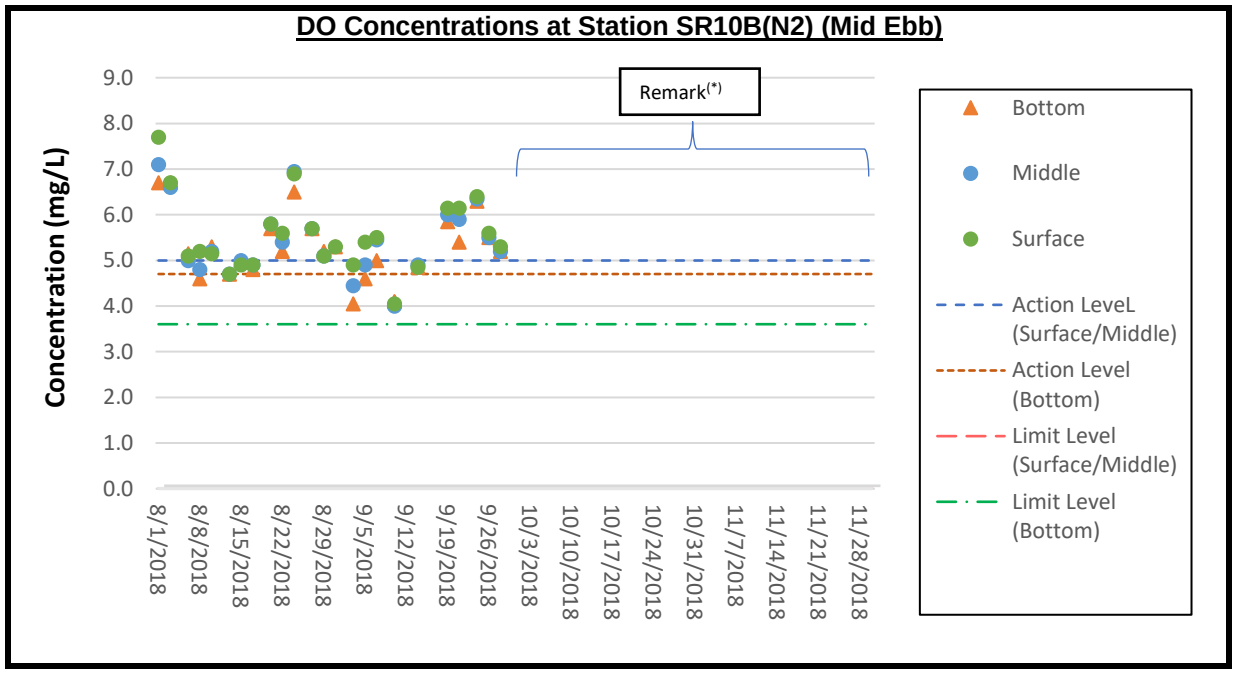

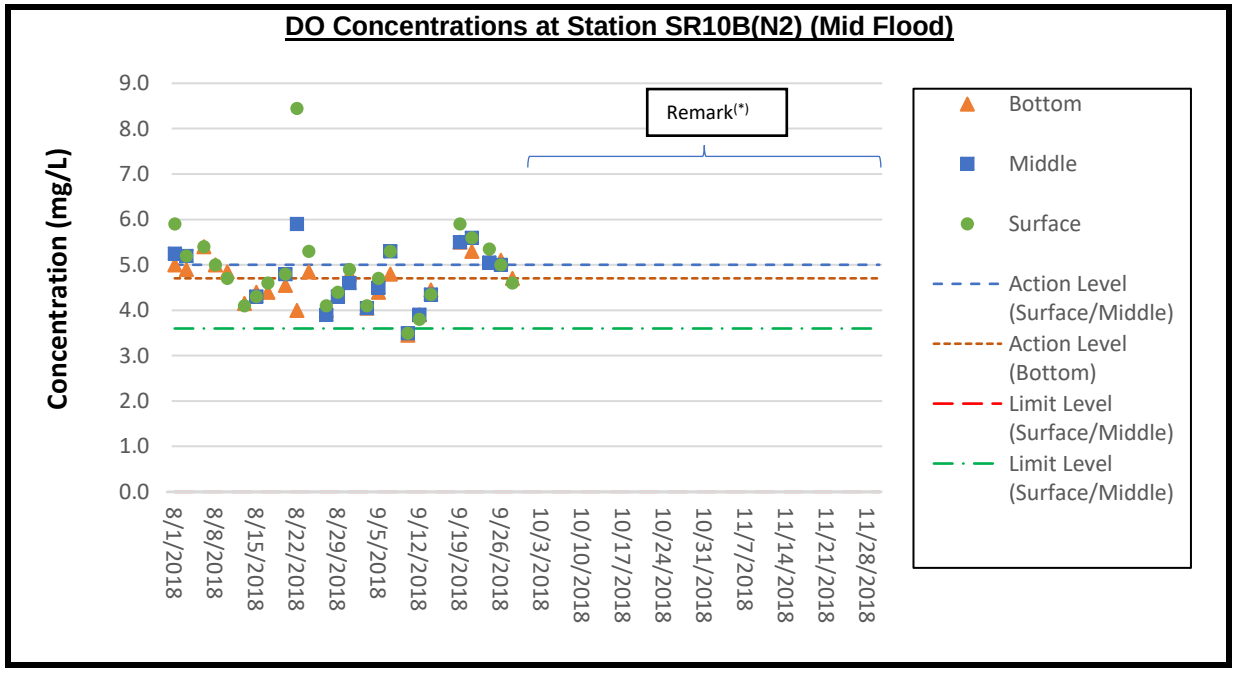

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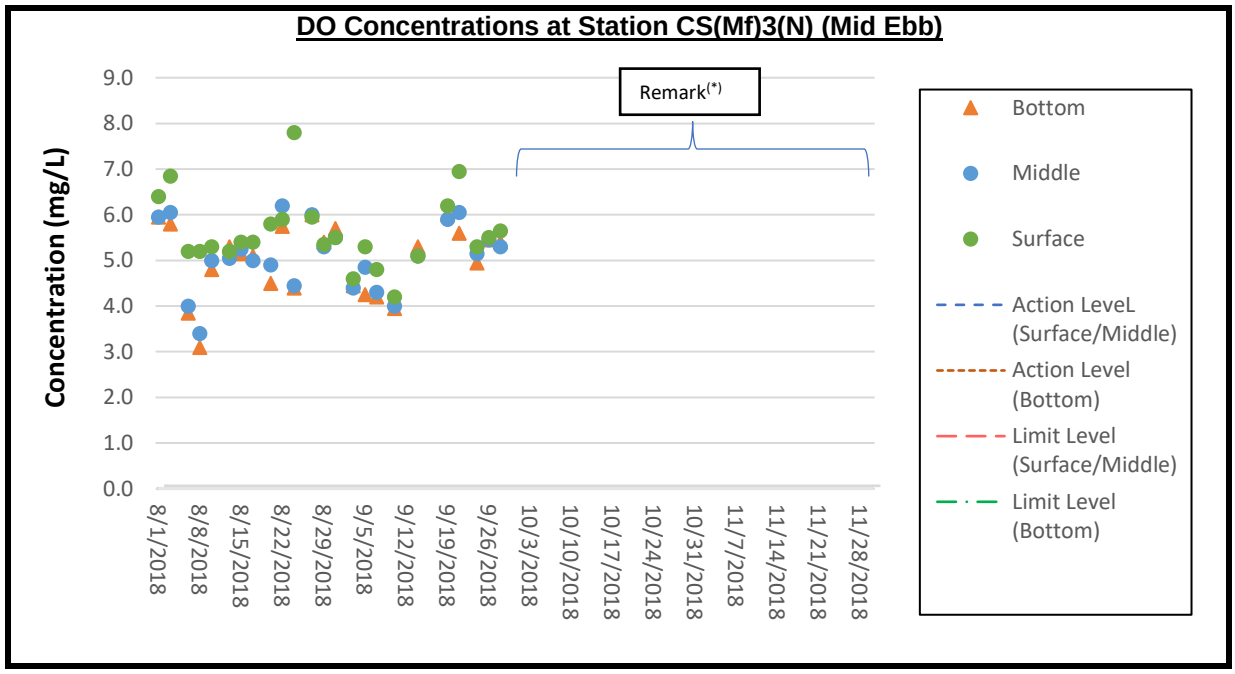

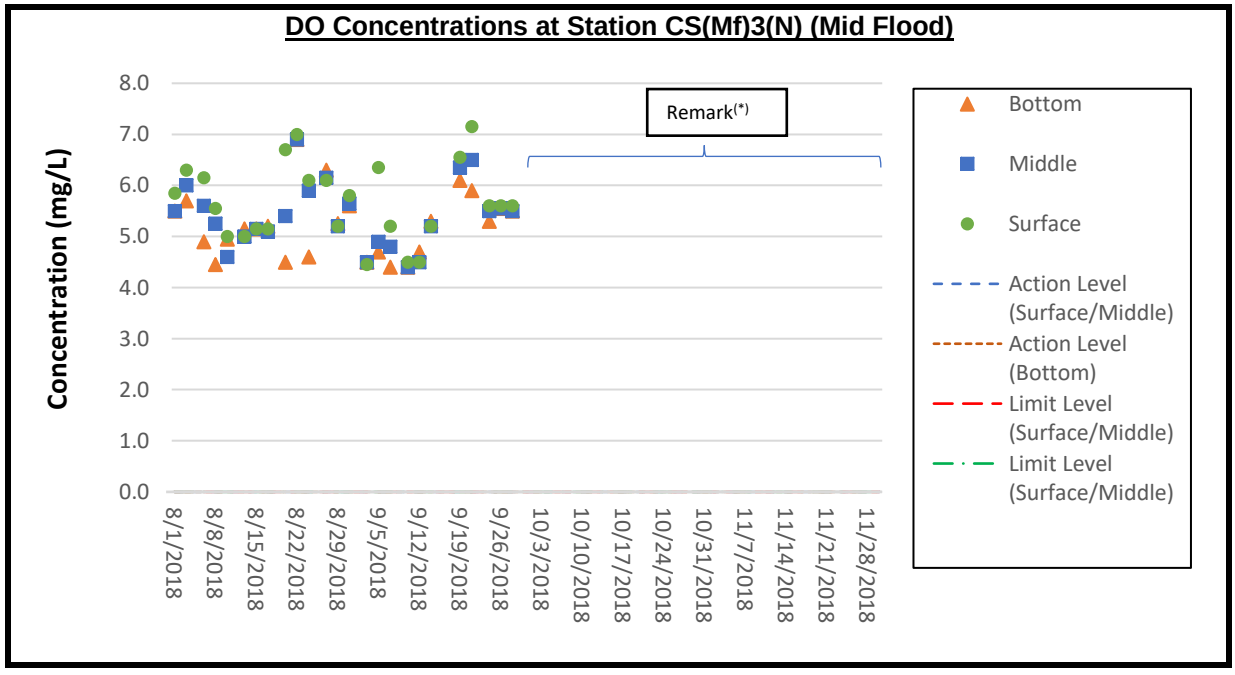

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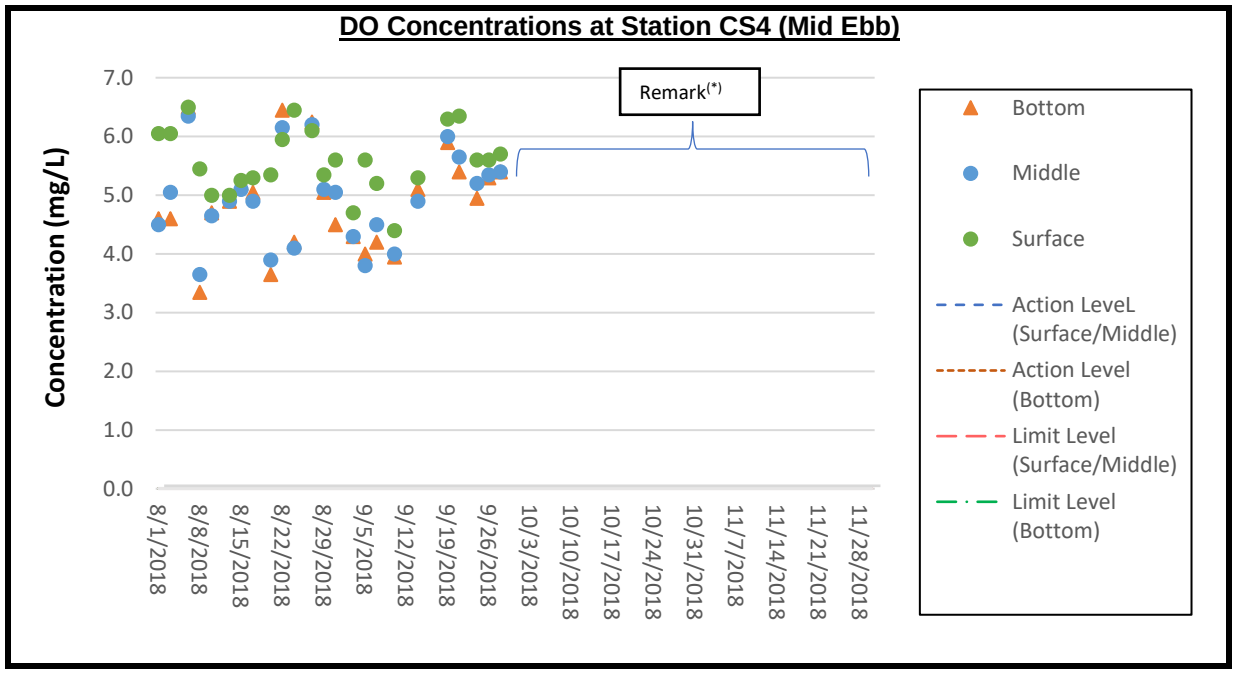

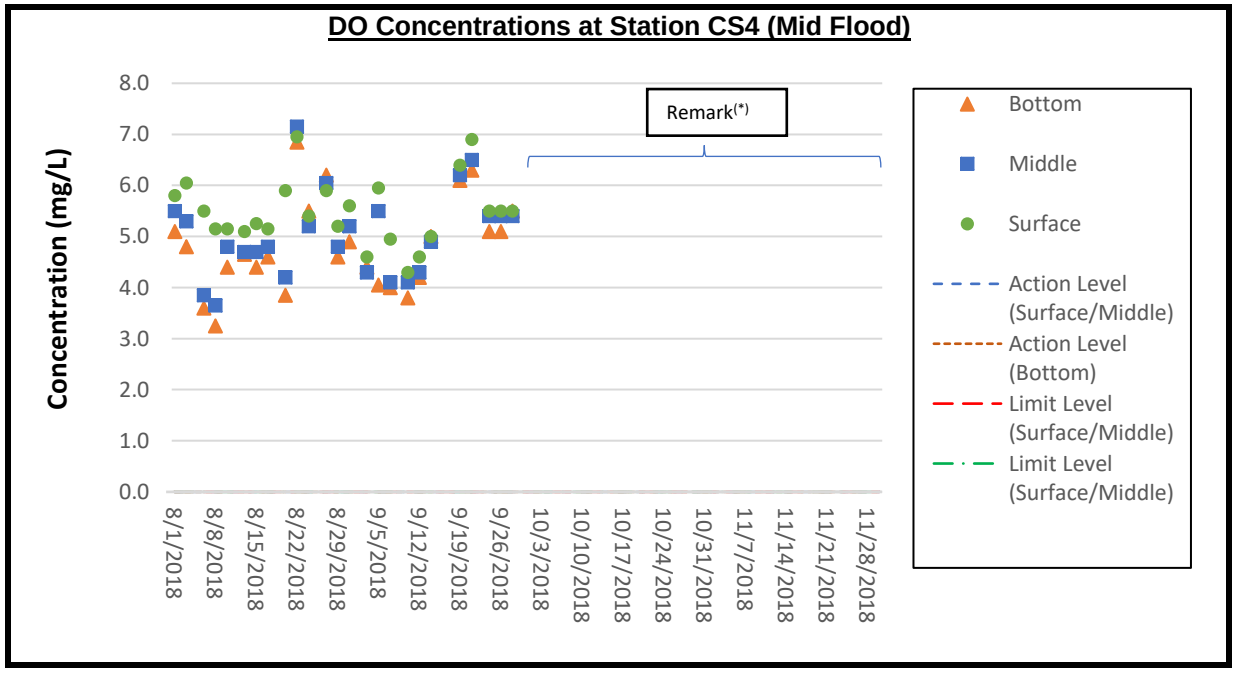

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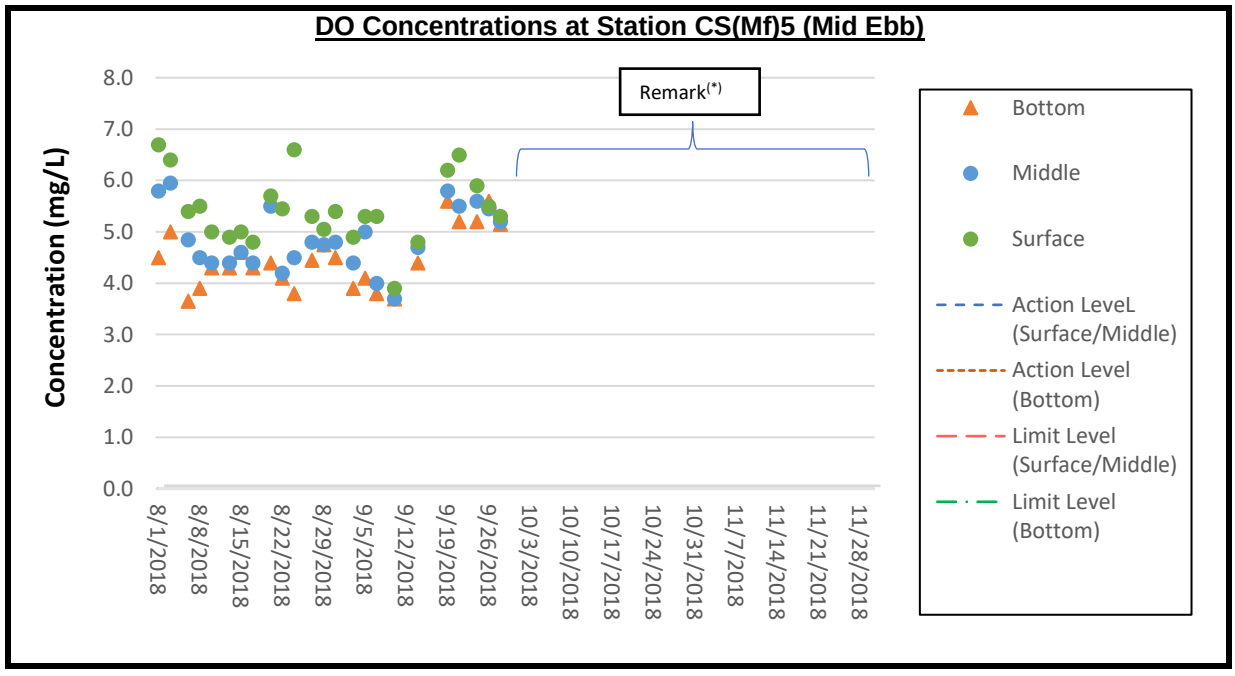

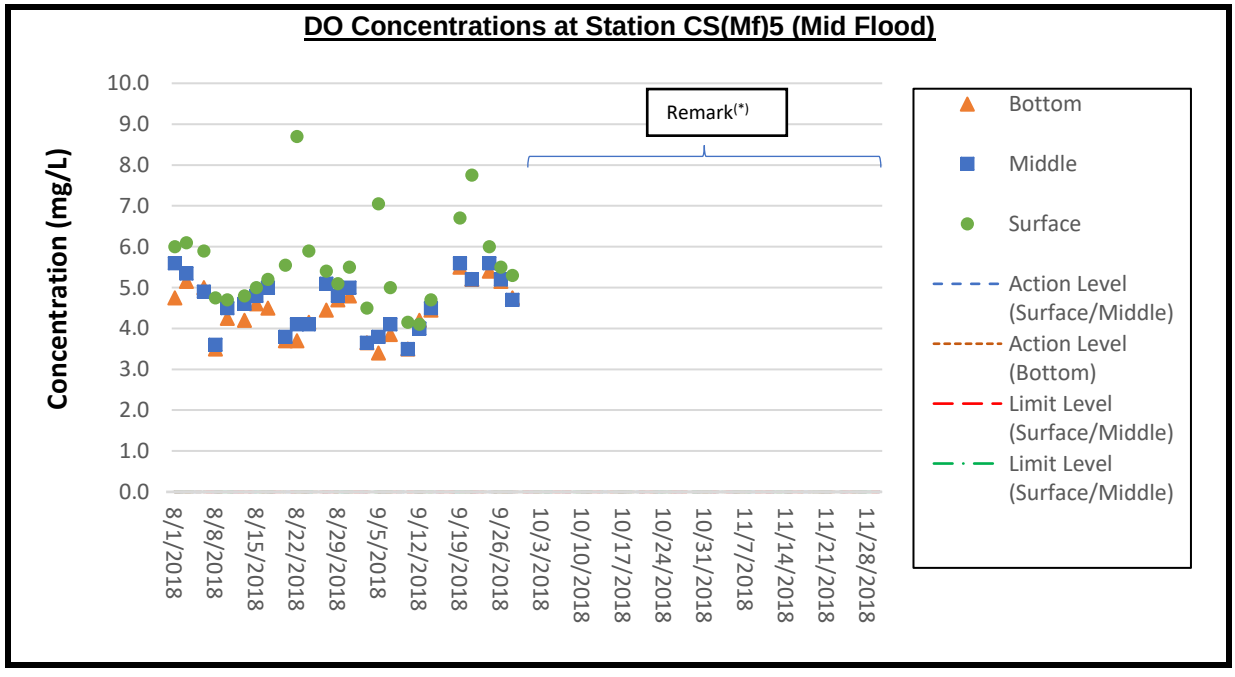

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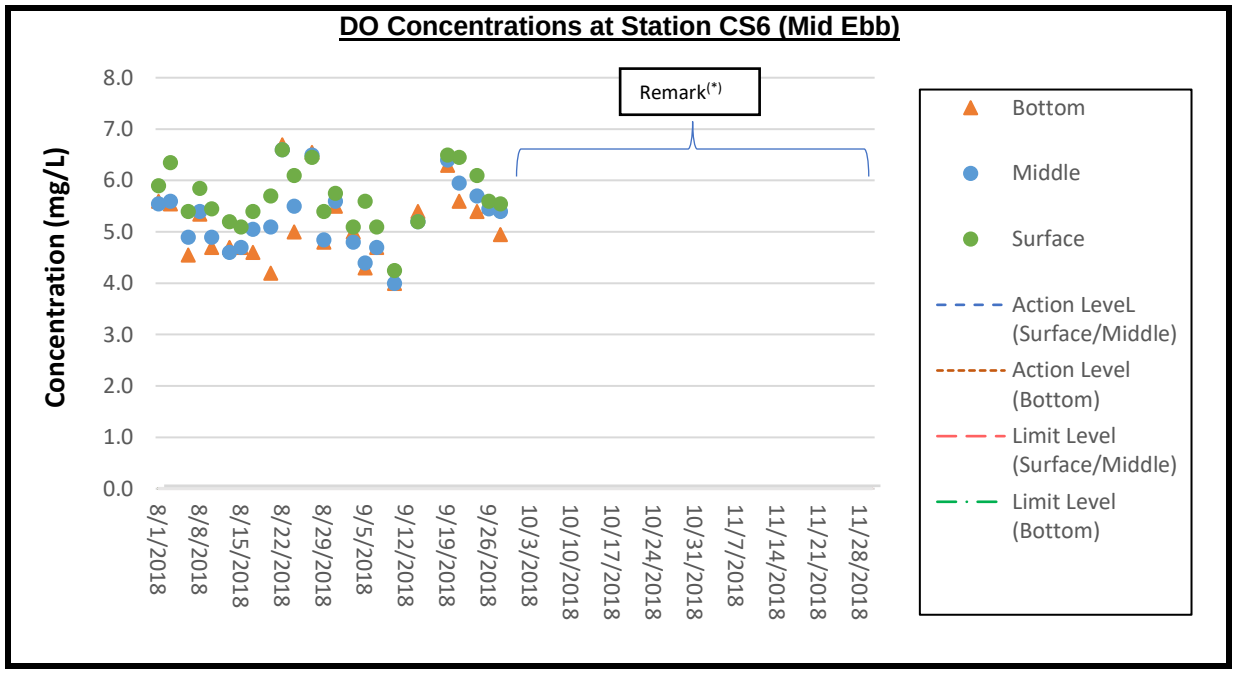

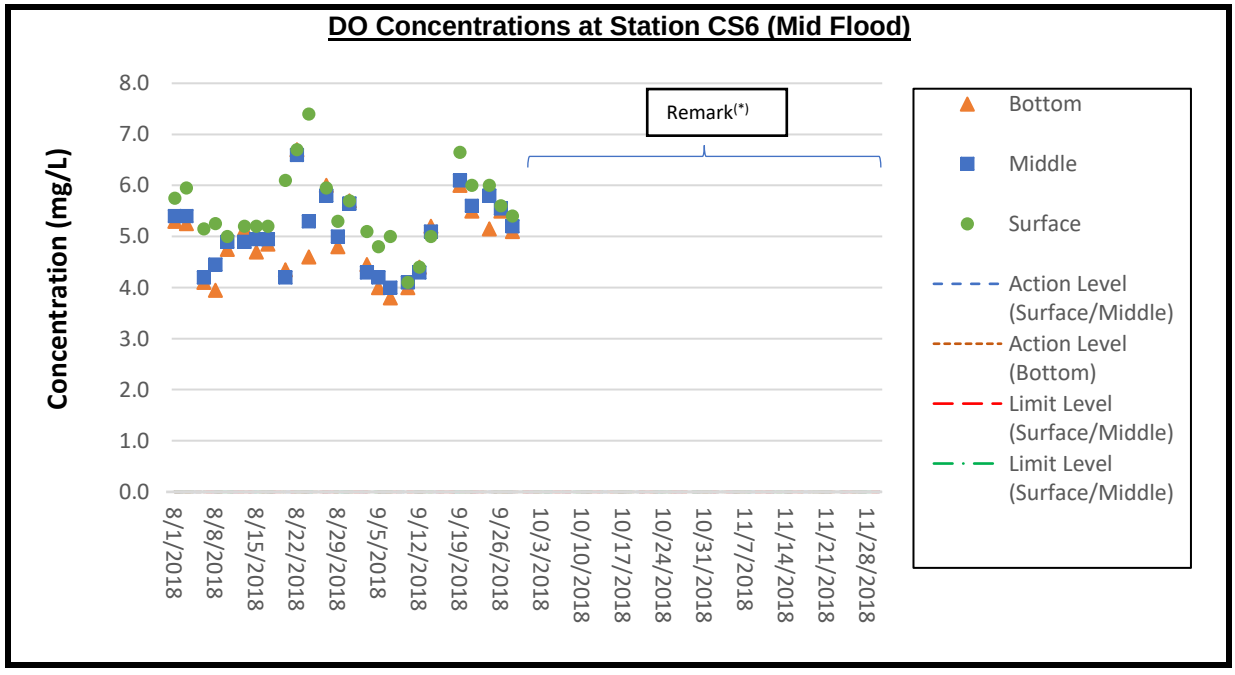

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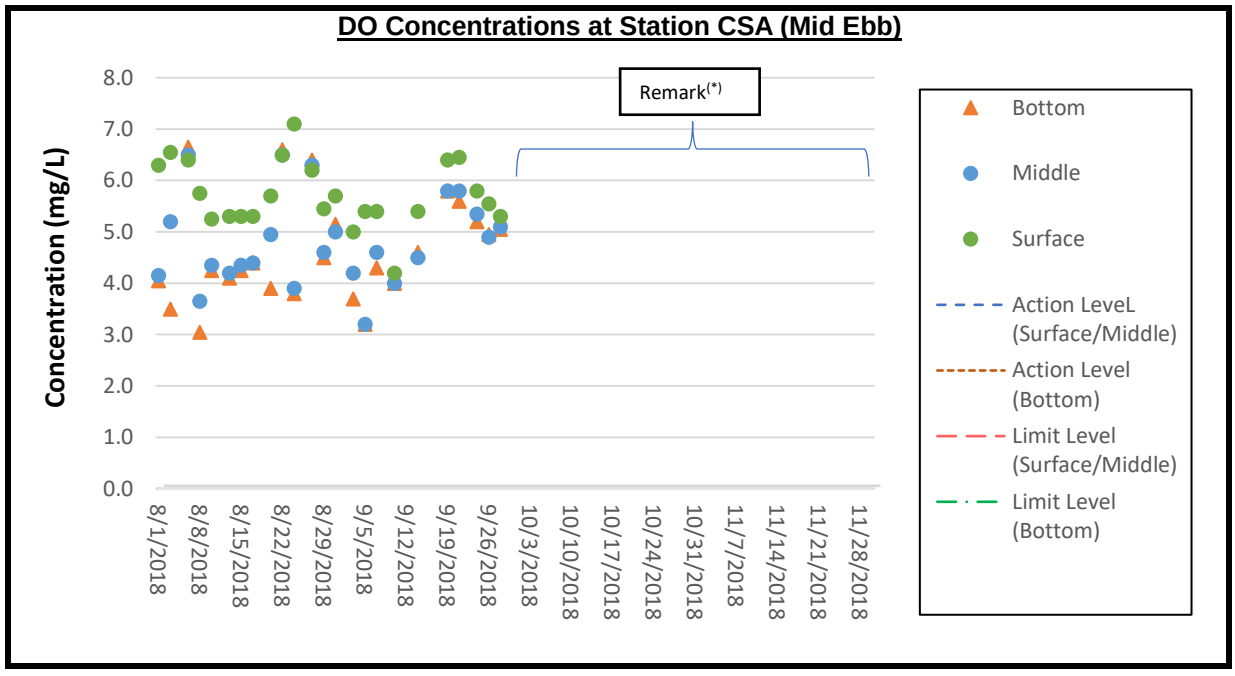

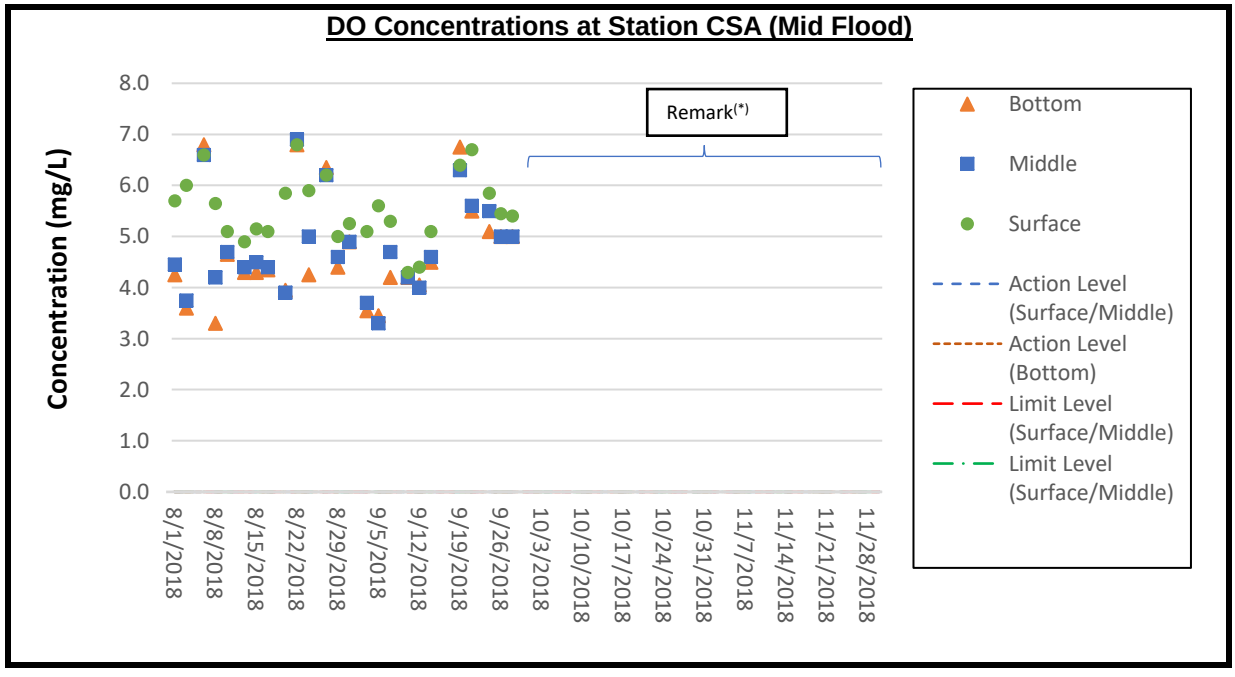

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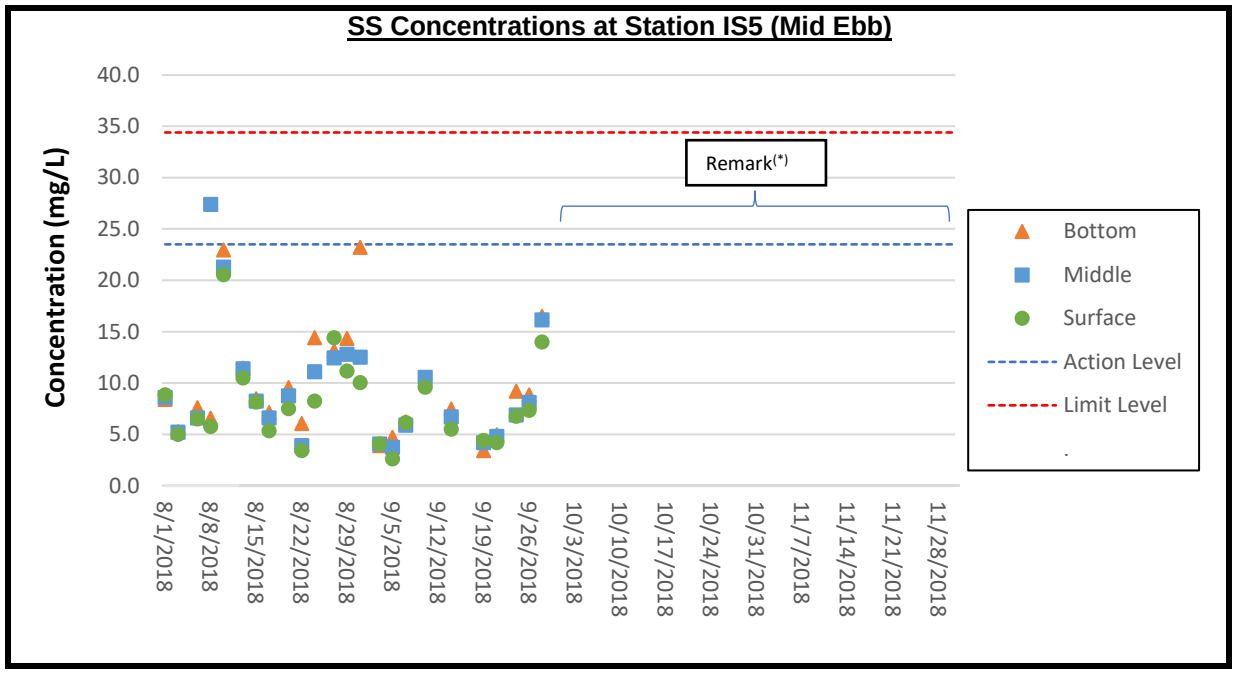

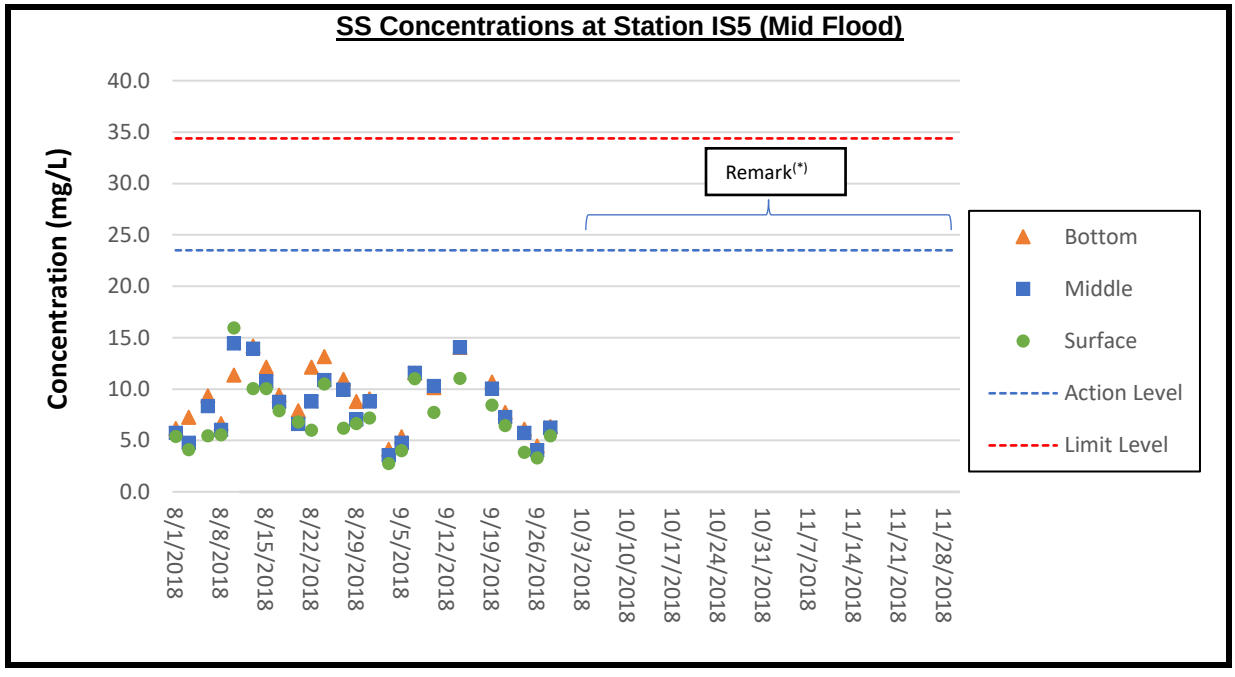

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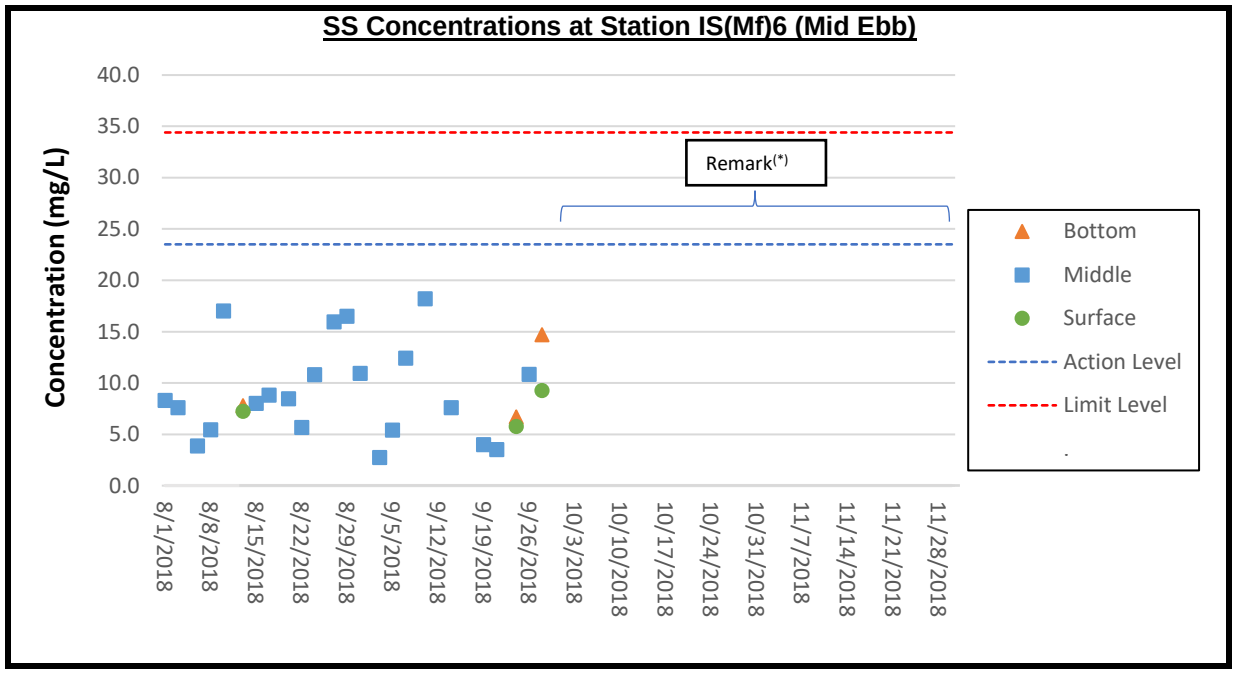

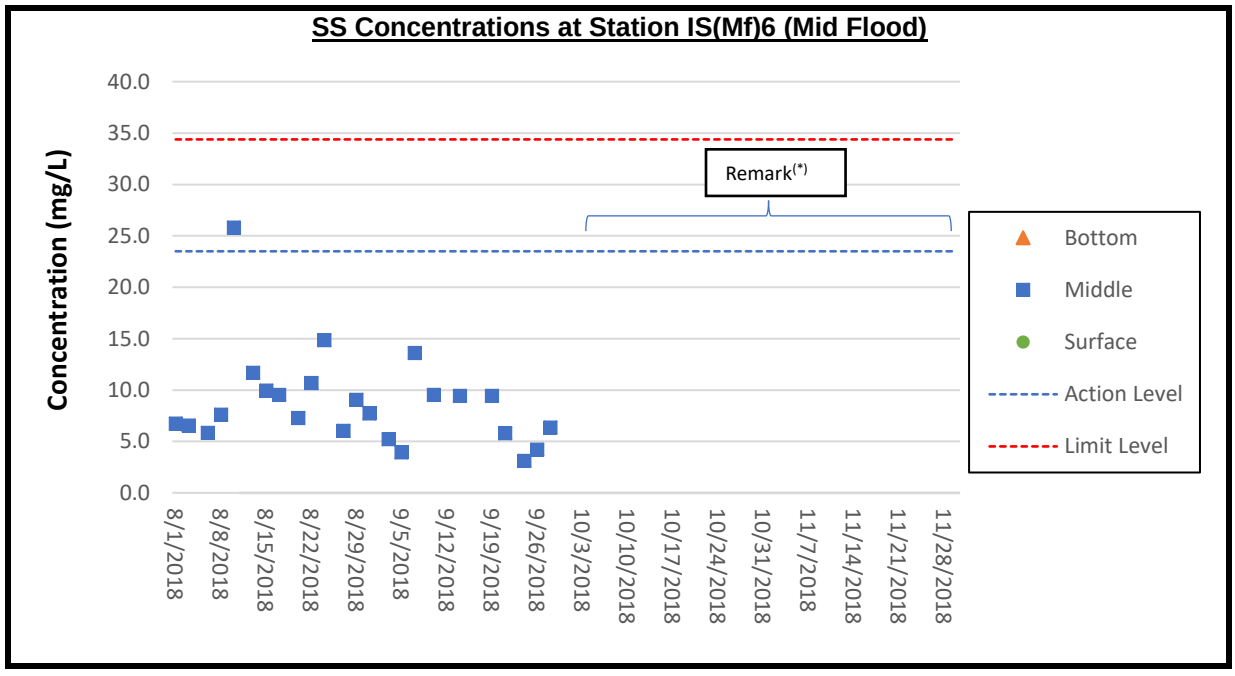

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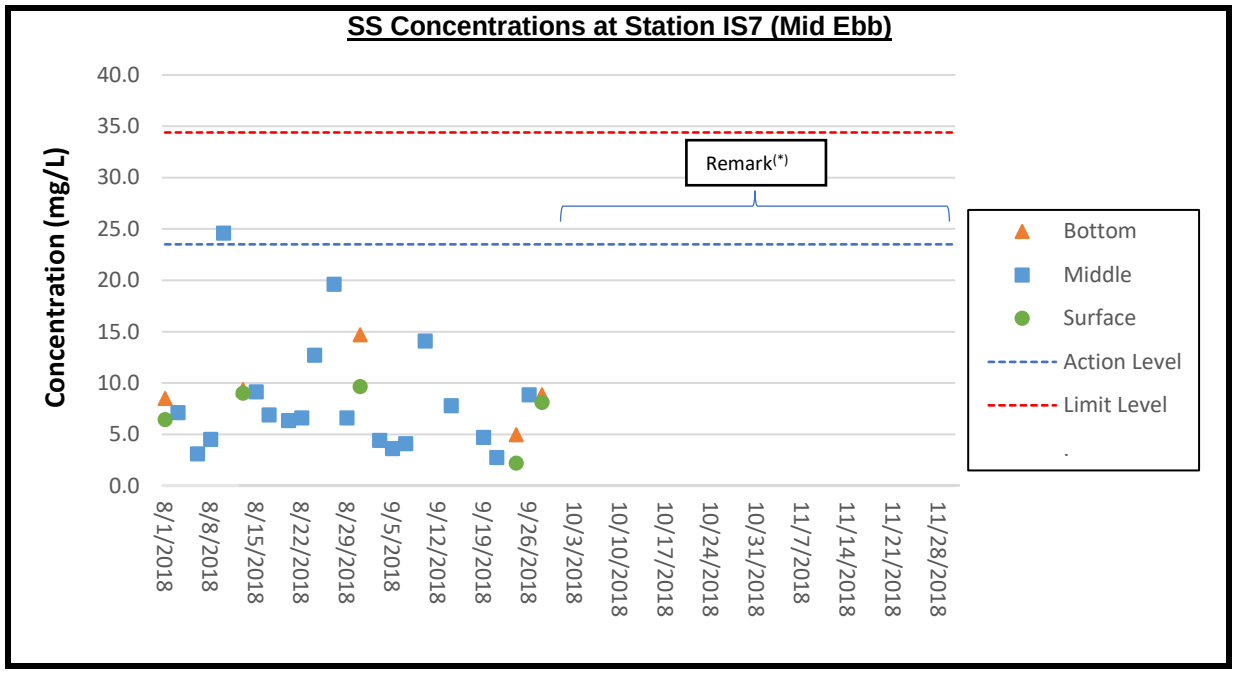

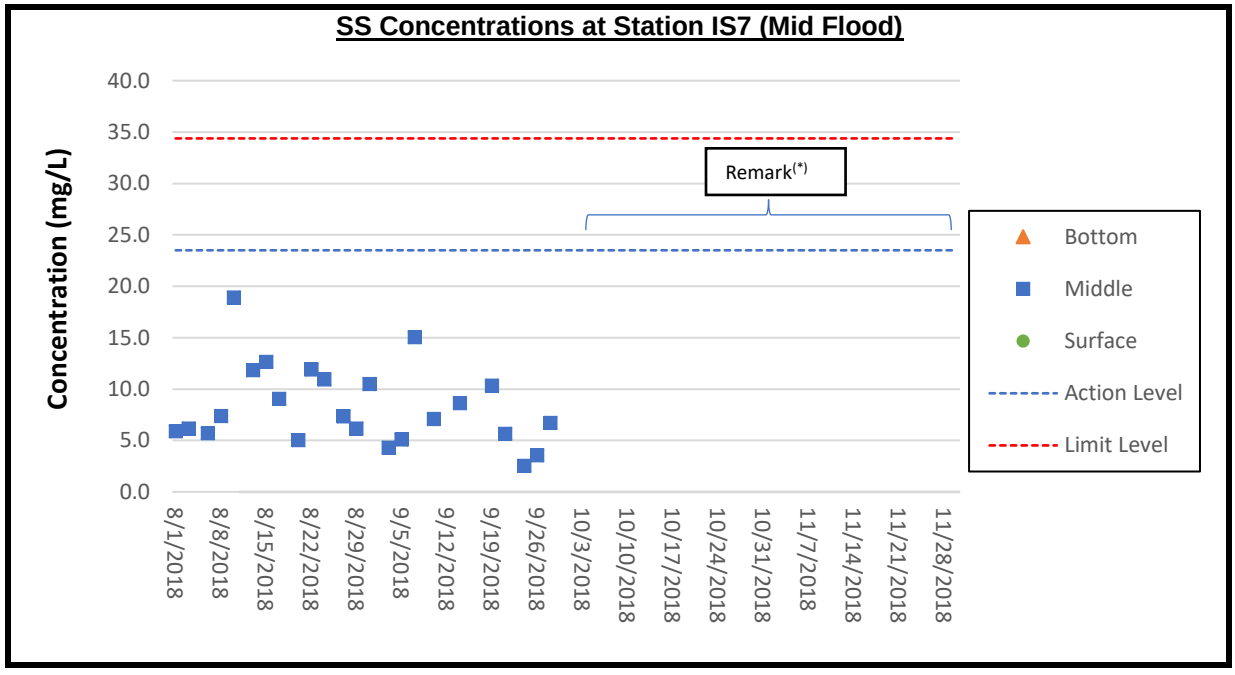

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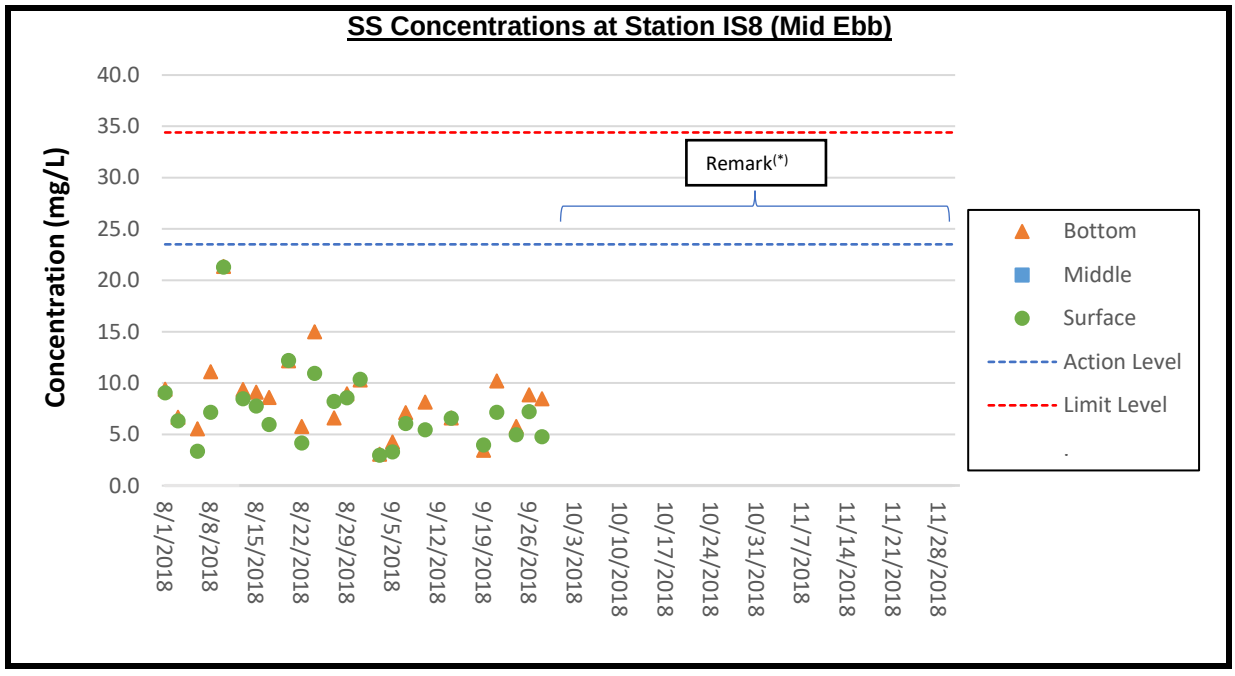

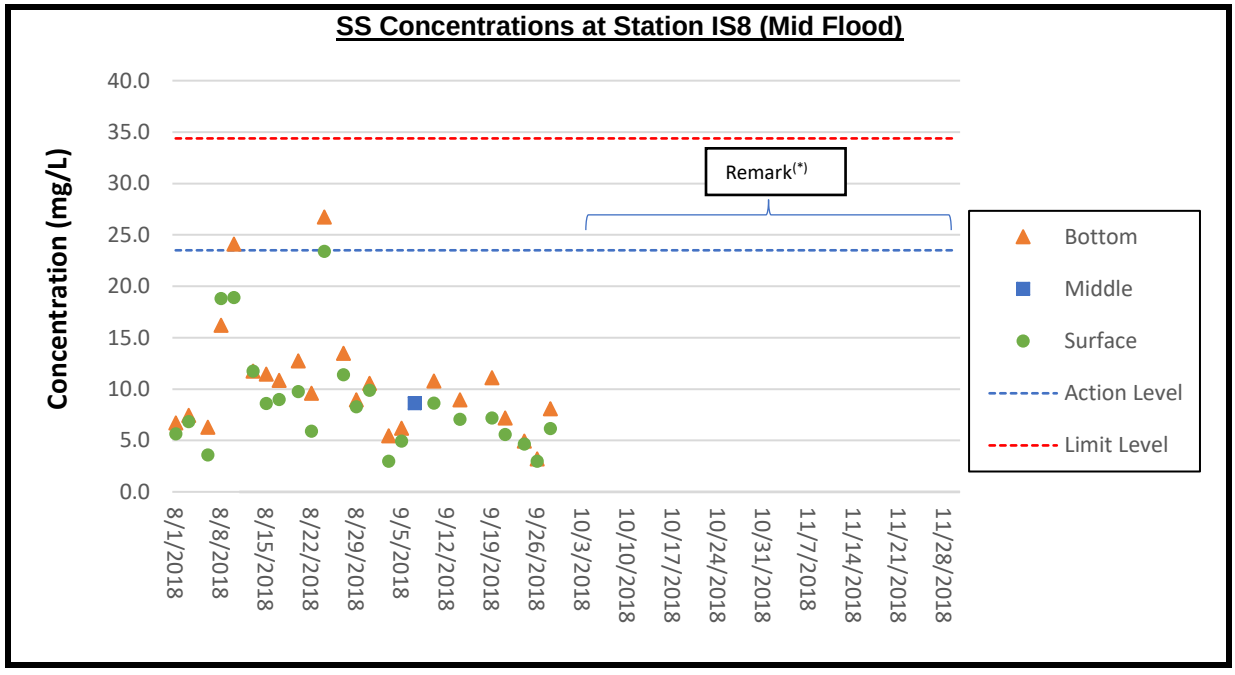

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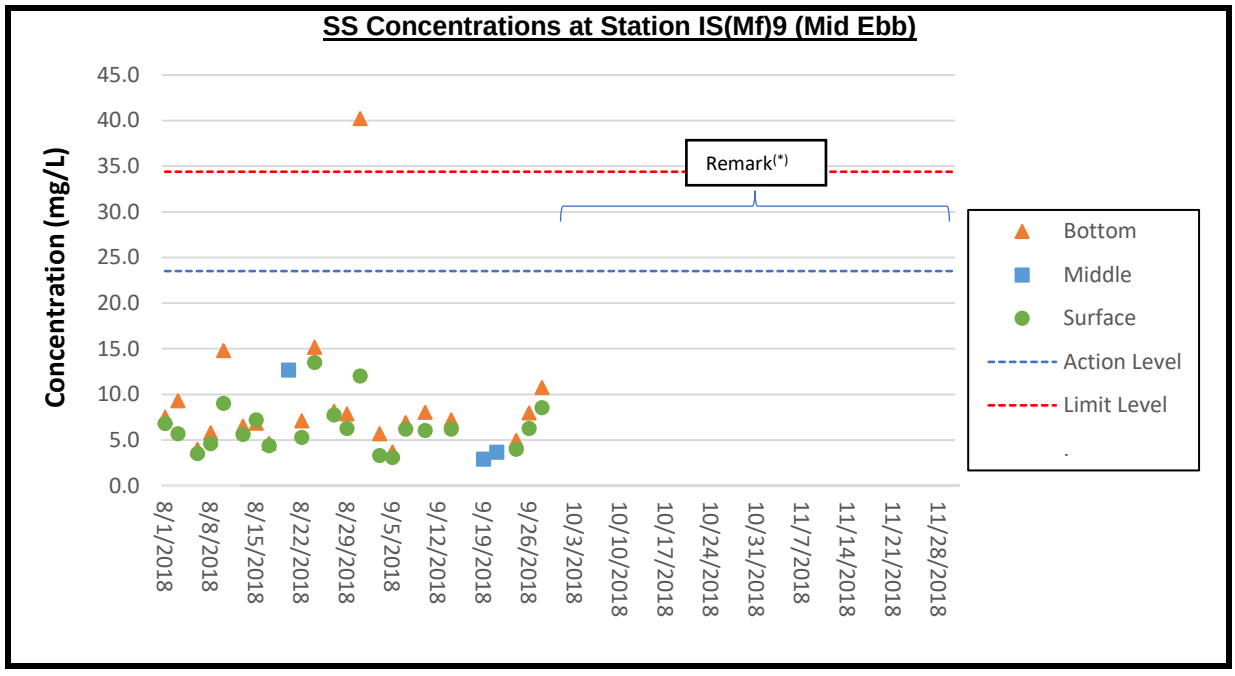

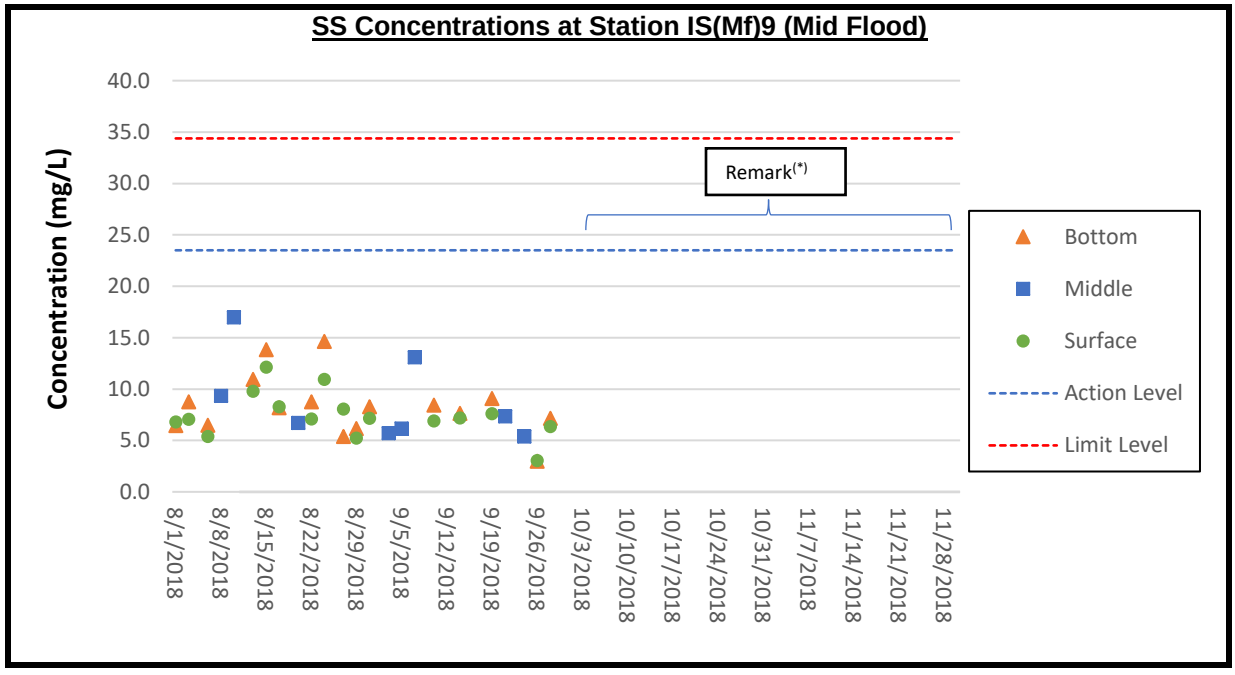

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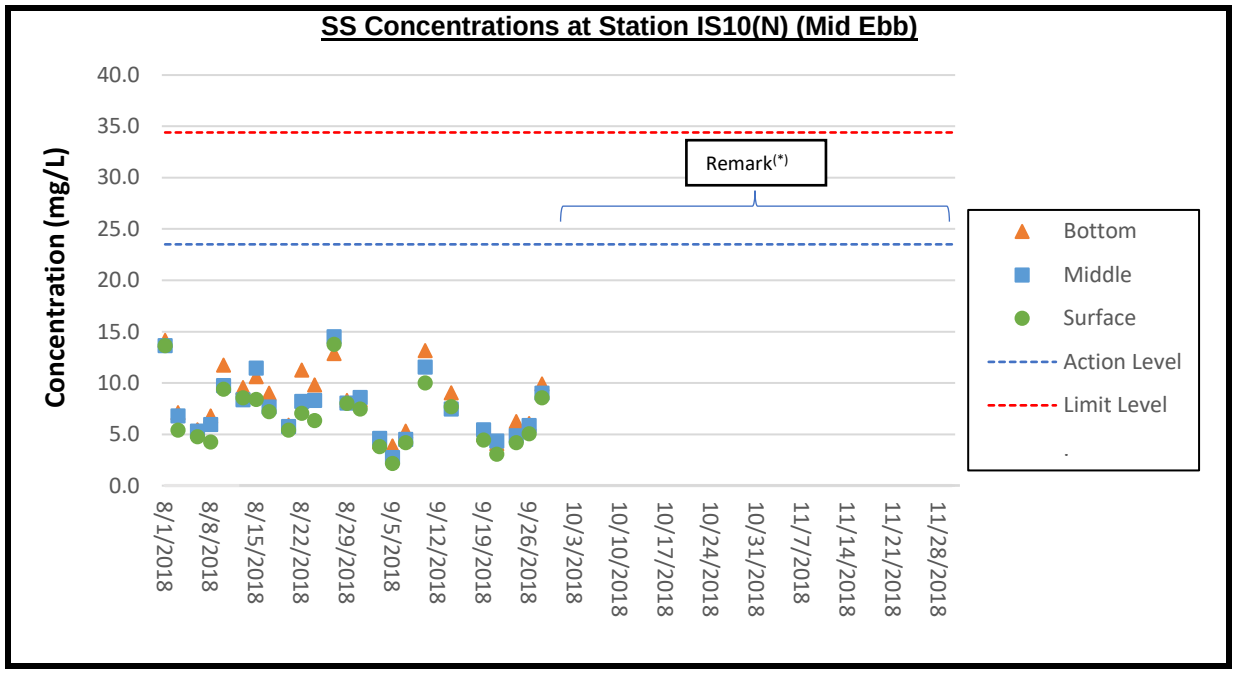

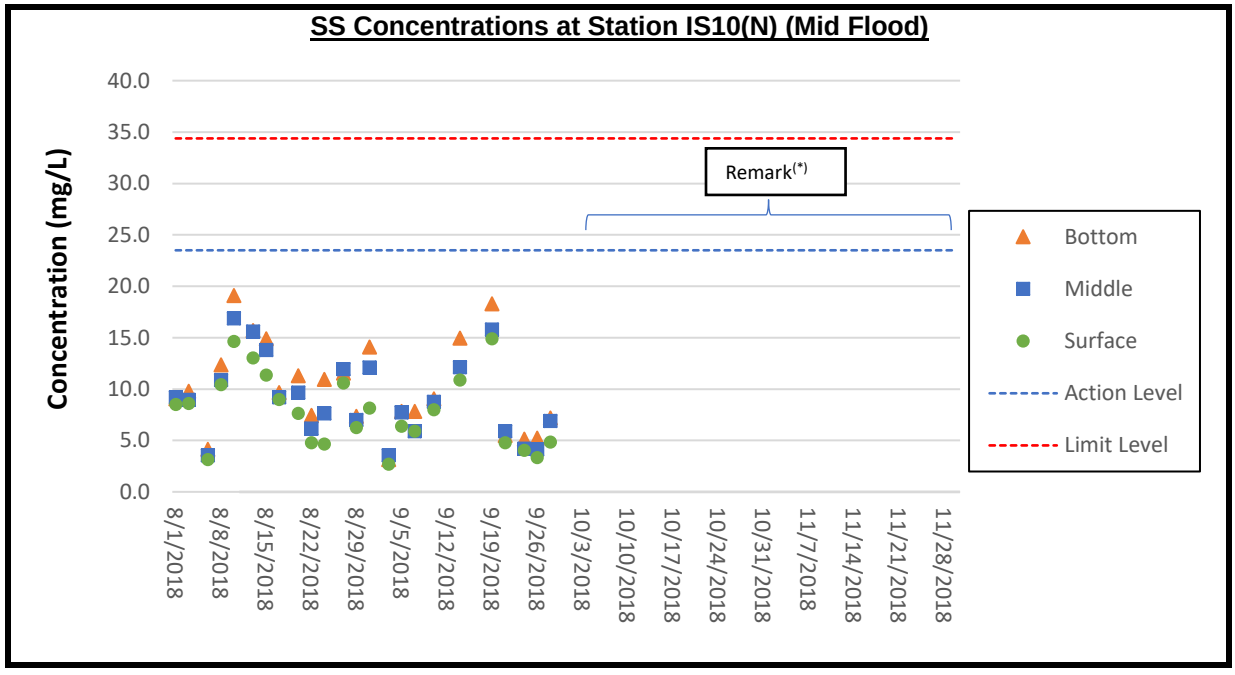

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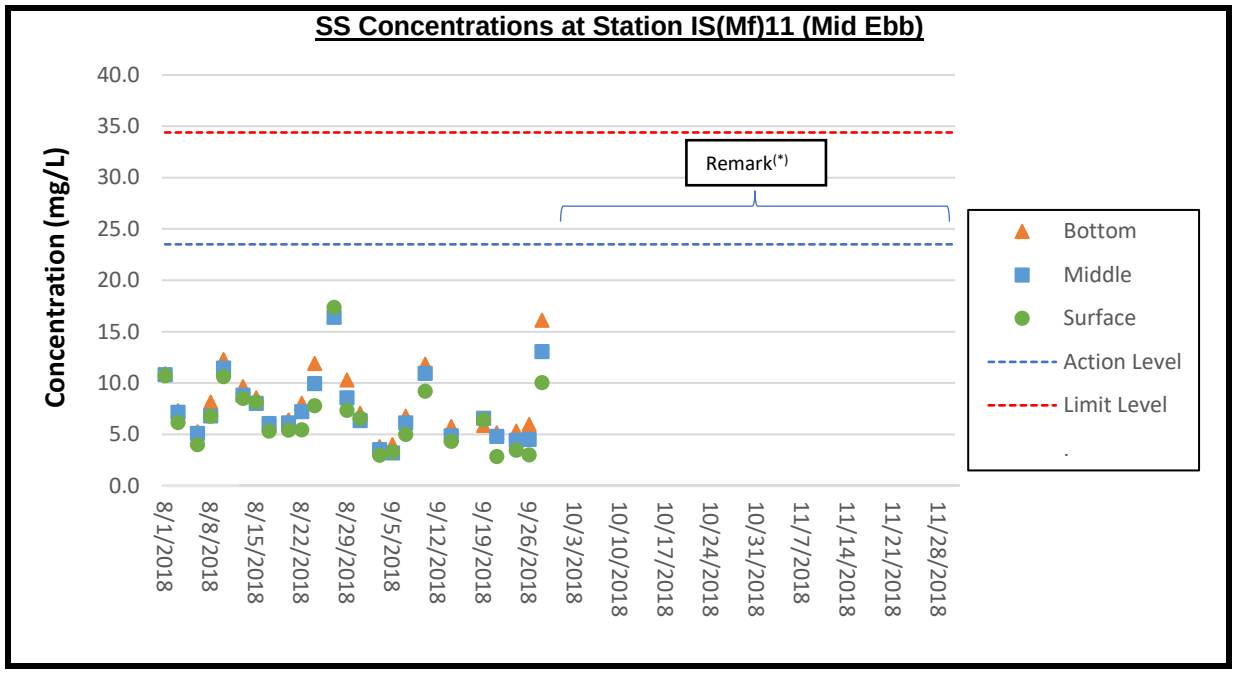

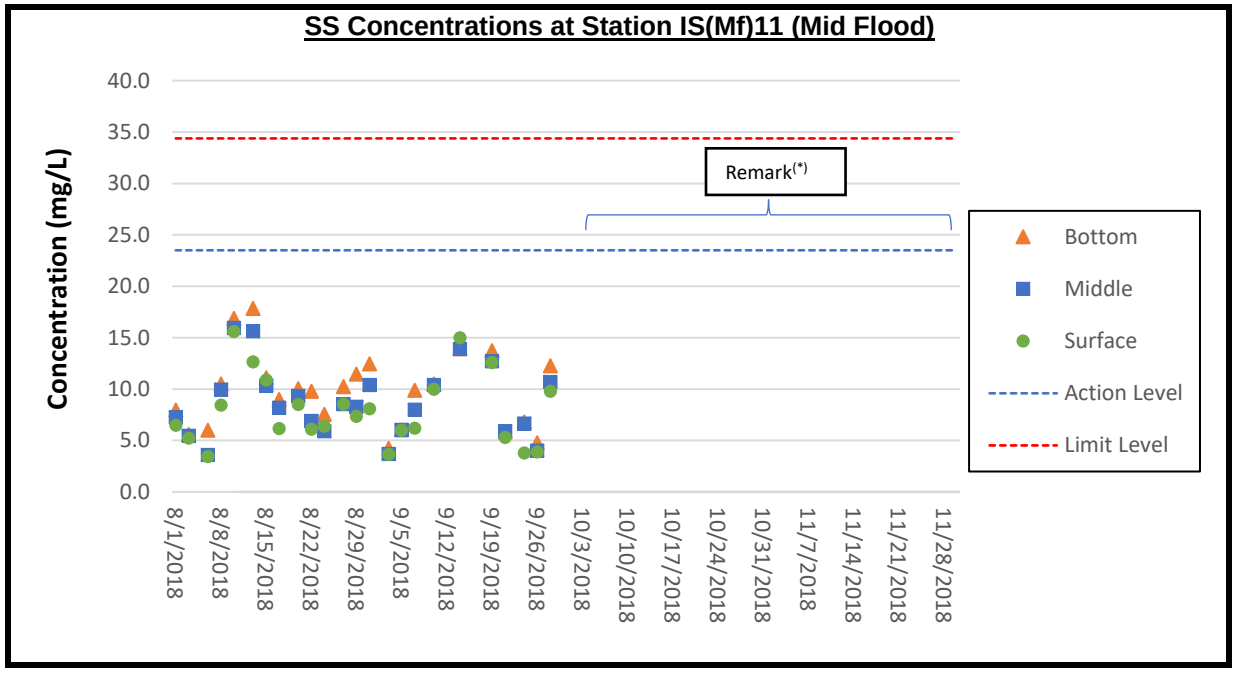

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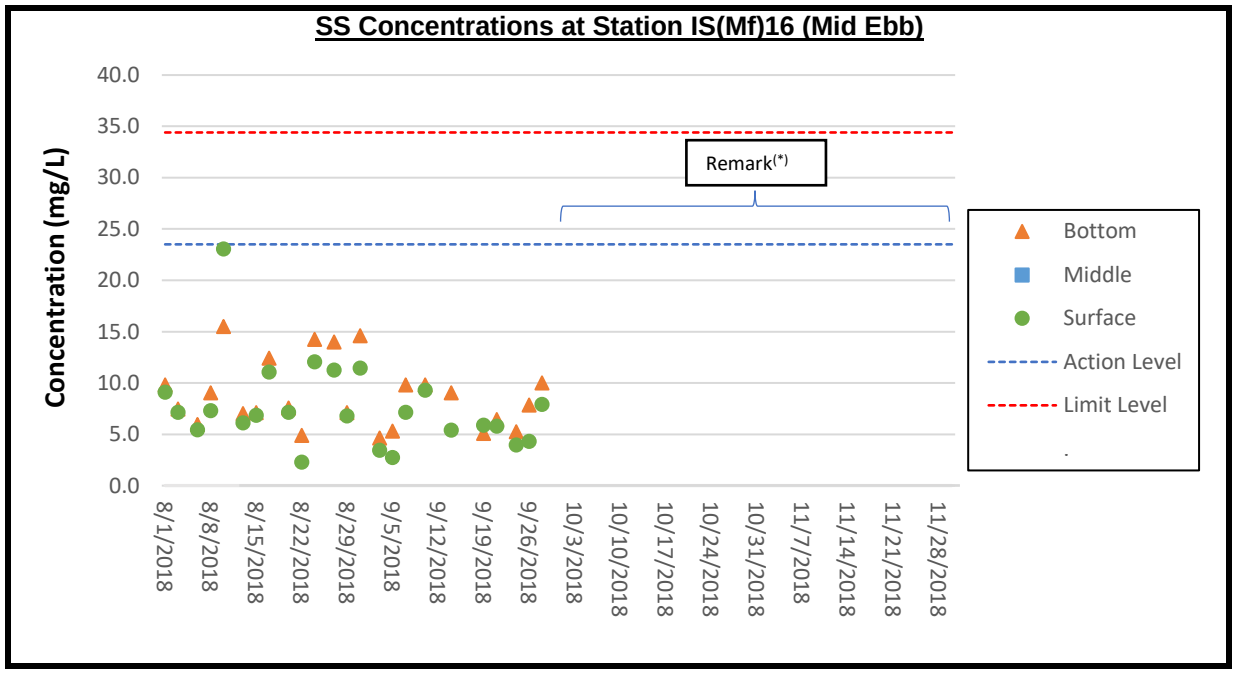

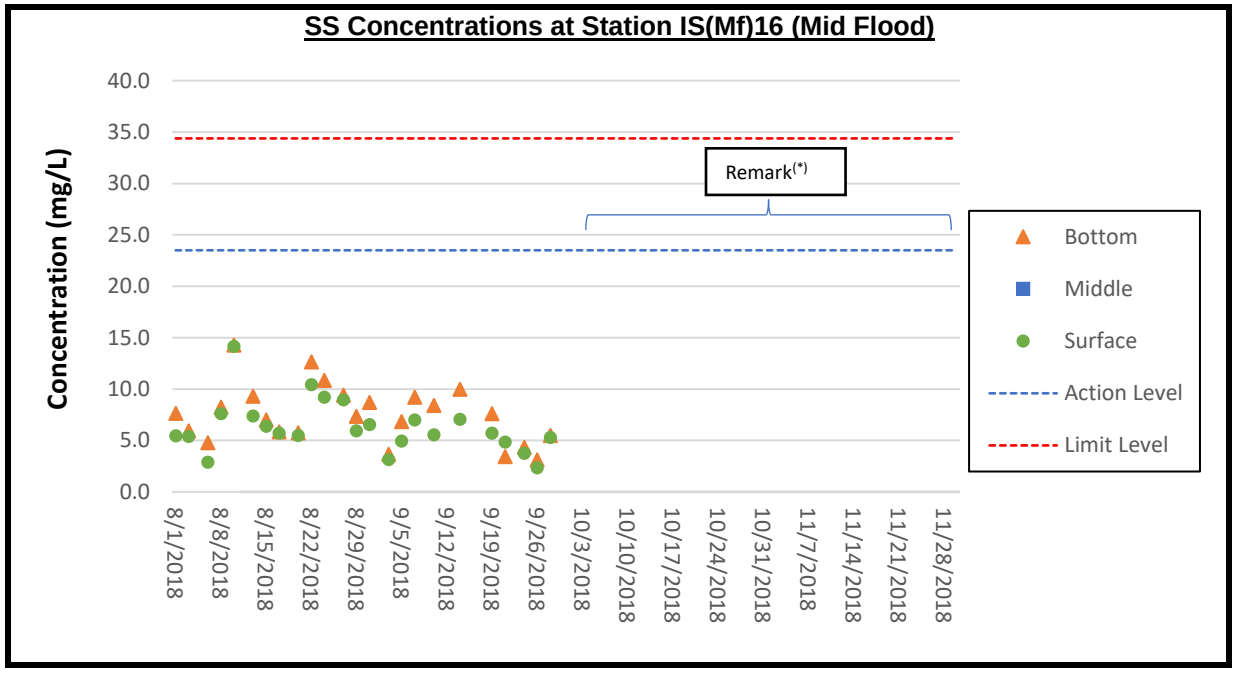

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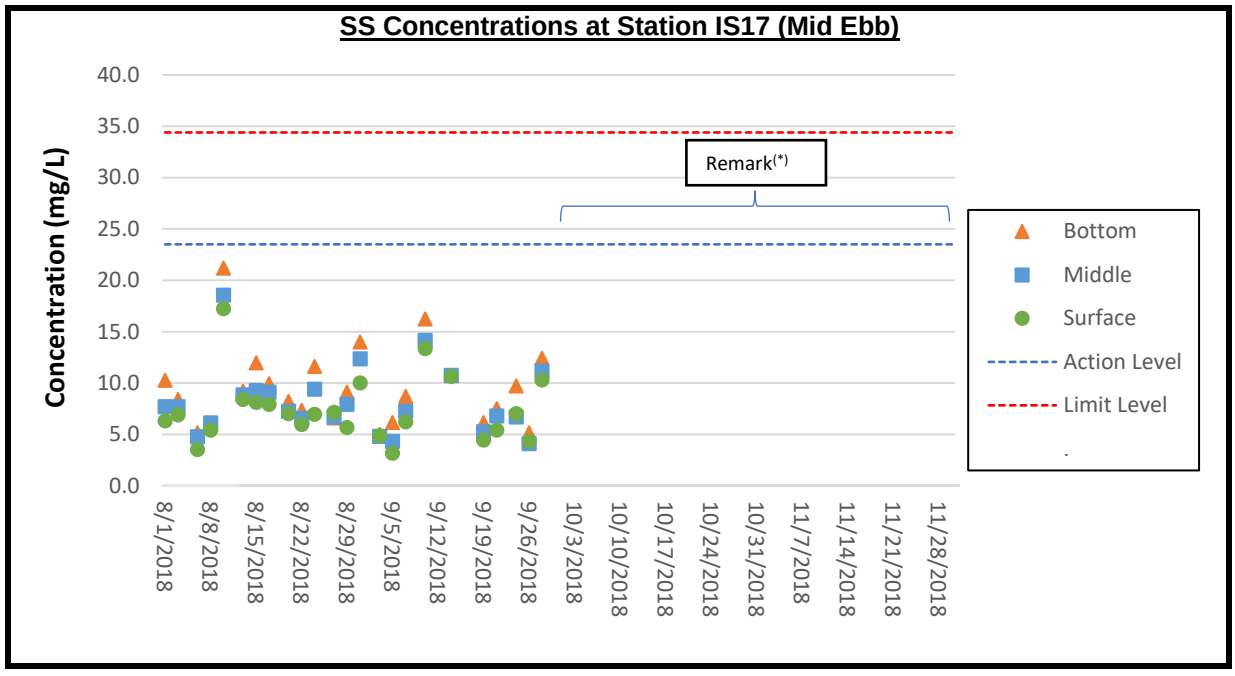

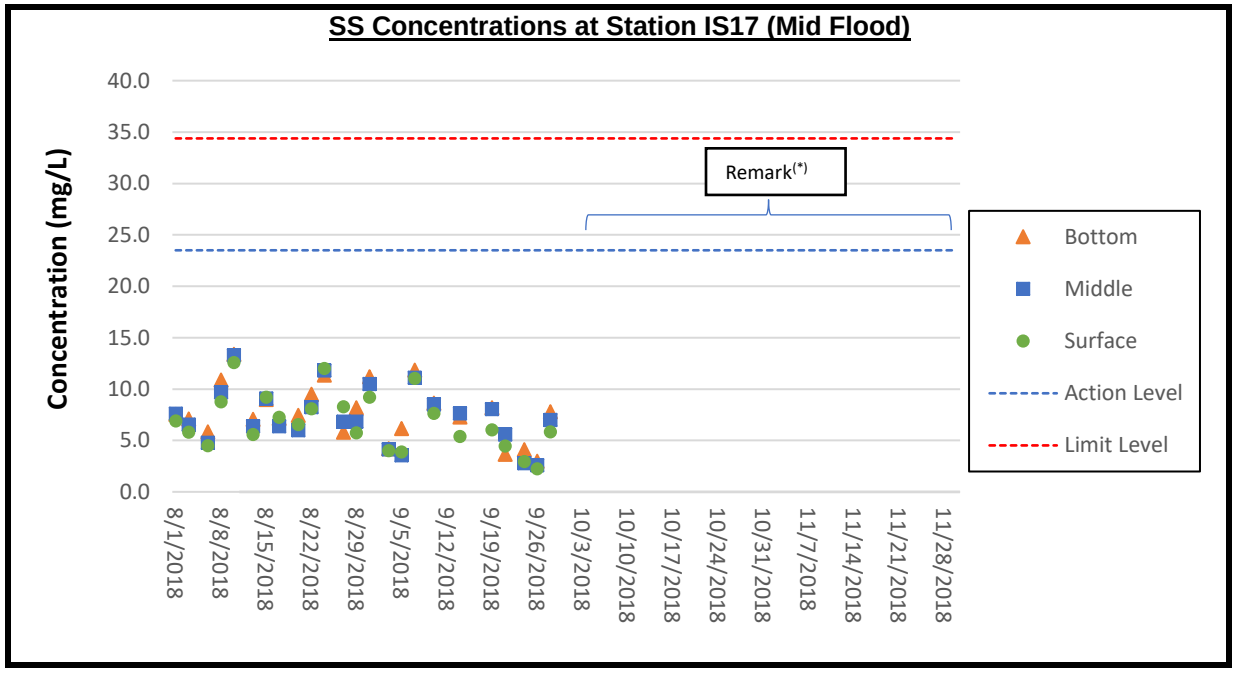

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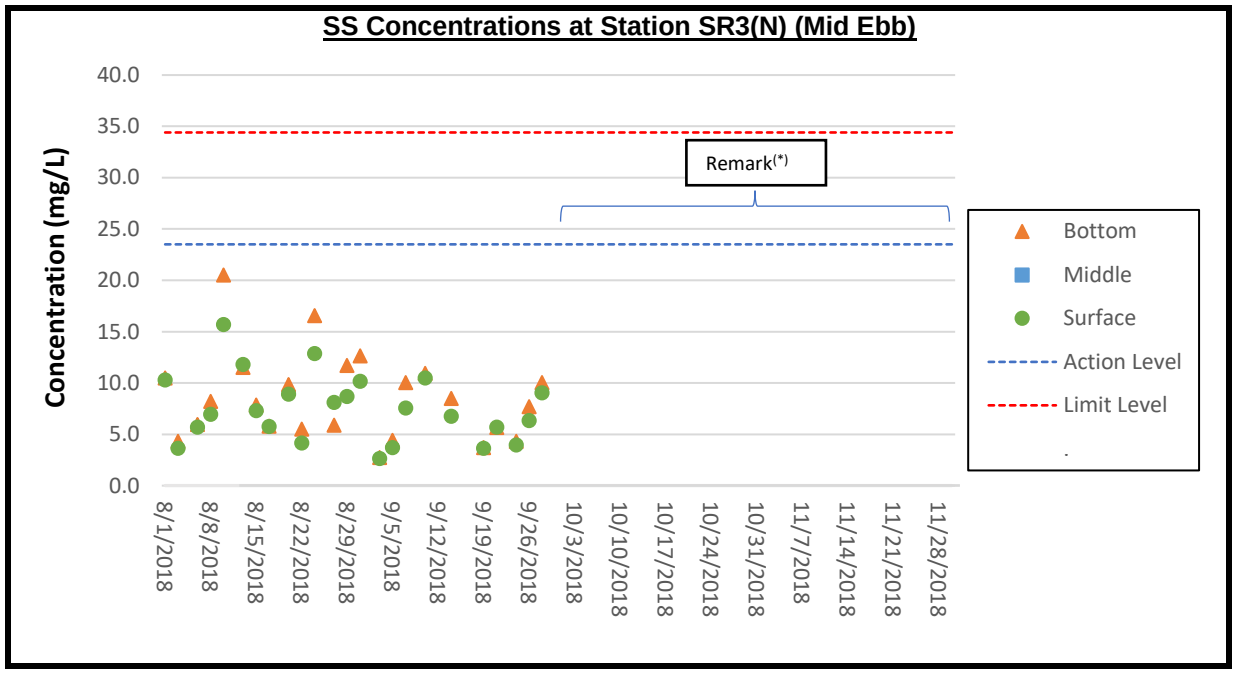

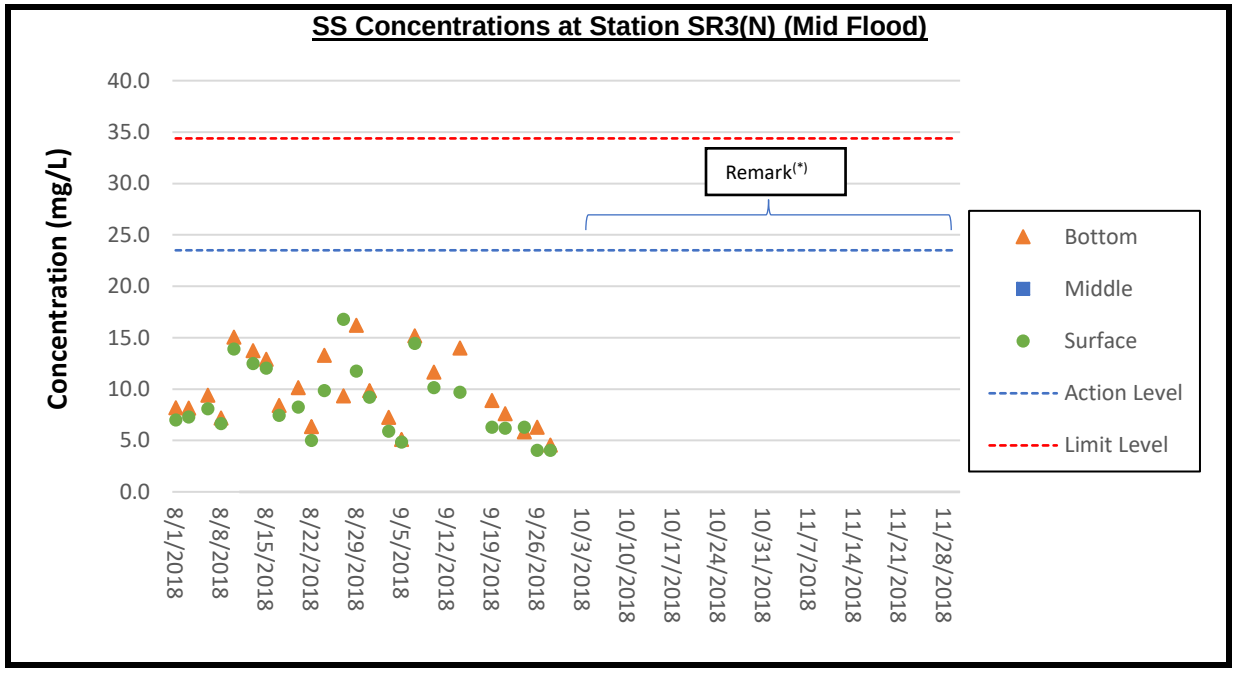

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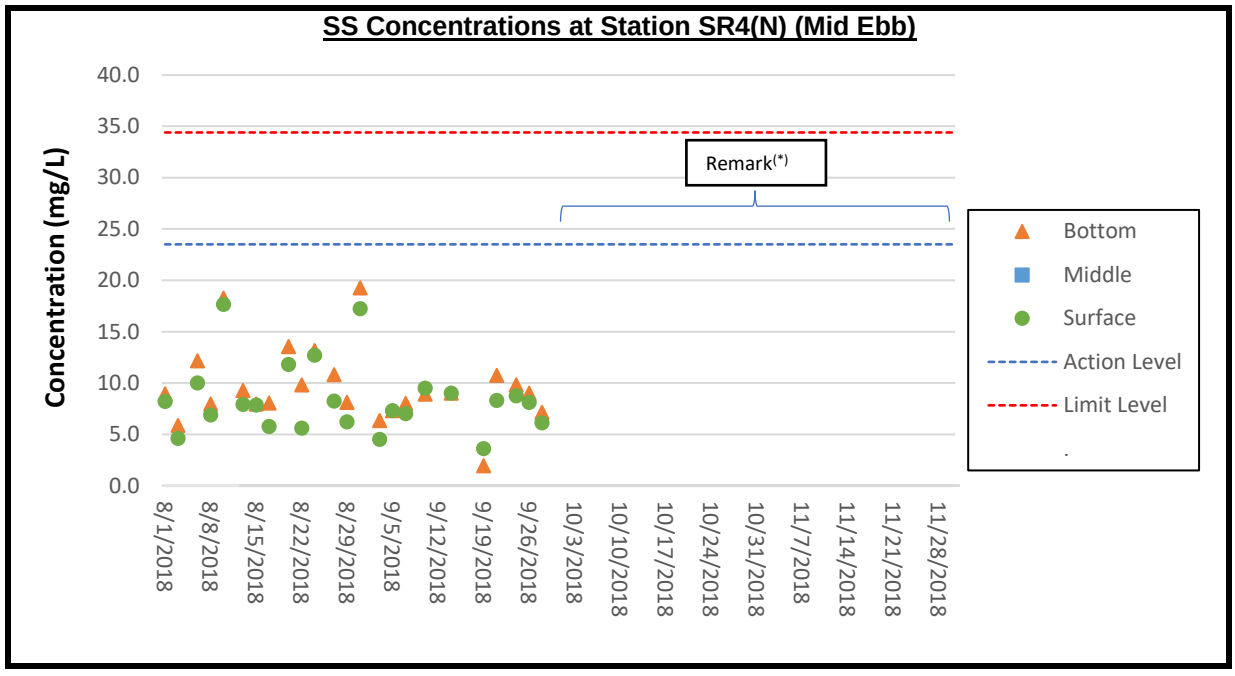

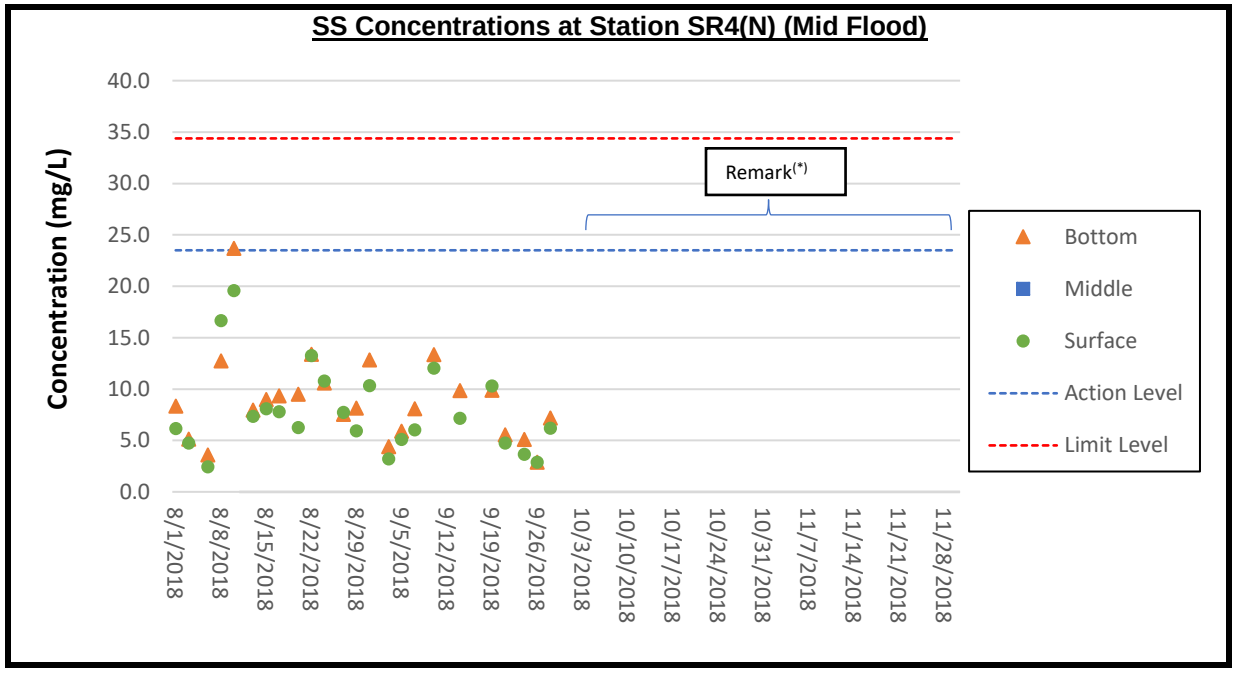

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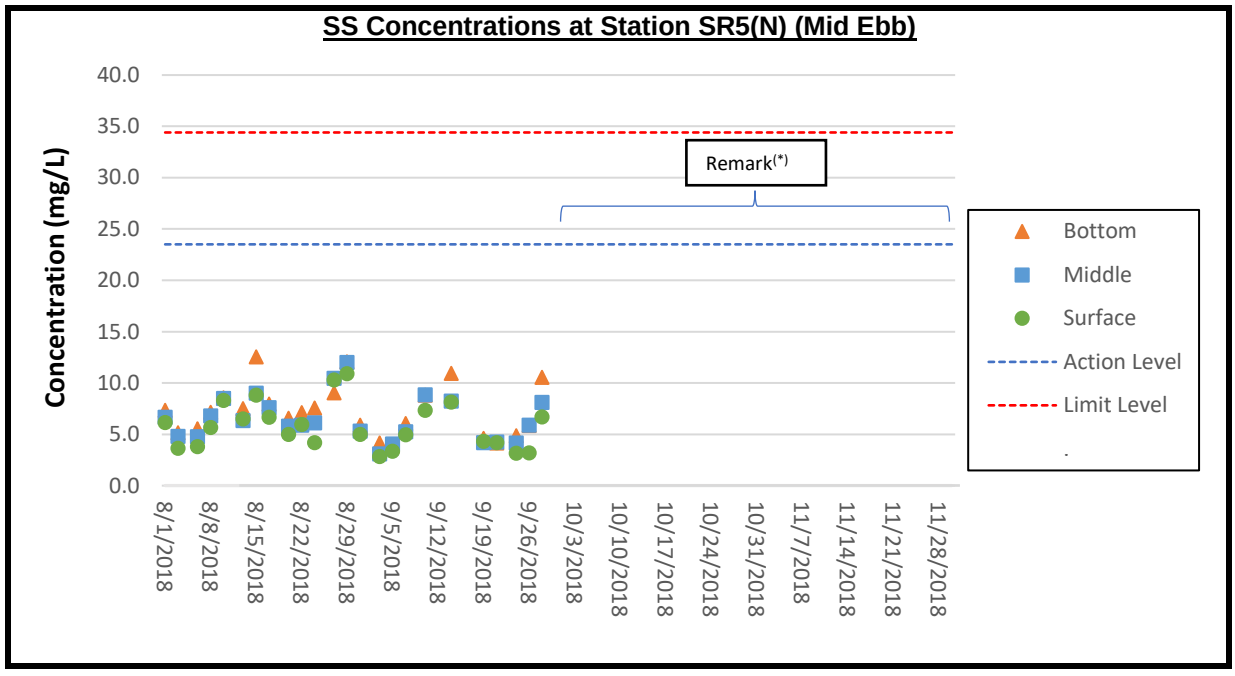

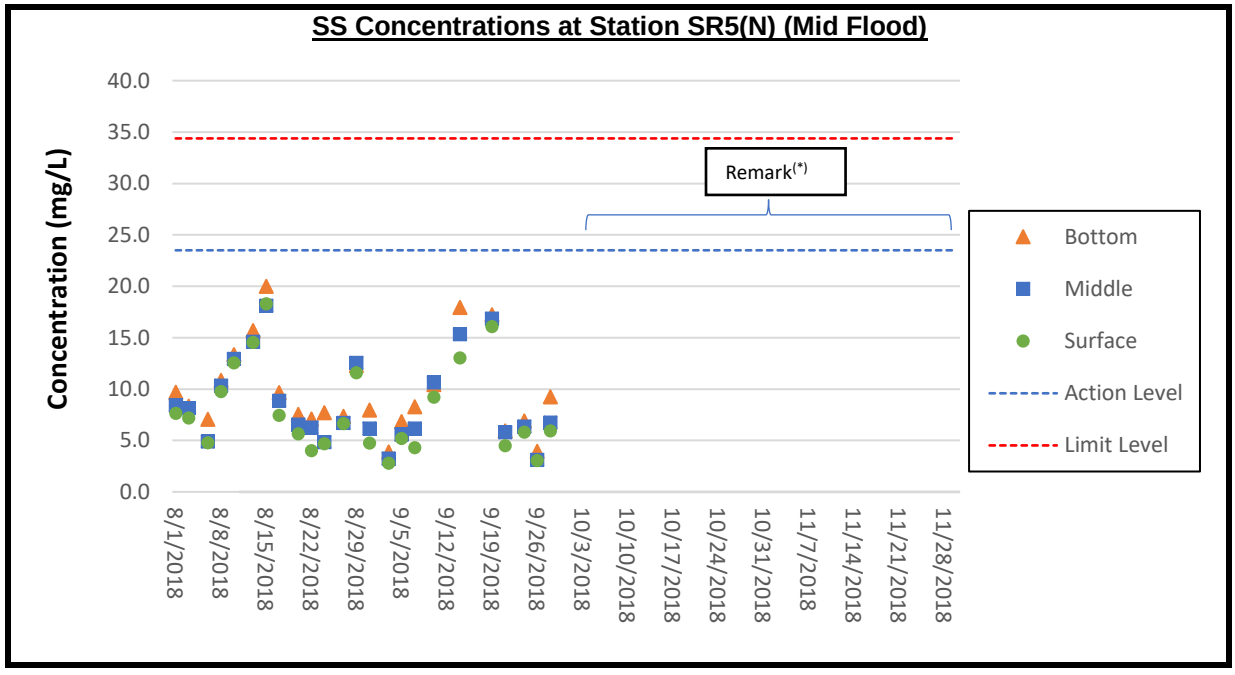

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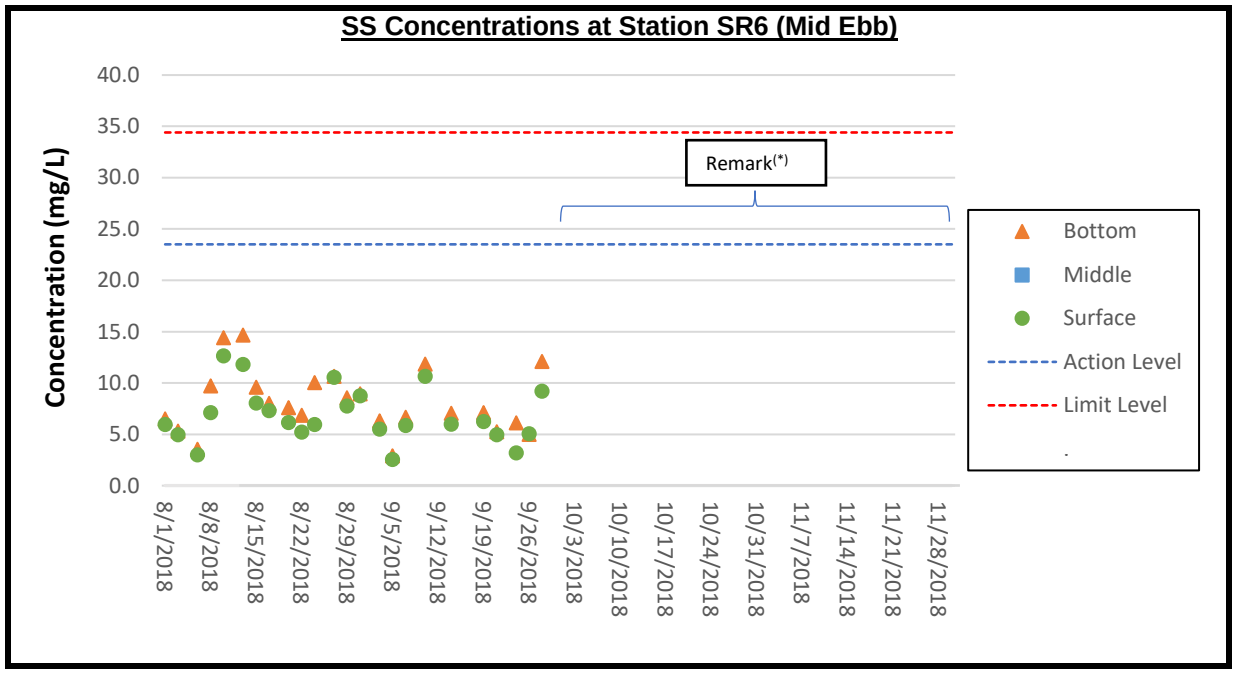

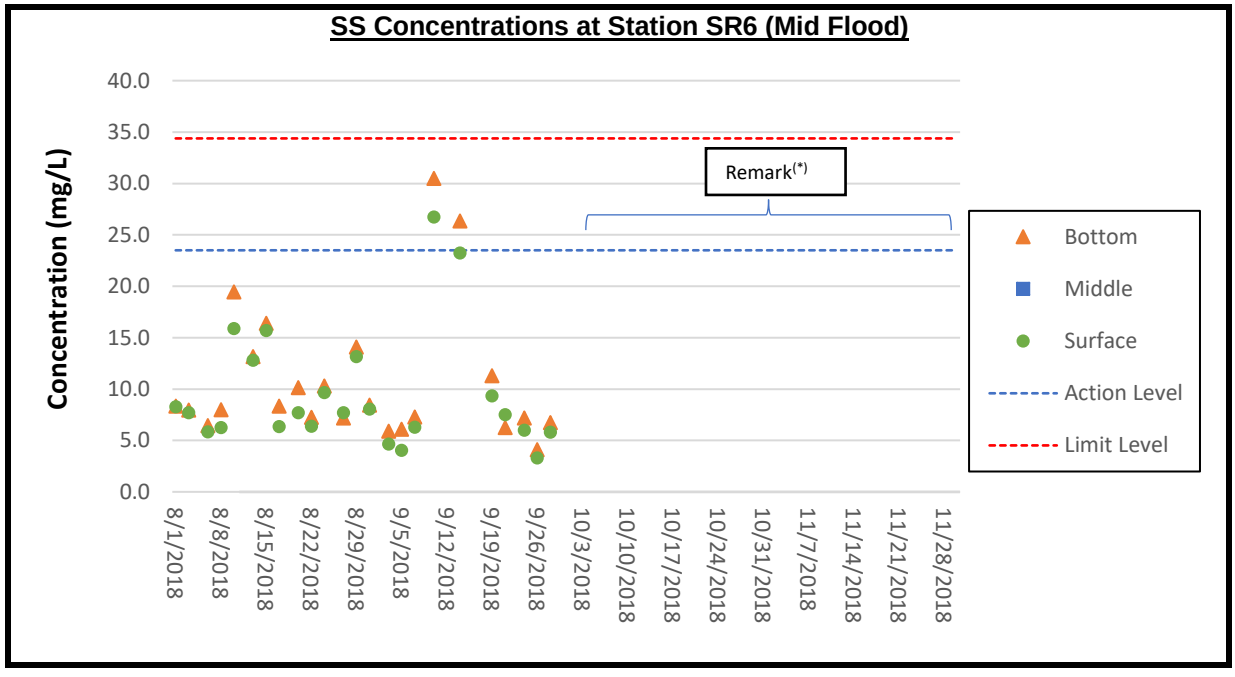

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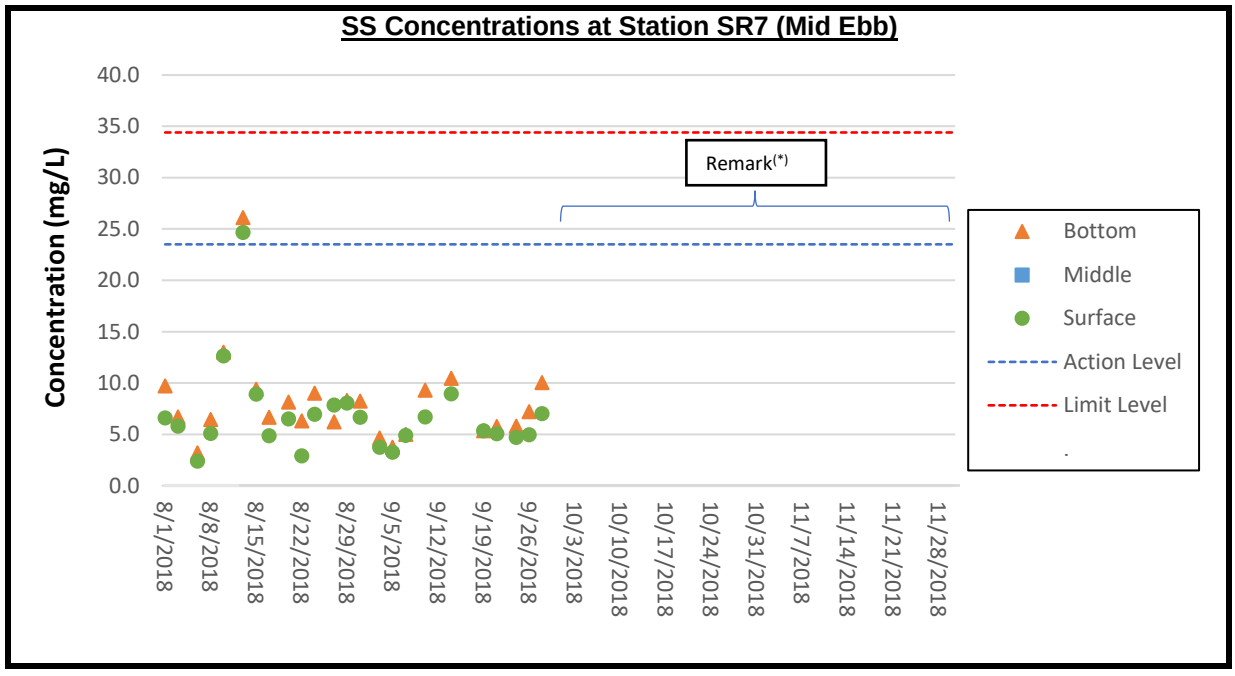

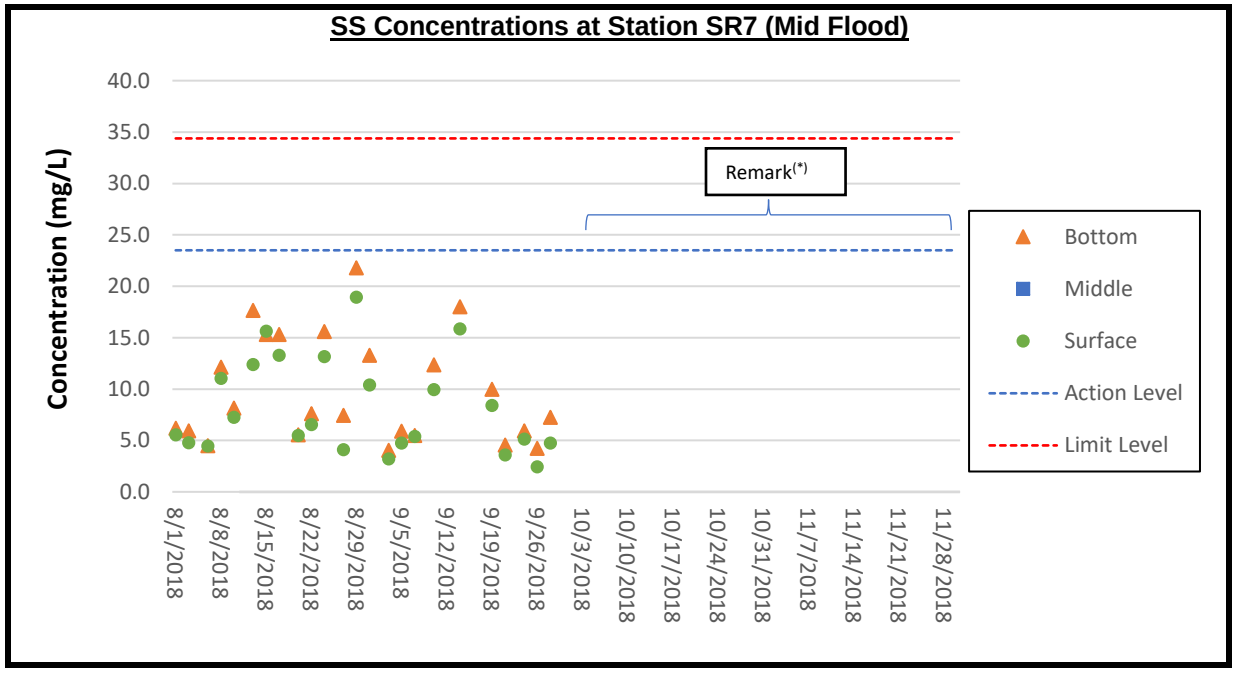

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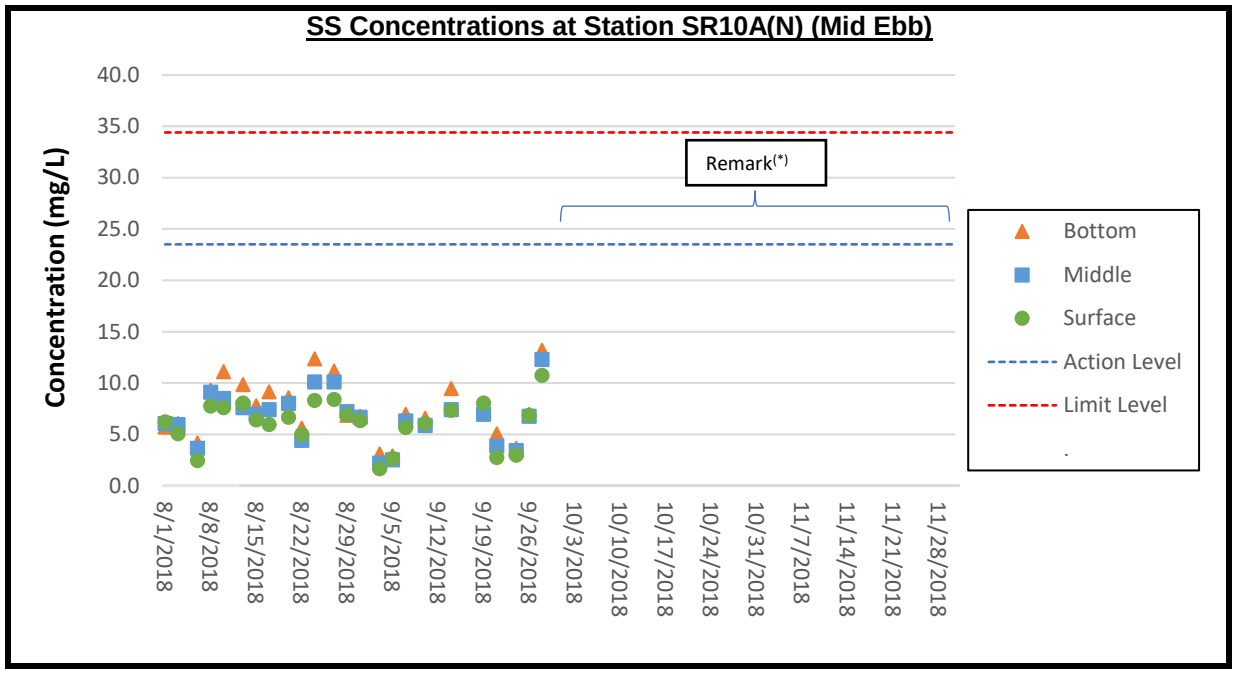

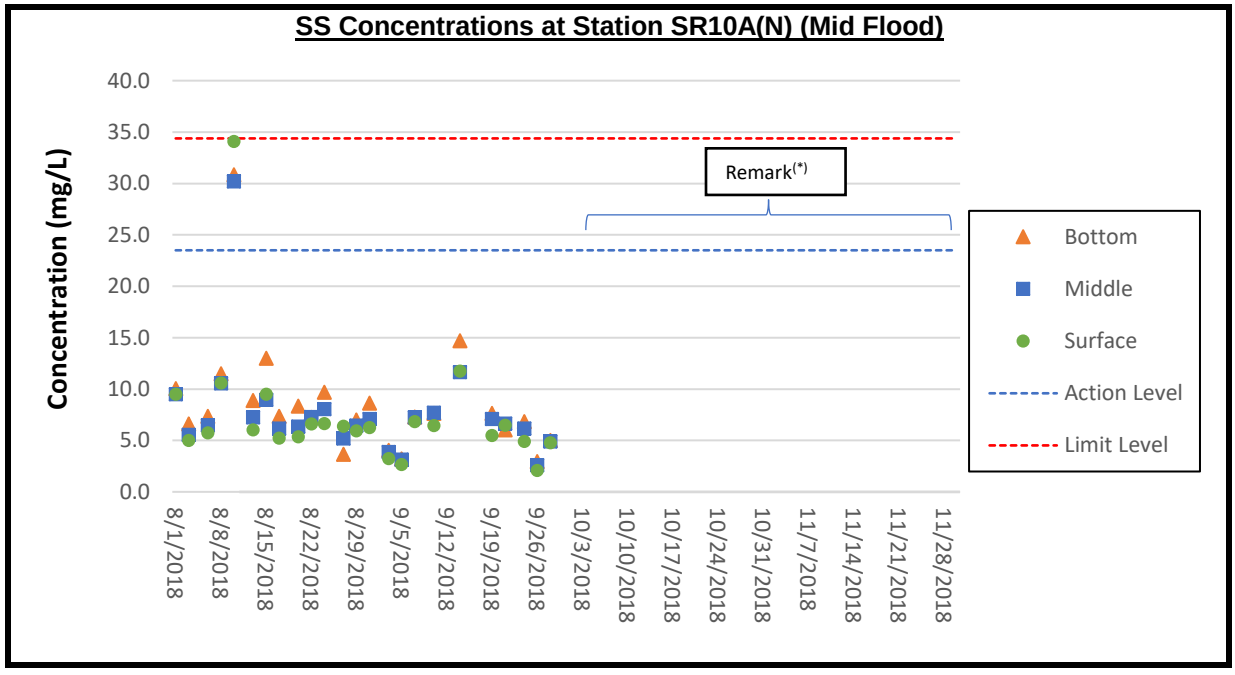

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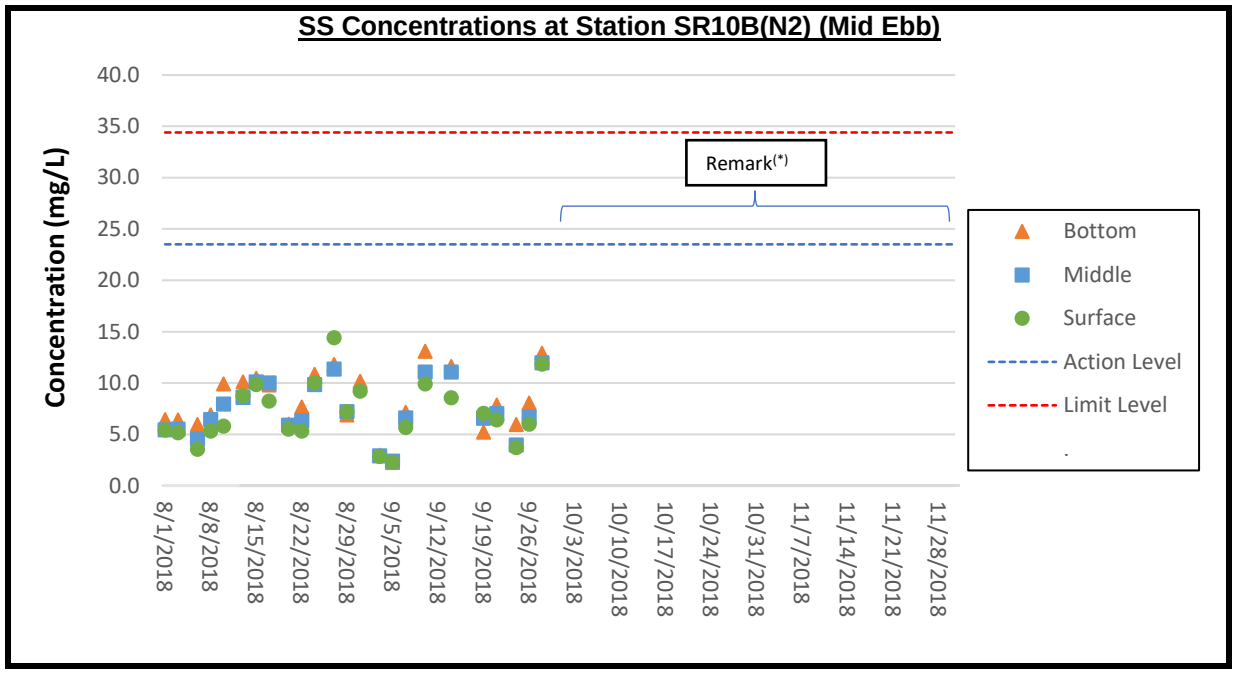

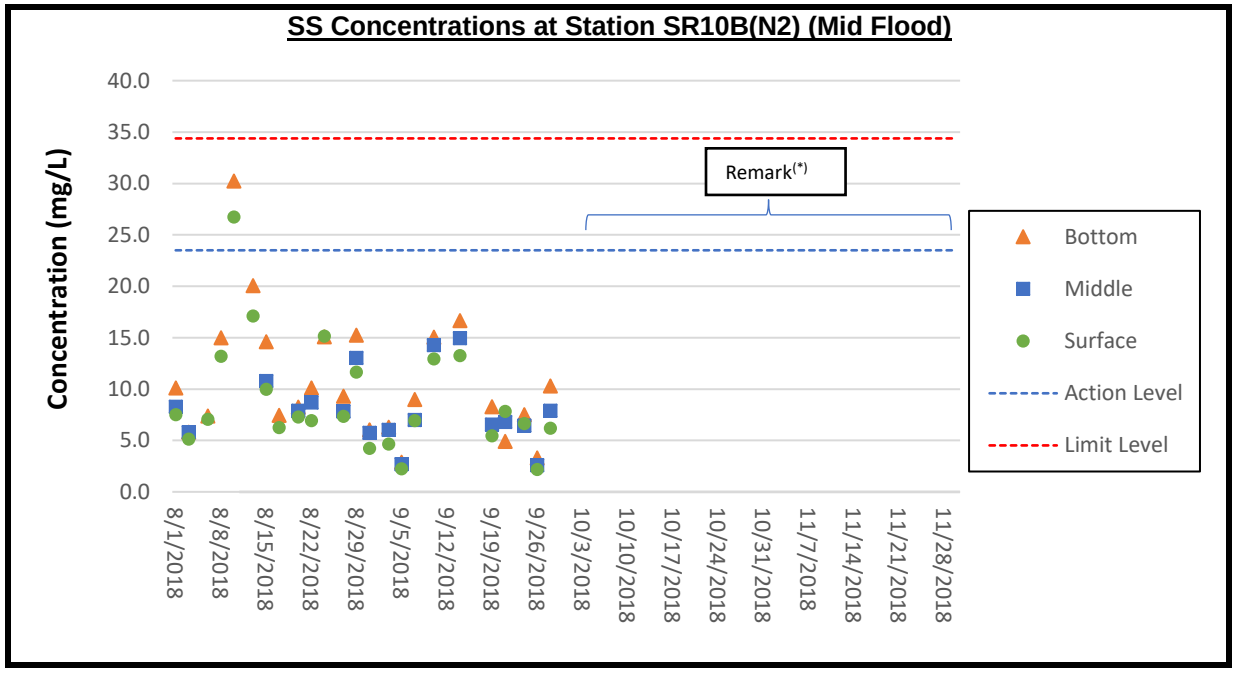

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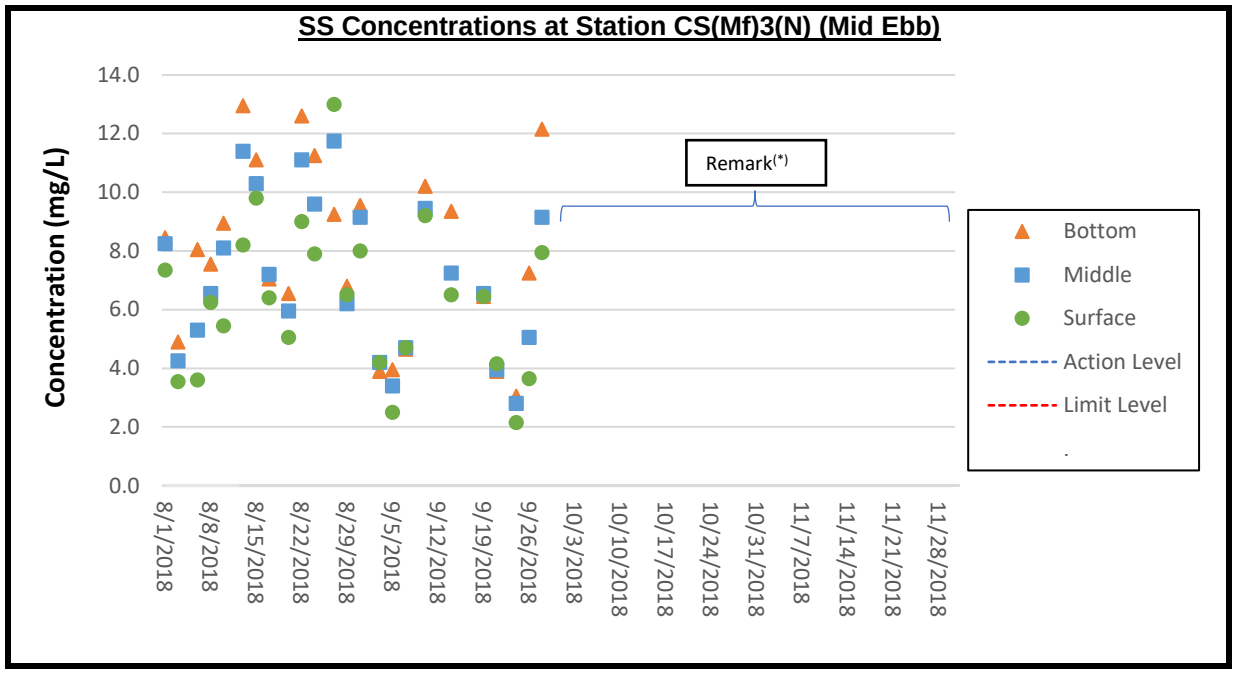

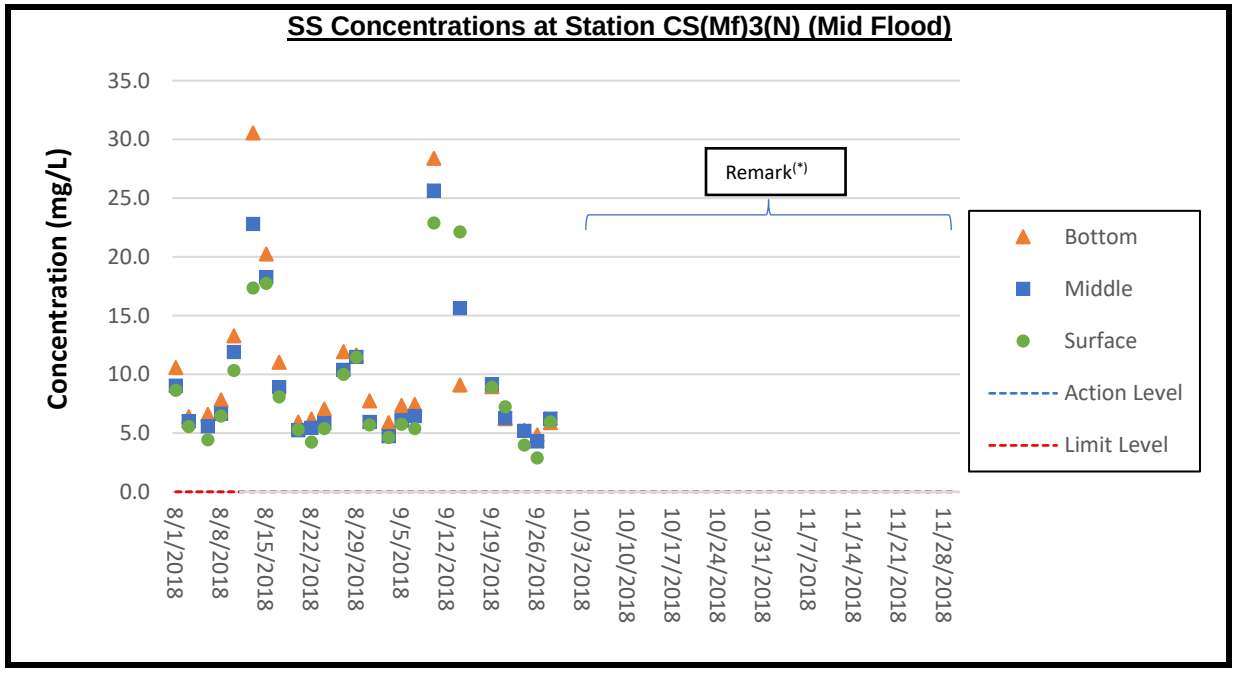

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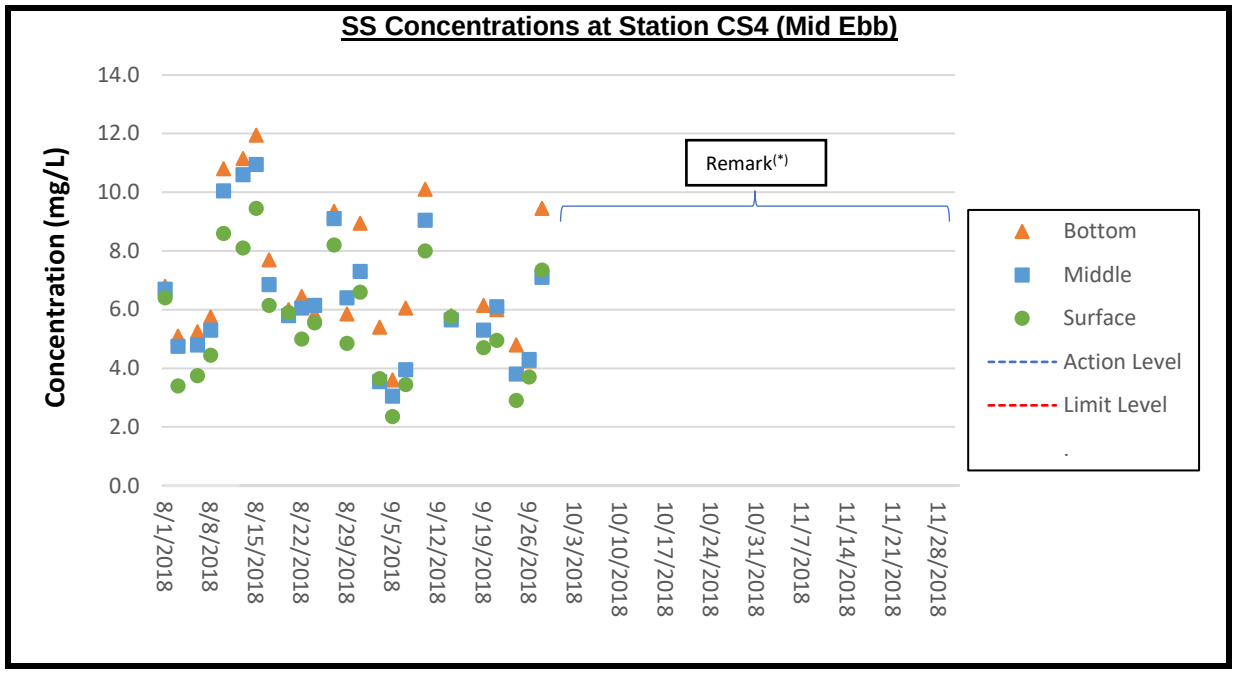

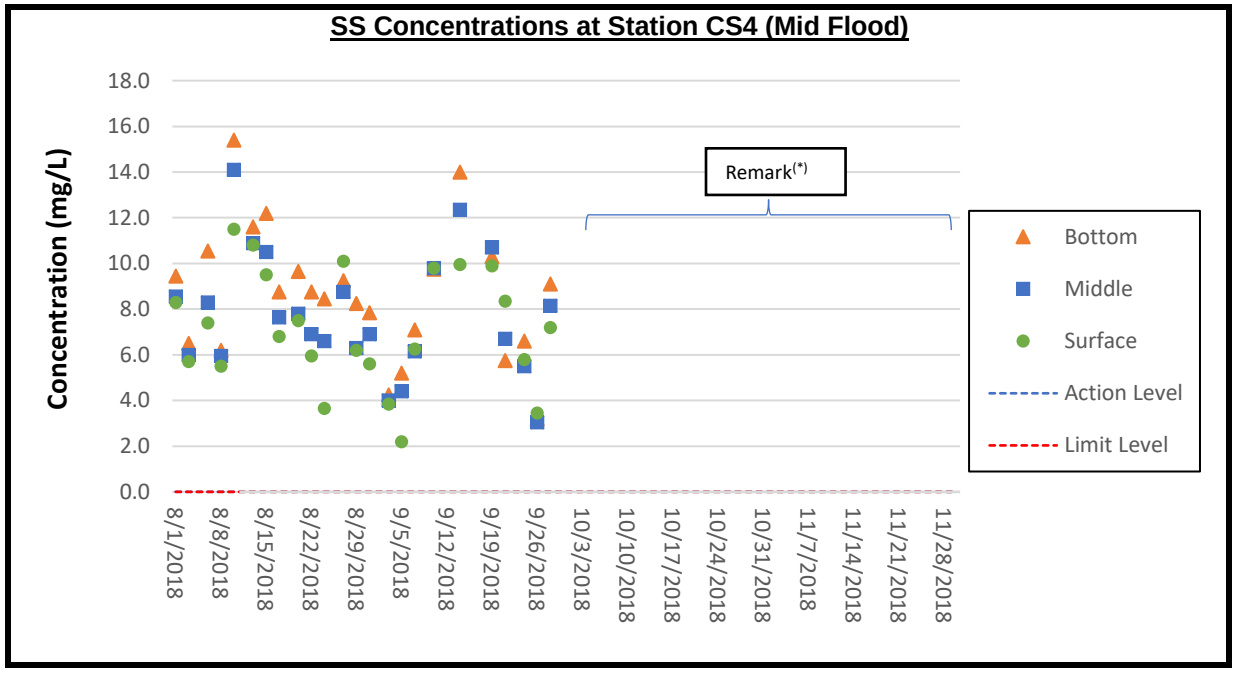

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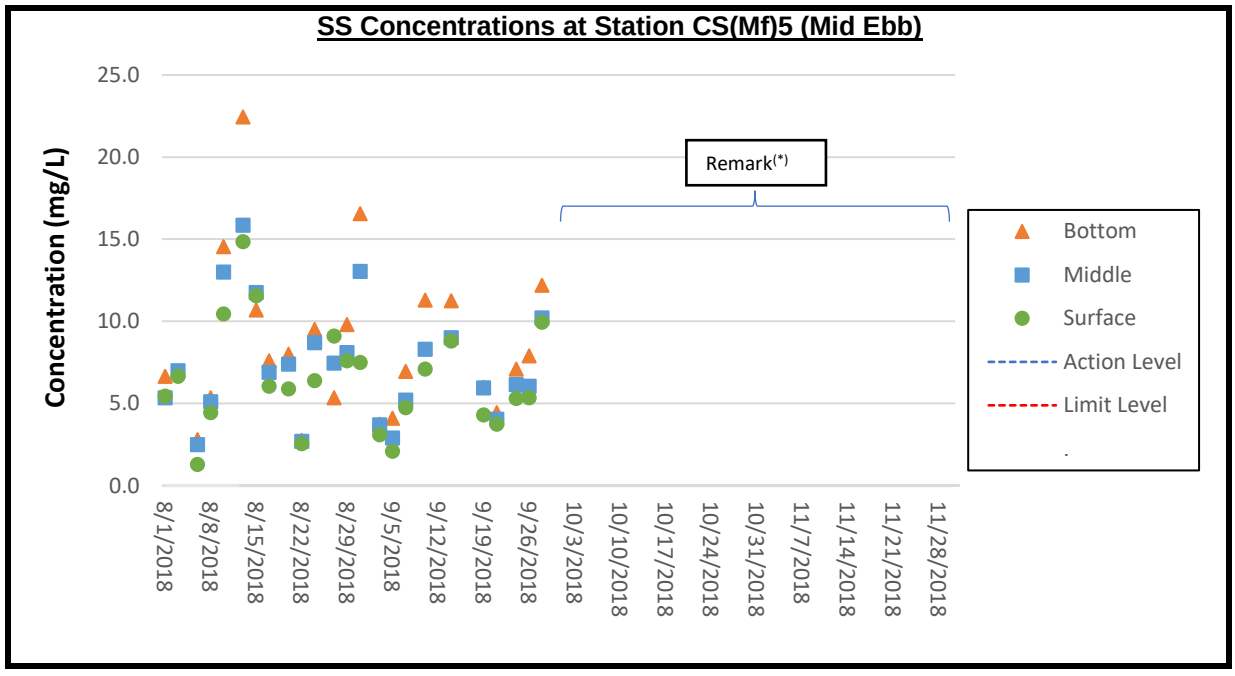

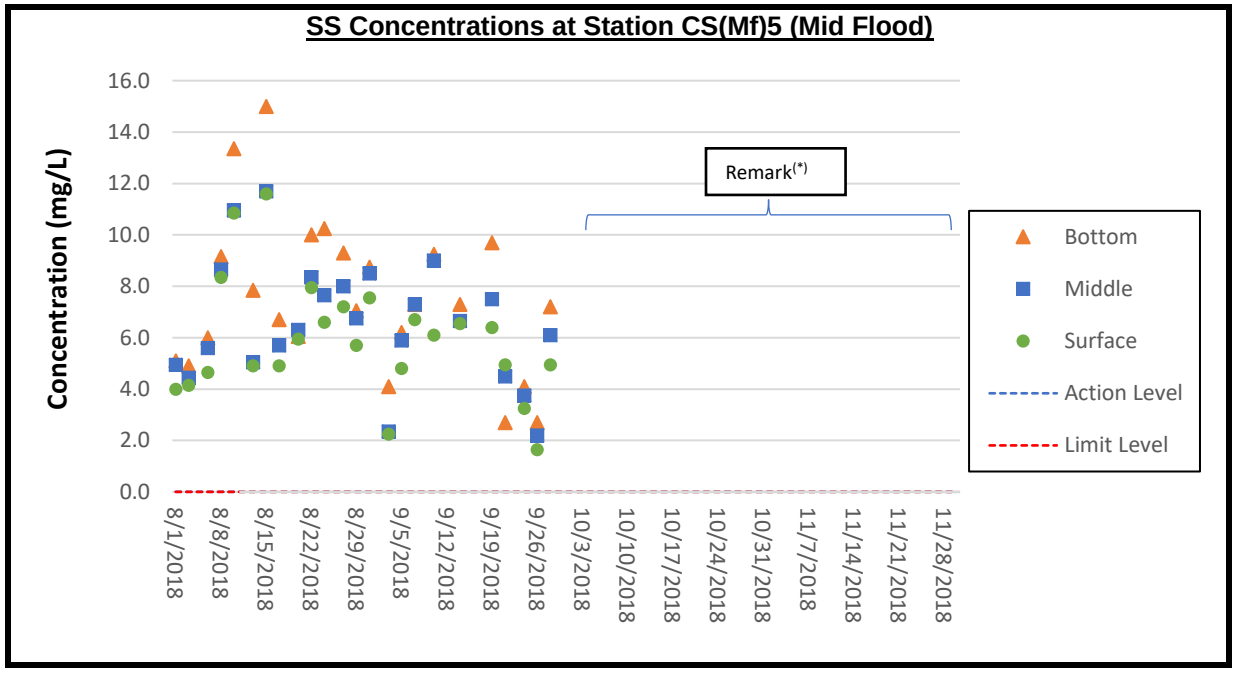

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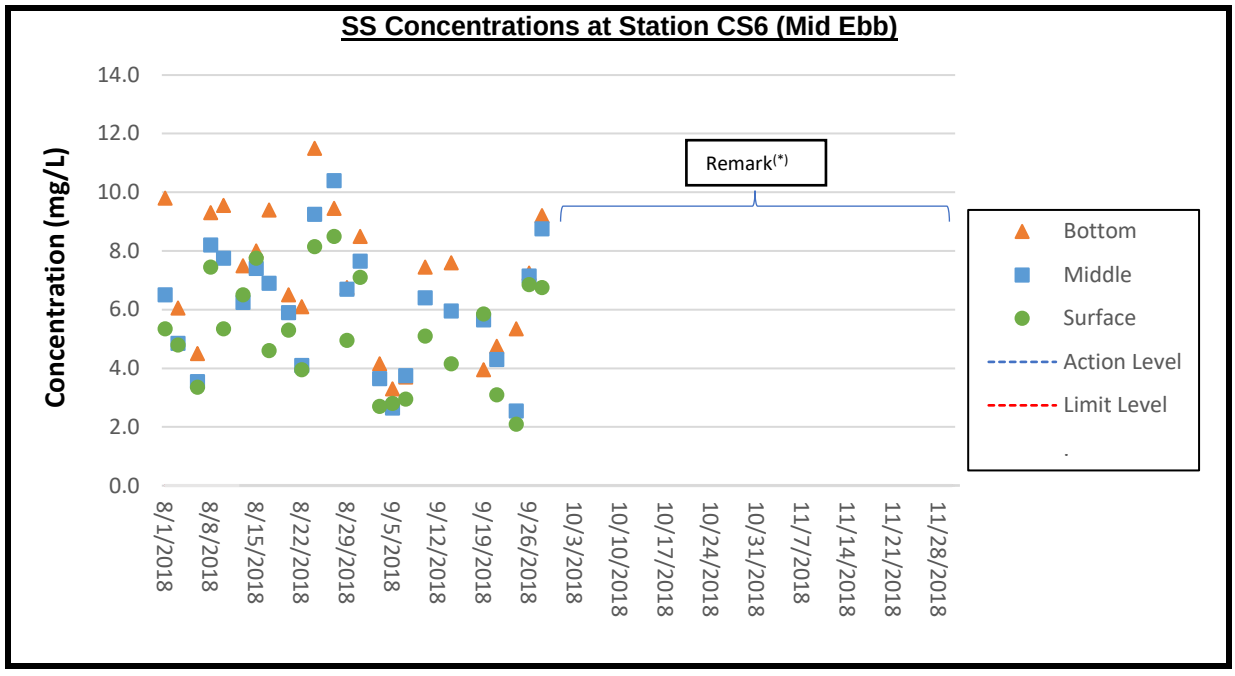

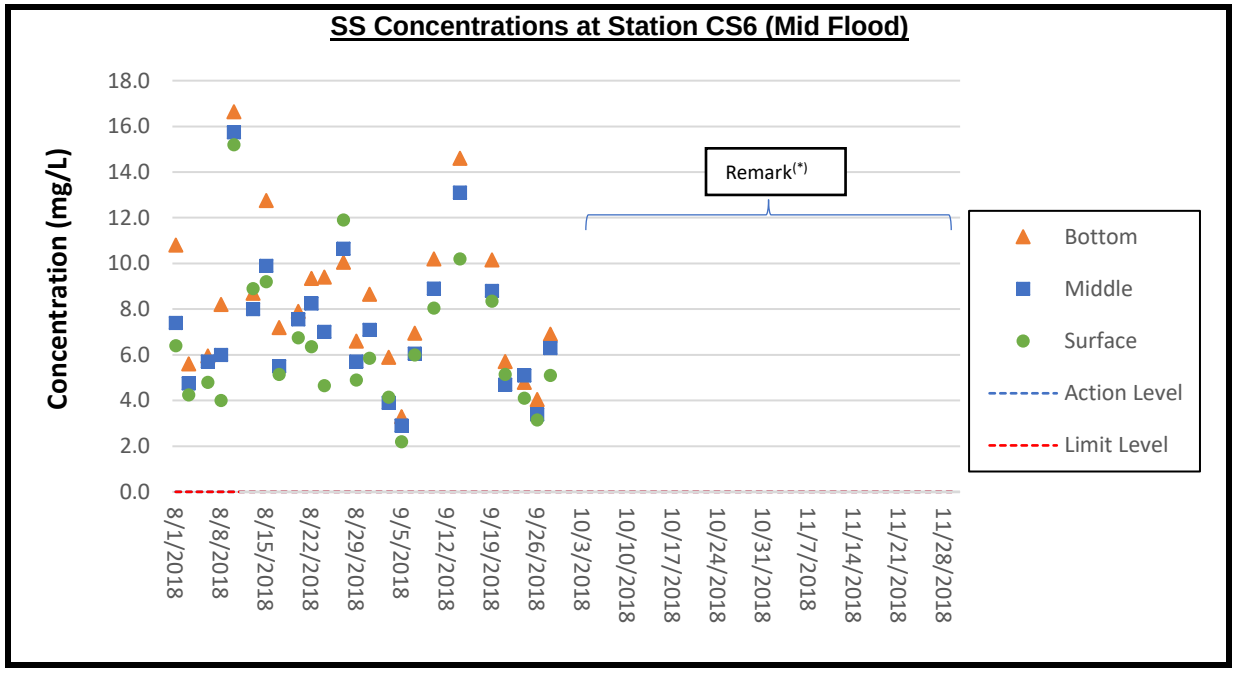

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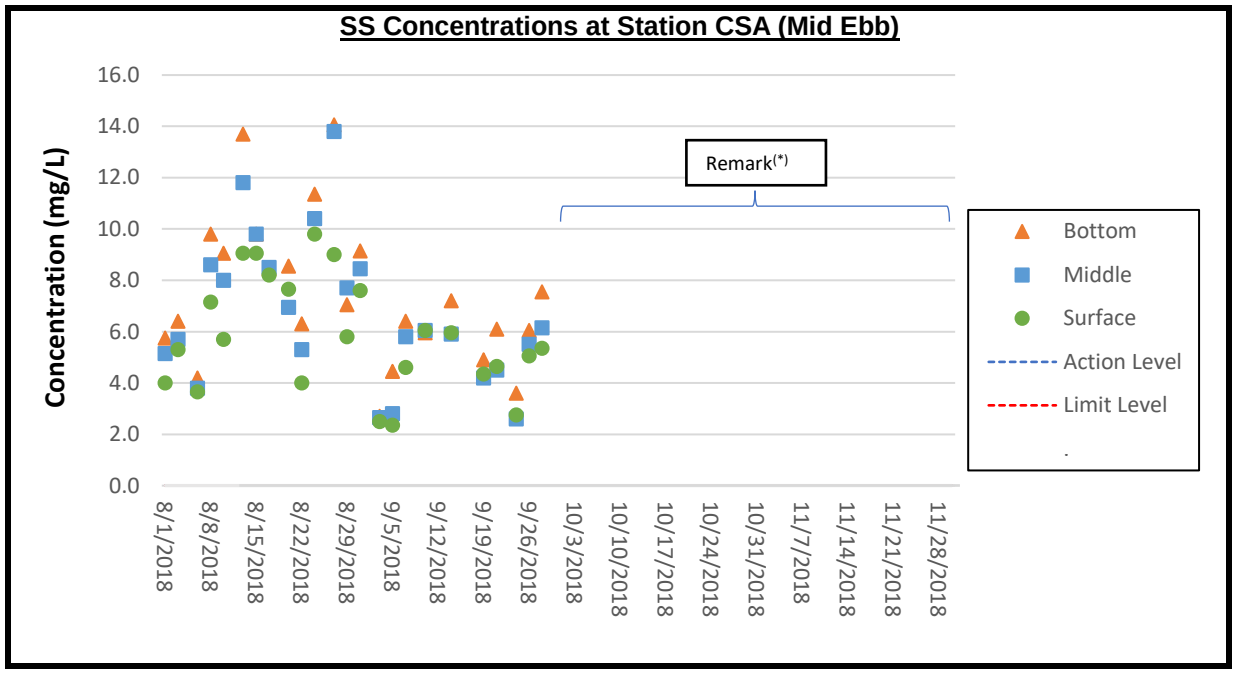

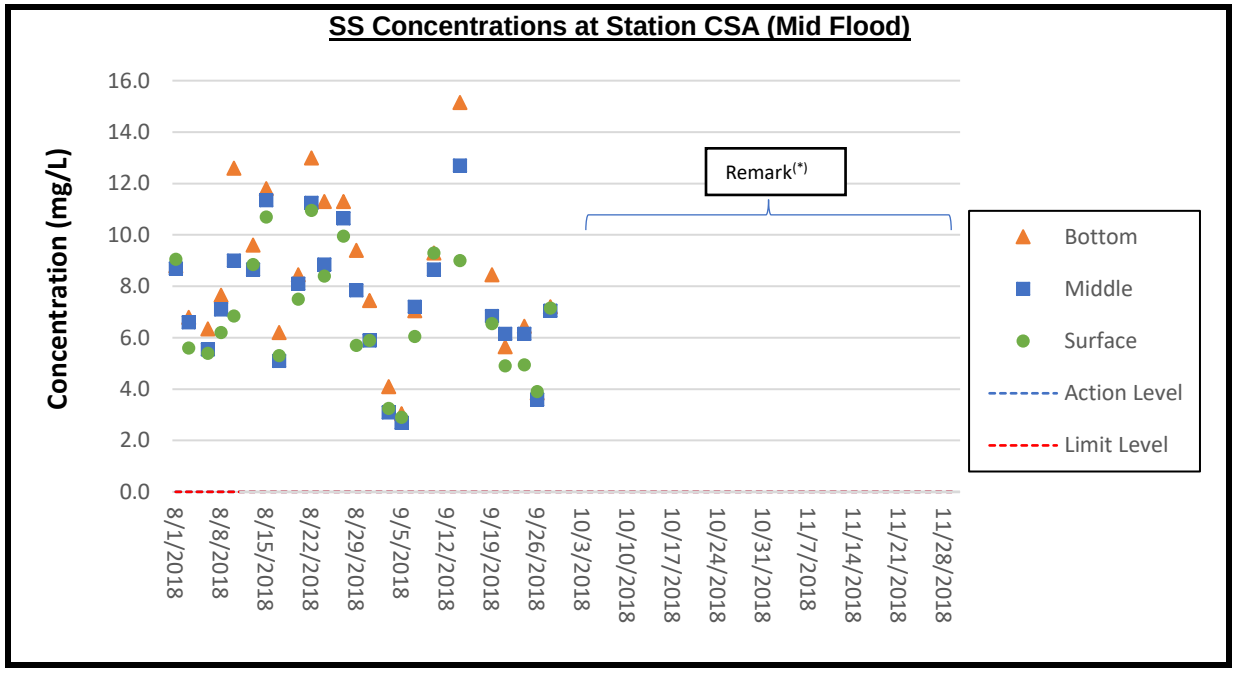

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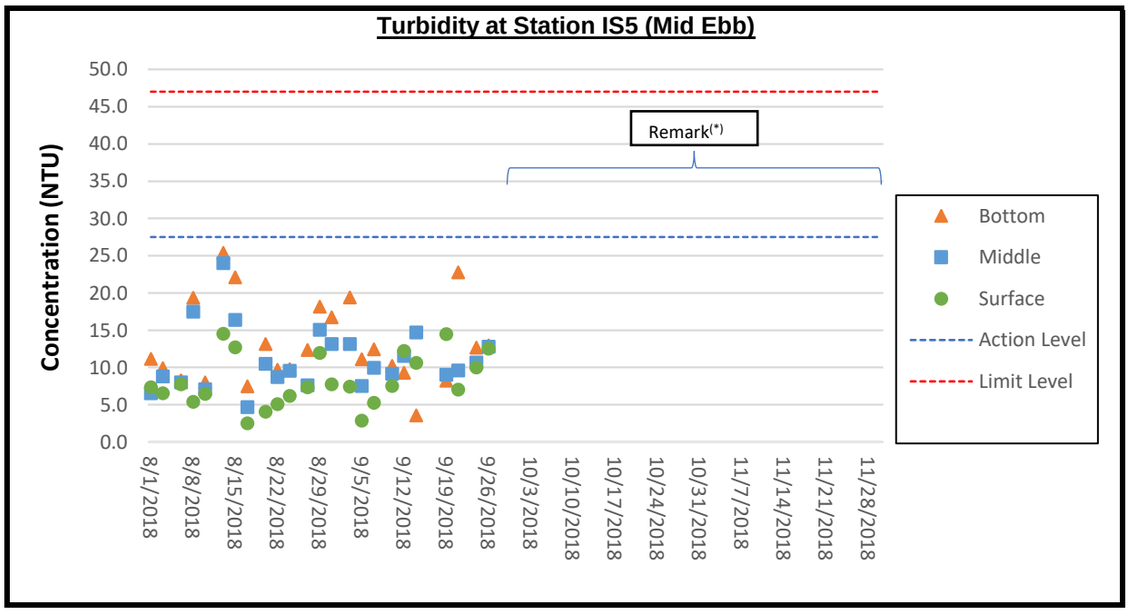

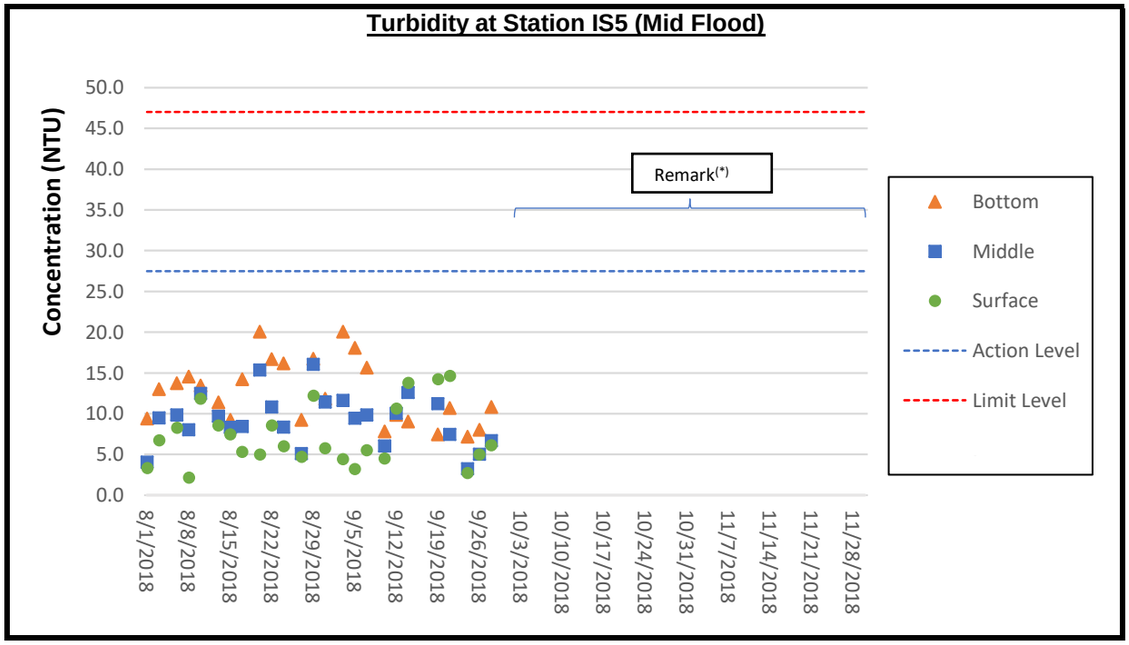

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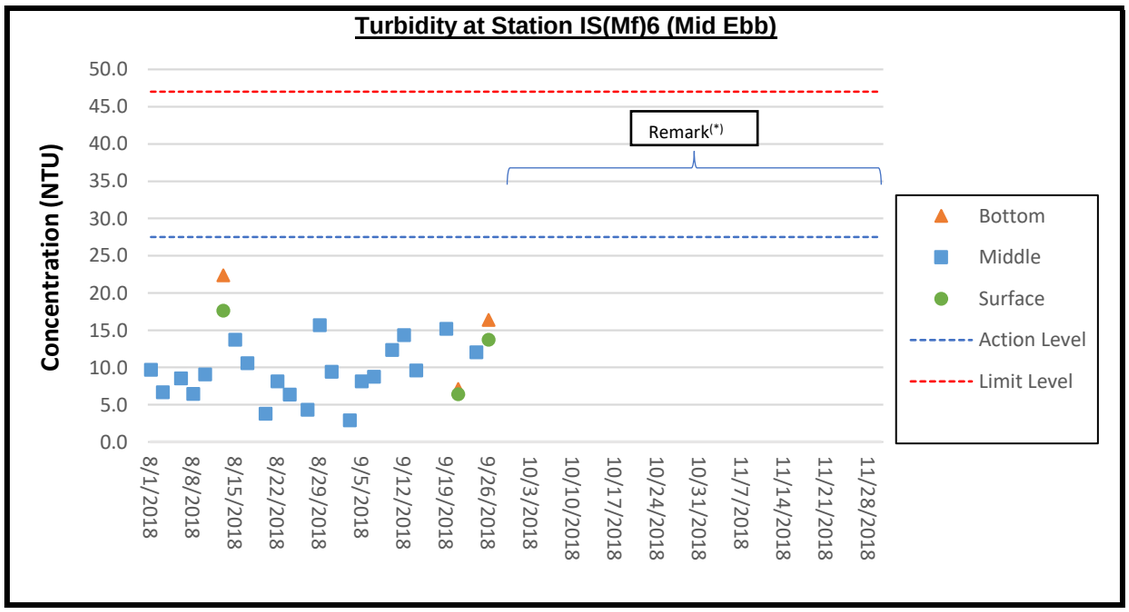

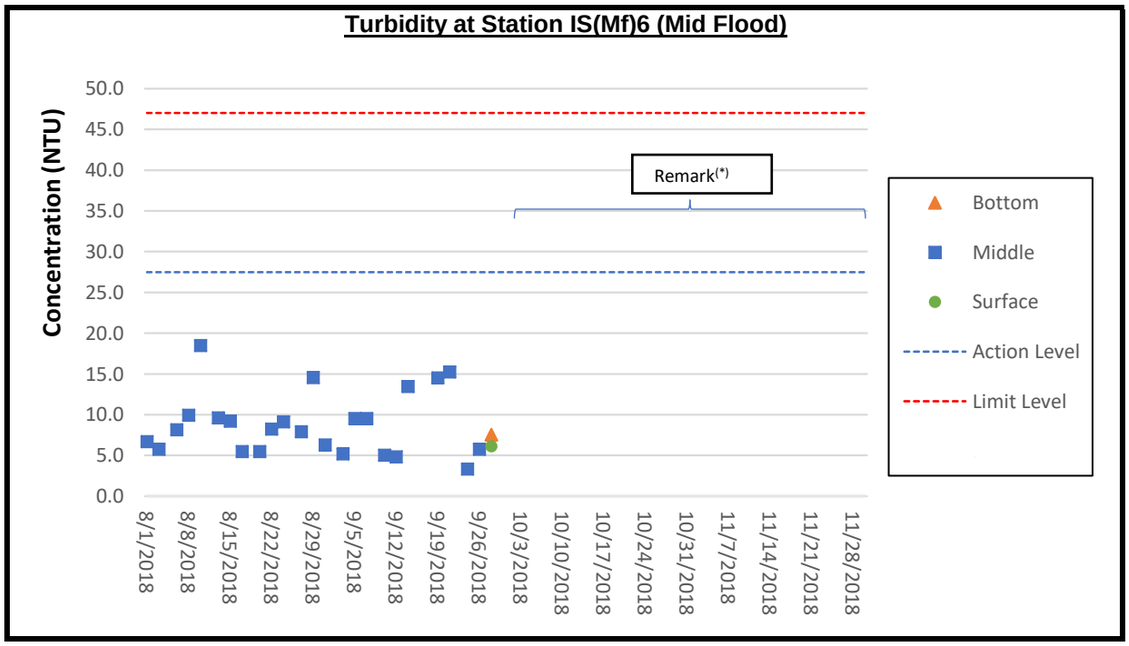

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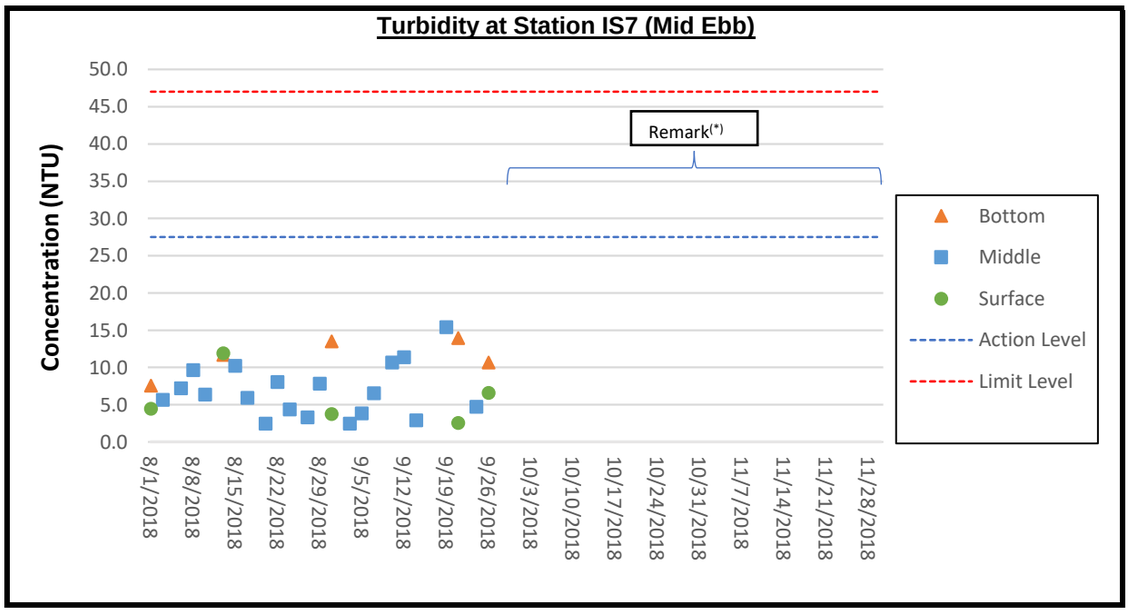

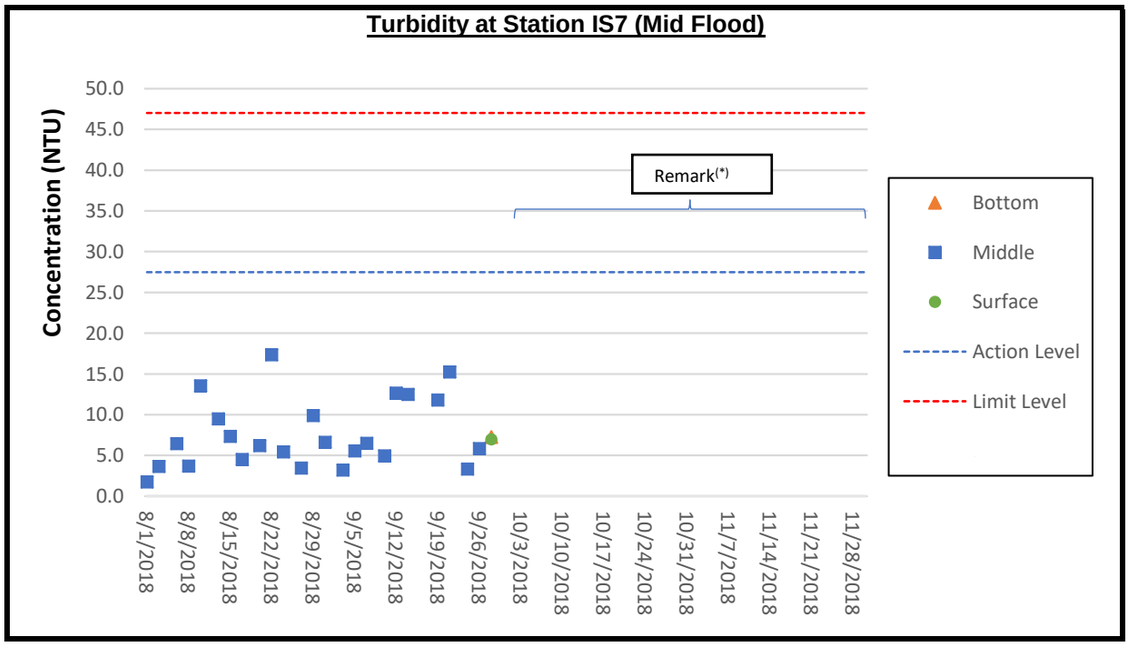

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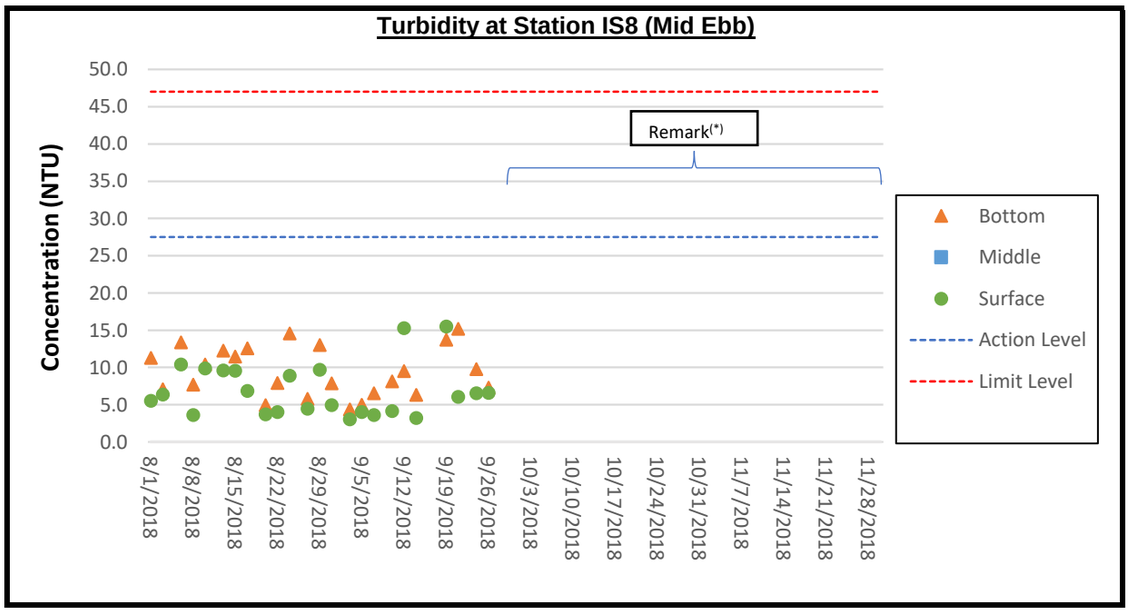

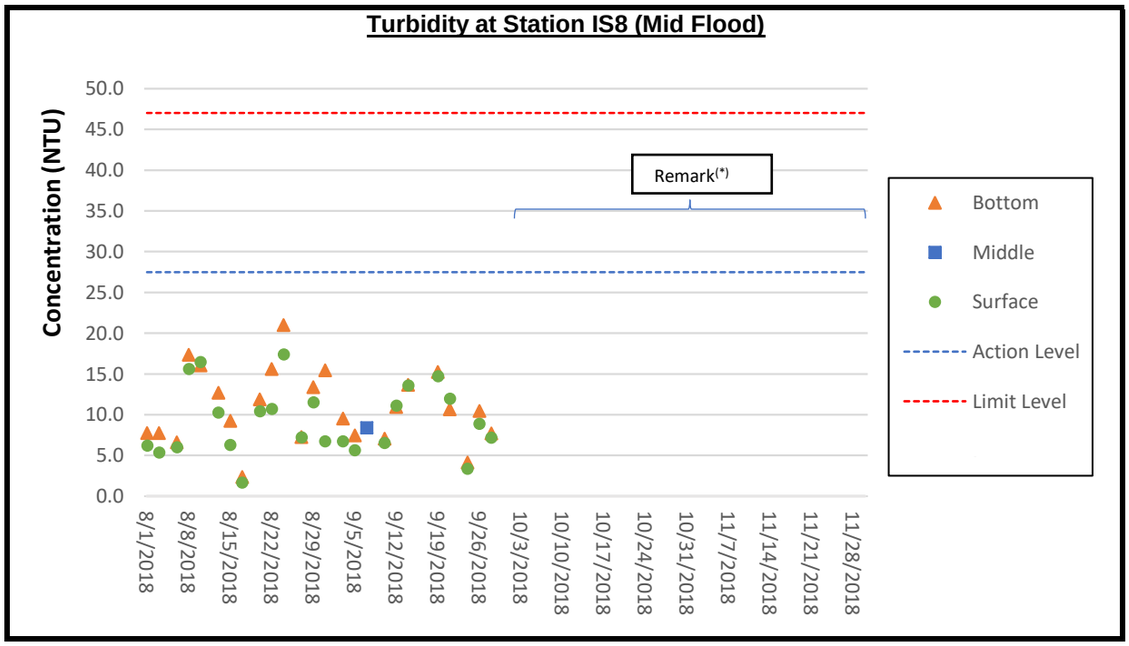

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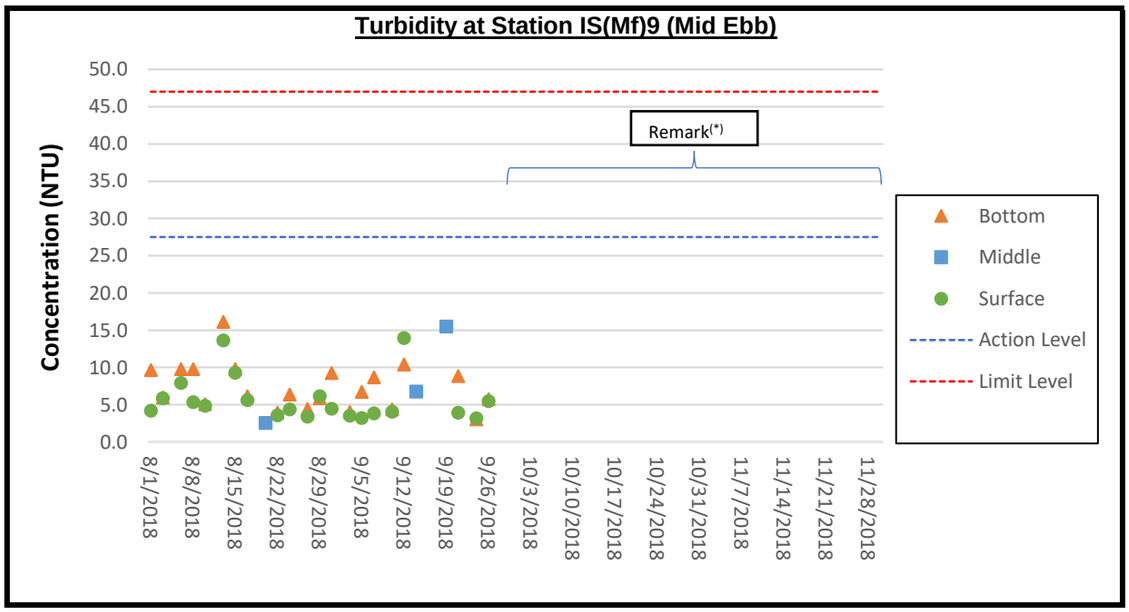

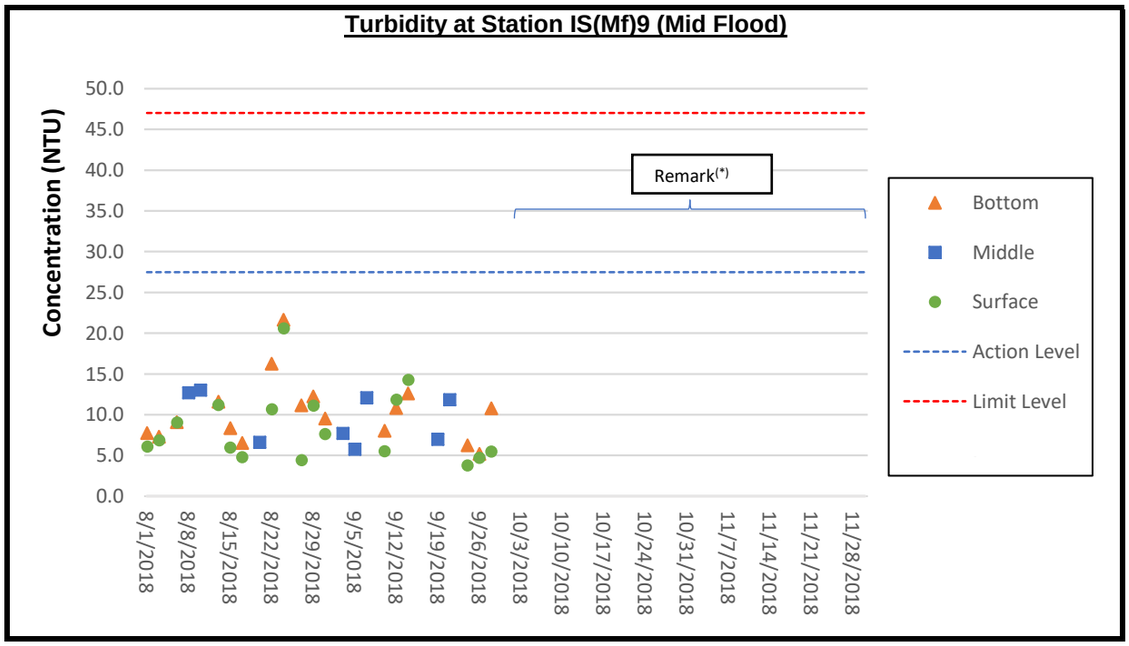

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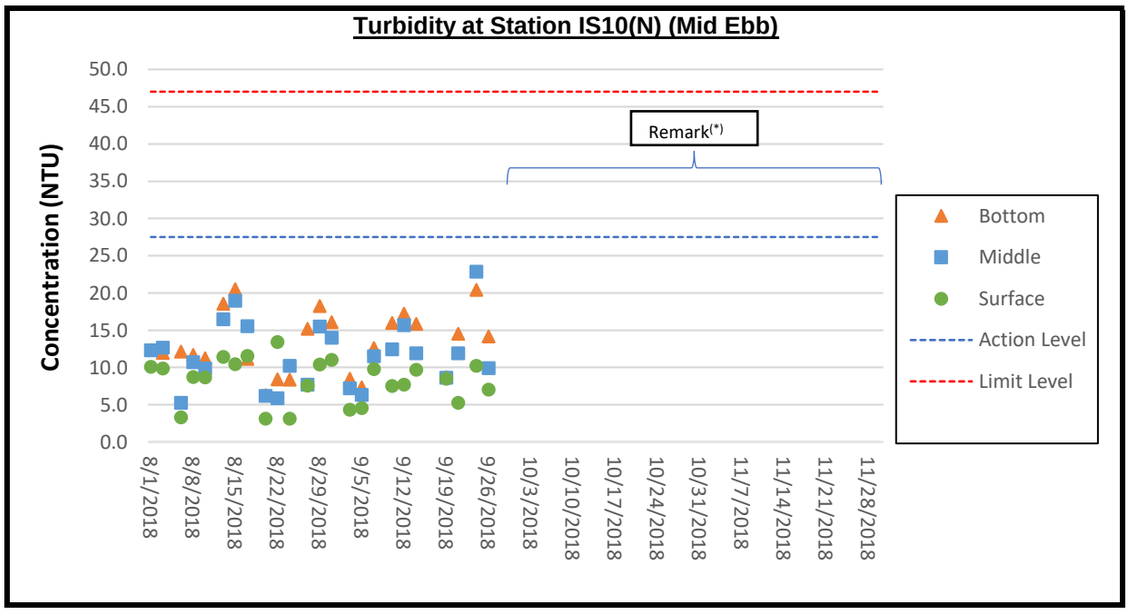

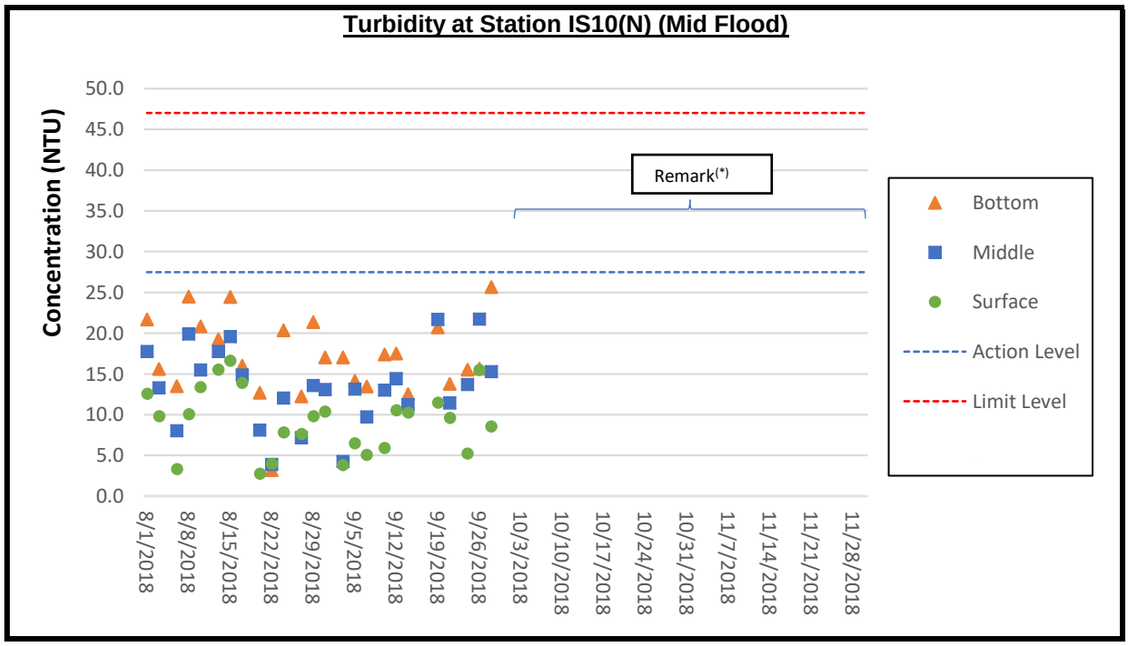

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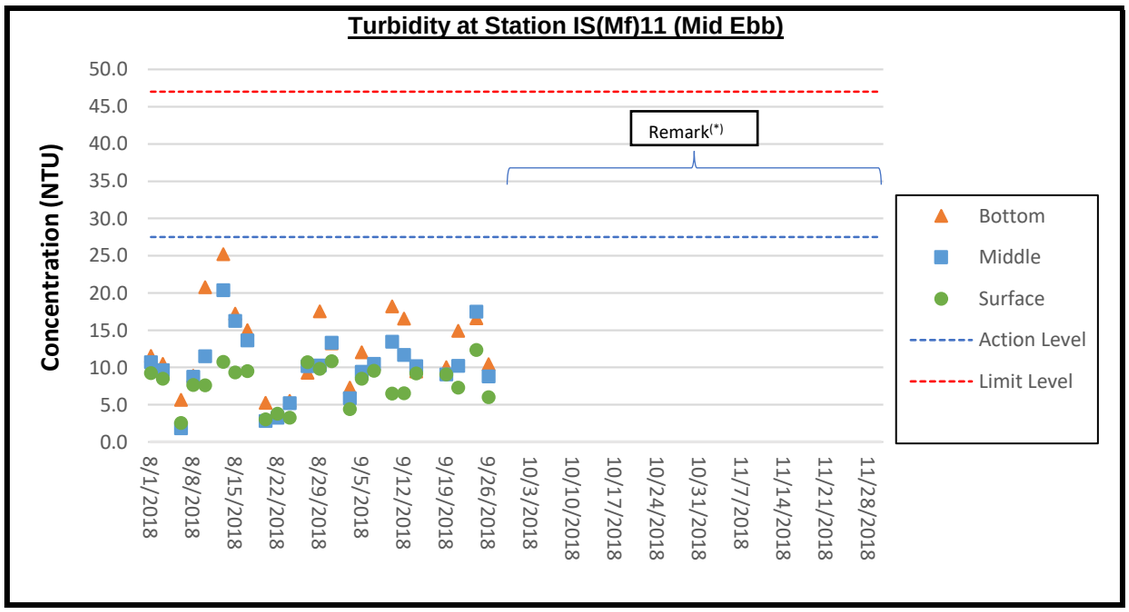

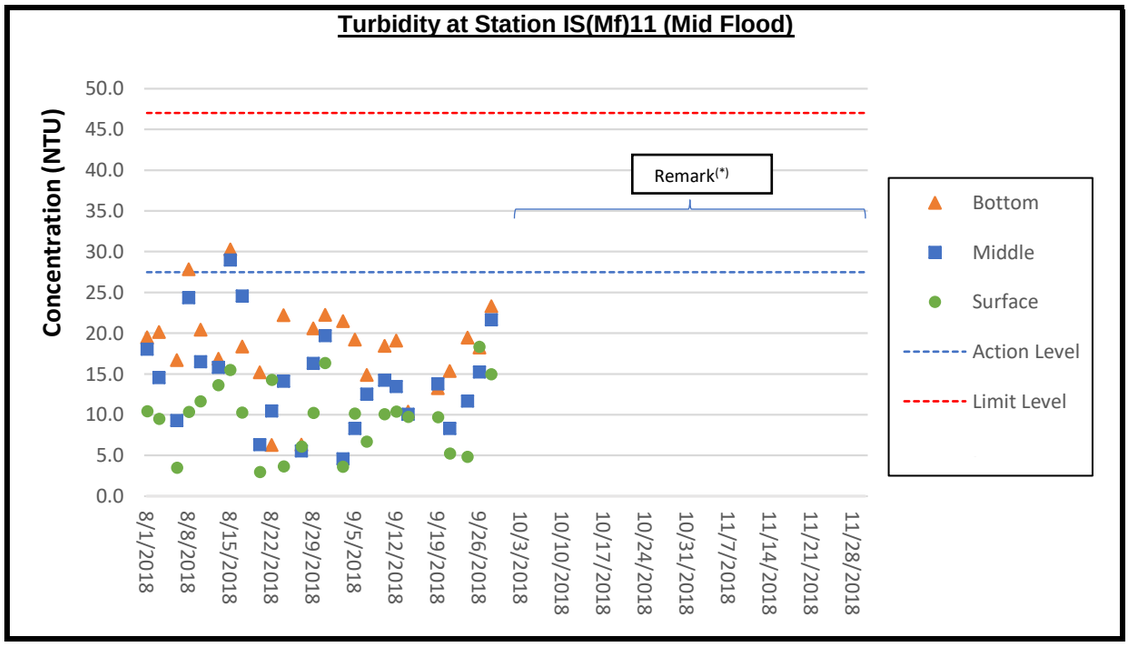

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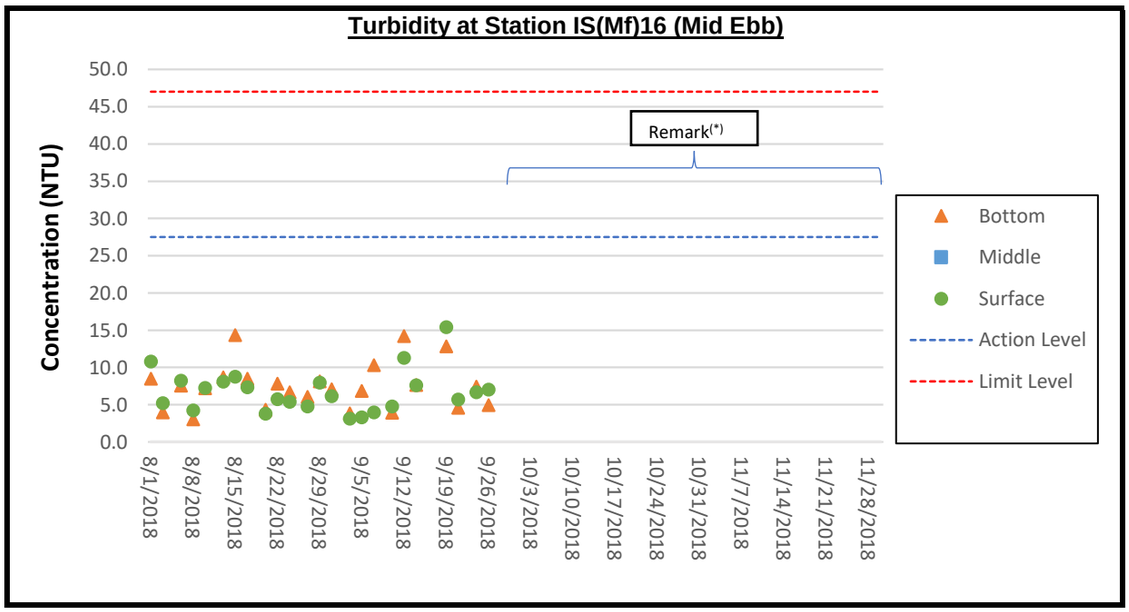

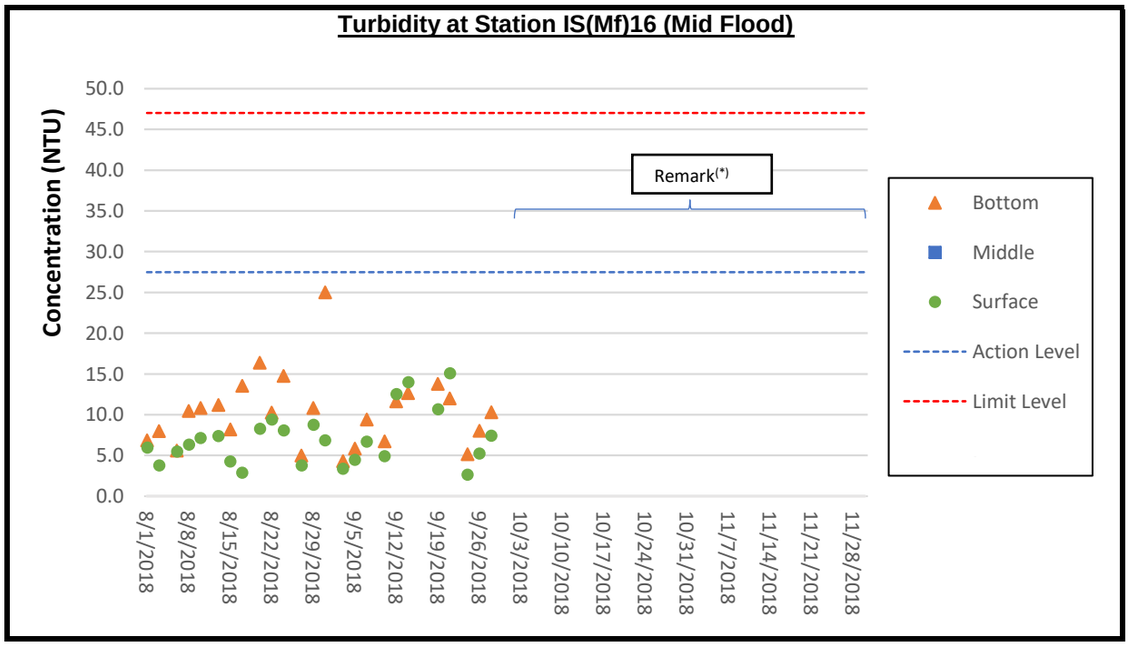

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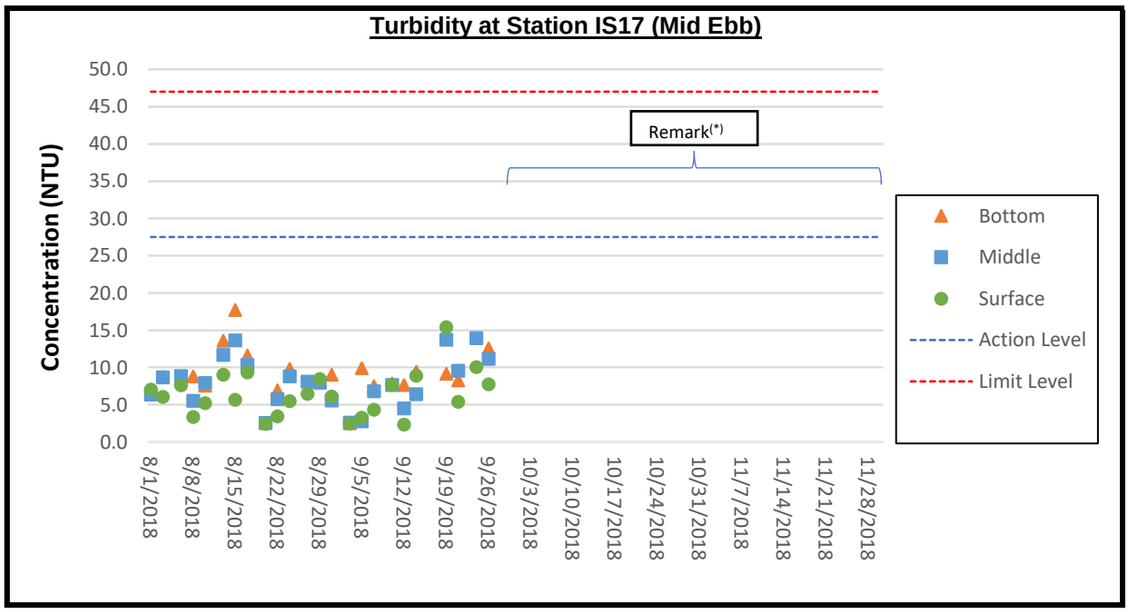

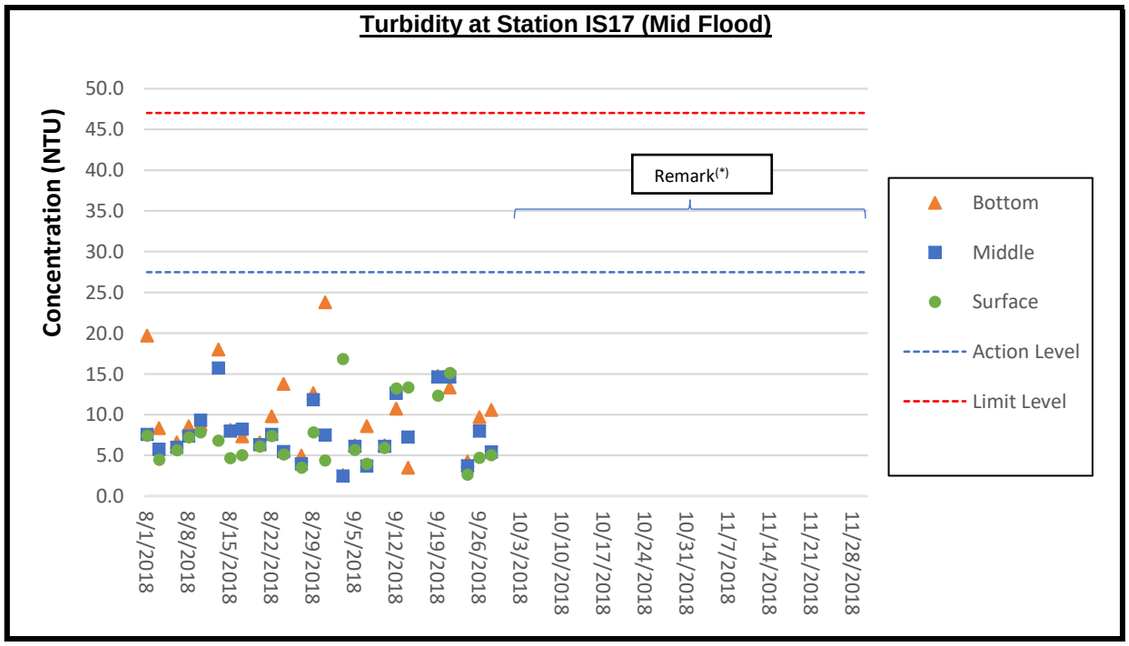

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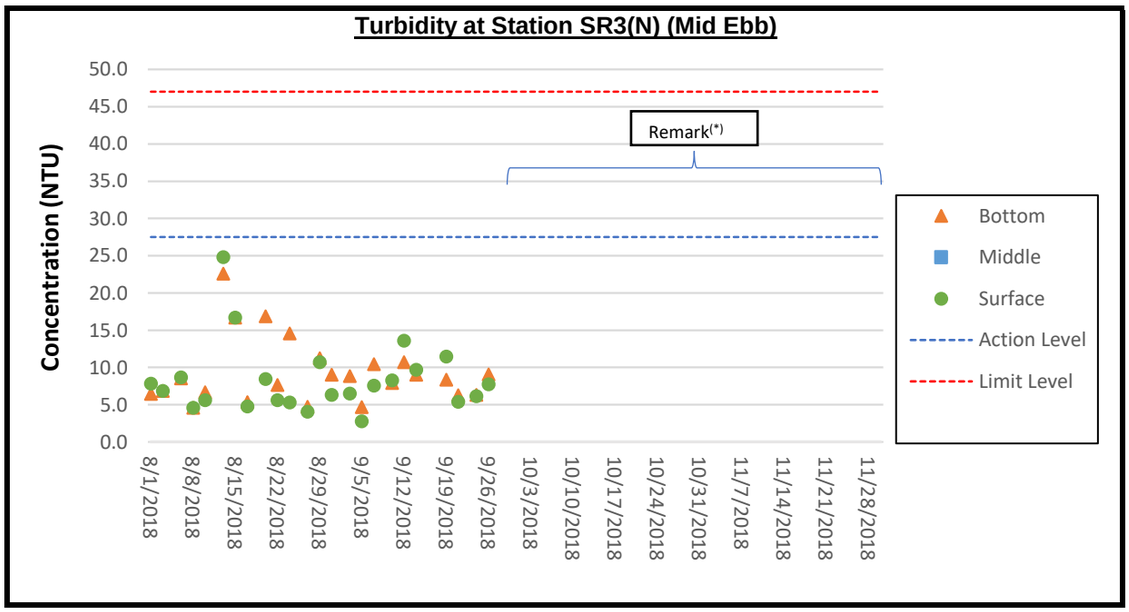

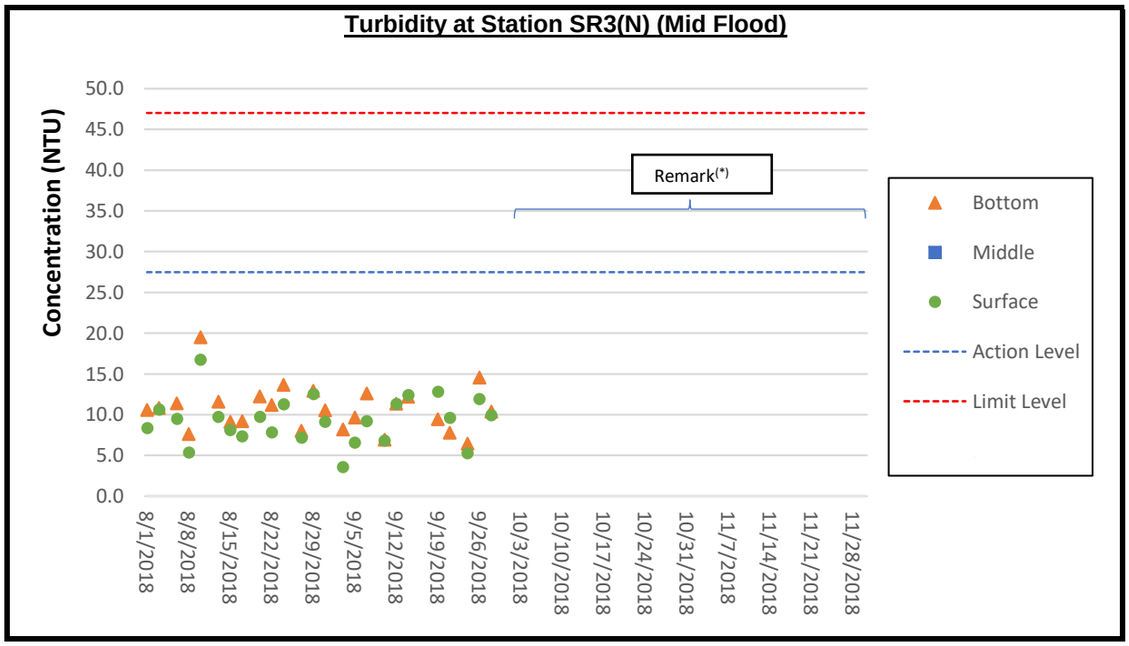

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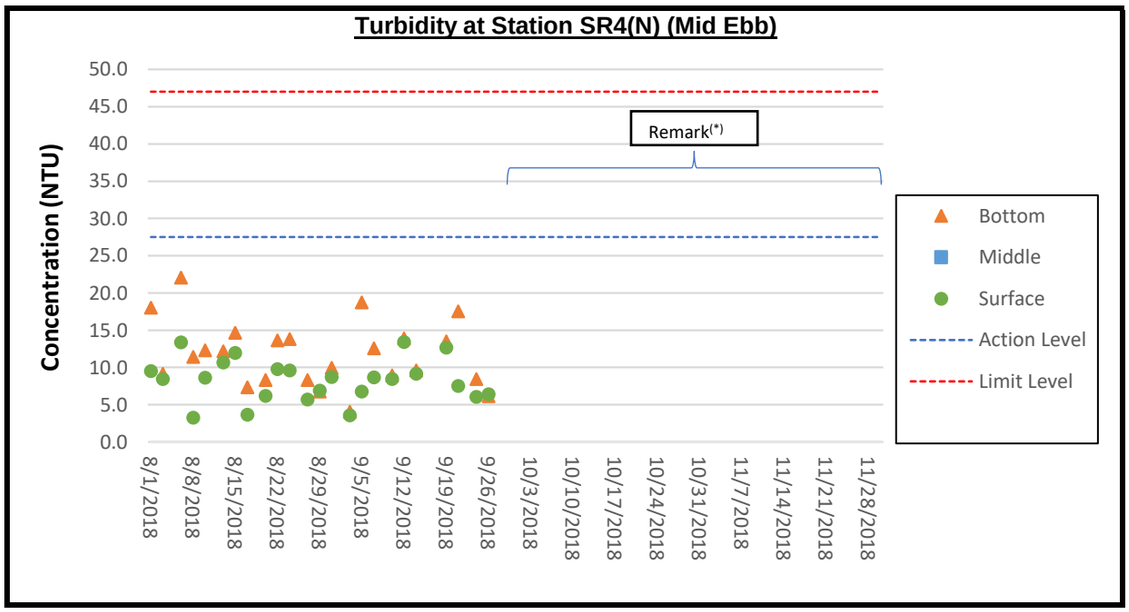

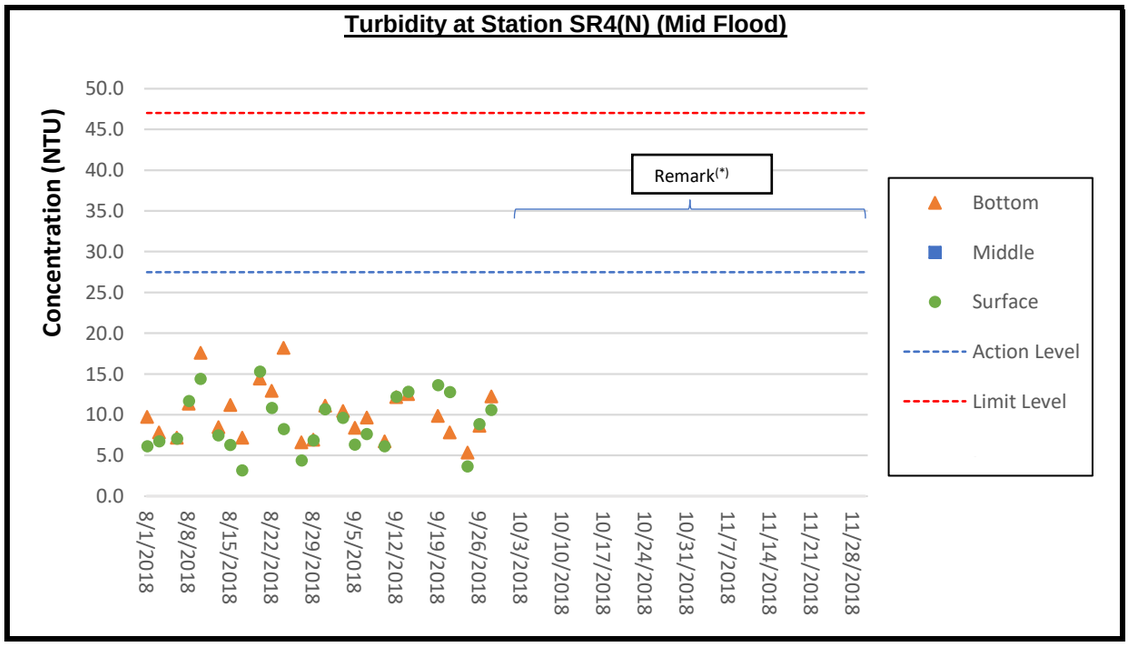

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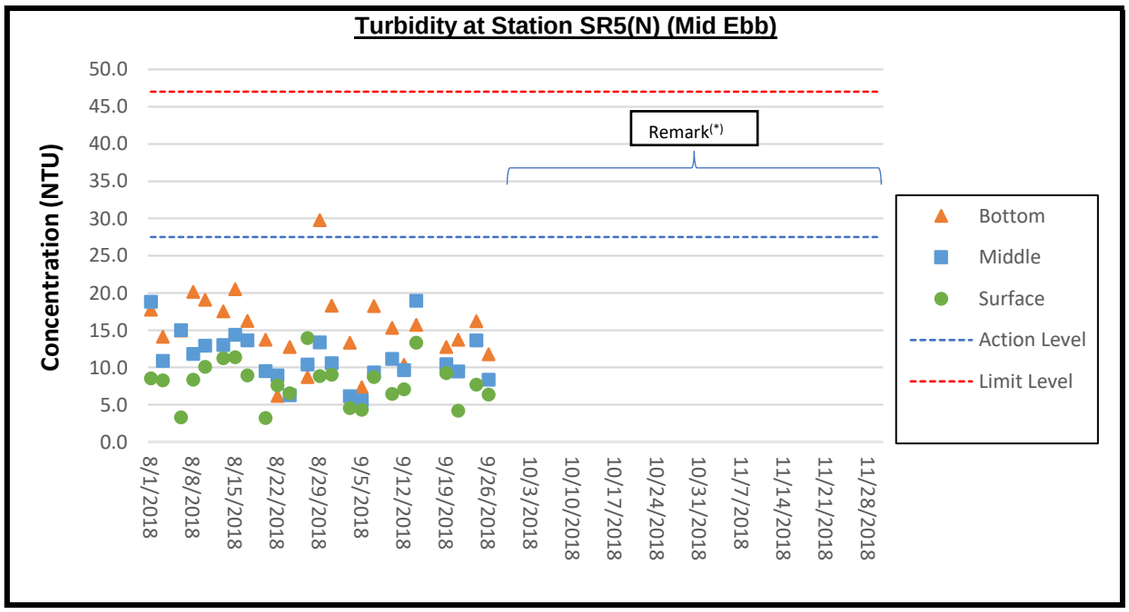

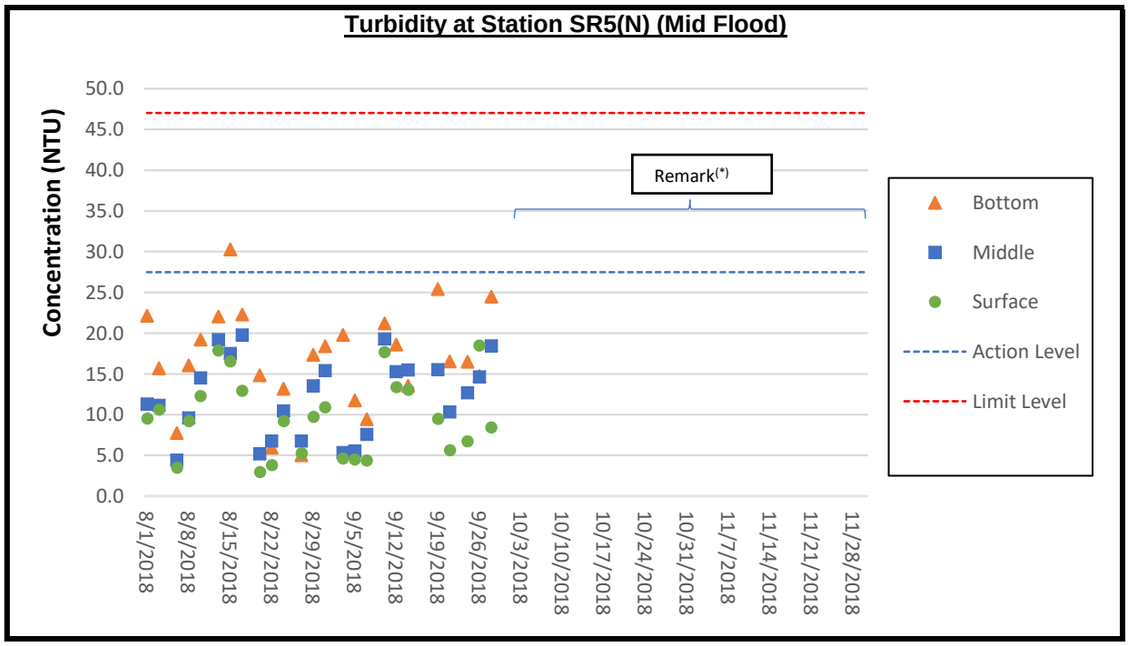

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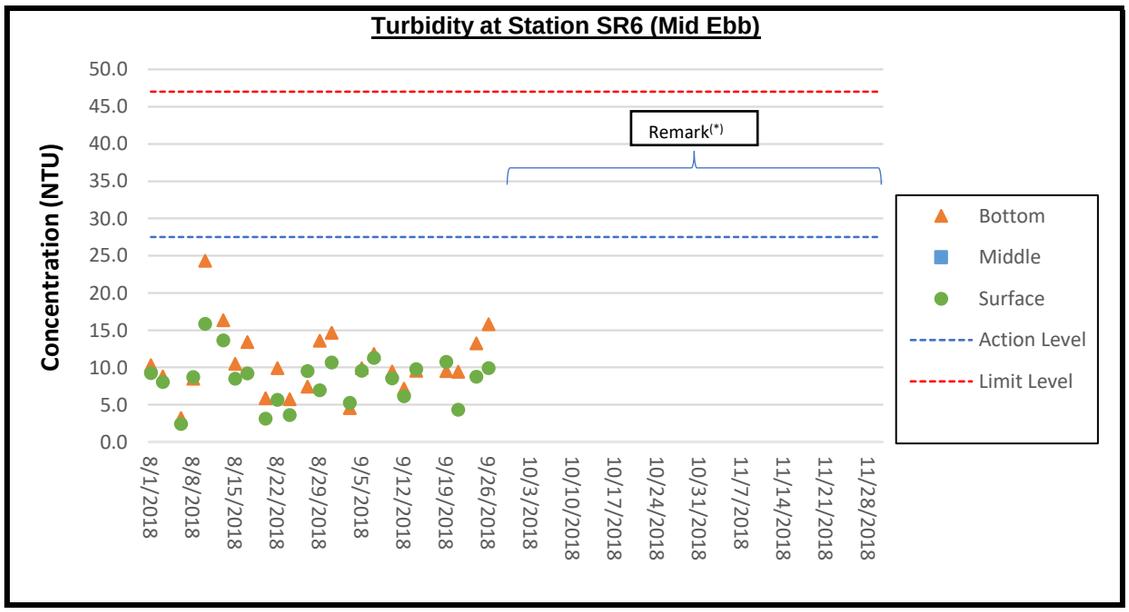

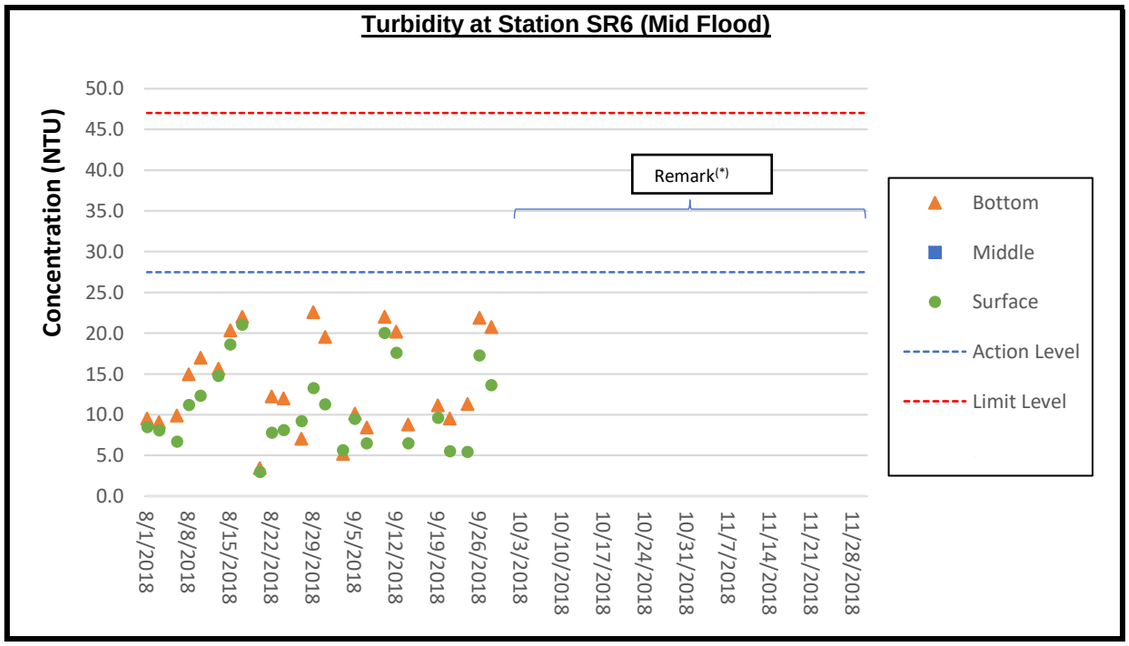

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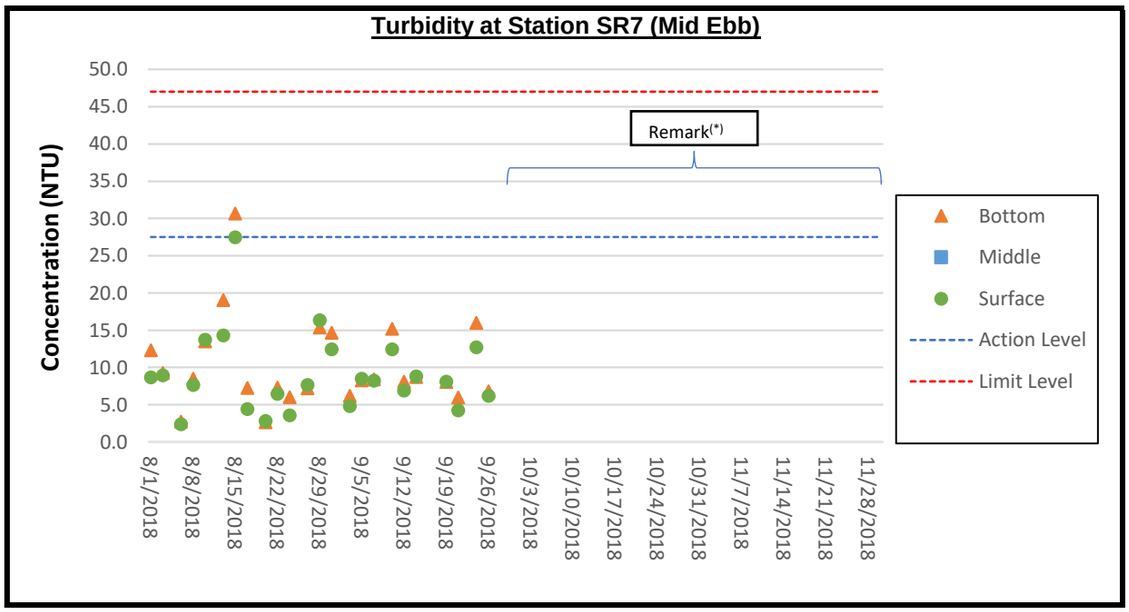

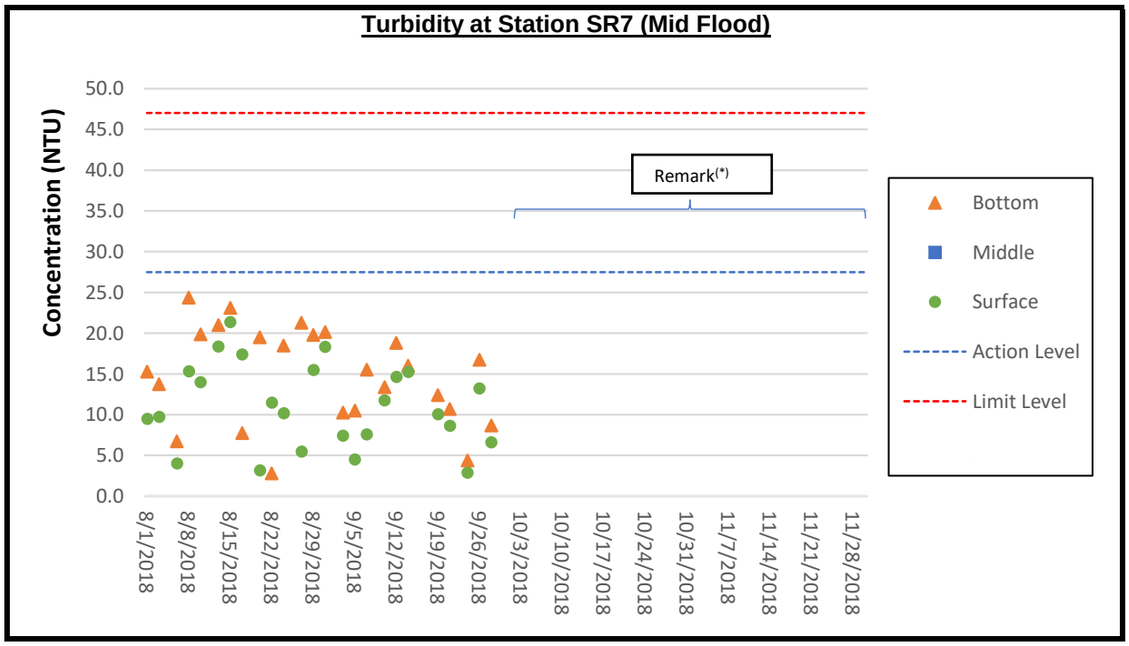

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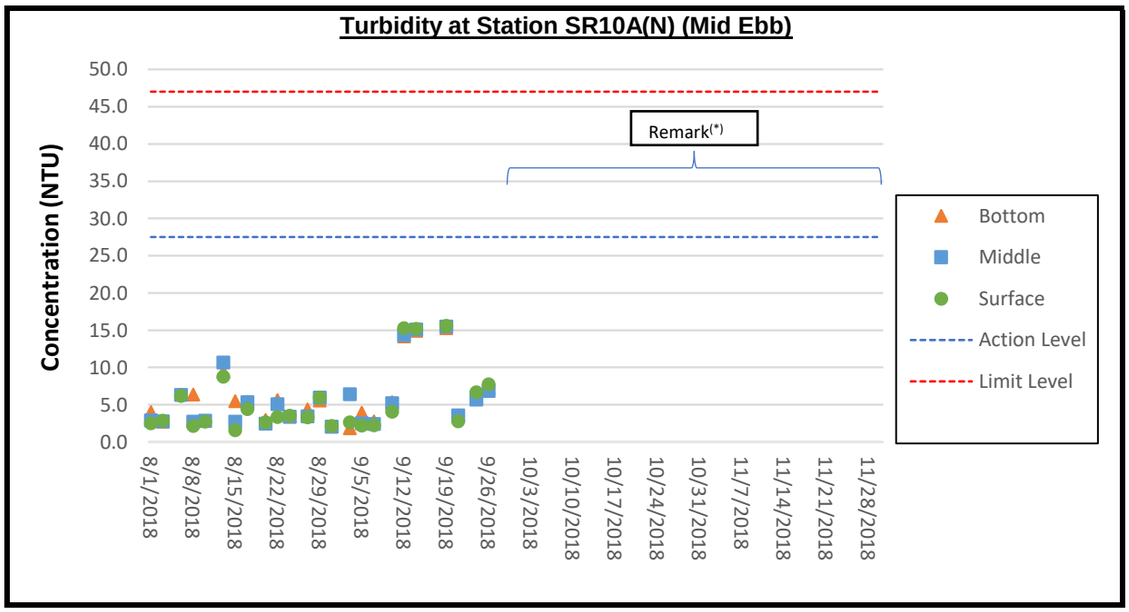

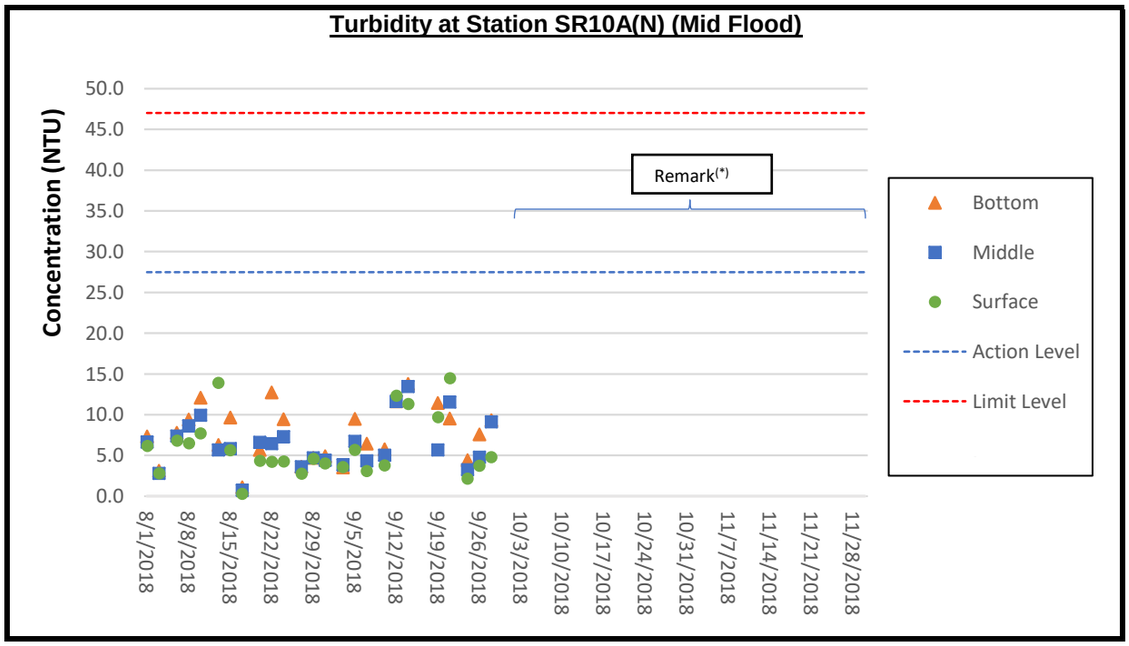

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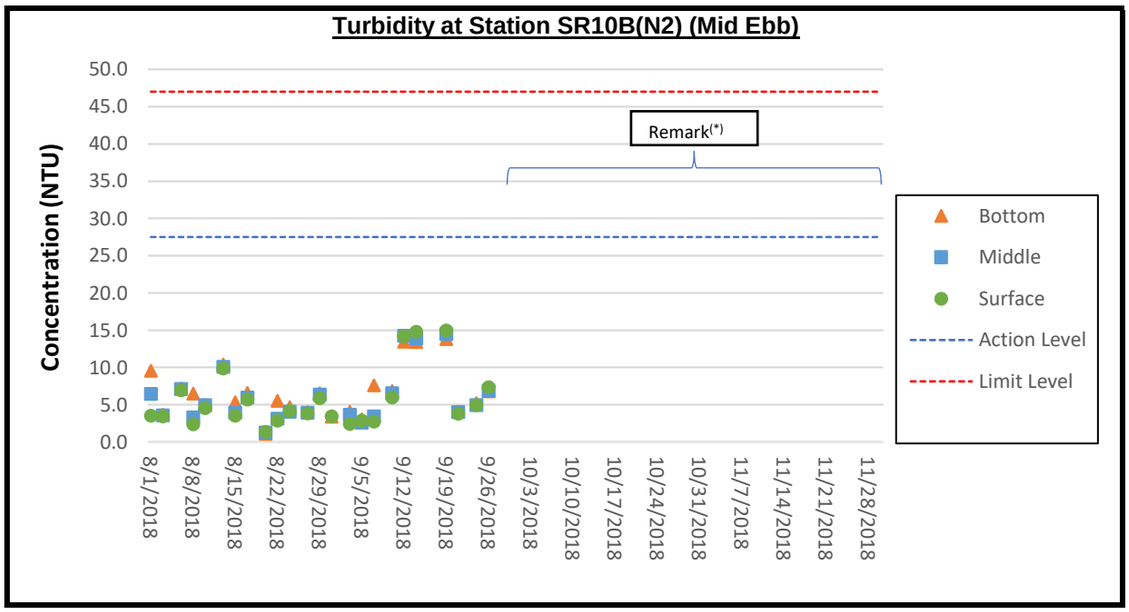

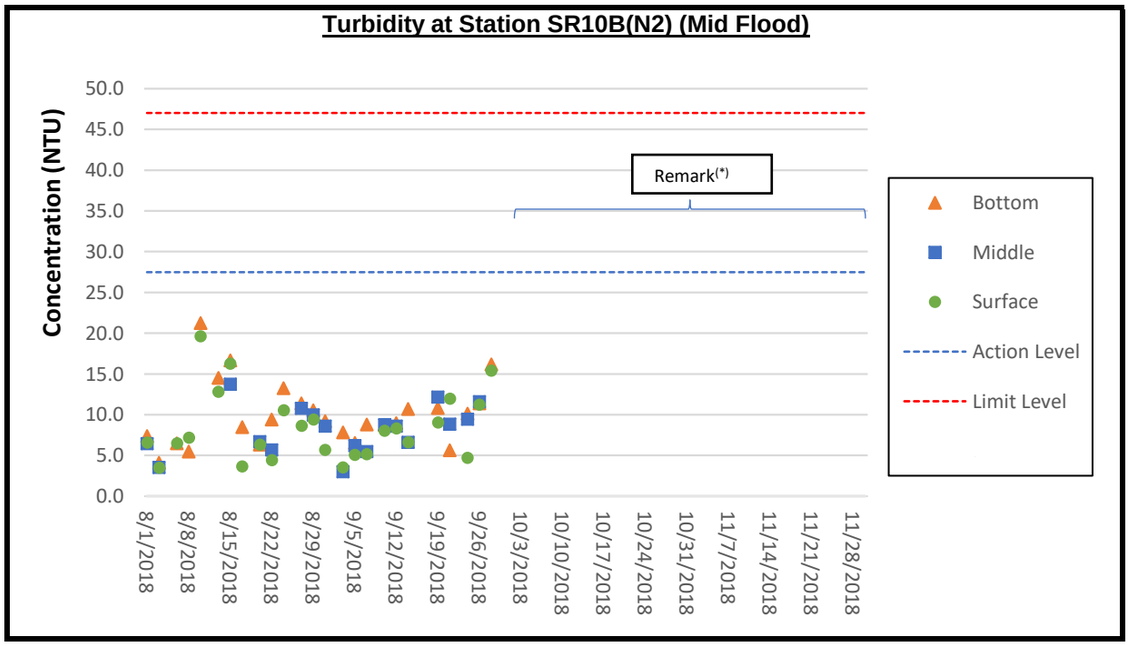

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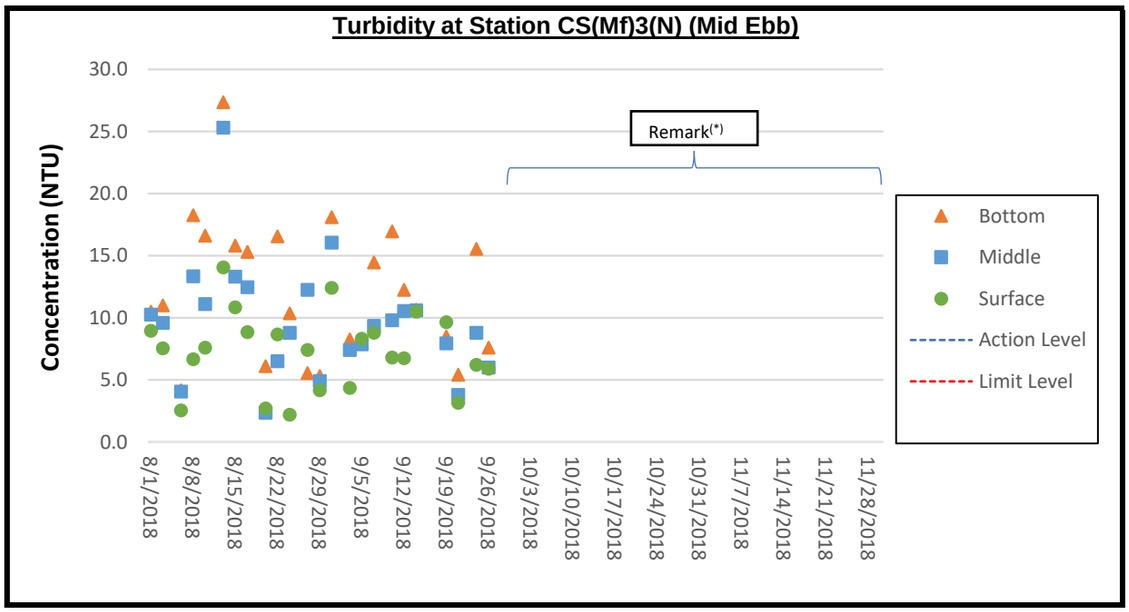

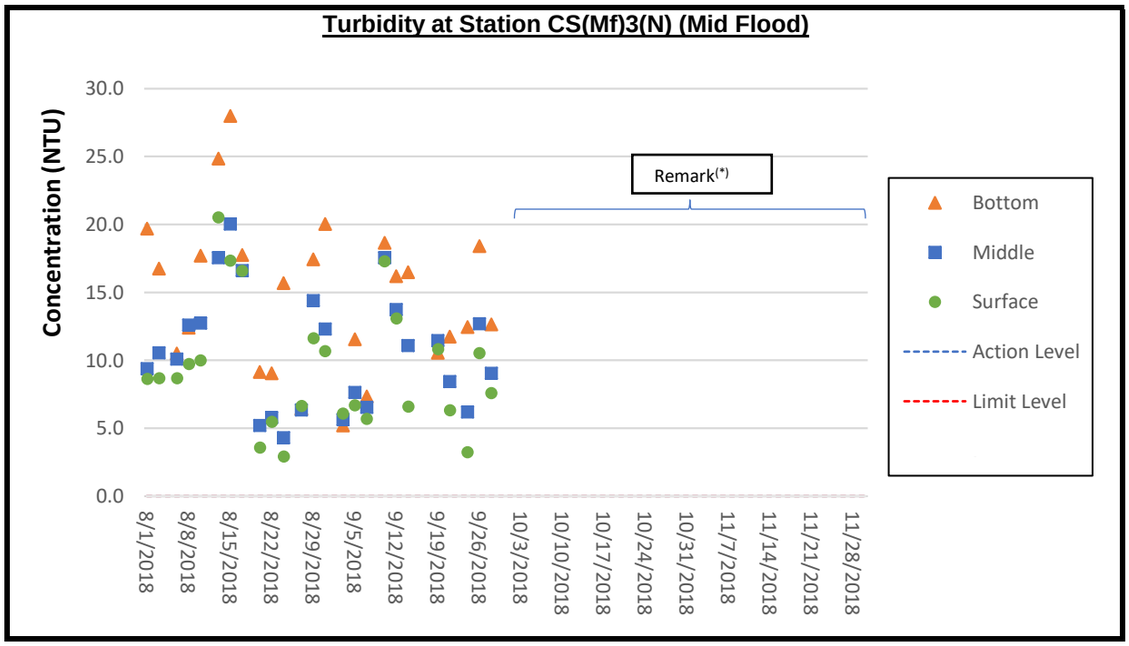

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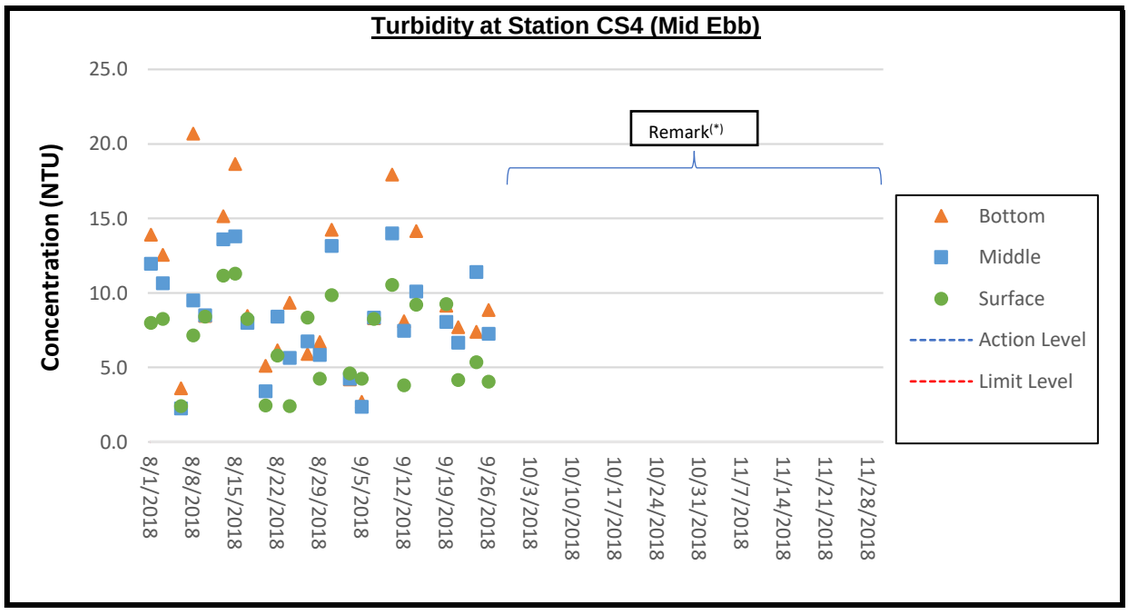

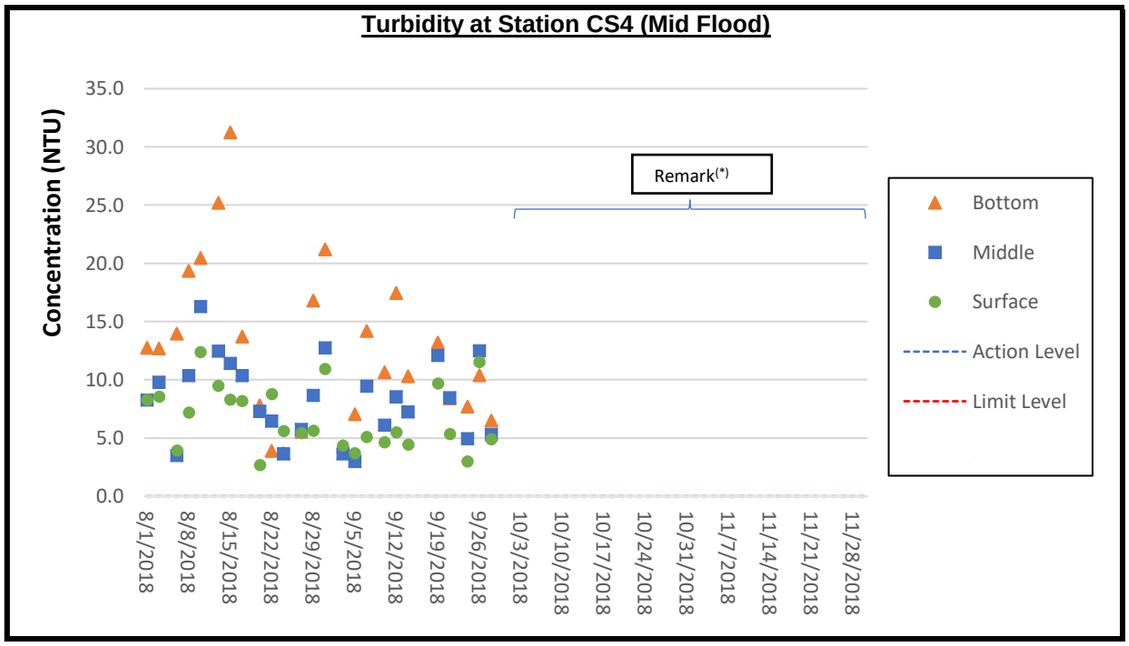

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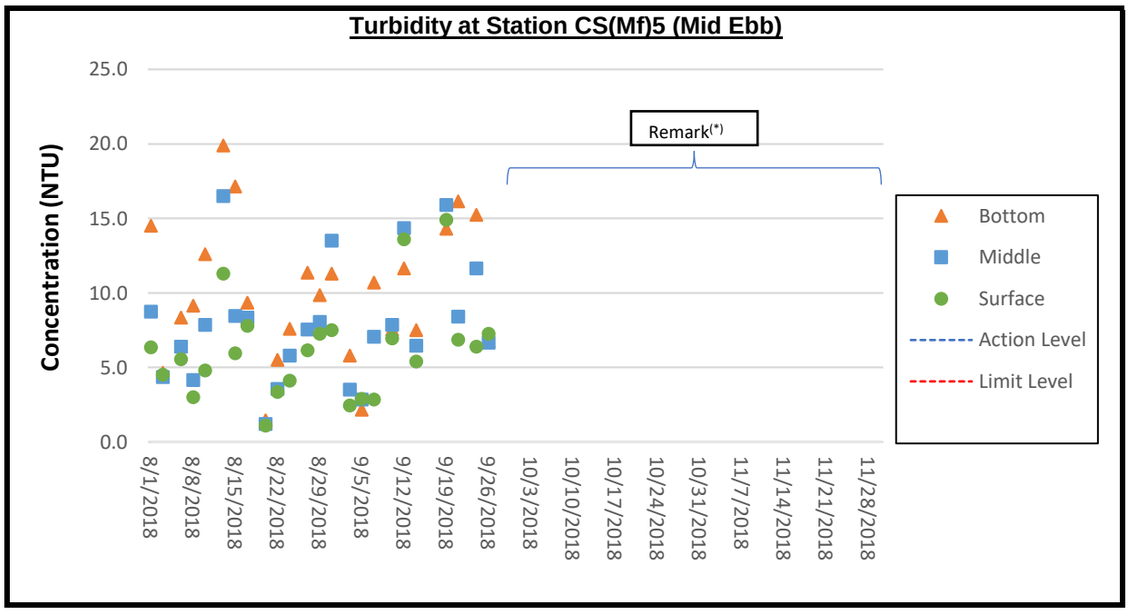

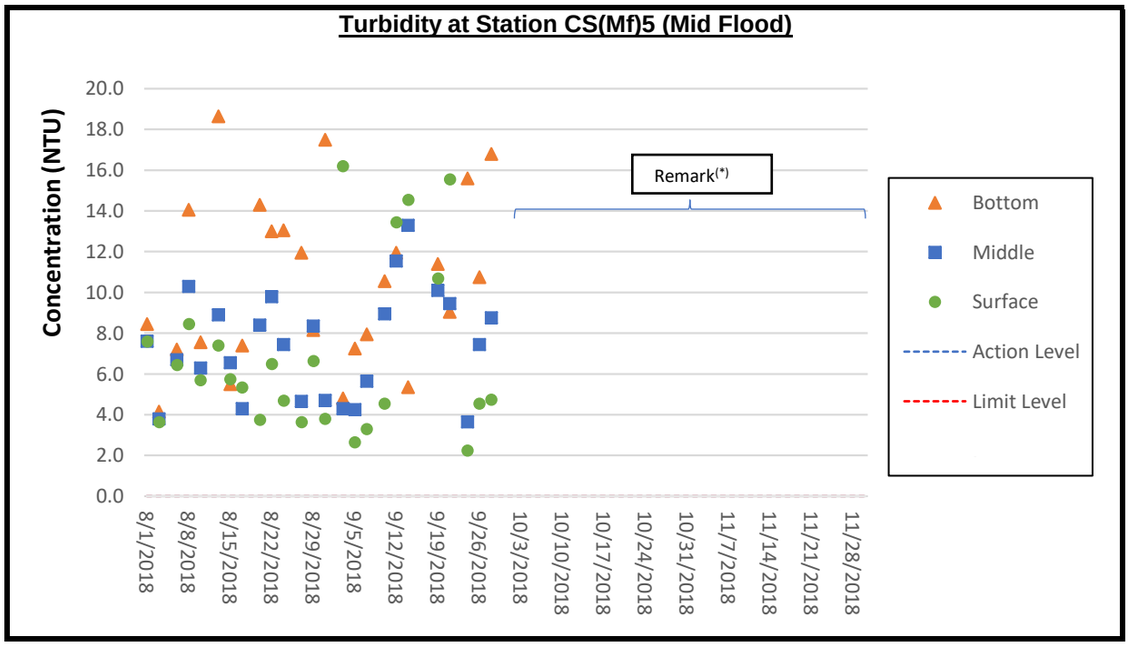

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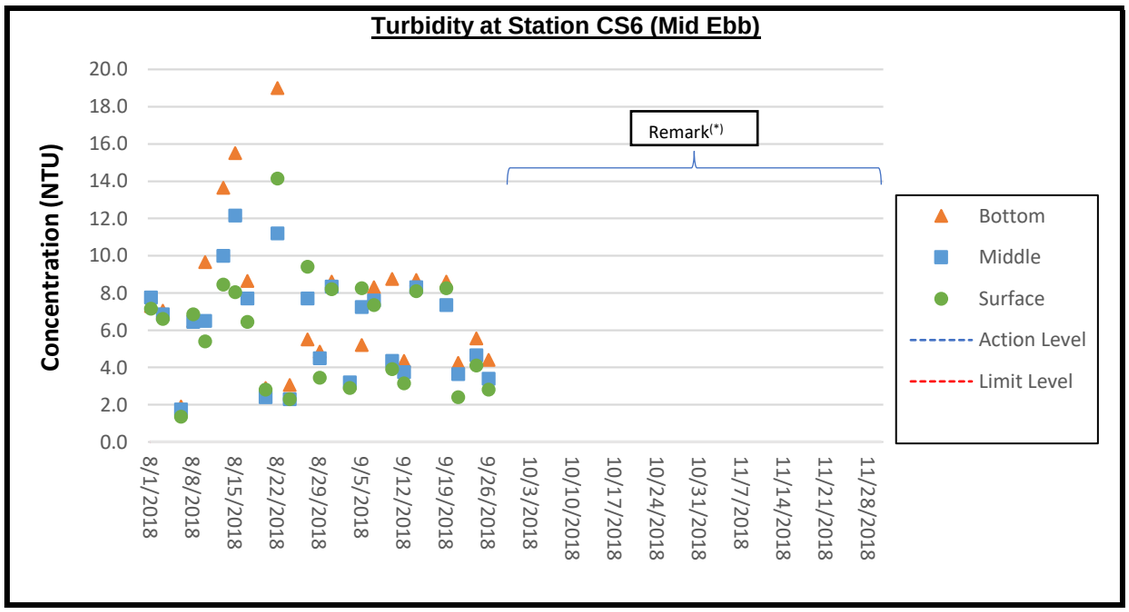

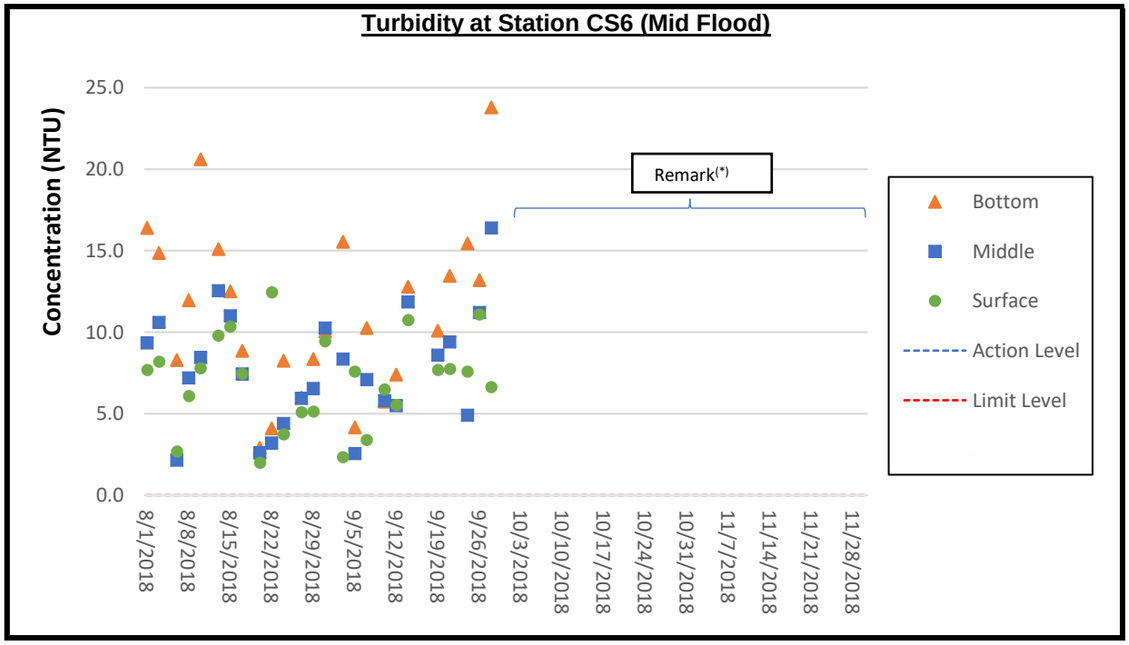

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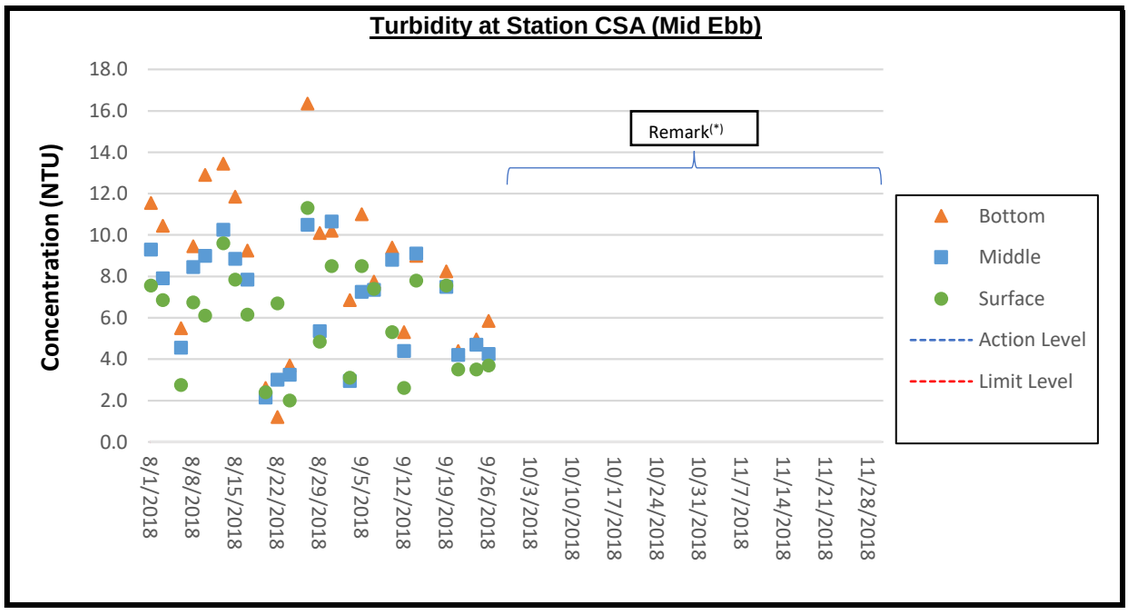

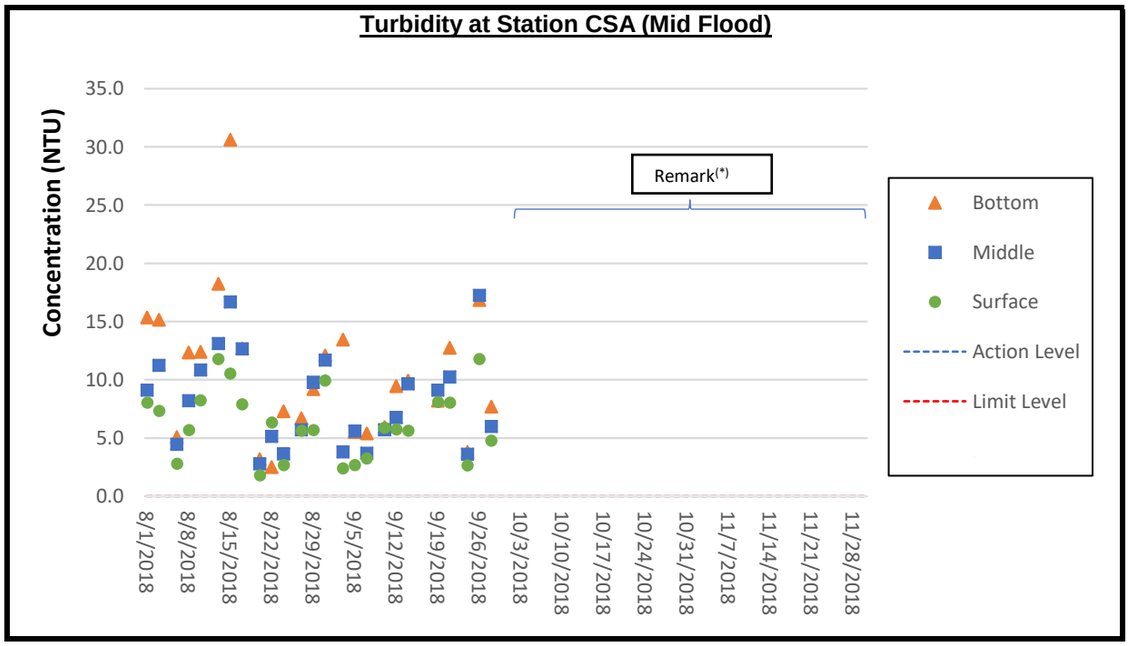

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APPENDIX H

Site Audit Findings and Corrective Actions

Appendix H – Site Audit Findings and Corrective Actions

1.1.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Contract No. HY/2013/01 (includes the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/01 works area). During the reporting period, eight site inspections were carried out 5, 12, 19 and 26 September and 5, 10, 18, 24 and 31 October 2018.

1.1.2 The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area, no site inspection was conducted for the Contract HY/2013/01 since in November 2018.

1.1.3 Particular for Contract No. HY/2013/01 and Contract No. HY/2013/06 within Contract No. HY/2013/01 works area during the site inspections and corrective actions undertaken by the Contractor are described in Table 1 and Table 2.

Table 1 Summary of Environmental Site Inspections for Contract No. HY/2013/01

Date of Audit	Observations	Actions Taken by Contractor / Recommendation	Date of Observations Closed
5 September 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
12 September 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
19 September 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
26 September 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
5 October 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
10 October 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
18 October 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
24 October 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
31 October 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.

Table 2 Summary of Environmental Site Inspections for Contract No. HY/2013/06 within Contract No. HY/2013/01 works area

Date of Audit	Observations	Actions Taken by Contractor / Recommendation	Date of Observations Closed
5 September 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
12 September 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
19 September 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
26 September 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
5 October 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
10 October 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
18 October 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
24 October 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
31 October 2018	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.

APPENDIX I

Waste Flow Table

Name of Department: Highways Department

Contract No.: HY/2013/01

Monthly Summary Waste Flow Table for 2018

Leighton - Chun Wo Joint Venture

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	a.Total Quantity Generated (see Note 8)	b. Hard Rock and Large Broken Concrete (see Note 9)	c. Reused in the Contract	d. Reused in Other Projects	e. Disposed as Public Fill (see Note 10)	f. Imported Fill	g. Metals (see Note 5)	h. Paper / Cardboard Packaging (see Note 5)	i. Plastics (see Note 3) (see Note 5)	j. Chemical Waste	k. Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
January	1.836	1.836	0.000	0.000	1.836	0.000	437.360	1.922	0.000	0.000	0.912
February	0.648	0.648	0.000	0.000	0.648	0.000	0.000	0.000	0.000	0.000	1.124
March	2.590	2.590	0.000	0.000	2.590	0.000	0.000	1.785	0.000	0.000	1.661
April	0.355	0.355	0.000	0.000	0.355	0.000	0.000	1.630	0.000	0.000	1.067
May	0.066	0.000	0.000	0.000	0.066	0.000	0.000	1.493	0.000	0.000	0.510
June	0.071	0.000	0.000	0.000	0.071	0.000	0.000	0.000	0.000	0.000	0.218
Sub-total	5.566	5.429	0.000	0.000	5.566	0.000	437.360	6.830	0.000	0.000	5.492
July	0.010	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.114
August	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.201	0.000	0.000	0.189
September	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.700	0.000	0.000	0.066
October	0.038	0.000	0.000	0.000	0.038	0.000	0.000	0.000	0.000	0.000	0.255
November(*)	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
December											
Total	5.614	5.429	0.000	0.000	5.614	0.000	437.360	9.731	0.000	0.000	6.116

Total C&D waste generated = a+b+f+g+h+i+j+k

Total C&D waste generated (excluded excavated material) = g+h+i+j+k

Total C&D waste recycled = c+d+g+h+i

% of recycled C&D waste = (Total C&D waste generated - Total C&D waste recycled) / Total C&D waste generated

Forecast of Total Quantities of C&D Materials to be Generated from the Contract*										
a.Total Quantity Generated (see Note 8)	**b. Hard Rock and Large Broken Concrete** (see Note 9)	**c. Reused in the Contract**	**d. Reused in Other Projects**	**e. Disposed as Public Fill** (see Note 10)	**f. Imported Fill**	**g. Metals** (see Note 5)	**h. Paper / Cardboard Packaging** (see Note 5)	**i. Plastics** (see Note 3) (see Note 5)	**j. Chemical Waste**	**k. Others, e.g. general refuse**
(in '000m^3)	**(in '000m^3)**	**(in '000m^3)**	**(in '000m^3)**	**(in '000m^3)**	**(in '000m^3)**	**(in '000kg)**	**(in '000kg)**	**(in '000kg)**	**(in '000kg)**	**(in '000m^3)**

Notes:
(1) The performance target are given in PS Clause 6(14)
(2) The waste flow table shall also include C&D materials that are not specified in the Contract to be imported for use at the Site
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
(4) The Contractor shall also submit the latest forecast of the amount of C&D materials expected to be generated from the Works, together with a break down of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000m3.
(5) All recyclable materials, including metals, paper / cardboard packaging, plastics, etc. will be collected by registered collector for recycling.
(6) Conversion factors for reporting purpose:
in-situ: rock = 2.5 tonnes/m^3; soil = 2.0 tonnes/m^3
excavated: rock = 2.0 tonnes/m^3; soil = 1.8 tonnes/m^3; broken concrete and bitumen = 2.4 tonnes/m^3
C&D Waste = 0.9 tonnes/m^3; bentonite slurry = 2.8 tonnes/m^3
Diesel density: 0.8kg/l
(7) Numbers are rounded off to the nearest three decimal places
(8) The "Total Quantity Generated" equals to the sum of "Reuse in the Contract", "Reuse in Other Projects" and "Disposed as Public Fill"
(9) The "Hard Rock and Large Broken Concrete" were disposed as public fill
(10) The amount in "Disposed as Public Fill" included the "Hard Rock and Large Broken Concrete" disposed as public fill
(*) The works site area of Contract No. HY/2013/01 was handed over to the relevant authorities since 24 October 2018 and no chemical waste and general refuse were generated in November 2018.

Ver: 1st
Date: Jan 2017

ATAL Technologies Ltd
安樂科技工程有限公司

ATAL Technologies Ltd.
Contract No. **HY/2013/06** HKBCF Automatic Vehicle Clearance Support System
Location: Artifical Island of HKBCF **(C1 Area)**

Monthly Summary Waste Flow Table for 2018

Month	Inert C&D Waste disposal / 瀆性廢物 (in tonnes) (see Note 1)						Non-inert C&D Waste disposal 非瀆性廢物 (in tonnes)		Waste to be recycled and returned / 可再循環利用或回收的廢物								Total Quantity Generated 總生產量	
	Reused in the Work Package (e.g. backfilling) 再用於工程 (如回填)		Reused in other Projects 再用於其他工程		Inert Waste (e.g. soil, broken concrete, rubble, fill material etc.) 瀆性廢物 (如泥, 石矢頭, 石, 填料等)		Others (e.g. general refuse, broken formwork etc) 其他 (如垃圾, 廢板枋等)		Metals 金屬		Plastic 塑膠		Paper/cardboard packaging 廢紙/包裝紙類		Chemical Waste 化學廢物			
	(b)		(c)		(d)		(e)		(in tonnes)		(in tonnes)		(in tonnes)		(in litre)		(a)= (b+c+d+e)	
	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量
January	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
February	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.010	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.010
March	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.010	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.010
April	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.010
May	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.010
June	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005
July	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
August	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
September	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
October	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
November(*)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
December																		
Total	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.045**	**0.045**	**0.007**	**0.007**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.045**	**0.045**

Notes: (1) The quantitles of C&D Materials, in tonne, was calculated by multiply the estimated volume, in m3, with the density of the soil, which is 1.5 gcm-^{3}.
(*) The works site area of Contract No. HY/2013/01 (includes the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/01 works area) was handed over to the relevant authorities since 24 October 2018 and no chemical waste and general refuse were generated in November 2018.

APPENDIX J

Environmental Licenses and Permits

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: October 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
1.	All Areas	29 Jul 13	N/A	Environmental Permit to construct the Passenger Clearance Building and associated works of the Hong Kong Zhuhai and Macao Bridge Boundary Crossing Facilities	EP-353/2009/G	06 Aug 13	N/A	EPD	Superseded by EP-353/2009/H
2.	All Areas	16 Jan 15	N/A	Environmental Permit to construct the Passenger Clearance Building and associated works of the Hong Kong Zhuhai and Macao Bridge Boundary Crossing Facilities	EP-353/2009/H	19 Jan 15	N/A	EPD	Superseded by EP-353/2009/I
3.	All Areas	30 Jun 15	N/A	Environmental Permit to construct the Passenger Clearance Building and associated works of the Hong Kong Zhuhai and Macao Bridge Boundary Crossing Facilities	EP-353/2009/I	17 Jul 15	N/A	EPD	Superseded by EP-353/2009/J
4.	All Areas	18 Feb 2016	N/A	Environmental Permit to construct the Passenger Clearance Building and associated works of the Hong Kong Zhuhai and Macao Bridge Boundary Crossing Facilities	EP-353/2009/J	25 Feb 2016	N/A	EPD	Superseded by EP-353/2009/K

Environmental License/ Permits /Notification Register

LCAL H2620

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: October 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
5.	All Areas	24 Mar 2016	N/A	Environmental Permit to construct the Passenger Clearance Building and associated works of the Hong Kong Zhuhai and Macao Bridge Boundary Crossing Facilities	EP-353/2009/K	11 Apr 2016	N/A	EPD	
6.	All Areas	29 Apr 14	H2620-LTR-EPD-AU-000006	**Billing Account** for disposal of construction waste	Billing Account No.: 7019944	16 May 14	N/A	EPD	
7.	PCB	30 Apr 14	H2620-LTR- EPD-000002	**Notification** that notifiable works are anticipated to commence (Form NA).	Acknowledge Receipt Ref. No. 373961	05 May 14	N/A	EPD	
8.	WA2	30 Apr 14	H2620-LTR- EPD-000003	**Notification** that notifiable works are anticipated to commence (Form NA).	Acknowledge Receipt Ref. No. 373956	05 May 14	N/A	EPD	
9.	WA3	30 Apr 14	H2620-LTR-EPD-AU-000001	**Notification** that notifiable works are anticipated to commence (Form NA).	Acknowledge Receipt Ref. No. 373962	05 May 14	N/A	EPD	

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: October 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
10.	PCB	30 May 14	H2620-LTR-EPD-AU-000020	**Registration** as Chemical Waste Producer for disposal of spent batteries, used lubrication oil and surplus paint at PCB area	WPN: 5213-951-L2846-01	08 Jul 14	N/A	EPD	
11.	PCB	23 Jun 14	In H2620-LTR-EPD-000017	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0683-14	03 Jul 14	29 Dec 14	EPD	Superseded by GW-RS0908-14
12.	WA2	02 Jul 14	H2620-LTR-LCJ-AU-000280	**CNP** for the use of powered mechanical equipment for the purpose of carry out ER Office construction works from 19:00 to 23:00. (Non-designated area)	GW-RS0715-14	17 Jul 14	15 Jan 15	EPD	Superseded by GW-RS1034-14
13.	WA3	02 Jul 14	H2620-LTR-LCJ-AU-000324	**CNP** for the use of powered mechanical equipment for the purpose of carry out construction of JV site office from 19:00 to 23:00. (Non-designated)	GW-RS0716-14	17 Jul 14	15 Jan 15	EPD	Expired

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: October 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
14.	PCB	23 Jun 14	H2620-LTR- EPD-000527	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0908-14	03 Sep 14	22 Dec 14	EPD	Superseded by GW-RS1044-14
15.	PCB	29 Sep 14	H2620-LTR-EPD-AU-000034	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1044-14	29 Sep 14	24 Dec 14	EPD	Superseded by GW-RS1300-14
16.	WA2	12 Sep 14	H2620-LTR-EPD-AU-000032	**CNP** for the use of powered mechanical equipment for the purpose of carry out ER Office construction works from 19:00 to 23:00. (Non-designated area)	GW-RS1034-14	29 Sep 14	28 Mar 15	EPD	Expired
17.	WA4	17 Oct 14	H2620-LTR-EPD-AU-000036	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0814-14	20 Oct 14	19 Apr 15	EPD	Expired and replaced by GW-RW0171-15

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: October 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
18.	PCB	03 Nov 14	H2620-LTR-EPD-AU-000040	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1300-14	17 Nov 14	16 Feb 15	EPD	Superseded by GW-RS0087-15
19.	PCB	12 Jan 15	H2620-LTR-EPD-AU-000046	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0087-15	26 Jan 15	25 Apr 15	EPD	Superseded by GW-RS0308-15
20.	PCB	12 Mar 15	H2620-LTR-EPD-AU-000051	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0308-15	26 Mar 15	25 Jun 15	EPD	Superseded by GW-RS0476-15
21.	PCB	31 Jul 14	H2620-LTR-EPD-AU-000038	**Water Discharge License** for construction works on PCB island	WT00020335-2014	13 Nov 14	30 Nov 19	EPD	

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: October 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
22.	WA4	27 Mar 15	H2620-LTR-EPD-AU-000054	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0171-15	20 Apr 15	19 Oct 15	EPD	Superseded by GW-RW0351-15
23.	PCB	15 Apr 15	H2620-LTR-EPD-AU-000057	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0476-15	01 May 15	31 Jul 15	EPD	Superseded by GW-RS0685-15
24.	PCB	09 Jun 15	H2620-LTR-EPD-AU-000063	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0685-15	01 Jul 15	30 Sep 15	EPD	Superseded by GW-RS0877-15
25.	WA4	29 Jun 15	H2620-LTR-EPD-AU-000066	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0351-15	17 Jul 15	12 Jan 16	EPD	Expired. Replaced by GW-RW0003-16

Date: October 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
26.	PCB	27 Jul 15	H2620-LTR-EPD-AU-000069	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0877-15	10 Aug 15	09 Nov 15	EPD	Superseded by GW-RS1016-15
27.	PCB	02 Sep 15	H2620-LTR-EPD-AU-000072	**CNP** for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1016-15	18 Sep 15	17 Dec 15	EPD	Superseded by GW-RS1195-15
28.	PCB	22 Oct 15	H2620-LTR-EPD-AU-000075	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1195-15	9 Nov 15	8 Feb 16	EPD	Superseded by GW-RS1444-15
29.	PCB	17 Dec 15	H2620-LTR-EPD-AU-000076	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1444-15	31 Dec15	30 Mar 16	EPD	Superseded by GW-RW0191-16

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: October 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
30.	WA4	24 Dec 15	H2620-LTR-EPD-AU-000080	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0003-16	13 Jan 16	06 Jul 16	EPD	Superseded by GW-RW0394-16
31.	PCB	17 Feb 16	H2620-LTR-EPD-AU-000083	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0191-16	3 Mar 16	2 Jun 16	EPD	Superseded by GW-RW0543-16
32.	PCB	18 May 16	H2620-LTR-EPD-AU-000086	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0543-16	2 Jun 16	1 Sep 16	EPD	Superseded by GW-RS0879-16
33.	WA4	20 Jun 16	H2620-LTR-EPD-AU-000089	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0394-16	07 Jul 16	06 Jan 17	EPD	Superseded by GW-RW0742-16

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: October 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
34.	PCB	09 Aug 16	H2620-LTR-EPD-AU-000092	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0879-16	23 Aug 16	22 Dec 16	EPD	Superseded by GW-RS1193-16
35.	PCB	16 Nov 16	H2620-LTR-EPD-AU-000094	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1193-16	30 Nov 16	29 May 17	EPD	Superseded by GW-RS0005-17
36.	WA4	17 Dec 16	H2620-LTR-EPD-AU-000100	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0742-16	07 Jan 17	06 Jul 17	EPD	Superseded by GW-RW0341-17
37.	PCB	19 Dec 16	H2620-LTR-EPD-AU-000103	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0005-17	6 Jan 17	5 Jul 17	EPD	Superseded by GW-RS0461-17

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

									Date: October 2018	
Item No.	**Permit/License or Registration Application**			**Permit/License/ Notification/ Registration Description**	**Permit/License/ Registration Number**	**Issue/Start Date**	**Expiry Date**	**Issuing Office**	**Remark**
	Work Area	**Date**	**Reference**						
38.	WA3	30 Dec 16	H2620-LTR-EPD-AU-000102	**CNP** for the use of powered mechanical equipment for the purpose of carry out construction of JV site office from 19:00 to 23:00. (Non-designated)	GW-RS0015-17	12 Jan 17	11 Jul 17	EPD	Superseded by GW-RS0587-17
39.	PCB	12 May 17	H2620-LTR-EPD-AU-000106	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0461-17	25 May 17	24 Nov 17	EPD	Superseded by GW-RS0998-17
40.	WA3	22 Jun 17	H2620-LTR-EPD-AU-000113	**CNP** for the use of powered mechanical equipment for the purpose of carry out construction of JV site office from 19:00 to 23:00. (Non-designated)	GW-RS0587-17	12 Jul 17	11 Jan 18	EPD	Expired and replaced by GW-RS1201-17
41.	WA4	19 Jun 17	H2620-LTR-EPD-AU-000112	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0341-17	10 Jul 17	6 Jan 18	EPD	Expired and replaced by GW-RW0005-18

Environmental License/ Permits /Notification Register

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Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: October 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
42.	PCB	20 Oct 17	H2620-LTR-EPD-AU-000117	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0998-17	15 Nov 17	12 May 18	EPD	Expired and replaced by GW-RS0389-18
43.	WA3	20 Dec 17	H2620-LTR-EPD-AU-000119	**CNP** for the use of powered mechanical equipment for the purpose of carry out construction of JV site office from 19:00 to 23:00. (Non-designated)	GW-RS1201-17	12 Jan 18	11 Jul 18	EPD	Expired and replaced by GW-RS0589-18
44.	WA4	20 Dec 17	H2620-LTR-EPD-AU-000118	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0005-18	07 Jan 18	06 Jul 18	EPD	Expired and replaced by GW-RW0271-18
45.	PCB	27 Apr 18	H2620-LTR-EPD-AU-000125	**CNP** for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0389-18	13 May 18	12 Nov 18	EPD	-

Contract No. HY/2013/01 – Hong Kong Zhuhai and Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Date: October 2018

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
46.	WA4	22 Jun 18	H2620-LTR-EPD-AU-000129	**CNP** for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0271-18	10 Jul 18	06 Jan 19	EPD	-
47.	WA3	22 Jun 18	H2620-LTR-EPD-AU-000128	**CNP** for the use of powered mechanical equipment for the purpose of carry out construction of JV site office from 19:00 to 23:00. (Non-designated)	GW-RS0589-18	12 Jul 18	11 Jan 19	EPD	-

APPENDIX K

Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

For Contract No. HY/2013/01

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
This reporting period	0	0	0
From commencement date of contract to end of reporting month	11	0	0

For Contract No. HY/2013/06 within Contract No. HY/2013/01 works area

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
This reporting period	0	0	0
From commencement date of contract to end of reporting month	0	0	0

APPENDIX L

Investigation Report

Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities (Superstructure and Infrastructure Contracts)
Notifications of Environmental Quality Limits Exceedances Notification No.: 20180903DO_v1

Date of Notification: 06 September 2018 **Date of Investigation Report:** 4 October 2018

Works Inspected: Data collected from water sampling works on 3 September 2018 and the results were issued on 5 September 2018

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ ~~Suspended Solid (SS)~~ / ~~Turbidity (TURB)~~

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS5	Surface and Middle	Surface and Middle 5.0 mg/L Bottom 4.7 mg/L	Surface and Middle 4.2 mg/L (except 5 mg/L for FCZ) Bottom 3.6 mg/L	**4.4**	**4.9**
DO	IS5	Bottom			**4.0**	**4.1**
DO	IS8	Bottom			**4.6**	5.0
DO	IS(Mf)9	Bottom			**4.6**	--(*)
DO	IS10(N)	Surface and Middle			**4.6**	**4.9**
DO	IS10(N)	Bottom			**3.7**	**4.2**
DO	IS(Mf)11	Surface and Middle			**4.8**	**4.9**
DO	IS(Mf)11	Bottom			**4.2**	**4.3**
DO	IS(Mf)16	Surface and Middle			**4.5**	5.2
DO	IS(Mf)16	Bottom			**4.3**	**4.6**
DO	IS17	Surface and Middle			**4.7**	**4.7**

DO	IS17	Bottom			**4.6**	4.7
DO	SR4(N)	Surface and Middle			**4.5**	5.0
DO	SR4(N)	Bottom			**4.3**	**4.2**
DO	SR5(N)	Surface and Middle			**4.7**	5.0
DO	SR5(N)	Bottom			**4.6**	4.7
DO	SR6	Surface and Middle			5.0	**4.1**
DO	SR6	Bottom			5.4	**4.0**
DO	SR7	Surface and Middle			**4.8**	5.3
DO	SR10A(N)	Surface and Middle			6.3	**4.1**
DO	SR10A(N)	Bottom			6.3	**4.0**
DO	SR10B(N2)	Surface and Middle			**4.7**	**4.1**
DO	SR10B(N2)	Bottom			**4.1**	**4.1**

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
Bold with underline means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA
Remark (*): The water depth at station IS(Mf)9 during the sampling time is less than 3 meters. Therefore, only the mid-depth station was monitored.

Possible reason for Action / Limit Level Non-compliance:

On 3 September 2018, 18 AL exceedances of DO at stations IS5, IS8, IS(Mf)9, IS10(N), IS(Mf)11, IS(Mf)16, IS17, SR4(N), SR5(N), SR7 and SR10B(N2) were recorded during mid-ebb tide, while 12 AL exceedances of DO at stations IS5, IS10(N), IS(Mf)11, IS(Mf)16, IS17, SR4(N), SR6, SR10(A) and SR10B(N2) were recorded during mid-flood tide. Moreover, one LL exceedance of DO at station SR10B(N2) was recorded during mid-ebb tide and three LL exceedances of DO at stations SR6, SR10A(N) and SR10B(N2) were recorded during mid-flood tide.

Contract No.: HY/2013/01

As confirmed by the Contractor of Contract No.: HY/2013/01, there was no marine transportation and marine-based work on 3 September 2018. No site runoff within the Contract site has been observed. All wastewater generated from construction site which potentially contain organic matter was collected by registered collector. No organic matter discharge/ accumulation at active works areas on 3 September 2018. Therefore, it is concluded that the exceedances were not related to the Contract.

Contract No.: HY/2013/02

As confirmed with RSS, it is concluded that the exceedances were not related to the Contract due to completion of marine works on 10 September 2017. ET (Contract No. HY/2013/02) confirmed that no any organic matter discharge/accumulation at active works areas under Contract HY/2013/02 was observed on the date of exceedance with respect to the exceedance in DO.

Contract No.: HY/2013/03

As confirmed with RSS of Contract No. HY/2013/03, there was no marine transportation on the date of exceedance. As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, no organic matter discharge or accumulation at active works areas on 3 September 2018 under Contract No. HY/2013/03. The marine-based works in Box Culvert B had been completed. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused exceedance recorded at the concerned WQM station on 3 September 2018.

During weekly site audit on 23, 30 August 2018 and 6 September 2018, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

Contract No.: HY/2013/04

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 3 September 2018. Furthermore, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 3 September 2018.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspections on 29 August 2018 (between14:45 and 14:55) and 6 September 2018 (between 10:20 and 10:25). There were no observations referring to water quality mitigation measures associated with that shoreline.

It was concluded that the exceedance was not due to HY/2013/04.

Contract No.: HY/2014/05

There was no marine transportation and marine-based work under this contract. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

Contract No.: HY/2013/01

Actions were taken under action plan:
1. in situ measurement was repeated to confirm findings;
2. After considering the above-mentioned investigation results, it appears that it was unlikely that the dissolved oxygen exceedance was attributed to active construction activities of this Contract;
3. EPD, IEC, Contractor and ER were informed via email;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the dissolved oxygen exceedances are unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Contract No.: HY/2013/02
Although the exceedance was considered not due to HY/2013/02, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2013/03

During weekly site audit on 23, 30 August 2018 and 6 September 2018, ET (Contract No. HY/2013/03) confirmed the Contractor had provided workable and effective water quality mitigation measures.

Contract No.: HY/2013/04
Although the exceedance was considered not due to HY/2013/04, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2014/05
Although the exceedance was considered not due to HY/2014/05, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Checked by:	Keith Chau	Title:	Environmental Team Leader (Contract No. HY/2013/01)
Signature:		Date:	4 October 2018

Copied to : EPD, Contractor, Engineer Representative and IEC/ENPO

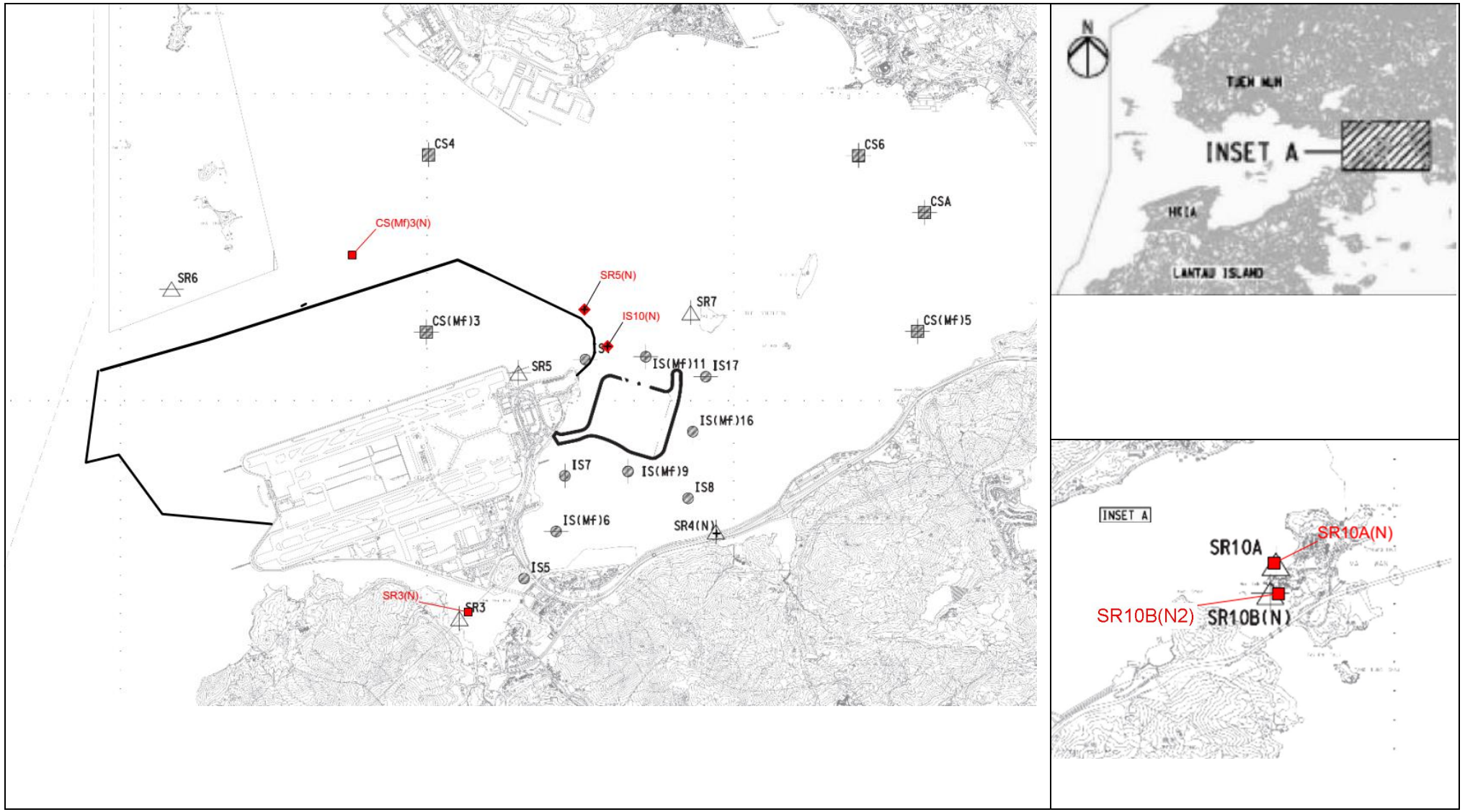

Figure 1: Location Plan

Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities (Superstructure and Infrastructure Contracts)
Notifications of Environmental Quality Limits Exceedances Notification No.: 20180905DO_v1

Date of Notification: 11 September 2018 **Date of Investigation Report:** 5 October 2018

Works Inspected: Data collected from water sampling works on 5 September 2018 and the results were issued on 10 September 2018

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ ~~Suspended Solid (SS)~~ / ~~Turbidity (TURB)~~

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS5	Surface and Middle	Surface and Middle 5.0 mg/L Bottom 4.7 mg/L	Surface and Middle 4.2 mg/L (except 5 mg/L for FCZ) Bottom 3.6 mg/L	**4.6**	6.4
DO	IS5	Bottom			**3.0**	**4.0**
DO	IS(Mf)9	Bottom			**4.6**	--(*)
DO	IS10(N)	Surface and Middle			**4.4**	**4.8**
DO	IS10(N)	Bottom			**3.9**	**3.7**
DO	IS(Mf)11	Surface and Middle			**4.5**	5.7
DO	IS(Mf)11	Bottom			**4.0**	**3.6**
DO	IS(Mf)16	Bottom			**3.8**	5.5
DO	IS17	Surface and Middle			**4.7**	6.5
DO	IS17	Bottom			**3.1**	4.7
DO	SR4(N)	Surface and Middle			**4.9**	7.0

DO	SR4(N)	Bottom			**<u>3.0</u>**	6.3
DO	SR5(N)	Surface and Middle			**4.6**	5.4
DO	SR5(N)	Bottom			**3.7**	**4.0**
DO	SR6	Surface and Middle			5.7	**4.5**
DO	SR10A(N)	Surface and Middle			5.4	**<u>4.3</u>**
DO	SR10A(N)	Bottom			**3.9**	**3.6**
DO	SR10B(N2)	Surface and Middle			5.2	**<u>4.6</u>**
DO	SR10B(N2)	Bottom			**4.6**	**4.4**

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
<u>Bold with underline</u> means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA
Remark (*): The water depth at station IS(Mf)9 during the sampling time is less than 3 meters. Therefore, only the mid-depth station was monitored.

Possible reason for Action / Limit Level Non-compliance:

On 5 September 2018, 13 AL exceedances of DO at stations IS5, IS(Mf)9, IS10(N), IS(Mf)11, IS(Mf)16, IS17, SR4(N), SR5(N), SR10A(N) and SR10B(N2) were recorded during mid-ebb tide, while 8 AL exceedances of DO at stations IS5, IS10(N), IS(Mf)11, SR5(N), SR6, SR10A(N) and SR10B(N2) were recorded during mid-flood tide. Moreover, three LL exceedance of DO at stations IS5, IS17 and SR4(N) were recorded during mid-ebb tide and two LL exceedances of DO at stations SR10A(N) and SR10B(N2) were recorded during mid-flood tide.

Contract No.: HY/2013/01

As confirmed by the Contractor of Contract No.: HY/2013/01, there was no marine transportation and marine-based work on 5 September 2018. No site runoff within the Contract site has been observed. All wastewater generated from construction site which potentially contain organic matter was collected by registered collector. No organic matter discharge/ accumulation at active works areas on 5 September 2018. Therefore, it is concluded that the exceedances were not related to the Contract.

Contract No.: HY/2013/02

As confirmed with RSS, it is concluded that the exceedances were not related to the Contract due to completion of marine works on 10 September 2017. ET (Contract No. HY/2013/02) confirmed that no any organic matter discharge/accumulation at active works areas under Contract HY/2013/02 was observed on the date of exceedance with respect to the exceedance in DO.

Contract No.: HY/2013/03

During weekly site audit on 23, 30 August 2018 and 6 September 2018, ET of Contract No. HY/2013/03 confirmed the Contractor had provided workable and effective water quality mitigation measures. Regarding the exceedance on 5 September 2018, there was no marine transportation on the date of exceedance. As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, no organic matter discharge or accumulation at active works areas on 5 September 2018 under Contract No. HY/2013/03. The marine-based works in Box Culvert B had been completed. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused exceedance recorded at the concerned WQM station on 5 September 2018.

Contract No.: HY/2013/04

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 5 September 2018. Furthermore, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 5 September 2018.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspections on 29 August 2018 (between14:45 and14:55) and 6 September 2018 (between 10:20 and 10:25). There were no observations referring to water quality mitigation measures associated with that shoreline.

It was concluded that the exceedances were not due to HY/2013/04.

Contract No.: HY/2014/05

There was no marine transportation and marine-based work under this contract. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

Contract No.: HY/2013/01

Actions were taken under action plan:
1. in situ measurement was repeated to confirm findings;
2. After considering the above-mentioned investigation results, it appears that it was unlikely that the dissolved oxygen exceedance was attributed to active construction activities of this Contract;
3. EPD, IEC, Contractor and ER were informed via email;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the dissolved oxygen exceedances are unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Contract No.: HY/2013/02
Although the exceedance was considered not due to HY/2013/02, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2013/03

During weekly site audit on 23, 30 August 2018 and 6 September 2018, ET (Contract No. HY/2013/03) confirmed the Contractor had provided workable and effective water quality mitigation measures.

Contract No.: HY/2013/04
Although the exceedance was considered not due to HY/2013/04, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2014/05
Although the exceedance was considered not due to HY/2014/05, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Checked by:	Keith Chau	Title:	Environmental Team Leader (Contract No. HY/2013/01)
Signature:		Date:	5 October 2018

Copied to : EPD, Contractor, Engineer Representative and IEC/ENPO

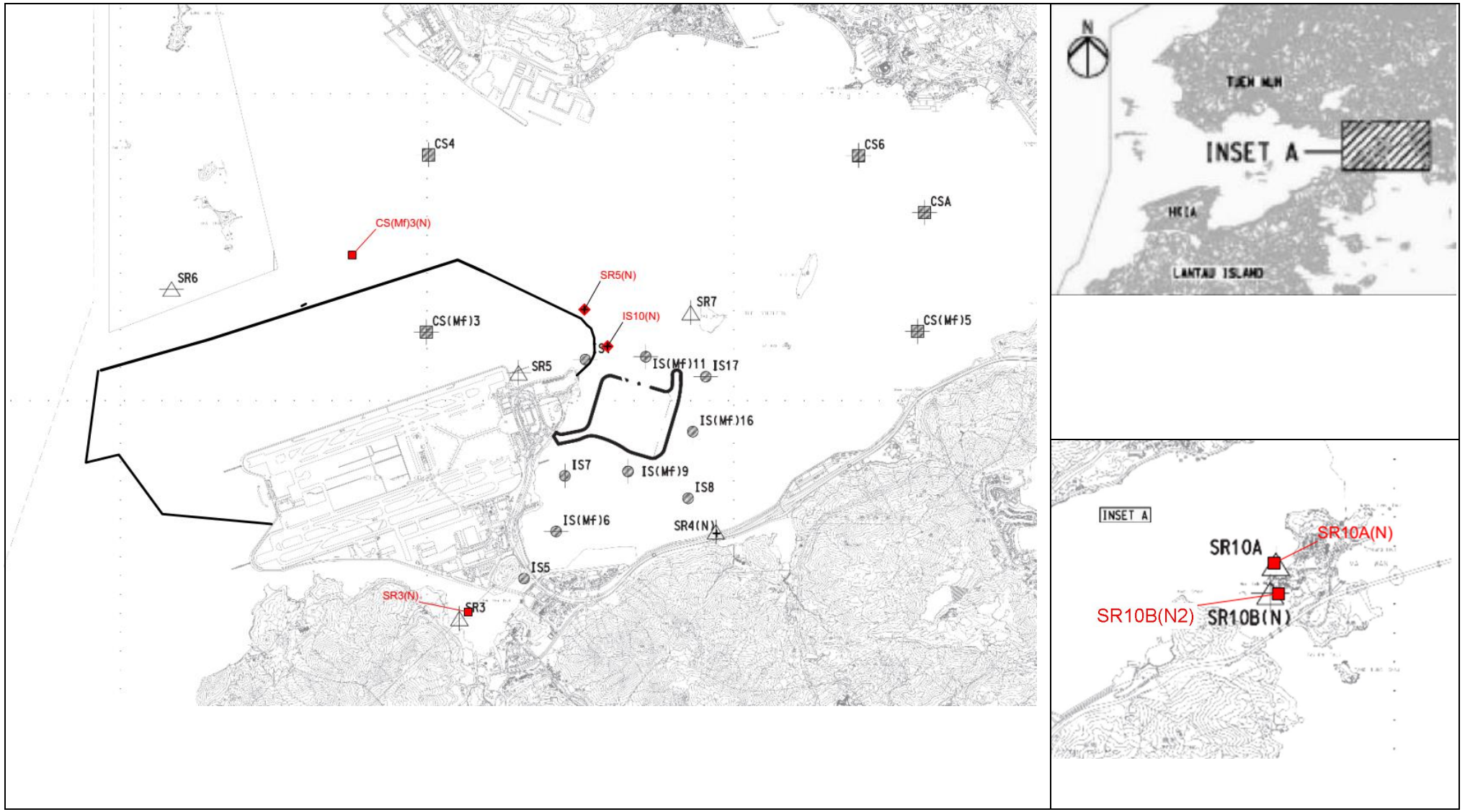

Figure 1: Location Plan

Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities (Superstructure and Infrastructure Contracts)
Notifications of Environmental Quality Limits Exceedances Notification No.: 20180907DO_v1

Date of Notification: 11 September 2018 **Date of Investigation Report:** 5 October 2018

Works Inspected: Data collected from water sampling works on 7 September 2018 and the results were issued on 11 September 2018

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ ~~Suspended Solid (SS)~~ / ~~Turbidity (TURB)~~

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS5	Surface and Middle	Surface and Middle 5.0 mg/L Bottom 4.7 mg/L	Surface and Middle 4.2 mg/L (except 5 mg/L for FCZ) Bottom 3.6 mg/L	**4.5**	7.9
DO	IS5	Bottom			**3.6**	5.6
DO	IS8	Bottom			**4.0**	--(*)
DO	IS10(N)	Surface and Middle			**4.9**	5.9
DO	IS10(N)	Bottom			**4.0**	**4.6**
DO	IS(Mf)11	Surface and Middle			**4.8**	5.6
DO	IS(Mf)11	Bottom			**4.5**	**4.4**
DO	IS(Mf)16	Bottom			**4.1**	5.0
DO	IS17	Bottom			4.8	**4.2**
DO	SR3(N)	Bottom			**4.0**	6.7
DO	SR4(N)	Surface and Middle			**4.4**	7.1

DO	SR4(N)	Bottom			**4.0**	7.2
DO	SR5(N)	Surface and Middle			**4.6**	6.5
DO	SR5(N)	Bottom			**4.2**	5.3
DO	SR6	Surface and Middle			**4.5**	**4.6**
DO	SR6	Bottom			**4.2**	**4.2**
DO	SR10A(N)	Surface and Middle			5.7	**<u>4.6</u>**
DO	SR10A(N)	Bottom			5.5	**4.4**

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
<u>Bold with underline</u> means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA
Remark (*): The water depth at station IS8 during the sampling time is less than 3 meters. Therefore, only the mid-depth station was monitored.

Possible reason for Action / Limit Level Non-compliance:

On 7 September 2018, 15 AL exceedances of DO at stations IS5, IS8, IS10(N), IS(Mf)11, IS(Mf)16, SR3(N), SR4(N), SR5(N) and SR6 were recorded during mid-ebb tide, while 6 AL exceedances of DO at stations IS10(N), IS(Mf)11, IS17, SR6 and SR10A(N) were recorded during mid-flood tide. Moreover, one LL exceedance of DO at station SR10A(N) was recorded during mid-flood tide.

Contract No.: HY/2013/01

As confirmed by the Contractor of Contract No.: HY/2013/01, there was no marine transportation and marine-based work on 7 September 2018. No site runoff within the Contract site has been observed. All wastewater generated from construction site which potentially contain organic matter was collected by registered collector. No organic matter discharge/ accumulation at active works areas on 7 September 2018. Therefore, it is concluded that the exceedances were not related to the Contract.

Contract No.: HY/2013/02

As confirmed with RSS, it is concluded that the exceedances were not related to the Contract due to completion of marine works on 10 September 2017. ET (Contract No. HY/2013/02) confirmed that no any organic matter discharge/accumulation at active works areas under Contract HY/2013/02 was observed on the date of exceedance with respect to the exceedance in DO.

Contract No.: HY/2013/03

During weekly site audit on 6 and 14 September 2018, ET of Contract No. HY/2013/03 confirmed the Contractor had provided workable and effective water quality mitigation measures. The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Regarding the exceedance on 7 September 2018, there was no marine transportation on the date of exceedance. As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, no organic matter discharge or accumulation at active works areas on 7 September under Contract No. HY/2013/03. The marine-based works in Box Culvert B had been completed. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused exceedance recorded at the concerned WQM station on 7 September 2018.

Contract No.: HY/2013/04

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 7 September 2018. Furthermore, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 7 September 2018.

It is noted that, on the same day, no exceedance was recorded at IS(Mf)9 which is the nearest monitoring location to HY/2013/04 loading and unloading point and HY/2013/04 shoreline interfacing with open waters.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspection on 6 September2018 (between 10:20 and 10:25). There were no observations referring to water quality mitigation measures associated with that shoreline.

It was concluded that the exceedances were not due to HY/2013/04.

Contract No.: HY/2014/05

There was no marine transportation and marine-based work under this contract. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

Contract No.: HY/2013/01

Actions were taken under action plan:
1. in situ measurement was repeated to confirm findings;
2. After considering the above-mentioned investigation results, it appears that it was unlikely that the dissolved oxygen exceedance was attributed to active construction activities of this Contract;
3. EPD, IEC, Contractor and ER were informed via email;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the dissolved oxygen exceedances are unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Contract No.: HY/2013/02
Although the exceedance was considered not due to HY/2013/02, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2013/03

During weekly site audit on 6 and 14 September 2018, ET of Contract No. HY/2013/03 confirmed the Contractor had provided workable and effective water quality mitigation measures.

Contract No.: HY/2013/04
Although the exceedance was considered not due to HY/2013/04, the Contractor is reminded to implementall necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2014/05
Although the exceedance was considered not due to HY/2014/05, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Checked by:	Keith Chau	Title:	Environmental Team Leader (Contract No. HY/2013/01)
Signature:		Date:	5 October 2018

Copied to : EPD, Contractor, Engineer Representative and IEC/ENPO

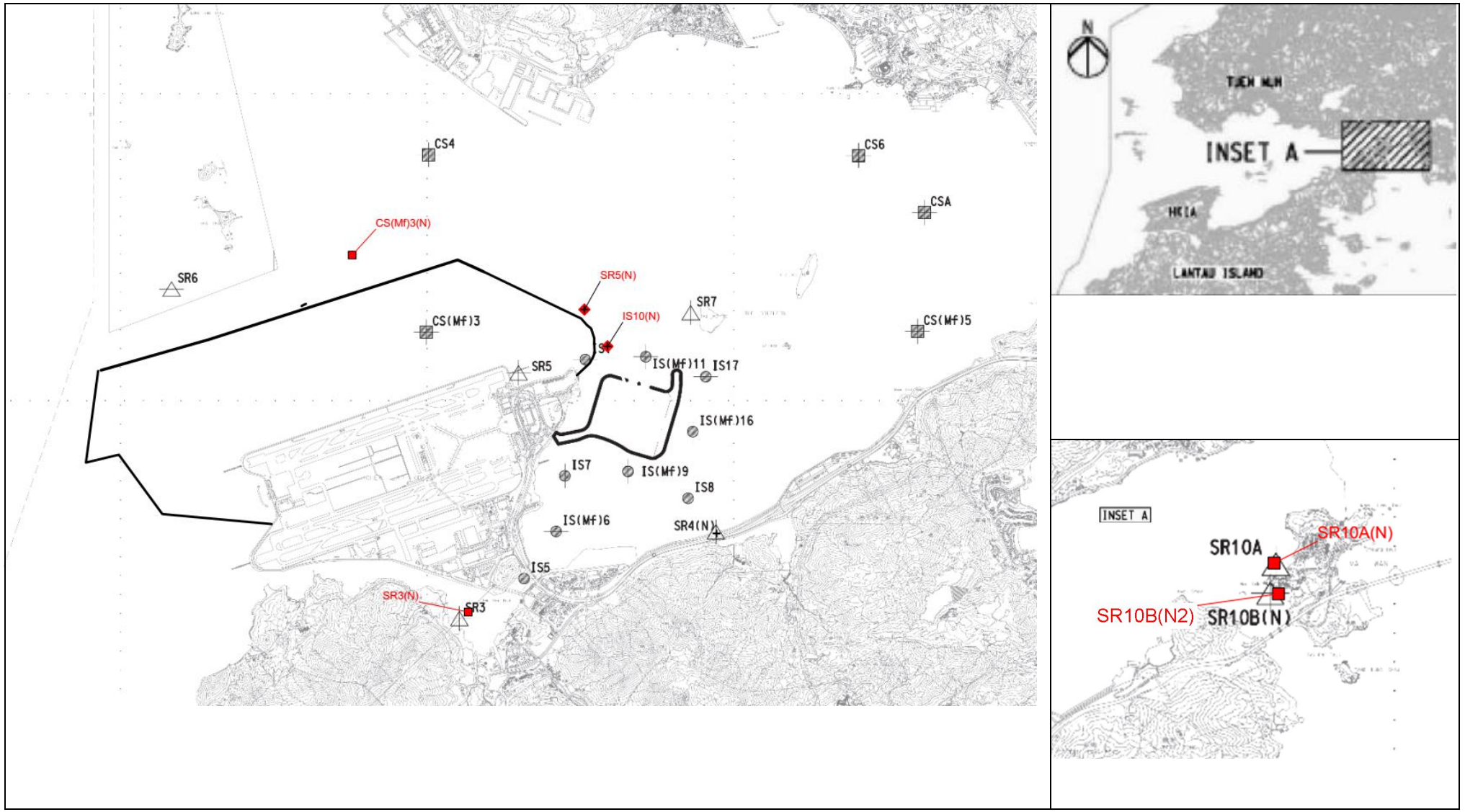

Figure 1: Location Plan

Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities (Superstructure and Infrastructure Contracts)
Notifications of Environmental Quality Limits Exceedances Notification No.: 20180910DO_v1

Date of Notification: 20 September 2018 **Date of Investigation Report:** 8 October 2018

Works Inspected: Data collected from water sampling works on 10 September 2018. Results for in-situ data were issued on 12 September 2018 and the results for SS data were issued on 19 September 2018.

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS) / ~~Turbidity (TURB)~~

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS5	Surface and Middle	Surface and Middle 5.0 mg/L Bottom 4.7 mg/L	Surface and Middle 4.2 mg/L (except 5 mg/L for FCZ) Bottom 3.6 mg/L	**4.0**	**4.4**
DO	IS5	Bottom			**3.8**	**3.9**
DO	IS(Mf)6	Surface and Middle			**4.4**	**4.3**
DO	IS7	Surface and Middle			**4.6**	**4.3**
DO	IS8	Surface and Middle			**4.6**	**4.2**
DO	IS8	Bottom			**4.5**	**4.1**
DO	IS(Mf)9	Surface and Middle			**4.7**	**4.1**
DO	IS(Mf)9	Bottom			**4.6**	**4.1**
DO	IS10(N)	Surface and Middle			**4.2**	**4.3**
DO	IS10(N)	Bottom			**4.0**	**4.0**
DO	IS(Mf)11	Surface and Middle			**4.2**	**4.2**

DO	IS(Mf)11	Bottom			**4.0**	**3.9**
DO	IS(Mf)16	Surface and Middle			**4.1**	**4.2**
DO	IS(Mf)16	Bottom			**4.1**	**4.1**
DO	IS17	Surface and Middle			**4.0**	**4.1**
DO	IS17	Bottom			**4.0**	**3.9**
DO	SR3(N)	Surface and Middle			**4.3**	**4.3**
DO	SR3(N)	Bottom			**4.3**	**4.3**
DO	SR4(N)	Surface and Middle			**4.3**	**4.2**
DO	SR4(N)	Bottom			**4.4**	**4.1**
DO	SR5(N)	Surface and Middle			**4.2**	**4.2**
DO	SR5(N)	Bottom			**4.1**	**4.0**
DO	SR6	Surface and Middle			**3.7**	**3.9**
DO	SR6	Bottom			**3.6**	**4.0**
DO	SR7	Surface and Middle			**4.4**	**4.2**
DO	SR7	Bottom			**4.0**	**4.2**

DO	SR10A(N)	Surface and Middle			**<u>4.2</u>**	**<u>4.0</u>**
DO	SR10A(N)	Bottom			**4.2**	**3.7**
DO	SR10B(N2)	Surface and Middle			**<u>4.0</u>**	**<u>3.5</u>**
DO	SR10B(N2)	Bottom			**4.1**	**<u>3.5</u>**
SS	SR6	Depth Average	23.5 and 120% (i.e. 11.2 for mid-ebb/10.5 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 12.1 for mid-ebb/11.4 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	11.3	**28.6**

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
<u>Bold with underline</u> means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Possible reason for Action / Limit Level Non-compliance:

On 10 September 2018, 24 AL exceedances of DO at stations IS5, IS(Mf)6, IS7, IS8, IS(Mf)9, IS10(N), IS(Mf)11, IS(Mf)16, IS17, SR3(N), SR4(N), SR5(N), SR6, SR7, SR10A(N) and SR10B(N2) were recorded during mid-ebb tide, while 24 AL exceedances of DO at stations IS5, IS(Mf)6, IS7, IS8, IS(Mf)9, IS10(N), IS(Mf)11, IS(Mf)16, IS17, SR3(N), SR4(N), SR5(N), SR6, SR7 and SR10A(N) were recorded during mid-flood tide. Moreover, six LL exceedances of DO at stations IS5, IS(Mf)16, IS17, SR6, SR10A(N) and SR10B(N2) were recorded during mid-ebb tide and six LL exceedance of DO at stations IS(Mf)9, IS17, SR6, SR10A(N) and SR10B(N2) were recorded during mid-flood tide. And one AL exceedance of SS at station SR6 was recorded during mid-flood tide.

Contract No.: HY/2013/01

As confirmed by the Contractor of Contract No.: HY/2013/01, there was no marine transportation and marine-based work on 10 September 2018. No site runoff within the Contract site has been observed. All wastewater generated from construction site which potentially contain organic matter was collected by registered collector. No organic matter discharge/ accumulation at active works areas on 10 September 2018. Therefore, it is concluded that the exceedances were not related to the Contract.

Contract No.: HY/2013/02

As confirmed with RSS, it is concluded that the exceedances were not related to the Contract due to completion of marine works on 10 September 2017. ET (Contract No. HY/2013/02) confirmed that no any organic matter discharge/accumulation at active works areas under Contract HY/2013/02 was observed on the date of exceedance with respect to the exceedance in DO.

Contract No.: HY/2013/03

During weekly site audit on 6, 14 and 20 September 2018, ET of Contract No. HY/2013/03 confirmed the Contractor had provided workable and effective water quality mitigation measures. The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Regarding the exceedance on 10 September 2018, there was no marine transportation on the date of exceedance. As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, all surplus filling materials transported from Contract No. HY/2013/03 to other projects by marine vessels have been completed with the last batch delivered on 24 March 2018, no organic matter discharge or accumulation at active works areas on 10 September 2018 under Contract No. HY/2013/03. The marine-based works in Box Culvert B had been completed. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused exceedance recorded at the concerned WQM station on 10 September 2018.

Contract No.: HY/2013/04

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 10 September 2018. Furthermore, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 10 September 2018.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspection on 6 September 2018 (between 10:20 and 10:25). There were no observations referring to water quality mitigation measures associated with that shoreline.

Subsequent to the subject exceedances, HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspection on 12 September 2018 (between 14:30 and 14:45). There were no observations referring to water quality mitigation measures associated with that shoreline.

It was concluded that the exceedances were not due to HY/2013/04.

Contract No.: HY/2014/05

There was no marine transportation and marine-based work under this contract. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

Contract No.: HY/2013/01

Actions were taken under action plan:
1. in situ measurement was repeated to confirm findings;
2. After considering the above-mentioned investigation results, it appears that it was unlikely that the dissolved oxygen and suspended solid exceedances were attributed to active construction activities of this Contract;
3. EPD, IEC, Contractor and ER were informed via email;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the dissolved oxygen and suspended solid exceedances are unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Contract No.: HY/2013/02
Although the exceedance was considered not due to HY/2013/02, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2013/03

During weekly site audit on 6, 14 and 20 September 2018, ET of Contract No. HY/2013/03 confirmed the Contractor had provided workable and effective water quality mitigation measures.

Contract No.: HY/2013/04
Although the exceedance was considered not due to HY/2013/04, the Contractor is reminded to implemental necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2014/05
Although the exceedance was considered not due to HY/2014/05, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Checked by:	Keith Chau	Title:	Environmental Team Leader (Contract No. HY/2013/01)
Signature:		Date:	8 October 2018

Copied to : EPD, Contractor, Engineer Representative and IEC/ENPO

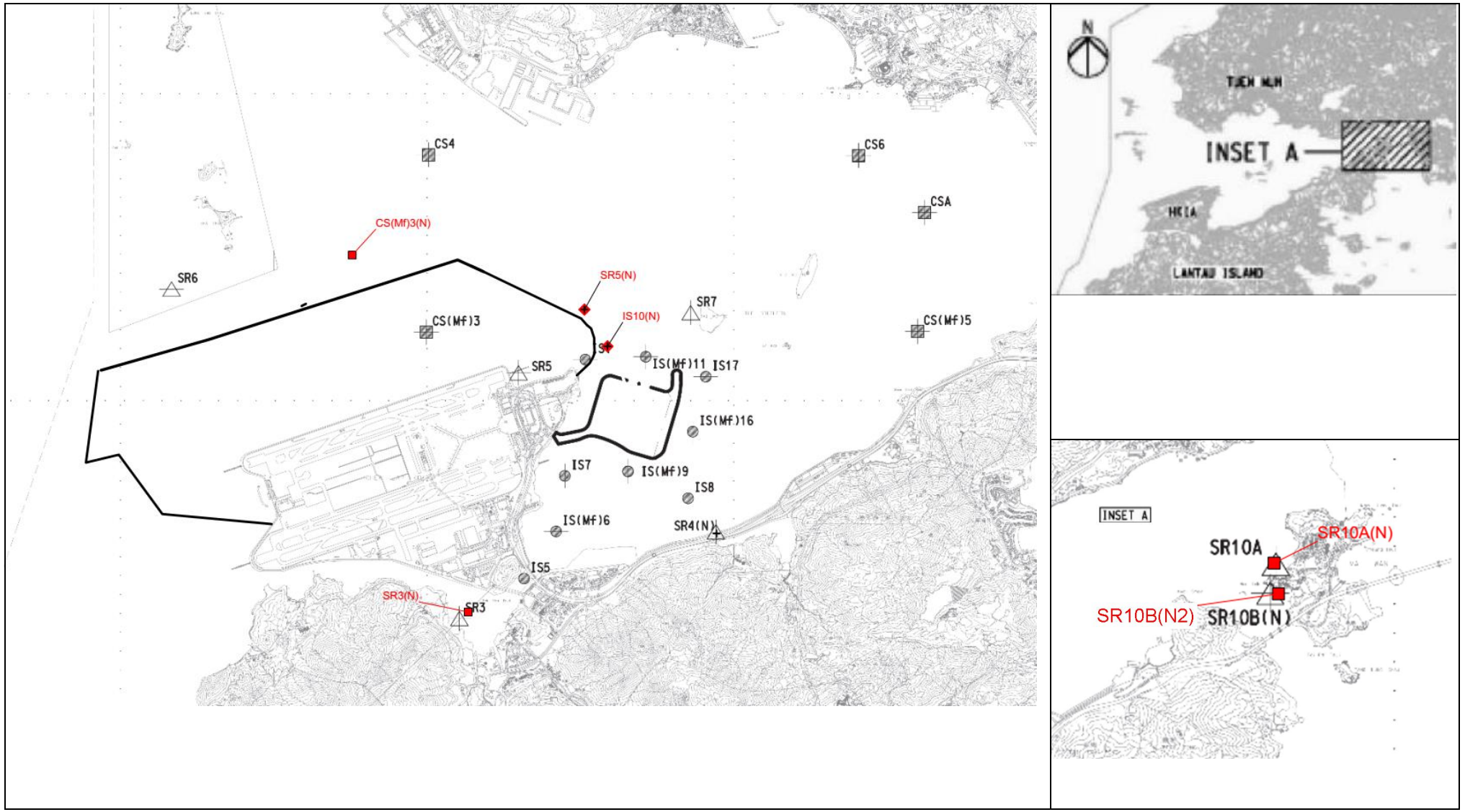

Figure 1: Location Plan

Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities (Superstructure and Infrastructure Contracts)
Notifications of Environmental Quality Limits Exceedances Notification No.: 20180912DO_SS

Date of Notification: 21 September 2018 **Date of Investigation Report:** 28 September 2018

Works Inspected: Data collected from water sampling works on 12 September 2018. Results for in-situ data were issued on 14 September 2018 and the results for SS data were issued on 21 September 2018.

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS) / ~~Turbidity (TURB)~~

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS5	Surface and Middle	Surface and Middle 5.0 mg/L Bottom 4.7 mg/L	Surface and Middle 4.2 mg/L (except 5 mg/L for FCZ) Bottom 3.6 mg/L	--(*)	**4.5**
DO	IS(Mf)6	Surface and Middle			--(*)	**4.7**
DO	IS7	Surface and Middle			--(*)	**4.7**
DO	IS8	Surface and Middle			--(*)	**4.3**
DO	IS8	Bottom			--(*)	**4.5**
DO	IS(Mf)9	Surface and Middle			--(*)	**4.4**
DO	IS(Mf)9	Bottom			--(*)	**4.5**
DO	IS10(N)	Surface and Middle			--(*)	**4.4**
DO	IS10(N)	Bottom			--(*)	**4.3**
DO	IS(Mf)11	Surface and Middle			--(*)	**4.5**
DO	IS(Mf)11	Bottom			--(*)	**4.5**

DO	IS(Mf)16	Surface and Middle			--(*)	**4.3**
DO	IS(Mf)16	Bottom			--(*)	**4.4**
DO	IS17	Surface and Middle			--(*)	**4.2**
DO	IS17	Bottom			--(*)	**4.2**
DO	SR3(N)	Surface and Middle			--(*)	**4.4**
DO	SR3(N)	Bottom			--(*)	**4.5**
DO	SR4(N)	Surface and Middle			--(*)	**4.4**
DO	SR4(N)	Bottom			--(*)	**4.6**
DO	SR5(N)	Surface and Middle			--(*)	**4.4**
DO	SR5(N)	Bottom			--(*)	**4.5**
DO	SR6	Surface and Middle			--(*)	**4.5**
DO	SR6	Bottom			--(*)	**4.6**
DO	SR7	Surface and Middle			--(*)	**4.4**
DO	SR7	Bottom			--(*)	**4.4**
DO	SR10A(N)	Surface and Middle			--(*)	**4.2**

DO	SR10A(N)	Bottom			--(*)	**4.3**
DO	SR10B(N2)	Surface and Middle			--(*)	**<u>3.9</u>**
DO	SR10B(N2)	Bottom			--(*)	**3.9**
SS	SR6	Depth Average	23.5 and 120% (i.e. 12.7 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 13.8 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	--(*)	**24.8**

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
<u>Bold with underline</u> means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA
Remark (*): Water sampling had been cancelled (mid-ebb tide) due to the Strong Wind Signal No.3.

Possible reason for Action / Limit Level Non-compliance:

On 12 September 2018, 27 AL exceedances of DO at stations IS5, IS(Mf)6, IS7, IS8, IS(Mf)9, IS10(N), IS(Mf)11, IS(Mf)16, IS17, SR3(N), SR4(N), SR5(N), SR6, SR7, SR10A(N) and SR10B(N2) were recorded during mid-flood tide. Moreover, two LL exceedances of DO at stations SR10A(N) and SR10B(N2) were recorded during mid-flood tide. And one AL exceedance of SS at station SR6 was recorded during mid-flood tide.

Contract No.: HY/2013/01

As confirmed by the Contractor of Contract No.: HY/2013/01, there was no marine transportation and marine-based work on 12 September 2018. No site runoff within the Contract site has been observed. All wastewater generated from construction site which potentially contain organic matter was collected by registered collector. No organic matter discharge/ accumulation at active works areas on 12 September 2018. Therefore, it is concluded that the exceedances were not related to the Contract.

Contract No.: HY/2013/02

As confirmed with RSS, it is concluded that the exceedances were not related to the Contract due to completion of marine works on 10 September 2017. ET (Contract No. HY/2013/02) confirmed that no any organic matter discharge/accumulation at active works areas under Contract HY/2013/02 was observed on the date of exceedance with respect to the exceedance in DO.

Contract No.: HY/2013/03

During weekly site audit on 6 and 14 September 2018, ET of Contract No. HY/2013/03 confirmed the Contractor had provided workable and effective water quality mitigation measures. The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Regarding the exceedance on 12 September 2018, there was no marine transportation on the date of exceedance. As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, all surplus filling materials transported from Contract No. HY/2013/03 to other projects by marine vessels have been completed with the last batch delivered on 24 March 2018, no organic matter discharge or accumulation at active works areas on 12 September 2018 under Contract No. HY/2013/03. The marine-based works in Box Culvert B had been completed. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused exceedance recorded at the concerned WQM station on 12 September 2018.

Contract No.: HY/2013/04

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 12 September 2018. Furthermore, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 12 September 2018.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspection on 12 September 2018 (between 14:30 and 14:45). There were no observations referring to water quality mitigation measures associated with that shoreline.

It was concluded that the exceedances were not due to HY/2013/04.

Contract No.: HY/2014/05

There was no marine transportation and marine-based work under this contract. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

Contract No.: HY/2013/01

Actions were taken under action plan:
1. in situ measurement was repeated to confirm findings;
2. After considering the above-mentioned investigation results, it appears that it was unlikely that the dissolved oxygen and suspended solid exceedances were attributed to active construction activities of this Contract;
3. EPD, IEC, Contractor and ER were informed via email;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the dissolved oxygen and suspended solid exceedances are unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Contract No.: HY/2013/02
Although the exceedance was considered not due to HY/2013/02, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2013/03

During weekly site audit on 6 and 14 September 2018, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

Contract No.: HY/2013/04
Although the exceedance was considered not due to HY/2013/04, the Contractor is reminded to implemental necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2014/05
Although the exceedance was considered not due to HY/2014/05, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Checked by:	Keith Chau	Title:	Environmental Team Leader (Contract No. HY/2013/01)
Signature:		Date:	28 September 2018

Copied to : EPD, Contractor, Engineer Representative and IEC/ENPO

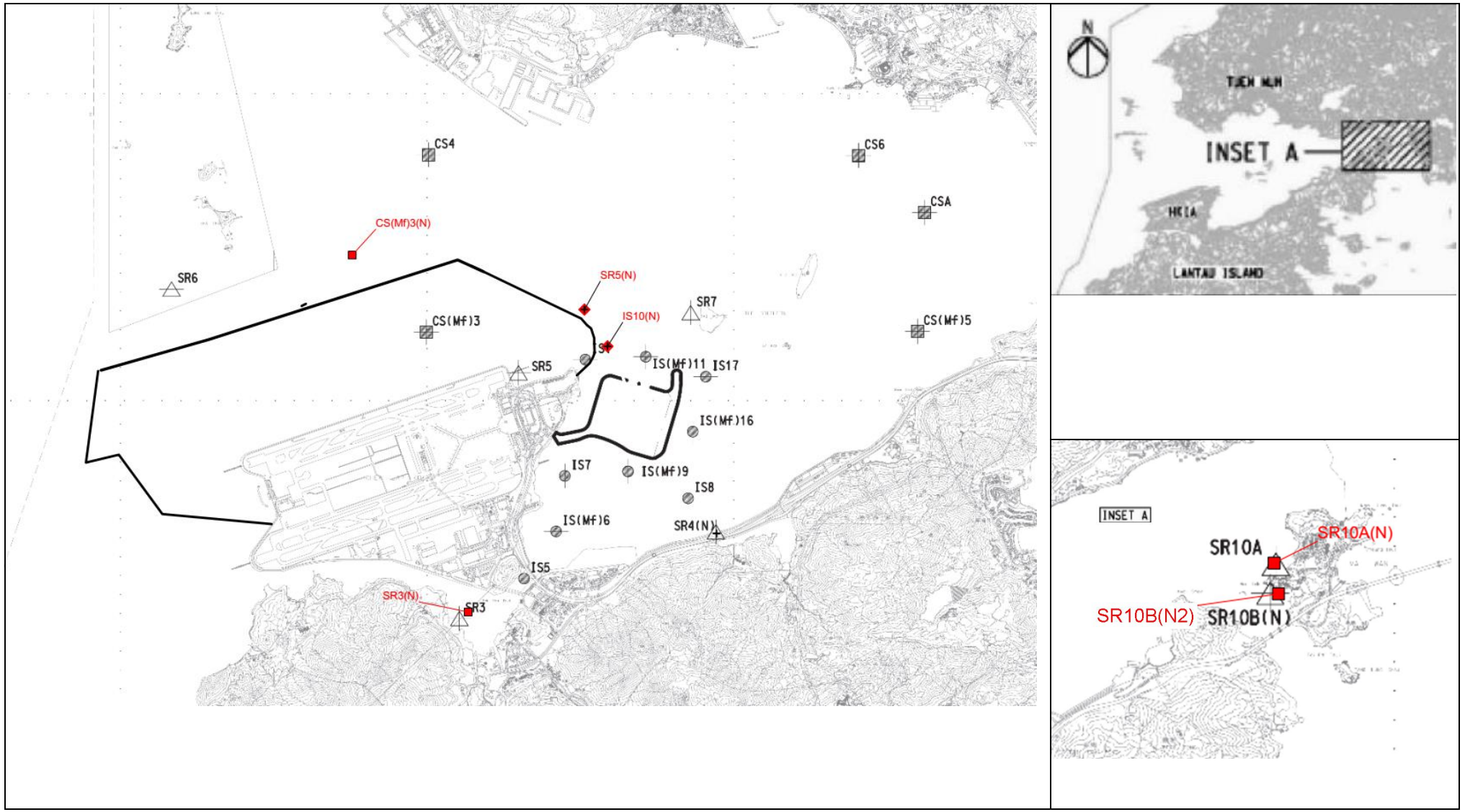

Figure 1: Location Plan

Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities (Superstructure and Infrastructure Contracts)
Notifications of Environmental Quality Limits Exceedances Notification No.: 20180914DO_v1

Date of Notification: 18 September 2018 **Date of Investigation Report:** 8 October 2018

Works Inspected: Data collected from water sampling works on 14 September 2018 and the results were issued on 18 September 2018

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ ~~Suspended Solid (SS)~~ / ~~Turbidity (TURB)~~

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS(Mf)16	Surface and Middle	Surface and Middle 5.0 mg/L Bottom 4.7 mg/L	Surface and Middle 4.2 mg/L (except 5 mg/L for FCZ) Bottom 3.6 mg/L	**4.9**	5.0
DO	IS17	Surface and Middle			**4.8**	**4.8**
DO	IS17	Bottom			**4.6**	4.7
DO	SR4(N)	Surface and Middle			5.3	**4.9**
DO	SR10A(N)	Surface and Middle			**4.9**	**4.7**
DO	SR10B(N2)	Surface and Middle			**4.9**	**4.4**
DO	SR10B(N2)	Bottom			4.9	**4.5**

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
Bold with underline means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Possible reason for Action / Limit Level Non-compliance:

On 14 September 2018, 3 AL exceedances of DO at stations IS(Mf)16 and IS17 were recorded during mid-ebb tide while 3 AL exceedances of DO at stations IS17, SR4(N) and SR10B(N2) were recorded during mid-flood tide. Moreover, two LL exceedances of DO at stations SR10A(N) and SR10B(N2) were recorded during mid-ebb tide and two LL exceedances of DO at stations SR10A(N) and SR10B(N2) were recorded during mid-flood tide.

Contract No.: HY/2013/01

As confirmed by the Contractor of Contract No.: HY/2013/01, there was no marine transportation and marine-based work on 14 September 2018. No site runoff within the Contract site has been observed. All wastewater generated from construction site which potentially contain organic matter was collected by registered collector. No organic matter discharge/ accumulation at active works areas on 14 September 2018. Therefore, it is concluded that the exceedances were not related to the Contract.

Contract No.: HY/2013/02

As confirmed with RSS, it is concluded that the exceedances were not related to the Contract due to completion of marine works on 10 September 2017. ET (Contract No. HY/2013/02) confirmed that no any organic matter discharge/accumulation at active works areas under Contract HY/2013/02 was observed on the date of exceedance with respect to the exceedance in DO.

Contract No.: HY/2013/03

During weekly site audit on 6, 14 and 20 September 2018, ET of Contract No. HY/2013/03 confirmed the Contractor had provided workable and effective water quality mitigation measures. The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Regarding the exceedance on 14 September 2018, there was no marine transportation on the date of exceedance. As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, no organic matter discharge or accumulation at active works areas on 14 September 2018 under Contract No. HY/2013/03. The marine-based works in Box Culvert B had been completed. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused exceedance recorded at the concerned WQM station on 14 September 2018.

Contract No.: HY/2013/04

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 14 September 2018. Also, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 14 September 2018. Furthermore, the Contractor has confirmed that the silt curtains were properly installed around Box Culverts C and D on the day of monitoring, i.e. 14 September 2018.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspection on 12 September 2018 (between 14:30 and 14:45). There were no observations referring to water quality mitigation measures associated with that shoreline.

Subsequent to the subject exceedances, HY/2013/04 site shoreline interfacing with open waters was inspected by ET as part of checking of water quality mitigation measures during the regular weekly site inspection on 17 September 2018 (between 14:40 and 14:50). It was observed that the silt curtains at Box Culverts C and D were disconnected from the coastal shoreline. The Contractor was reminded to reinstate the silt curtains. There were no other observations in relation to the same shoreline.

It was concluded that the exceedances were not due to HY/2013/04.

Contract No.: HY/2014/05

There was no marine transportation and marine-based work under this contract. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

Contract No.: HY/2013/01

Actions were taken under action plan:
1. in situ measurement was repeated to confirm findings;
2. After considering the above-mentioned investigation results, it appears that it was unlikely that the dissolved oxygen exceedances were attributed to active construction activities of this Contract;
3. EPD, IEC, Contractor and ER were informed via email;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the dissolved oxygen exceedances are unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Contract No.: HY/2013/02
Although the exceedance was considered not due to HY/2013/02, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2013/03

During weekly site audit on 6, 14 and 20 September 2018, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

Contract No.: HY/2013/04
Although the exceedance was considered not due to HY/2013/04, the Contractor is reminded to implemental necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2014/05
Although the exceedance was considered not due to HY/2014/05, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Checked by:	Keith Chau	Title:	Environmental Team Leader (Contract No. HY/2013/01)
Signature:		Date:	8 October 2018

Copied to : EPD, Contractor, Engineer Representative and IEC/ENPO

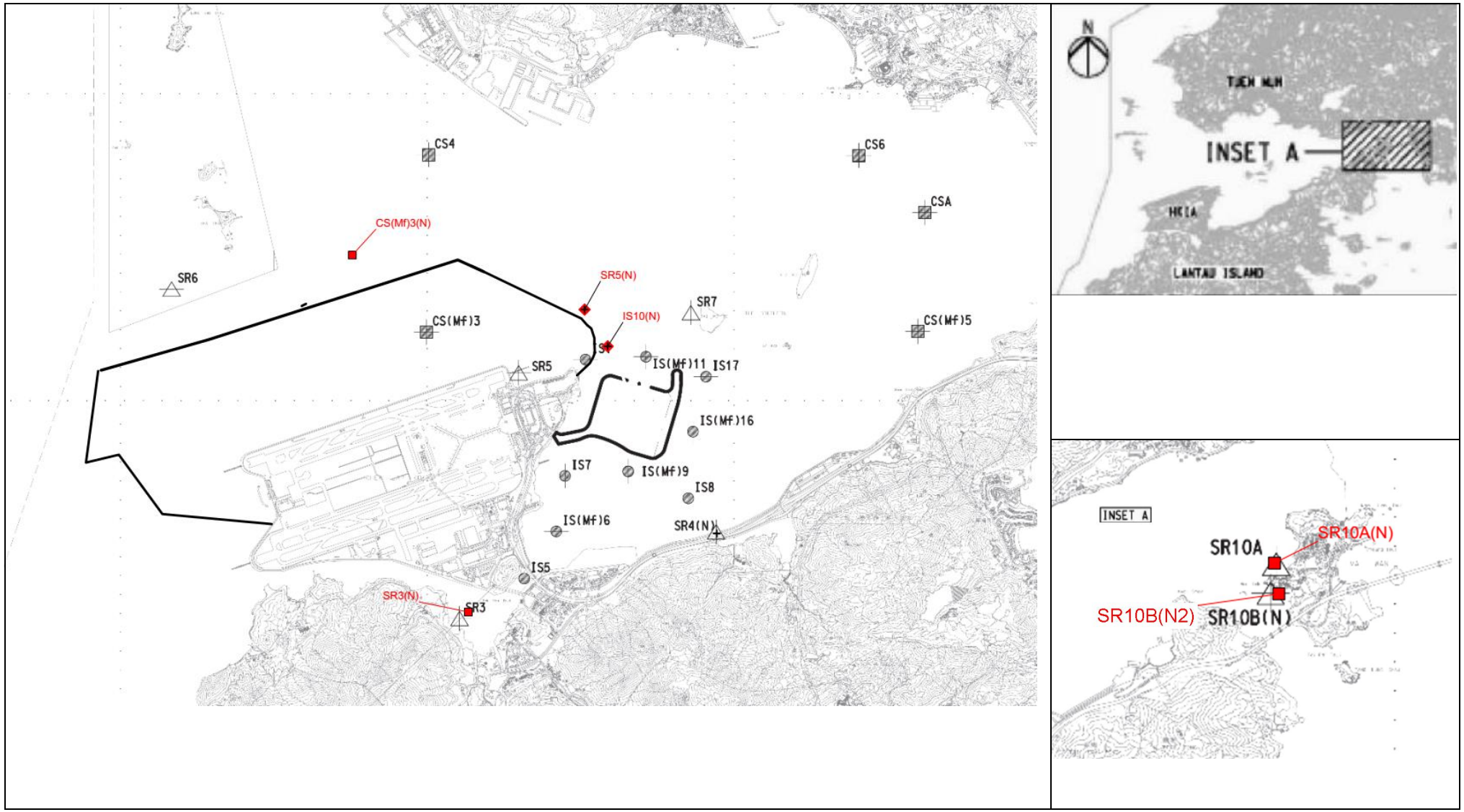

Figure 1: Location Plan

Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities (Superstructure and Infrastructure Contracts)
Notifications of Environmental Quality Limits Exceedances Notification No.: 20180928DO_v1

Date of Notification: 3 October 2018 **Date of Investigation Report:** 12 October 2018

Works Inspected: Data collected from water sampling works on 28 September 2018 and the results were issued on 02 October 2018

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ ~~Suspended Solid (SS)~~ / ~~Turbidity (TURB)~~

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	SR10B(N2)	Surface and Middle	Surface and Middle 5.0 mg/L Bottom 4.7 mg/L	Surface and Middle 4.2 mg/L (except 5 mg/L for FCZ) Bottom 3.6 mg/L	5.3	**<u>4.6</u>**

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
<u>Bold with underline</u> means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Possible reason for Action / Limit Level Non-compliance:

On 28 September 2018, 1 LL exceedance of DO at station SR10B(N2) was recorded during mid-flood tide.

Contract No.: HY/2013/01

As confirmed by the Contractor of Contract No.: HY/2013/01, there was no marine transportation and marine-based work on 28 September 2018. No site runoff within the Contract site has been observed. All wastewater generated from construction site which potentially contain organic matter was collected by registered collector. No organic matter discharge/ accumulation at active works areas on 28 September 2018. Therefore, it is concluded that the exceedances were not related to the Contract.

Contract No.: HY/2013/02

As confirmed with RSS, it is concluded that the exceedances were not related to the Contract due to completion of marine works on 10 September 2017. ET (Contract No. HY/2013/02) confirmed that no any organic matter discharge/accumulation at active works areas under Contract HY/2013/02 was observed on the date of exceedance with respect to the exceedance in DO.

Contract No.: HY/2013/03

During weekly site audit on 14, 20, 27 September 2018 and 4 October 2018, ET of Contract No. HY/2013/03 confirmed the Contractor had provided workable and effective water quality mitigation measures. The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Regarding the exceedance on 28 September 2018, there was no marine transportation on the date of exceedance. As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, no organic matter discharge or accumulation at active works areas on 28 September 2018 under Contract No. HY/2013/03. The marine-based works in Box Culvert B had been completed. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused exceedance recorded at the concerned WQM station on 28 September 2018.

Contract No.: HY/2013/04

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract on 28 September 2018. Furthermore, there was no visible observation of any discharge or accumulation of organic matter at the active works areas within HY/2013/04 site area on 28 September 2018. HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspection on 12 September 2018 (between 14:30 and 14:45). There were no observations referring to water quality mitigation measures associated with that shoreline.

HY/2013/04 site shoreline interfacing with open waters was inspected during ET's regular weekly site inspection on 26 September 2018 (between 14:30 and 14:55). There were no observations referring to water quality mitigation measures associated with that shoreline. The large distance between HY/2013/04 site and SR10B(N2) is also noted.

Subsequent to the subject exceedance, HY/2013/04 site shoreline interfacing with open waters was inspected by ET as part of checking of water quality mitigation measures during the regular weekly site inspection on 3 October 2018 (between15:10 and 16:20). It was observed that the silt curtains at Box Culverts C and D were disconnected from the coastal shoreline. The Contractor was reminded to reinstate the silt curtains. There were no other observations in relation to the same shoreline.

It was concluded that the exceedances were not due to HY/2013/04.

Contract No.: HY/2014/05

There was no marine transportationand marine-based work under this contract. No site runoff within the Contract site has been observed. Therefore, it is concluded that the exceedances were not related to the Contract.

Actions taken/ to be taken:

Contract No.: HY/2013/01

Actions were taken under action plan:
1. in situ measurement was repeated to confirm findings;
2. After considering the above-mentioned investigation results, it appears that it was unlikely that the dissolved oxygen exceedances were attributed to active construction activities of this Contract;
3. EPD, IEC, Contractor and ER were informed via email;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the dissolved oxygen exceedances are unlikely to be contract related, as such, Actions 5-7 under the EAP are not considered applicable.

However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule.

Contract No.: HY/2013/02
Although the exceedance was considered not due to HY/2013/02, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2013/03

During weekly site audit on 14, 20, 27 September 2018 and 4 October 2018, ET of Contract No. HY/2013/03 confirmed the Contractor had provided workable and effective water quality mitigation measures.

Contract No.: HY/2013/04
Although the exceedance was considered not due to HY/2013/04, the Contractor is reminded to implemental necessary water quality mitigation measures identified in the EM&A Manual.

Contract No.: HY/2014/05
Although the exceedance was considered not due to HY/2014/05, the Contractor is reminded to implement all necessary water quality mitigation measures identified in the EM&A Manual.

Checked by:	Keith Chau	Title:	Environmental Team Leader (Contract No. HY/2013/01)
Signature:		Date:	12 October 2018

Copied to : EPD, Contractor, Engineer Representative and IEC/ENPO

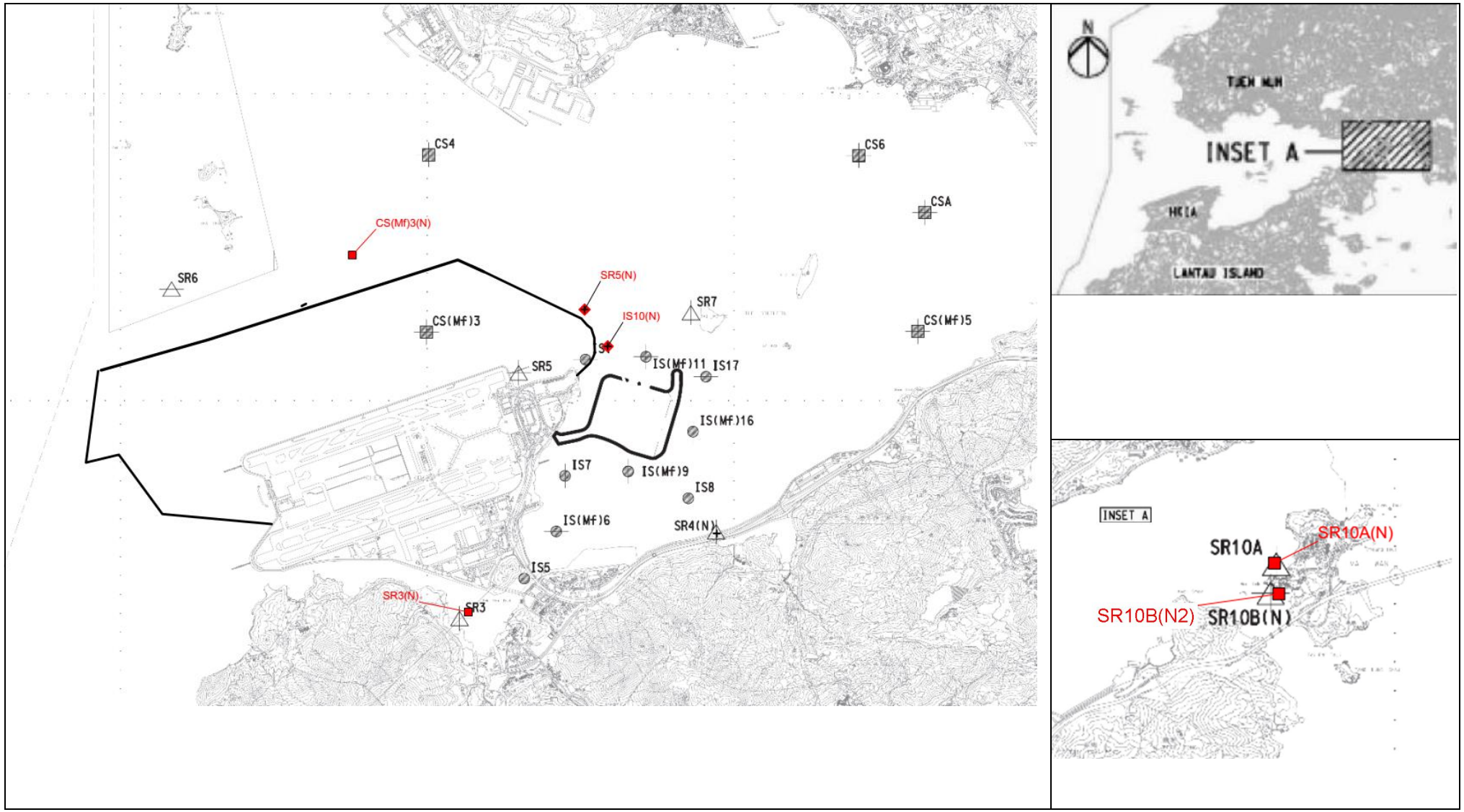

Figure 1: Location Plan